Telecom New Zealand's submissions in respect of the TelstraClear UBS and backhaul application

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Public version

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I. OVERVIEW

1. Telecom accepted the Commission's final report on LLU and advocated that the Government accept it. We saw it as placing responsibilities and expectations on Telecom and also providing a clear set of regulatory ground rules to enable Telecom to invest with confidence in its NGN.

2. The responsibilities and expectations placed on Telecom by the Commission's LLU recommendations and its acceptance by the Government included:

   (a) a fair and workable wholesale UBS market that facilitated competition in the internet connectivity space;

   (b) a focused rollout of the NGN; and

   (c) a drive to deliver substantial broadband growth.

3. Telecom responded on these expectations by setting some firm deliverables in terms of broadband uptake (250,000), an indicative forecast of around a third of broadband growth being at the wholesale level, a proactive delivery of UBS and a committed and active NGN programme.

4. Telecom has delivered on its promises. There has been substantive uptake in broadband demand and there is every indication that UBS sales on a run rate basis will make the 30% at wholesale prediction a realistic one. **[**

   ] TCNZCOI In terms of our proactive UBS implementation, whilst Telecom faced genuine technical issues given the speed of the rollout, the 256 kbps service has been implemented. While we are the first to admit that our implementation of a commercial UBS has not been smooth sailing, Telecom is also on target to exceed its other firm commitment in this space which was a 512 kbps service in March. This is now a 1 Mbps and 2 Mbps service in March 2005.

5. There is every sign that our commercial UBS product is delivering a competitive wholesale market given the run rate of UBS and Telecom remains highly committed to an effective competitive process with the UBS.

6. As to the regulatory ground rules set by the Commission's final report on LLU, they included setting some boundaries on the UBS service. Critical boundaries were a 128 kbps upstream speed, an internet grade service (as per the explanatory notes to the designation) and not supporting real time applications including voice (see Appendix 5 of the Final LLU Report).

7. TelstraClear's application certainly crosses those boundaries.

8. It would be hugely concerning for Telecom if the Commission acceded to TelstraClear's desire to create a UBS service that goes well outside the best efforts internet space. The regulatory uncertainty created by how such a service could be priced or the risk that it would be referenced back to JetStream for pricing purposes has significant implications for our NGN investments.

9. Scope of service issues aside however, the overarching problem with TelstraClear's requests for services is that the services have no close retail parallel. In contrast to ihug, TelstraClear is seeking five (or potentially more) highly tailored services that go significantly beyond the performance of JetStream.

10. It is this aspect of TestraClear's application which creates significant difficulties across the board as the designation contemplates at least some equivalence between the service requested and Telecom's retail offerings. For instance, the lack of any close retail parallel makes it very difficult to find a comparable retail product from which any meaningful imputation can be made. The tailored non-price service specifications requested are also very contentious from an operational practicability perspective and will, if ordered, have cost consequences which will in turn need to be reflected in the wholesale pricing.

11. TelstraClear's application also raises the issue of the correct market definitions and assessment of competition issues which Telecom says the Commission has not yet correctly assessed in its Decision to Investigate and which deserve detailed consideration, preferably in a workshop environment.

12. Overall then this is an application by TelstraClear which tests the boundaries of the UBS and backhaul designations. It will therefore require careful consideration by the Commission set against the background of the LLU Review and the interests of the end-users of telecommunications services. In essence, Telecom's submission will explain why it considers that the application by TelstraClear is pushing the boundaries too far in light of the Act and the current competitive landscape. The Commission should confirm the boundaries to TelstraClear and seek a refinement of TelstraClear's application.

II. EXECUTIVE SUMMARY

13. This is the first time that an application under the UBS service designations has been considered by the Commission.

14. The LLU Report and the principles underlying the UBS designations set the context for the Commission's consideration of this application. The focus of regulatory intervention through designation of the bitstream and backhaul service is to achieve enhanced competition in markets for broadband internet grade access for residential and SME end-users.

15. Consistently with the purposes set out in section 18 of the Telecommunications Act, the Commission explicitly limited the scope of its recommended regulatory intervention to internet grade broadband access in order to preserve the dynamic efficiencies associated with Telecom's NGN programme and this was accepted by Government.

16. This is particularly relevant for a number of the issues to be considered by the Commission in this application, in particular the scope of the designated service and the market and competition analysis.

17. The purpose of Part 2 of the Telecommunications Act is squarely focused on promotion of competition for the long-term benefit of end-users of telecommunications services within New Zealand and the Commission should not make any determination requiring access to the designated UBS services in any particular market unless it will best give effect to the purposes set out in section 18. If a determination is warranted then the Commission must also have regard to the purposes set out in section 18 when considering each and every aspect of that determination.

18. Telecom's submissions fall into four broad headings: market analysis, service designation, non-price terms and the application of the initial pricing principle. A summary of Telecom's submission under each of these headings is set out below.

MARKET ANALYSIS

19. Telecom notes that the Commission is required to carry out a market analysis before regulation may be considered. The Commission must consider TelstraClear's application and make any determination on a market by market basis. A determination may only be made in respect of those markets where Telecom faces limited, or is likely to face lessened, competition or the Commission otherwise decides that the service should be wholesaled by Telecom.

20. A full market analysis is necessary because:

    (a) insufficient information is provided in TelstraClear's application on which the Commission could have reasonably concluded, as a prerequisite for regulated access, that Telecom faces limited

competition or is likely to face lessened competition or that the Commission should require access to be provided; and

(b) it is not appropriate for the Commission to apply the market analysis from the LLU Review or Decision 497 for the purposes of this application, as the context and purpose of market analysis for this application is substantially different to the context and purpose for which the market analysis was undertaken in either the LLU Review or Decision 497. The dynamic nature of the market also means that the facts upon which the Commission based its earlier analysis are no longer current.

21. The focus of the regulatory framework for the UBS service designations is enhanced competition in markets for residential and SME retail broadband internet access. For this reason, competition in the various markets for internet grade broadband access cannot be considered in isolation from the retail broadband internet access markets. The Commission must also consider the retail broadband internet access markets when having regard to how to give best effect to the purposes in section 18.

22. The relevant markets to be considered in the market and competition analysis are the retail broadband internet access markets, the markets for internet grade broadband access and the market for bitstream backbone transmission for internet grade broadband access services.

23. All of the retail markets and the wholesale local access broadband markets have separate residential and business customer dimensions and the geographic dimension is identified by reference to the reach of competitor broadband access networks, including fixed wireless access networks.

24. A market analysis for internet grade wholesale broadband access services has not been considered in detail by the Commission before. Telecom proposes that, as market analysis will involve a significant volume of data and other factual information to be put before the Commission not only by the parties to this application but a number of other market participants, and as this is a common issue both for this application and the ihug application, the most expeditious way to progress the matter would be by way of a workshop, as the Commission has done in the past.

25. There are a number of wholesale local access broadband markets where Telecom does not face limited competition, and is not likely to face lessened competition. These are the wholesale local access broadband markets in areas where purchasers (and end-users) have a choice of at least one other broadband access network. There is no economic justification for regulatory intervention to require Telecom to provide the designated bitstream service in such markets.

26. The market for bitstream backhaul for internet grade broadband access is a national market and one that is fully competitive. Accordingly, there is no justification for regulation requiring Telecom to provide such a service.

27. Whilst these submissions set out Telecom's preliminary views on relevant market definition and competition assessments, in the time available it has not been able to undertake a full assessment and analysis of these issues and anticipates making further submissions to the Commission on these issues.

SERVICE DESIGNATION

28. The UBS designation was an amendment to the Act which mandated access to an internet grade xDSL bitstream service.[1] TelstraClear's application requests five (and potentially more) upstream and downstream speed combinations, each of which amount to a different service to be provided by Telecom. [2] Each service will need to be considered by the Commission in terms of the Telecommunications Act.

29. Some of the non-price terms which TelstraClear has requested should not be ordered because they clearly extend the service beyond an internet grade service with a 128 kbps upstream limit.

30. In addition, there is a material lack of clarity around some of the key non-price bitstream service specifications requested by TelstraClear[3] which makes it impossible, at this stage, for the Commission (or Telecom) to form a view on whether those permutations of the service requested are at the internet grade service level.

31. It is therefore imperative that the Commission seeks further and better particulars from TelstraClear so that both parties, the Commission and other industry stakeholders can properly engage in an informed discussion about this application. Only then will it be clear precisely how far TelstraClear is attempting to push past internet grade service specifications and (if so) relitigate previous Commission findings.

32. As the application stands however, there is a flaw in TelstraClear's application as it is framed in a way which appears to request a determination for a service outside the scope of the designation in the Act. This point was made in Telecom's first submission.

NON-PRICE TERMS

33. Even assuming that the scope of the service requested is within the UBS designation, many of the non-price terms requested by TelstraClear are inconsistent with the general access principles in that they are not technically or operationally practicable having regard to Telecom's network. Telecom's submission sets out in some detail its preliminary concerns in this regard.

34. There will also be a considerable degree of complexity around the determination of many of the non-price terms proposed by TelstraClear, because of the highly technical and specific nature of what is being sought.

[1] Refer to the Explanatory Note to the Telecommunications (Fixed Public Data Networks) Order 2004 SR 2004/231.
[2] Refer to TelstraClear application, paragraph 16.2(b)(ii).
[3] For example jitter and latency.

35. In contrast to the ihug application, which accepts the negotiated terms of the Wholesale Services Agreement ("WSA") (which has also been accepted by 16 members of the industry), the issues and requests made by TelstraClear will require detailed debate if the Commission is to consider each and every one of the terms proposed and rule on them.

36. In the spirit of the Telecommunications Act's focus on the primacy of negotiation, the Commission should consider setting high level principles to guide parties as to non-price terms.

PRICE TERMS

Bitstream service

37. The initial pricing principle for a designated bitstream service is a retail minus approach, in line with the overall regulatory regime. The Commission is required to impute the price for access based on a comparable service and to derive a benchmarked discount.

38. Telecom believes that the retail minus formulation adopted in the initial pricing principle effectively requires equivalence or at least reasonable comparability between the retail service used as the comparator and the service to which access is sought. The Commission and the Government have clearly accepted that the long term interests of end-users are best promoted by a regime that permits providers and seekers to compete on their merits in contestable markets and as such the history of the UBS designation has been one which has contemplated the closest possible fit between the service being made available by Telecom at retail and the wholesale service sought to be regulated.

39. The fact that the service specifications TelstraClear has requested are far from clear and the fact that TelstraClear is asking the Commission to tailor a service which is significantly different from any of Telecom's retail offerings creates problems in terms of finding a comparable retail service from which a meaningful imputation can be made. To the extent that access is granted on the non-price terms sought by TelstraClear, Telecom believes that those terms will need to be taken into account as part of the imputation exercise (although TelstraClear would need to clarify the non-price terms sought before Telecom is able to make detailed submissions on this). The imputation exercise will also need to take into account any differences in functionality between services offered at retail by Telecom and the Layer 2 Tunnel Protocol services sought by TelstraClear.

40. From this imputed price the Commission is required to carry out a benchmarking exercise against discounts in comparable countries that apply retail price minus avoided costs saved pricing or retail price minus actual costs saved pricing in respect of the service in order to arrive at an appropriate wholesale discount. Depending on the services proposed to be determined and relevant non-price terms, Telecom expresses considerable doubt that meaningful benchmarking will be possible.

Backhaul

41. Telecom does not consider that it faces limited or is likely to face lessened competition for backhaul and as such does not consider it appropriate to require it to provide access to TelstraClear. If access is to be determined, the initial pricing principle for the designated backhaul service is based on international benchmarking. Telecom is unable to make detailed submissions on the initial pricing principle until an appropriate draft benchmarking report has been prepared.

Other Pricing Terms

42. In response to the specific pricing terms sought by TelstraClear in section 16.1 of its application, Telecom considers that if a regulatory solution is to be imposed, then pricing must be in accordance with the initial pricing principle. In general, TelstraClear can not seek cost-based pricing. Further, costs uniquely incurred to meet TelstraClear's unique requests should be borne solely by TelstraClear and, where appropriate, these should be priced on a retail minus basis.

III. LEGAL FRAMEWORK

43. The legal framework section deals with three main points:

    (a) section 18 of the Act;

    (b) the approach to conditions and market analysis; and

    (c) the designated service (background, UBS designation and non-price terms, backhaul).

44. Legal issues relating to price are addressed in Section VI on the initial pricing principle.

SECTION 18

45. The Telecommunications Act puts the onus on the Commission to demonstrate that any determination meets the standard required by sections 18 and 19. Section 18 provides that the purpose is to *promote competition in telecommunications markets for the long term benefit of end-users*.

46. Section 19 provides that the Commission must:

    (a) consider the purpose set out in section 18; and

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

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

47. Both Government and the Ministerial Inquiry into Telecommunications were cognisant of the dangers inherent in regulation where regulation is not absolutely necessary. Accordingly a broad interventionist mandate was deliberately withheld in favour of "backstop" regulation. In interpreting its powers the Commission must respect Parliament's intention to maintain "as much market as possible" and to promote investment through "return on capital"[4] by conducting a relevant and full market analysis.

APPROACH TO CONDITIONS/MARKET ANALYSIS

48. In assessing TelstraClear's request for access the Commission must first consider the applicable conditions. In summary Telecom considers:

    (a) That the Commission did not have sufficient evidence on which to conclude that the conditions were satisfied at the decision to investigate stage.

[4] Ministerial Statement, 20 December 2001, Hon Paul Swain, Minister of Communications.

(b) That the LLU Review and Decision 497 market definitions are not a proper basis for the current market assessment and that in assessing "as a matter of fact and commercial common sense" what the markets are, a much fuller, more focused and up to date analysis is required of the dynamic markets involved.

(c) The best way to proceed is to hold a workshop on the market issues.

49. These points are now expanded on.

50. The conditions applicable to the designated bitstream service are that:

(a) Telecom faces limited, or is likely to face lessened competition in the market for the designated bitstream service; or

(b) Telecom does not face limited, or is not likely to face lessened competition for the designated bitstream service, and the Commission has decided to require the service to be wholesaled.

51. One of these conditions needs to be satisfied for the designated bitstream service to be available to TelstraClear.

52. The Commission is first required to define the relevant markets and then assess the state of competition before it has jurisdiction under the Act to make a determination in relation to the TelstraClear application.[5] It is only if Telecom does not face limited, or is not likely to face lessened competition in a particular market that the Commission must then consider whether it should require the service to be wholesaled.

53. In its Decision to Investigate the Commission states that it considers, in relation to the designated bitstream services, there is either a national or sub-national market. The Commission considered that, on either basis, as in large areas of New Zealand only Telecom has the network infrastructure to support bitstream services, Telecom faces limited competition in a relevant market.[6]

54. The Commission also states that if there are markets in which Telecom does not face limited competition, the Commission may, at its discretion, require that access is provided to the services applied for. Telecom acknowledges this discretion but says it must be exercised with section 18 in mind.

55. The Commission stated that an evaluation of the merits or otherwise for requiring access in markets where Telecom does not face limited competition, should most appropriately occur during the course of the investigations.[7]

[5] Refer to the applicable conditions in the Act and section 22(d).
[6] Paragraph 27, Decision to Investigate.
[7] Paragraph 28, Decision to Investigate.

56. In previous applications, the Commission has, for considerations of administrative efficiency (which Telecom has disagreed with) undertaken a full market analysis as part of the substantive investigation rather than doing so at the stage of making a Decision to Investigate an application. Telecom infers, from the Commission's comments in paragraph 28 of the Decision to Investigate, that the Commission proposes to take the same approach in this application and that the Commission's comments in the Decision to Investigate about the relevant markets and state of competition in those markets are of a preliminary nature only.

57. A full market analysis is necessary in the present case because:

(a) The consequence of a finding that Telecom faces limited, or is likely to face lessened, competition in a relevant market is a regulatory intervention (subject to the requirements of the Telecommunications Act otherwise being satisfied). Accordingly, the standard approved to be applied should be the normal civil standard. This means that there must be clear evidence satisfying the Commission that limited competition, or the likelihood of lessened competition, is (at least) more likely than not.

(b) However the information provided in TelstraClear's application does not provide sufficient evidence upon which the Commission could have reasonably concluded, as a prerequisite for regulated access, that Telecom faces limited competition or is likely to face limited competition, or that Telecom should be required to provide access. The Decision to Investigate does not identify any factual basis or economic analysis upon which a final conclusion could reasonably be based.

(c) The Commission's market and competition analysis in the LLU Review and Decision 497 are not an appropriate substitute for a market by market competition analysis for the purpose of this application. This is because:

(i) A market analysis is quite specific to the purpose for which it is undertaken. A market analysis to determine whether Telecom should be required to wholesale a service in a particular market is a quite different task to the market analysis required to be undertaken in a context such as the LLU Review where the Commission was considering whether a recommendation should be made that access to any of the unbundled elements should be included as designated services in Schedule 1 of the Telecommunications Act.

(ii) By contrast to the LLU Review, the purpose of a market analysis in the present application has a more specific focus, namely whether Telecom faces limited, or is likely to face lessened, competition in the wholesale local access broadband markets and the downstream a retail broadband internet access markets, and whether Telecom

should be required to supply such services in particular markets.

(iii) The LLU Review considered a wider range of services than internet grade broadband local access.

(iv) As the Commission has noted on a number of occasions, an assessment of competition should be current and forward looking. The local access broadband markets are highly dynamic and have seen significant demand growth, innovation and network competition over the last 18 months. The market dynamics in December 2004 are quite different to those considered in the LLU Review or when the Commission considered the retail broadband internet access markets in Decision 497. Similarly, there is a lot more up-to-date and relevant source data available today than there was at the time of the LLU Review.

58. Accordingly, the Commission needs to re-examine the markets themselves and competition in those markets in the light of current circumstances before reaching any conclusions on whether or not Telecom faces limited competition that justifies a regulatory intervention.

59. In this regard, Telecom notes that requiring it to offer the designated bitstream and backhaul services is different to, and requires broader market considerations than, regulatory decisions relating to the wholesale of retail products. The difference arises from:

(a) the very dynamic nature of the demand and supply sides of the retail broadband internet access markets. On the demand side, this is driven by the availability of new content and applications. On the supply side, the key driver is wireless; and

(b) the designated bitstream service being an unbundled service – as it is not offered as a retail product. The designated bitstream service is also inherently tied up with ADSL and Telecom's NGN investment.

60. Market definition needs to be based on the relevant facts and commercial common sense.[8] As stated in *Power NZ v CC* [1997] 2 NZLR 669, at 678-679:

> The identification of the appropriate market or markets must **accord with the commercial realities**, and take account of the **activities of the parties** involved. It must expose the constraints on the individual firms.

61. Further investigation is required to determine the current commercial realities of the markets involved.

62. This requires the downstream retail markets in which the designated services are supplied to be examined. If competition is found to be

[8] Section 3(1A) Commerce Act 1986.

effective in those markets, then it is not appropriate to require access to the designated services.

63. Once the markets are properly defined section 18 puts the onus on the Commission to satisfy itself that its decision will, or would be likely to, promote competition in a telecommunications market for the long term benefit of end-users. This means that if a market is already workably competitive, regulation would be unlikely to promote competition for the purposes of section 18.

64. The Commission has previously set out its approach to assessing limited competition saying:[9]

> "2.25 The ordinary meaning of the word limited applies as the term is not defined in the Commerce Act. Competition will be “limited” where it is restricted. Consequently, the Commission views limited competition as denoting a restriction or impairment to workable or effective competition. …
>
> 2.27 The Commission’s view is that a nominal or de minimis restriction or impairment of competition in a market is not sufficient to satisfy the limited competition requirement. There needs to be more than a nominal or de minimis restriction or impairment of competition."

65. In this context the Commission bears the burden of positively proving that workable competition does not exist in a market. If this cannot be affirmatively demonstrated, then the analysis should proceed on the conservative assumption that the market is competitive.

66. Telecom proposes that the necessary market assessment and competition analysis can be most practicably progressed by means of a workshop. Telecom believes that a workshop is the most appropriate forum because:

(a) There are a number of market participants other than the parties to this application with a direct interest in the issues to be considered by the Commission, and with whom the Commission needs to consult before reaching any decisions on these issues.

(b) There is a significant volume of new factual data which Telecom wishes to put before the Commission in relation to these issues.[10]

(c) In the time made available by the Commission for this response, Telecom has not been able to collect all of the market data necessary for such an analysis or to conduct its own analysis and, as such, is unable to make detailed submissions on these issues.

(d) The Commission's proposed timetable does not allow for interested parties to provide relevant information to, or comment on information received by, the Commission.

[9] Commerce Commission "Final Report Part IV Inquiry into Airfield Activities at Auckland, Wellington and Christchurch International Airports" (1 August 2002) – quoted and adopted in Decision 497 at paragraphs 298 and 299.
[10] Refer section 26 of the Act.

67. Telecom is proceeding in relation to this application on the basis that the Commission will be undertaking a full market analysis as part of its substantive investigation but reserves its position as regards the Decision to Investigate should that not be the case.

THE DESIGNATED SERVICE

68. In this section of the legal framework, Telecom:

(a) sets out the relevant background to the UBS service description;

(b) analyses the UBS service description;

(c) comments on the approach to determining non-price terms under the Act; and

(d) analyses the backhaul service description.

Background

69. The Commission recommended in the LLU Report that access to and interconnection with the fixed PDN should be a designated service. In making this recommendation the Commission took into account the possible impact of the designation on dynamic efficiency gains: [11]

> "The Commission notes that the following are potential risks that could threaten dynamic efficiency gains were bitstream access to be regulated:
>
> - Bitstream requires less of a commitment in new investment by entrants. Telecom would consider the additional risk that its investment may facilitate competition for high-value business, and might, therefore, decide not to undertake the additional investment required to provide bitstream services, depriving the end-user of benefits that might have otherwise been delivered via bitstream. On the other hand, providing high-value services under LLU requires that entrants invest in facilities to deliver it. By taking on investment risk under LLU, entrants would need to be more certain about the market value of the services they propose to offer. To the extent that would be so, end-users might enjoy dynamic efficiencies over time;
>
> - Entrants using regulated bitstream would have access to any increased functionality or lower costs derived from investment in the network by the incumbent (e.g. when new DSLAMs are installed);
>
> - Entrants using regulated bitstream would be able to offer services incorporating the increased functionality or lower costs, but would not be constrained from offering them close to cost;
>
> - Telecom may lose 'first mover' advantages of providing new products via an upgraded network. It might, therefore, decline to undertake the investment it might otherwise have undertaken were first mover advantages available; and

[11] Local Loop Unbundling Report at paragraph 726.

- If entrants find that the services they offered were not supported by the market, the entrants could exit at a minimum cost, while Telecom would bear the cost."

70. The Commission appears to have been aware of the need to protect against these risks to dynamic efficiency and in this respect commented as follows: [12]

> "However, limiting the form of bitstream unbundling to ADSL bitstream rather than business-grade bitstream would limit the risk imposed on Telecom. The Commission expects that many of these risks would likely be less than the potential gains in dynamic efficiency via innovation. Asymmetric DSL access would limit Telecom's exposure to the loss of high-value corporate markets and would instead enhance competition in markets for SME and residential services. If entrants wanted to offer products to corporate customers, they would need to invest in the facilities to do so.
>
> The innovation that might be delivered by competition (or by contestability) using ADSL bitstream could include increased and improved broadband access for the residential market and for SMEs. Were these benefits to be realised by competition, the Commission expects that regulating access to ADSL bitstream services would provide dynamic efficiency gains overall."

71. This followed through into the designation for access to and interconnection with the fixed PDN in the sense that a business grade ADSL bitstream service was carved out of the designation and the scope of the designation was limited to an internet grade service. Designating access to a business grade service would pose a real risk to dynamic efficiency through potential impact on Telecom's NGN investment strategy, and the Commission acknowledged it was satisfied with the assurances by Telecom's UPC offering over legacy assets at cost-based benchmarked prices outside the regulatory arena.

72. It is in this context that the TelstraClear application needs to be examined and the Commission should be especially conscious of the need not to discourage further investment in telecommunications networks by both Telecom and other network operators.

UBS Service Designation

73. The UBS designated services themselves are quite different from the other services which are designated under Schedule 1, in that the immediate focus of the designations is not on a retail service offered by Telecom, but on the unbundled elements of Telecom's fixed PDN. The service description for the designated bitstream service is as follows:

> "An asymmetric digital subscriber line enabled service (and its associated functions, including the associated functions of Telecom's operation support systems) that enable access to, and interconnection with, that part of Telecom's fixed PDN that connect 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 other than a digital subscriber line access multiplexer (DSLAM)."

[12] Local Loop Unbundling Report at paragraph 727 to 728 (emphasis added).

74. The explanatory note to the Telecommunications (Fixed Public Data Network) Order 2004 – SR2004/231 and the LLU Report sums up the "general effect" of the technical language of the service description together with the additional limits on access principles when it says:[13]

> "The effect of this amendment is that access to unbundled elements of, and interconnection with, Telecom Corporation of New Zealand Limited's fixed public data network service (**in the form of access to an internet grade xDSL bitstream service), and a complementary backhaul transmission service also** provided by Telecom, are regulated by the Telecommunications Act 2001." (Emphasis added.)

75. Furthermore the Commission is required under section 29 to make a determination which is in accordance with the additional limits on access principles contained in the designation. The additional limits in this instance are material in assessing whether TelstraClear's application has been properly framed:

> "(a) the service requires a maximum upstream throughput rate of 128 kbps 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)."

76. Telecom makes the following observations around the additional limits on access principles:

(a) Limit (a) is plain on the face of the text, that is that the service requested by TelstraClear can only require Telecom to provide "a maximum upstream throughput rate of 128 kbps for data traffic sent from the end-user."

(b) Limit (b) has two elements which need to be considered: (b)(ii) requires the downstream throughput rate for data traffic sent to the end-users to have an average speed of not less than 256 kbps. Given this (ie if the average downstream speed must be 256 kbps) it is highly unlikely that for any extended period of time the end-user will experience speeds of less than 32 kbps. However to be clear, (b)(i) provides a downstream speed of not less than 32 kbps.

[13] Section 5 of the Interpretation Act 1999 provides:

"(2) The matters that may be considered in ascertaining the meaning of an enactment include the indications provided in the enactment.

(3) Examples of those indications are preambles, the analysis, a table of contents, headings to Parts and sections, marginal notes, diagrams, graphics, examples and explanatory material, and the organisation and format of the enactment."

In practice, in order to be sensible, this needs to be averaged over a time interval (for example, 1 hour, 15 minutes or 1 minute). That time interval depends on the characteristics of the service desired by the customer and may have a significant cost implication. The choice of time interval is important because if, for instance, it was 1 minute this would create a real time service that would be inconsistent with the limit in paragraph (c). It is important therefore that the determination includes a time interval for the 32 kbps measure of not less than 30 minutes.

(c) Limit (c) states that "the service is not required to support any function that relies on real time network capability". While it is not necessary to define the precise scope of that limit, limit (c) is clearly intended to exclude a service which is required to support video conferencing, VoIP clients, and other real time and multi media services including TV and video on demand.[14]

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78. Telecom submitted earlier in the process that the TelstraClear application was framed in a way which appeared to request a determination for a service outside the scope of the designation and that if access were granted on the terms sought by TelstraClear Telecom would in effect be required to provide a business grade service. The Commission stated in its Decision to Investigate:

> "The Commission does not consider it practicable or desirable to reach a view at this stage whether the services requested include features that differ from the designated service description in the Telecommunications Act. That issue is most appropriately dealt with in the context of the Commission's consideration of the application…".[15]

79. In Part IV, Telecom makes submissions that some important parts of the TelstraClear application fall outside either the service description or the limits on access principles contained in the Telecommunications Act. If the

[14] Local Loop Unbundling Report, Annex 5.
[15] Decision to Investigate the TelstraClear Application for Determination of Designated Services dated 25 November 2004 at paragraph 9.

Commission ultimately finds this to be the case, then (at least to the extent the requested service falls outside the designated service) the Commission must accept that it has no jurisdiction to determine this matter and TelstraClear should be requested to refine its application within the scope of the designation.

80. In respect of other key parts of the service requested by TelstraClear Telecom considers that the scope of the service sought remains unclear and undefined[16] and as such is of the view that TelstraClear must provide further and better particulars so that the Commission can properly engage in an informed discussion with both parties as to whether the service sought by TelstraClear falls within the designation.

81. It is important to recognise that TelstraClear is requesting multiple services, not just one service. This is the effect of the table requesting 5 (and potentially more) speed combinations it requests at paragraph 16.2b(ii) of its application, especially when considered with the minimum service specifications requested. Each speed combination (with its relevant service specifications) is a different service which Telecom is (potentially) required to set up. Therefore the Commission needs to consider each of the service requests by TelstraClear in paragraph 16.2b(ii) against the criteria in the Act - the applicable conditions, limits on access, section 18 and so on.

Non-Price Terms

82. TelstraClear's application is marked by a host of non-price terms which need to be considered by the Commission.

83. An access seeker may apply for a determination on both price and non-price terms provided that the service is a designated access service. As to whether the Commission reaches a determination which provides access on the non-price terms requested, the relevant provision is section 29(a) which provides:

> "29. Requirements for determination—
>
> 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 … ."

84. Therefore, section 29 requires the Commission to form an opinion that whatever access determination it makes (which includes non-price terms of access) is made in accordance with:

[16] Discussion of non-price terms Annex 1, Table 1.

(a) the applicable access principles in clause 5 (Schedule 1, Part 1, Subpart 2); and

(b) the limits on the applicable access principles in clause 6 (Schedule 1, Part 1, Subpart 2); and

(c) the additional limits on access principles relation to the service specified in Part 2, Subpart 1.

Backhaul

85. The backhaul service is intended to be provided in conjunction with the request for the bitstream service. This is the effect of the conditions in the designation relating to backhaul which provide:

> *"Conditions:* Both of the following:
>
> (a) one of the following:
>
> (i) an application for a determination by the access seeker of the service is pending in respect of access to, and interconnection with, Telecom's fixed PDN; or
>
> (ii) there must be a determination that has not expired in respect of access to, and interconnection with, Telecom's fixed PDN by the access seeker of the service; or
>
> (iii) the access seeker of the service and Telecom have an agreement relating to access to, and interconnection with, Telecom's fixed PDN."

86. This is reinforced by the Explanatory Note to the designated service which refers to "access to an internet grade xDSL bitstream service, and a complementary backhaul transmission service also".

87. TelstraClear's application however does not appear to recognise this fundamental limit on the backhaul service which can be determined by the Commission as its application requests backhaul services for the "aggregated traffic from the wholesale bitstream services and any other services TelstraClear acquires from Telecom" (paragraph 16.3 (b), emphasis added). To the extent TelstraClear is attempting to obtain backhaul for services other than UBS bitstream, it should be rejected as outside the Commission's jurisdiction.

IV. MARKET DEFINITION AND COMPETITION ANALYSIS

88. This section comprises the following:

(a) an introduction identifying the markets in respect of which TelstraClear has sought a determination and the need for a full market and competition analysis;

(b) a summary of Telecom's key points in relation to the market and competition analysis;

(c) bitstream market definition, including a discussion of the downstream retail markets;

(d) Telecom's comments relating to the bitstream competition analysis; and

(e) backhaul market definition and competition analysis.

INTRODUCTION

89. TelstraClear seeks a determination for supply of:

(a) the designated bitstream service for:

(i) a national wholesale market for supply of bitstream services; or

(ii) in any alternative, the wholesale markets for bitstream services in each of the Telecom Exchange Service Areas (ESAs);[17] and

(b) the designated backhaul service in respect of:

(i) a national wholesale market for supply of backhaul services; or

(ii) in any alternative, the wholesale markets for backhaul services for each of the ESAs in which TelstraClear is supplied the wholesale bitstream service.[18]

90. An application for a determination for the designated bitstream service or the designated backhaul service may only be made if the Commission is satisfied, inter alia, that either:

(a) Telecom faces limited, or is likely to face limited competition in a market for the service; or

[17] Paragraph 3(a) TelstraClear application.
[18] Paragraph 3(b) TelstraClear application.

(b) Telecom does not face limited competition, or is not likely to face lessened competition for the service, and the Commission has decided to require that service to be wholesaled to the market.[19]

91. The Commission must consider TelstraClear's application on a market by market basis and for this reason must undertake a full market and competition analysis.

92. A competition assessment of the wholesale local access broadband markets is required to establish the Commission's jurisdiction in relation to each market. The downstream retail broadband internet access markets are also relevant to this consideration.

93. Before making a determination, the Commission must also have regard to whether, and be satisfied that, making a determination best gives effect to the long term benefits of end-users having regard to the efficiencies that will, or will be likely to, result from making the determination. This also requires an assessment of the level of competition in the downstream retail markets. The dynamic efficiency costs of regulating access when it is not warranted will be very high in the context of such rapidly evolving markets as the broadband markets.

94. For the reasons stated in paragraph 57(c), the Commission cannot rely on the market and competition analysis undertaken in the LLU Review or Decision 497.

95. In the time available, Telecom has not been able to collect and collate all of the relevant data which it considers should inform the Commission's market and competition assessment. Telecom's comments in relation to market definition and competition analysis of the relevant markets are preliminary only and it will seek to develop and expand on these points in later submissions.

SUMMARY OF TELECOM'S MARKET AND COMPETITION ANALYSIS

96. Parties other than Telecom and ihug will also have a material interest in the market and competition analysis required for this application. Such parties will also be in a position to assist the Commission with relevant market information. Telecom suggests that the most appropriate way forward is for the Commission to hold a workshop on the market and competition issues involving all materially interested parties.

97. Telecom's view on the relevant markets and the competitive dynamics of those markets can be summarised as follows:

(a) The appropriate wholesale product dimension for the designated bitstream service is broadband access comprising local access services and existing local access broadband networks for the supply of retail broadband internet access services.

[19] Telecommunications Act, section 22(d) and Schedule 1, Subpart 2, conditions (a) and (b) in the designated bitstream service and conditions (b)(i) and (ii) in the designated backhaul service.

(b) There are likely to be at least four relevant economic retail markets:

(i) **Residential and business metropolitan markets for the supply of retail broadband internet access services:** geographic metropolitan markets where customers have the choice of many alternative providers for broadband internet access services.

(ii) **Residential and business non-metropolitan markets for the supply of retail broadband internet access services:** regional geographic markets where Telecom's JetStream and ihug's Ultra satellite product are available (ie rivals do not have a network presence in the particular region).

(c) It may be appropriate to further delineate product markets by different speeds of broadband access services. In the time available, Telecom has been unable to analyse the necessary data to identify with certainty whether the criteria for defining separate markets for different broadband access speeds are met, but notes that there is rapid evolution of the broadband markets, both as regards product development and customer uptake. Telecom believes that such an investigation is warranted and should be undertaken as part of the market and competition analysis.

(d) There are a number of local access broadband markets, but Telecom does not agree that these are defined by reference to each Telecom ESA. The appropriate reference point for the geographic market dimension is the location of a competitor broadband local access network, including wireless coverage areas. The relevant geographic markets are metropolitan and non-metropolitan, with metropolitan markets encompassing all competing broadband access networks, including fibre and wireless access networks.

(e) In Decision 497, the Commission identified the relevant retail markets as residential broadband internet access for both metropolitan and non-metropolitan markets and separate markets for business broadband internet access, also both metropolitan and non-metropolitan markets. Telecom considers that a similar customer dimension applies to the upstream broadband access markets.

(f) The metropolitan markets for retail broadband internet access are competitive, as evidenced by the rapid and continuing deployment of broadband internet access technologies in metropolitan areas of New Zealand.

(g) Competition is weaker in the non-metropolitan retail broadband internet access markets, but the threat of new entry from

competing broadband access technologies imposes real constraints.

(h) The metropolitan markets for wholesale local access broadband (as defined above) are competitive and the threshold requirement in condition (a) is not met. No circumstances exist which would justify the Commission exercising its discretion under condition (b). Accordingly, the Commission has no jurisdiction to make a determination in relation to the designated bitstream service for these markets.

(i) Telecom accepts that it faces weaker competitive constraints in non-metropolitan wholesale local access broadband markets. While a finding of limited competition is a necessary pre-condition for regulatory intervention, it is not in itself a sufficient condition for mandating access if this would not otherwise also be for the long term benefit of end-users.

(j) In relation to the designated backhaul service, the relevant product dimension of the market is bitstream backbone transmission services for the broadband internet access. There is a national market and there is effective competition in this market.

(k) Accordingly, applicable condition (b)(i) is not met in relation to the designated backhaul service and the Commission should not otherwise require the designated backhaul service to be wholesaled as no circumstances exist which would justify the exercise of this discretion by the Commission consistently with the purposes of the Telecommunications Act.

(l) Under section 22(d) of the Telecommunications Act, the Commission has no jurisdiction to make a determination in relation to the designated backhaul service.

BITSTREAM

Relationship of Wholesale Broadband Access Markets and the Downstream Retail Markets

98. The designated bitstream service is the local access component (across Telecom's local loop network) of a retail broadband internet access service. Given the nature of this input, competition in the broadband access markets should not be considered in isolation from competition in the relevant retail markets. An assessment of retail competition in any market will generally provide a good indication of the level of competition in the wholesale markets.

99. The objective of regulation under the Telecommunications Act is to provide competition for the long term benefit of end-users. If there is effective competition in a retail market, there is no reasonable rationale to require Telecom to provide the local access service in relation to that market, as the objectives of the Telecommunications Act are being met.

Market Definition – Broadband Access

100. TelstraClear's application suggests that there is either:

(a) a national wholesale market for the supply of the designated bitstream services; or

(b) in the alternative, separate geographic markets defined by reference to each ESA.

Telecom does not agree that the geographic dimension is defined by reference to each ESA.

101. The market definition should be technology neutral and should not be distinguished by the type of technology used to deliver the broadband access service. Whilst there are a wide variety of technologies available to deliver retail broadband internet access services,[20] the important characteristics from a customer's viewpoint are the speed and quality of internet access and price.

102. The service description in the designation is not by itself the appropriate product description for the purposes of market definition because in relation to the demand side, it does not reflect how customers use or respond to the service. In relation to the supply side, it is too specific to the way one particular competitor (Telecom) supplies the product (ie ADSL over Telecom's local loop). Competing network technologies may have different characteristics but deliver a competitive product.

103. As noted, the designated bitstream service provides the local access component, across Telecom's local loop, of a retail broadband internet access service. ISPs wishing to supply retail broadband internet access services have several alternative options to establish local access networks. An ISP can consider building its own network (as TelstraClear has done, and continues to do, in a number of metropolitan areas) or it can purchase commercial bitstream access services. It is appropriate therefore, in Telecom's view, to define the product dimension of the broadband local access market to include not only Telecom's broadband access network but also competing alternative broadband access networks including those provided using fixed wireless technologies as well as Telecom's commercial UBS service and satellite services.

104. 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. For this reason, when considering the geographic dimension of broadband local access for the purposes of internet access, it is appropriate to define the geographic dimension of the local access market according to the availability of alternative customer access infrastructure in a particular geographic area.

[20] These include a mix of fibre and coaxial copper, fibre only, ADSL, Wireless and satellite technologies.

105. In its previous decisions under the Telecommunications Act, the Commission has (appropriately) treated the geographic dimension of telecommunications access markets as being based around network competition.[21]

106. The Commission uses supply-side substitutability analysis (ie the "near entrant" test) to define the geographic boundaries of the access markets.

107. Conceptually, this approach divides the competitive constraints on Telecom into three categories:

(a) those arising from rivals that already have a broadband internet access "pipe" to a customer such as those with either, or a mix of, coaxial cable and wireless networks ("existing competitors");

(b) those arising from rivals that have a network that is close enough so that the rival can build a broadband internet access "pipe" to the customer without having to incur significant sunk costs ("near entrants"); and

(c) those arising from rivals that do not yet have a network presence in the particular region ("potential entrants").

108. Working down this list, the intensity of competitive constraints reduces (although the constraint exerted by potential entrants may still be material). Two key reasons for this are that the further one works down the list, the more delay there is before the rival is actually in a position to provide service to a customer, and the greater is the sunk investment required.

109. Broadband services when provided over fixed networks are provided in relation to telephone lines, where the Commission has already accepted that there should be a distinction made between residential and business customers. When these services are provided over wireless networks they are typically targeted separately at business or residential customers due to the different usage requirements of these two groups.

110. For these reasons and the reasons discussed above regarding the relationship between retail markets and wholesale markets, Telecom considers that there are separate customer dimensions to the wholesale local access broadband markets for different customer segments, in particular business and residential customers.

111. Telecom also considers that it may be appropriate to further delineate these markets by different speeds of broadband services. This is discussed in more detail as part of the discussion on the downstream retail markets.

112. Applying this framework, Telecom considers that the relevant wholesale local access broadband markets are as follows:

[21] Decision 497 and Decision 525.

(a) **Residential and business metropolitan markets for the supply of local access for retail broadband internet access services:** geographic metropolitan markets where there is the presence of rivals with an alternative broadband local access network, rivals who are using commercial wholesale bitstream or where there are "near entrants"; and

(b) **Residential and business non-metropolitan markets for the supply of local access for retail broadband internet access services:** regional geographic markets where Telecom's local access network and satellite network are available.

113. For ease of reference, Telecom describes these markets as wholesale local access broadband markets.

Market Definition – Downstream Retail Broadband Internet Access

114. Telecom considers that there are likely to be at least four relevant economic retail markets:

(a) **Residential and business metropolitan markets for the supply of retail broadband internet access services:** geographic metropolitan markets where customers have the choice of many alternative providers for broadband internet access services.

(b) **Residential and business non-metropolitan markets for the supply of retail broadband internet access services:** regional geographic markets where Telecom's JetStream and broadband retail satellite products are available (ie rivals do not have a network presence in the particular region).[22]

115. The large number of new wireless entrants (see Appendix B) are evidence of strong demand for a wireless alternative to ADSL broadband internet access services. Telecom's market view is that customers see wireless products as a demand-side substitute for ADSL services.

116. Telecom further considers that it may be appropriate to further delineate the markets identified in paragraph 114 by different speeds of broadband access services. Broadband technology is expanding rapidly and the broadband market available today is quite different to that of 12-18 months ago. In the time available, Telecom has been unable to analyse the necessary data to identify with certainty whether the criteria for defining a separate market for different broadband access speeds are met, but believes that such an investigation is warranted and should be undertaken as part of the market and competition analysis.

117. In this regard, Telecom refers to the ihug application for a designated bitstream service and ihug's correspondence to the Commission dated 11 November 2004 in which ihug states that "a product which is eight times as fast as another (as is the differential downstream speeds between the

[22] See paragraphs 103-112 above for further discussion of Telecom's proposed geographic delineation of the markets. The wholesale market delineation is a good representation of the products available at the retail level.

service being sought and the service currently provided) cannot be said to be in the same market as that other product".[23]

118. The following table indicates that there is a variety of broadband internet access products designed for specific types of customers. Prices exclude GST and include the ISP service component.

Table 1: Competitors in the retail broadband markets[24]

Product	Customer type	Technology	Retailer (Wholesaler)	Example Price
Sub 1 Mbps broadband]	Residential	ADSL	Telecom	$44.40
		Wireless	Watchdog (Wired Country)	$35.51
		Wireless	Woosh	$35.51
		Wireless	Iconz (BCL)	$93.33
		Wireless	ThePacific.net	$62.22
		Satellite	Iconz(IPstar)	$99.00
	Business	ADSL	Telecom	$59.95
		Wireless	Packing Shed (Wired Country)	$66.67
		Wireless	Woosh	$99.00
		Wireless	Iconz (BCL)	$93.33
		Wireless	ThePacific.net	$97.78
		Satellite	Iconz(IPstar)	$99.00
Over 1 Mbps broadband	Residential	ADSL	Telecom	$48.84
		Wireless	Watchdog (Wired Country)	$62.18
		Cable	Paradise	$35.51
		Wireless	Inspire.net	$100.00
	Business	ADSL	Telecom	$79.11
		Wireless	Wave (Wired Country)	$104.89
		Fibre	Actrix (Citylink)	$176.89
		Wireless	Inspire.net	$100.00

119. The table above demonstrates that suppliers are generally different between those that supply products with speeds up to 1 Mbps and those that supply products above this speed. It is possible that the competitive dynamics between these two speeds are quite different. On the demand-side, the Commission would need to examine evidence of customers churning between products to establish whether a sufficient number of customers at the "margin" of each product type find the products substitutable.

[23] 11 November 2004, paragraph 1(d).
[24] A full listing of retail broadband competitors is included in Appendix B.

120. Telecom considers it may also be appropriate to further divide the markets by type of customer (business and residential). Retail broadband internet services are typically targeted separately at business or residential customers due to the different usage requirements of these two groups.

121. Telecom considers it is likely that there is a difference in the competitive dynamics for the supply of services to both groups. There are reasonable costs involved in switching to the supply of different groups of customers and, as Table 1 above shows, price discrimination is apparent between the two types of customers. Telecom is likely to comment further on this issue in any workshop proceeding.

122. The geographic dimension of the markets identified at paragraph 114 is crucial to the Commission's consideration.

Competition Analysis

123. As discussed above, Telecom considers that the level of competition in the retail markets provides a good indication of competition in the wholesale local access broadband markets and that these markets are complementary. In Telecom's view:

(a) the metropolitan markets are clearly competitive and the threshold requirement in condition (a) is not met; and

(b) no circumstances exist which would justify the Commission exercising its discretion under condition (b).

124. Telecom accepts that it faces weaker competitive constraints in the non-metropolitan wholesale local access markets for internet grade broadband access but notes that while a finding of limited competition is a necessary pre-condition for regulatory intervention, it is not in itself a sufficient condition for mandating access if this would not otherwise also be for the long term benefit of end-users.

125. Telecom discusses the basis for its views in more detail below.

126. The rate of deployment of broadband internet access technologies has been rapid and has continued to increase since the Commission last considered these alternative access technologies during the LLU Review. We expand on this below.

127. Telecom now faces a multitude of competitors in metropolitan markets who offer alternatives to Telecom's broadband services including TCL, Woosh, Wired Country and ThePacific.net. These are detailed below and in Appendix B.

128. Telecom accepts that it faces weaker competitive constraints in the non-metropolitan markets than in the metropolitan markets. Satellite-based competitors are either providing products that are not priced competitively or are of an inferior quality to Telecom's JetStream product.

129. However, Telecom considers that the threat of entry from alternative broadband internet access competitors is constraining any increases in price above the competitive level in non-metropolitan markets. The increasing intensity of rivalry from our competitors is described below.

Woosh Wireless

130. Woosh's wireless broadband service is now available in Auckland, Wellington, Christchurch, Invercargill and Southland.[25]

131. Woosh has recently announced plans to extend its network nationally over the next 12 to 18 months, including setting up in Hamilton and Dunedin and expanding Wellington's coverage to include the Hutt Valley. In addition, Woosh is continuing to build additional sites in its existing coverage areas, as well as increasing the capacity of its existing sites "to cover the increasing number of customers who are switching to [its] service".[26]

132. Woosh last month introduced a special offer that prices its wireless broadband service at just $19.95 including GST a month for six months. The offer is for users signing up to a 12-month contract before 31 December 2004, the second six months of which reverts to the normal monthly rate of $39.95 including GST. The service offers a 256 kbps service with 1GB of traffic per month. The equivalent Telecom plan costs $49.95 a month for customers who do not use Telecom for toll calls.[27]

Wired Country

133. The Wired Country broadband network now covers Auckland, Counties and Hamilton.

134. Wired Country is continuing to expand its network. In September 2004, Wired Country launched its broadband transmission site on the Awhitu Peninsula. This site provides residential and business consumers in the Clarks Beach, Matakawau, Waiau Pa, Glenbrook Beach, and parts of Awhitu, with access to a full range of Broadband services, including high speed always-on internet. Wired Country have indicated that this expansion is the first of many new sites that are needed to fulfil the requirements of the Government's PROBE project for the Auckland Region.[28]

TelstraClear

135. TelstraClear recently announced a partnership with Network Tasman, which will see Network Tasman provide fibre in business areas and build a new 170 km backup fibre link from Nelson to Blenheim, where it will connect with TelstraClear's existing national fibre network.[29] TelstraClear

[25] http://www.woosh.com/UserInterface/Woosh/Static/News/News.aspx. Reference – Woosh Extends Coverage in Southland.
[26] http://www.woosh.com/UserInterface/Woosh/Static/News/News.aspx. Reference – Woosh Strengthens Auckland Network.
[27] http://www.woosh.com/userinterface/static/xmas04/xmas04.aspx
[28] http://www.wiredcountry.co.nz/press_25.html
[29] http://www.telstraclear.co.nz/companyinfo/media.release-detail.cfm?newsid=168

then plans to expand the reach of Network Tasman's network by deploying wireless local loop equipment. TelstraClear has indicated that it is interested in pursuing this model with other electricity lines companies.

136. TelstraClear has also continued incremental rollouts of its distribution network.

Ease of Entry

137. Entry barriers are low for wireless broadband operators. The key distinction for broadband internet access services on the supply side is that they can be provided over wireless technology as well as wire line. Wireless technologies have several advantages:

(a) As the Commission noted in Decision 447 (paragraph 199), fixed wireless technologies have relatively low sunk costs, as the assets can be easily redeployed.

(b) There is no requirement to trench or to hang wires from power poles. Accordingly:

(i) labour costs are lower;

(ii) Resource Management consents are easier to obtain; and

(iii) rollout is far quicker.

(c) Greater scalability enables targeted, small-scale entry.

138. Unlike wired technology where capital costs of building the network are sunk before any users are connected, costs are only incurred when the user is connected in a wireless network. Telecom considers that the resulting real threat of entry from wireless operators is an effective competitive constraint operating upon it in both metropolitan and non-metropolitan markets.

Price Competition

139. Since the LLU Review, Telecom has significantly reduced its prices and raised the quality of the product available for both residential and business retail broadband internet customers.

140. JetStream plans have fallen significantly in price from a minimum price (for consumers) of $89 (applying until late 2000) to $39.95 per month, currently. The data caps have also increased, meaning customers are getting more for every dollar they spend.

September 2003	Data Cap	Price
Xtra JS Home 256K	500 MB	$49.95
(256K/256K)	1 GB	$59,95
	2 GB	$69.95
March 2004		
Xtra JS Surf	1 GB	$39.95
(256K/128K)	3 GB	$49.95
	Flat Rate	$69.95

141. Telecom considers the prices of its JetStream plans are amongst the more competitive ones in the market. The tables below detail in full our current offerings:

Residential Plans

URL: http://www.telecom.co.nz/chm/0,5123,203160-202568,00.html

Plan	Speed	Gbytes	Rental (including GST)	Overage?
Go	256 kbps	1	$39.95	ToC
Everyday	1 Mbps	1	$44.95	ToC
Explorer	256 kbps	3	$49.95	ToC
Plus	2 Mbps	10	$69.95	ToC
Swift	2 Mbps	10	$69.95	2 c/Mbyte

ToC = Throttle on Cap. Speed is reduced to dialup rates after the Gbyte cap is reached.

Business Plans

URL: http://www.telecom.co.nz/content/0,3900,204337-202572,00.html

Plan	Speed	Gbytes	Rental (excluding GST)	Overage (c/Mbyte)
Venture 1Gb	256 kbps	1	$51.06	4.44
Venture 3Gb	256 kbps	3	$71.06	4.44
Venture Flat Rate	256 kbps	10	$91.06	ToC
600	Full Speed	0.6	$61.33	18
1200	Full Speed	1.2	$120.00	17
1800	Full Speed	1.8	$176.00	16
3000	Full Speed	3	$292.00	14.3
5000	Full Speed	5	$458.00	12.5
10000	Full Speed	10	$888.00	10.7
20000	Full Speed	20	$1600.00	9
30000	Full Speed	30	$2400.00	9

142. The price reductions described in paragraph 140 were also accompanied by new product launches. 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.

143. The non-geographic nature of wireless competitors and the relative ease with which wireless solutions can be deployed in new areas (relative to wireline network rollout) has meant that Telecom has needed to provide these price reductions across all of New Zealand. However product options are more limited for customers in non-metropolitan areas, with metropolitan customers benefiting from the greatest range of choice in broadband internet access plans.

BACKHAUL

144. Telecom considers that the Commission should determine that the market for the designated backhaul services is a national market and one in which Telecom faces more than limited, and is not likely to face lessened, competition and that therefore the Commission should not determine regulated terms of supply for this service.

Market Definition

145. The designated bitstream backhaul service allows the onwards transmit of asymmetric internet grade broadband traffic across Telecom's core network, from an ATM switch to the access seeker's nearest point of interconnection. Telecom considers that this service is supplied within the national wholesale backbone transmission market. This market includes not only wholesale bitstream backhaul, but also other forms of national data transmission, as suppliers of one of these products can readily supply one of the others in response to demand or price changes. In practice, the participants in this market tend to supply all types of data services over the same national infrastructure as this allows the realisation of economies of scope between the services.

146. There are several backhaul options available to suppliers who wish to establish retail broadband services. Telecom considers that the product market for backhaul includes Telecom's network, BCL's wholesale product for backbone transmission and TelstraClear's fibre backbone.

147. The geographic dimension of the wholesale backbone transmission market is clearly national.

148. Telecom considers that the appropriate market for the designated backhaul service is a national market for wholesale backbone transmission services.

Competition Analysis

149. The Commission's assertion in the TelstraClear Decision to Investigate that "in large areas of New Zealand only Telecom has the network infrastructure to support bitstream backhaul services" is incorrect. This

decision is not consistent with previous decisions of the Commission, in particular Decision 447 where at paragraph 223 it noted "the merged entity [TelstraSaturn and Clear] would continue to face strong competition, both from Telecom as the major incumbent, and BCL [in the wholesale market for backbone transmission]." Also, in relation to the UPC benchmarking process, the Commission accepted that it was not appropriate to impose a cost-based pricing regime on the transmission occurring beyond the first ATM switch.

150. TelstraClear has two clearly viable commercial options to expand its involvement in the market for backhaul services for internet grade broadband access. It can either:

(a) profitably interconnect with Telecom's ATM switches (as outlined below); or

(b) negotiate a commercial backhaul price with Telecom for access to its national PDN.

151. Telecom has analysed TelstraClear's network in particular in relation to the opportunities TelstraClear has to connect to all of Telecom's ATM switches. Currently TelstraClear is connecting for PSTN interconnection purposes to all ATM nodes which are also Points of Interconnect. However, some ATM nodes are not used for PSTN call handover and thus there has been no incentive for TelstraClear to connect to them.

152. In relation to all ATM nodes except two, TelstraClear's network passes close to Telecom's nearest ATM node, generally within 200 metres, although in the case of Mount Albert it is 220 metres. The two exceptions to this were the Porirua and Otahuhu ATM exchanges.

153. For these two exchanges, the TelstraClear network comes within 760 metres of the Porirua exchange and 930 metres of the Otahuhu exchange at its respective closest points. Telecom has produced a cost-benefit analysis to understand whether it would be profitable for TelstraClear to connect to the last two exchanges which are furthest from its network. The assumed revenues were the UBR backhaul prices quoted in Telecom's commercial UBS industry offer document. In both cases, TelstraClear would be able to avoid paying A-step charges ($0.65 per end-user per month) if it connected to the exchanges rather than paying Telecom for backhaul. The cost assumed was based on standard costs for building a new fibre network for an estimated actual distance of 1100 metres in each case. This is likely to be an overstatement of costs as a site-specific analysis would probably reveal cheaper reticulation methods, and point-to-point wireless (eg LMDS) would probably be a viable option in both of these cases given the relatively short distances involved.

154. The analysis showed a positive NPV even after just three years at the 18% pre-tax discount rate which the Commission used in the LLU analysis. Over a more realistic timeframe having regard to the expected useful life of such assets the exercise becomes very profitable. The Commission should note that the high profits projected are the result of the economics

of making short extensions to pre-existing networks, rather than a general indication that prices for these service are above TSLRIC costs.

155. Telecom has not included details of this analysis in its submission as we have not had time to complete it with the rigour we would desire before releasing such information publicly. The analysis is just an indication to Telecom as to whether TelstraClear could profitably connect, and it showed that the case was easy to make. If the Commission still considers that there may be limited competition for provision of backhaul in the wholesale backbone transmission market, Telecom will provide a more detailed and rigorous analysis in later submissions.

156. The Commission should also note that ihug in its application for bitstream services noted that it was happy with Telecom's commercial UBR backhaul charges, and did not seek a determination in respect of them (paragraph 11.1) even though such an application could have been made at a very low incremental cost.

V. ANALYSIS OF NON-PRICE TERMS

157. The legal framework within which the Commission is to assess the non-price terms requested by TelstraClear has been discussed in section III. In short this requires the Commission to be satisfied that the non-price terms meet the relevant access principles and limits on access principles.

REQUESTED NON-PRICE TERMS

158. Whilst a few of the non-price terms TelstraClear has requested appear to be uncontentious,[30] Telecom has reservations regarding the remainder of the terms for the reasons set out below.

159. TelstraClear's service option at 16.2(b)(i) of its application is plainly outside of the designated service limits as there is no limit on the upstream speed. That option should be immediately discounted by the Commission.

160. TelstraClear's alternative service option at 16.2(b)(ii) is (to the extent that it has been specified) largely within the parameters of the service designation though there are some real practical difficulties around the 8 Mbps downstream speed request, which are discussed in Appendix A.

161. In addition, there is a material lack of clarity around some of the key minimum service specifications TelstraClear has requested in Table 1 of Annex 1. This simply makes it impossible at this stage for the Commission (or Telecom) to form a view on whether those permutations of the service requested are at the internet grade service level or can in fact be delivered by Telecom. Telecom considers that TelstraClear should be requested to clarify its requested service so that Telecom can properly respond to this central aspect of the application. Telecom has summarised its queries for TelstraClear in Appendix A.

162. If Telecom's understanding of the minimum service specifications in Table 1 of Annex 1 is applied to upstream traffic, Telecom's view is that TelstraClear is asking for minimum service specifications which place the requested service outside of the 128 kbps upstream limit.

163. Subject to clarification by TelstraClear of the minimum service specifications for downstream traffic, Telecom considers it is likely that it could meet many of these but notes that such specifications are above the ones currently used in Telecom's UBS wholesale agreements and JetStream products.

164. However, the provision of these minimum service specifications is very likely to result in significant cost increases which flow through to the retail price. For example, if Telecom was required to monitor the minimum service specifications requested by TelstraClear on a per user basis this would require a specialist modem costing upwards of $2,000 (as opposed to the standard end-user modem which costs about $100). This kind of

[30] Refer to paragraphs 16.2(a) and 16.2(c) of TelstraClear's Application.

modem, which is typically used for top end business services, would push the service beyond most residential and SME customers.

165. Although it may be possible for Telecom to provide TelstraClear with a tailored solution in this case, Telecom considers that this raises a significant precedent issue that needs to be carefully considered by the Commission. Requiring Telecom to provide a number of different tailored solutions for different wholesale customers will present real operational issues for Telecom. Each additional tailored solution that Telecom is required to provide will increase the overall operational complexity of the designated bitstream service. For example, each new solution will require Telecom to configure a new virtual path for each of Telecom's approximately 1,500 DSLAMs. If all traffic for all different variants of the service is mixed together, then it is very difficult to deliver consistent service characteristics.

166. Many of the non-price terms requested by TelstraClear do not accord with the general access principles primarily as they are not technically or operationally practicable having regard to Telecom's network (for example, see the comments in relation to paragraphs 16.2(d), 16.2(f) and 16.2(g) of TelstraClear's application), and therefore cannot be ordered under section 29. Telecom's submission sets out in some detail its preliminary concerns in this regard, but it notes that these issues will inevitably require detailed debate if the Commission is to consider each and every one of the terms proposed.

167. In the spirit of the Telecommunications Act's focus on the primacy of negotiation, the Commission should consider setting high level principles to guide parties as to non-price terms.

168. A practical approach would be to use the non-price terms in Telecom's Wholesale Services Agreement to define the level of the service. Those terms have been agreed to by 16 other wholesale customers. Using the Wholesale Services Agreement as a base is also more appropriate as granting a determination on the basis TelstraClear is seeking would see TelstraClear significantly advantaged over other participants in the market which Telecom does not consider would best serve the purpose of Part II of the Telecommunications Act as set out in section 18.

169. A table depicting at a high level the above points by reference to each of the non-price terms using the numbering in TelstraClear's application follows. This table should be read in conjunction with Appendix A of these submissions which considers each of the TelstraClear non-price terms in order. Note that if the Commission were to find that the non-price terms did not raise issues under clause 6(a), then providing them would be likely to raise additional cost. The table assumes the enquiry ends at the clause 6(a) level of enquiry.

170. The Commission's attention is particularly drawn to the comments on 16.2(b)(i) and Annex 1, Table 1 being the areas where TelstraClear has stepped beyond the boundaries of the additional limits on the service and

where the material lack of clarity by TelstraClear around service specifications like jitter and latency is explained.

TelstraClear Non-Price Term BITSTREAM	OK	Outside Designation	Clause 6(a)	Extra Cost
16.2(a) (no usage limits)	X			
16.2(b)(i) (no rate shaping)		X		
16.2(b)(ii) (8 Mbps)			X	
16.2(c) (Telecom's retail configuration)	X			
16.2(d)(i) (OSS)			X	
16.2(d)(ii) (OSS)			X	
16.2(d)(iii) (OSS)			X	
16.2(d)(iv) (OSS)			X	
16.2(e) (static IP addresses)				X
16.2(f) (ADSL availability)			X	
16.2(g) (billing)			X	
16.2(h) (minimum service specifications)				
Annex 1 Table 1 (Minimum Specifications)		X (upstream & some downstream)	X (interleaving)	X (downstream)
Annex 1 Table 2 (Service Levels)			X	
Annex 1 Table 3 (Rebates)			X	
Annex 1 Table 4 (Individual Line Outages)			X	

TelstraClear Non-price Term BACKHAUL	OK	Outside Designation	Clause 6(a)	Extra Cost
16.3(a)			X	
16.3(b)			X	
16.3(c)			X	
16.3(d)			X	
Annex 1, Para 2.1			X	
Annex 1, Para 2.2			X	

COMMENCEMENT DATE AND DURATION OF THE DETERMINATION

171. At paragraph 16.4(a) of its application, TelstraClear requests that the commencement date of the supply terms should be the date of the Commission's determination.

172. Telecom understands from the Commission's letter dated 25 November 2004, advising of its intention to investigate TelstraClear's application, and its email of 8 December 2004 that the Commission is currently working through the arrangements for timetabling this matter and has only prepared a provisional timetable to date with no indication of when a final determination will be issued. Without knowing at this stage the likely date of the Commission's determination, Telecom is not presently able to comment on whether this commencement date is appropriate.

173. Importantly, as set out above in relation to the responses to paragraphs 16.2 and 16.3 of TelstraClear's application, there are significant issues as to whether it is reasonably technically and operationally practicable under clause 6 of subpart 2 of part 1 of Schedule 1 of the Telecommunications Act for Telecom to provide a number of the non-price terms requested by TelstraClear. If the Commission were to require Telecom to implement such non-price terms (despite Telecom's contention they are not reasonably operationally and technically practicable), then there are likely to be issues as to whether they can be provided by the date of the Commission's determination as requested by TelstraClear.

174. In these circumstances, Telecom reserves the opportunity to comment on the timing of the commencement date of the supply terms sought by TelstraClear until such time as the Commission confirms its timetable towards reaching a determination and the nature of the additional services (if any) that Telecom may be required to provide is clarified.

175. For the same reason, Telecom also reserves the opportunity to comment on these points on the expiration date of the terms sought by TelstraClear (as set out in paragraph 16.4(b) of the TelstraClear application).

VI. PRICE TERMS

176. TelstraClear has applied for access to Telecom's fixed PDN and fixed PDN backhaul in accordance with the initial pricing principles for those services.

177. The designation for access to and interconnection with Telecom's fixed PDN in the Telecommunications Act provides for an initial pricing principle based on a retail minus concept:

> "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 in a market for that service".

178. The designation for access to Telecom's fixed PDN backhaul provides for an initial pricing principle based on international benchmarking:

> "Benchmarking against prices for similar services in comparable countries that result from the application to networks that are similar to Telecom's fixed PDN of a forward-looking cost-based pricing method".

179. In the time available, Telecom has not been able to conduct a full scale pricing study and as such is unable to make detailed submissions on how the initial pricing principles should apply to the specific services to which TelstraClear is seeking access. In any event Telecom considers it appropriate to focus on matters of general principle rather than detail at this stage. Telecom has therefore sought only to make general submissions on the appropriate methodology for applying the initial pricing principle here.

180. Telecom has challenged a number of aspects of TelstraClear's application. In particular Telecom is very firmly of the view expressed earlier in these submissions that the regulatory regime set out in the Telecommunications Act is based (and certainly works best) on the concept of comparability of retail service offerings so as to accommodate competition at retail for internet grade end-users. The TelstraClear application is seeking access to services for which Telecom does not have a direct retail equivalent, or even a comparable product, (especially given the various non-price terms sought by TelstraClear in its application) and which would permit TelstraClear to provide services at levels well above internet grade (and do so on the basis of a cost advantage over Telecom and other providers).

181. Telecom is of the view that it is virtually impossible to price the services sought by TelstraClear on the basis of the applicable initial pricing principles but has nevertheless sought to make meaningful submissions on pricing under the relevant initial pricing principles.

182. Telecom makes the point that limiting TelstraClear's requests would not stifle competition – rather it would focus competitors on providing innovative services over a provider-agnostic Layer 2 service. There remains considerable potential for differentiation of services and hence competition from the ATM interface at which the regulated service terminates.

183. In addition to pricing in accordance with the relevant initial pricing principle, TelstraClear has also applied for a number of other pricing terms as set out in paragraphs 16.1(b) to 16.1(f) of its application. Telecom makes submissions as to these additional pricing terms.

INITIAL PRICING PRINCIPLE FOR FIXED PDN

Comparability

184. As mentioned above, the initial pricing principle for the fixed PDN is based on a retail minus formulation. Finding a comparable service is key to the initial pricing principle in relation to both imputing a retail price and assessing a wholesale discount as one would expect in a retail minus regime.

185. The retail minus methodology adopted for the designated service has obvious regulatory appeal given its simplicity. The essential premise is that the access provider is spared certain costs of retail (eg marketing and direct customer relations) which costs are assumed by the access seeker. The 'minus' component of the formulation is intended fairly to reflect these differences.

186. Telecom is of the view that the retail minus formulation adopted in the initial pricing principle effectively is based on a direct retail equivalent or at least reasonable comparability between the retail service used as the comparator and the service to which access is sought. Certainly the retail minus methodology works best where equivalence or reasonable comparability exists and in these circumstances the margin between wholesale and retail is able to be calculated with relative certainty and confidence. In effect, under these conditions the essential premise noted above applies. The methodology is tested where such equivalence or comparability does not exist; all the more so when what is being considered is a service or, even more acutely, a package of services, and where some of the services the provider provides to the seeker do not translate through (or are superior) to the service offered at retail.

187. Telecom believes that the history of the UBS designation is one which has contemplated the closest possible fit between the service being made available by Telecom at retail and the wholesale service sought to be regulated. The Commission and the Government have clearly accepted

that the long term interests of end-users are best promoted by a regime that permits providers and seekers to compete on their merits in contestable markets.

188. Furthermore, Telecom makes the observation that maintaining a tight link between retail and wholesale prices is key to maintaining the ability of Telecom and other network providers to value price (for example as between business and residential customers). The Commission has previously accepted (in particular in Decision 497) the desirability of this outcome in the interests of end-users and dynamic efficiency and recognised the need to manage the risk that:

> "entrants may 'cherry pick' markets, without committing to the market in the same way as the incumbent has"[31]

and indeed Telecom notes that this thinking underpinned the approach in Decision 497.

189. Maintaining comparability between retail services offered by Telecom and wholesale services sought to be regulated would appear to be the most workable approach which will meaningfully facilitate the application of the initial pricing principle. There is a clear expectation in the initial pricing principle that there be relevant comparable retail offerings. Furthermore, maintaining comparability with Telecom's standard retail offerings may make it easier to find an appropriate comparator against which a wholesale discount can be benchmarked.

190. If an intended regulated service is outside the constraints of reasonable retail comparability then, in Telecom's view, it should not be granted. Any such grant is unnecessary to promote workable and effective competition, would undermine the dynamic efficiency and other considerations which prevailed in the context of the LLU Review, and would in any event be practically impossible to price under the initial or final pricing principles.

191. It is unclear whether the statutory regime permits access seekers to request special non-price terms. Telecom does not believe that this was intended and certainly does not believe that the non-price terms sought by TelstraClear should be granted. The legislative intention is to ensure competition on the merits for retail offerings. The non-price terms sought by TelstraClear would not only not promote this, they would have the opposite effect. TelstraClear would be placed in a position of undue competitive advantage.

192. So, in general, Telecom believes that the regulatory framework intends only to regulate UBS offerings which in fact have obvious retail implications. At one obvious extreme, for example, a regulated UBS offering of 512 kbps/128 kbps would imply a retail offering of a 512 kbps/128 kbps service.

[31] LLU Report at paragraph 719.

Imputing a Retail Price

193. On this interpretation of the initial pricing principle if an access seeker applies for regulated access to a service which is the direct layer 2 Tunnel Protocol equivalent of a JetStream retail offering then, unless the access seeker seeks terms and conditions other than those offered commercially, the retail price of that offering would be the retail price imputed by the Commission for the purposes of the initial pricing principle.

194. Unless an access seeker seeks terms and conditions other than those which apply commercially, a notional retail price need only be imputed to the extent that an access seeker applies for regulated access to a service for which Telecom does not provide a directly equivalent service in its JetStream suite of services and such a notional retail price should only apply until such time as Telecom does provide such a direct equivalent.

195. TelstraClear is seeking access to services which do not have a direct equivalent in the JetStream suite of services and terms and conditions other than those which apply commercially. It therefore raises the issue of finding one or more comparable JetStream services from which a retail price can be imputed.

196. The extent to which an appropriate comparison can be made between a requested service and a service within the JetStream suite of services will depend not only on the speed profile of the requested service but also on the other terms and conditions upon which the requested service is to be provided. A requested service which is clearly comparable to a JetStream service may have its initial price imputed by reasonably obvious interpolation or extrapolation although the Commission will need to be sensitive to situations where modified offerings have different cost or value attributes.

197. The service specifications TelstraClear has requested are far from clear and the fact that TelstraClear is asking the Commission to allow access on terms and conditions which effectively mean that it has access to a service which is significantly different from any of Telecom's retail offerings creates problems in terms of finding a comparable retail service from which a meaningful imputation can be made.

198. A real issue is the extent to which an allowance will need to be made to account for services or terms and conditions requested by TelstraClear but not made available by Telecom in its commercial offerings. Telecom will be happy to make submissions on this if and when appropriate but notes that it would not be able to make meaningful submissions here until TelstraClear provides further and better particulars as to the scope of the services sought.

199. Even if TelstraClear had merely sought access to a Layer 2 Tunnel Protocol service which was equivalent to the services made available by Telecom at retail another issue would remain as to the extent to which an adjustment is required to reflect the absence of functionality restrictions for Layer 2 Tunnel Protocol services. Telecom believes that Layer 2 Tunnel

Protocol offerings provide greater functionality than any retail service offered by Telecom as Layer 2 Tunnel Protocol offerings never 'slow down', have no throttles or caps on data, and offer unlimited data and unlimited periods of use of the speed at which they run.[32]

Wholesale Discount

200. Finding a comparable service is also important in assessing the wholesale discount. The initial pricing principle requires benchmarking against the regulated wholesale price of the same service in one or more other countries which apply a retail minus pricing.

201. An avoided cost benchmark is to be used where Telecom faces limited or is likely to face lessened competition. Although the initial pricing principle also provides for an actual cost benchmark to be used in circumstances where the Commission exercises its discretion to allow access notwithstanding that Telecom does not face limited or lessened competition, Telecom has not focused on this benchmark. This is only relevant if there are exceptional circumstances and Telecom considers that there are no such circumstances.

202. In general Telecom believes that a benchmarking exercise is required in order to remove the number of Gigabytes included in JetStream plans, the authentication costs, and the sales and support services which are provided at retail but not provided at wholesale. Only the last of these has been benchmarked. Telecom has some internal costs which can be used as initial costs prior to the conducting of an avoided costs saved calculation if the Commission does not wish to conduct the benchmarking exercise required.

203. However, in the time available Telecom has not been able to conduct a benchmarking study but would be happy to make submissions on the benchmarking methodology when appropriate.

INITIAL PRICING PRINCIPLE FOR FIXED PDN BACKHAUL

204. Telecom has submitted elsewhere in these submission that backhaul is a competitive service and repeats those views here. However, if despite those submissions, access is to be granted to the designated backhaul service, the initial pricing principle will be based on international benchmarking.

205. In the time available Telecom has not been able to conduct a benchmarking study but would be happy to make submissions on the benchmarking methodology when appropriate.

[32] Telecom notes that there are other possible approaches but doubts they would appeal to the Commission. The most obvious such approach would be for the regulated wholesale option to be on terms which require the customer to include throttles or caps etc in their retail offerings generally along the lines adopted by Telecom.

OTHER PRICING TERMS

206. TelstraClear has requested a number of specific pricing terms in section 16.1 of its application. Telecom considers that if a regulatory solution is to be imposed, then pricing must be in accordance with the initial pricing principle. In general, TelstraClear can not seek cost-based pricing. Further, costs uniquely incurred to meet TelstraClear's unique requests should be borne solely by TelstraClear and where appropriate these should be priced on a retail minus basis.

207. It is in this context that Telecom comments on the various pricing terms sought in paragraph 16.1.

> **16.1(a) The monthly access charge and new connection charge should be calculated in accordance with the applicable initial pricing principle. There should be no per megabyte charge**

208. Telecom has commented generally on the application of the initial pricing principles above. Telecom does not impose any per megabyte charge on its commercial UBS access service.

209. With respect to the backhaul service, Telecom's wholesale customers have three options at each USAP where they on-sell the wholesale bitstream service. The option selected by the wholesale customer will determine whether any per megabyte charge is applicable to the backhaul service.

Option 1: The wholesale customer interconnects with Telecom's network at that USAP. The wholesale customer does not require any form of backhaul service, and accordingly no per megabyte charge is incurred by the wholesale customer.

Option 2: The wholesale customer purchases from Telecom or some third party a dedicated circuit (or circuits) between the ATM switch at that USAP and the wholesale customer's nearest ATM switch. The wholesale customer will be charged a flat rate for the dedicated circuit irrespective of the number of users or the volume of traffic carried over that dedicated circuit. No per megabyte charge will be incurred.

Option 3: The wholesale customer purchases from Telecom, a flexible backhaul service. The wholesale customer will be charged for the flexible backhaul service based on the average number of end-users it has using the service each month. The price of the flexible backhaul service is set on the basis that each end-user has a monthly usage allowance. Where the wholesale customer exceeds that aggregate usage allowance for the flexible backhaul service (ie the average number of end-users the wholesale customer has in a month multiplied by the monthly usage allowance applicable to each end-user), the

wholesale customer will incur a per megabyte charge in relation to the flexible backhaul service.

210. Telecom introduced the flexible backhaul service outlined in Option 3 above in response to feedback from some smaller access seekers who advised it that the dedicated circuit backhaul service described in Option 2 above was expensive for them given that their customer base was spread across a number of regions, and they only had a few users in some locations.

211. If Telecom was required to charge for its backhaul service based on a fixed price per user with no usage limit, it would incur significantly increased costs for provision of the service due to the additional network resources Telecom would need to provision to maintain a service with no usage allowance. Telecom would need to charge for the service on a worst-case assumption as regards the costs of providing backhaul capacity.

16.1(b) 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

212. The Commission recognised the importance of operational support systems in the Local Loop Unbundling report but did not recommend that access to such systems should be designated:

> "The Commission consider that the ability for an access seeker to obtain operational support services from Telecom to support regulated access to a bitstream service and a related backhaul service is essential to the effective utilization of the bitstream service and the backhaul service. However, the precise form in which OSS will be required to be delivered should emerge in the context of applications for determination. Rather than recommend that OSS be a separate regulated service, the Commission has therefore included OSS as an associated function of the recommended designated services."[33]

213. In terms of recovering costs related to any operational support system to be implemented to support the designated bitstream service and the designated backhaul service, the Commission stated:

> "The cost-benefit analysis factual scenario includes an estimate of OSS costs. The model includes a cost per connection for OSS. This assumes that Telecom is able to recover all reasonable onset and ongoing OSS costs directly incurred as a result of the implementation of an OSS system to support the provision of unbundled local loops or unbundled access to its fixed PDN. These costs are assumed to be spread across all broadband-enabled lines."[34]

214. Telecom agrees that a mechanism should be implemented whereby it is able to recover all reasonable costs associated with any operational

[33] LLU Report at paragraph 827.
[34] LLU Report at paragraph 286.

support system so implemented. Recovery should be economically efficient in that it should send appropriate signals to both Telecom and to access seekers. The TelstraClear application appears to suggest that such recovery should not be permitted which in Telecom's view would distort market signals by essentially allowing access seekers a 'free ride'. The first preference for the Commission should be to apply retail minus avoided cost pricing as this is what the initial pricing principle specifies. However, where there are special onset or ongoing costs which do not occur at retail and therefore do not have retail prices, a different pricing method is needed.

215. In terms of the onset costs of designing and deploying an operational support system Telecom notes that TelstraClear is the only access seeker seeking changes to the current operational support system provided by Telecom and is the only access seeker expecting to benefit from such changes. As such Telecom submits that TelstraClear should bear all reasonable costs of Telecom in designing and deploying an operational support system along the lines that TelstraClear has suggested. Telecom submits that, while it could be unclear to the Commission if there will be any onset costs involved in Telecom satisfying TelstraClear's request, this does not prevent the Commission from reaching a determination that this should happen. The Commission could determine that Telecom is entitled to recover its reasonable costs from TelstraClear without needing to know in advance the quantum of such costs. If it turns out that the quantum is zero, then the charge will be zero although Telecom believes that there will be at least some onset costs if all the terms and conditions sought in the TelstraClear application are granted.

216. In respect of ongoing costs, Telecom submits that such costs should be recovered over all services affected by the cost to be recovered. In some cases costs will be directly driven by transactions or service instances and the corresponding charges can be levied in direct proportion to these. Where there are more indirect ongoing costs, these should be recovered over the services which are facilitated by the incurring of that indirect cost. This may be all broadband services or it may be restricted to only wholesale broadband services for wholesale-specific costs.

16.1(c) support services, including physical collocation space for backhaul services, should be provided at charges which recoup only the incremental costs of Telecom providing those services

217. Backhaul services can be provided either by Telecom or by another party. Charges for physical co-location space are not an issue where Telecom is providing the backhaul as Telecom trunks data back to the access seeker's site.

218. Where backhaul services are being provided by another party the end of the non Telecom backhaul needs to be interfaced with Telecom equipment at the first ATM exchange corresponding to the bitstream connections which are served by the backhaul. However this does not require physical co-location as Telecom provides a network-to-network interface which

allows for an interconnection with an access seeker's network-to-network interface. The processes and procedures in relation to this for PSTN services have been in place for a number of years and are working successfully, and Telecom is prepared to provide controlled access to relevant parts of its facilities to allow such interconnection to take place. As such charges for co-location will again not be an issue.

219. In any event, Telecom makes the observation that support services such as co-location are an integral part of the requested bitstream service and the initial pricing principle should apply rather than incremental cost as TelstraClear has requested.

> **16.1(d) A service transferral charge (and not a new connection charge) should apply in the following situations:**
>
> **(i) an end-user supplied by Telecom with a retail JetStream 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;**
>
> **(iii) an end-user supplied by another access seeker with an ADSL service provided using a Telecom wholesale bitstream service chooses instead to subscribe to a retail ADSL service provided using a wholesale bitstream service supplied by Telecom to TelstraClear.**
>
> **Reference to 'a retail ADSL service provided using a wholesale bitstream service supplied by Telecom to TelstraClear" includes a retail service provided by a third party operator in a downstream chain of supply from TelstraClear.**
>
> **16.1(e) The service transferral charge should recoup only Telecom's incremental costs (excluding system setup costs) of processing the requested service migration.**

220. Telecom agrees that the situations set out in paragraph 16.1(d) are the situations where charges should apply but does not agree with TelstraClear's view of how those charges should be structured. Telecom does not see why the initial pricing principle should apply to a new connection charge but not to a service transferral charge and submits that retail minus should therefore apply equally to a service transferral charge. Here, Telecom notes that there is an internal charge to XTRA when it converts a UBS user to JetStream which is the retail connection charge. The retail charge is known as it is the fee XTRA charges the end-user to convert a UBS to JetStream.

16.1(f) Charges for other inter-carrier processes, such as moves adds and changes, should be based on Telecom's incremental costs (excluding system setup costs)

221. Again, Telecom notes that the initial pricing principle rather than incremental cost is appropriate here. Charges for such processes are based on corresponding retail activities primarily in relation to Telecom's JetStream offering. The Commission has already determined a pricing structure in Decision 497 for regulated JetStream services. Telecom notes that as a matter of principle it does not seek contributions to its fixed and common costs for moves, adds and changes at retail as it has incentives to facilitate customer access to its services. Telecom expects then that a comprehensive cost study of these services would produce a similar result to the retail minus pricing methodology in any event and a cost analysis is unlikely to provide a lower cost, and would involve unnecessary time and expense for all three parties.

Rebates

222. In addition to the pricing terms claimed in paragraph 16.1, TelstraClear has also sought rebates in paragraph 1.3 of Annex I which are relevant to pricing:

> "Telecom will provide the following rebates for failing to meet the service levels listed as (a) to (e) in table 2:

Table 3: Rebates

Actual Performance against service level	Rebate against total monthly access charge for services
80 - 90%	5%
70 - 79%	10%
50 - 69%	15%
less than 50%	30%

223. Telecom notes that a retail equivalent service which included provision for such rebates would need to be priced in such a manner that the expected value of rebates paid out would be added in to the retail price. The practical consequences would be a 'wash' and the requested rebate proposal should be declined.

APPENDIX A

DETAILED ANALYSIS OF NON-PRICE TERMS

1. What follows is an analysis of TelstraClear's application in relation to the non-price terms on a clause by clause basis. Telecom has provided as much detail as possible in the time available but inevitably its comments are still at a reasonably high level. Many of the non-price terms raise technical issues which are complex and will require further elaboration later in the process.

NON-PRICE TERMS FOR BITSTREAM SERVICE

2. Telecom addresses each of the relevant non-price terms for the bitstream service requested in paragraph 16.2 of TelstraClear's application in turn.

> **16.2(a) there should be no usage limits on data downloads for individual or aggregated wholesale bitstream services**

3. This would be acceptable to Telecom. Telecom does not impose usage limits on data downloads on its commercial UBS service. (Telecom imposes usage limits on data downloads on its flexible backhaul service and the non-price terms for this service have been separately dealt with by TelstraClear at paragraph 16.3 of its application).

> **16.2(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**

4. Subparagraph 16.2(b)(i) describes a service which is plainly outside the scope of the designated bitstream service, in that it does not purport to be constrained by the maximum upstream throughput rate of 128 kbps for data traffic sent from the end-user.

5. The theoretical maximum upstream throughput rate of the DSLAM is 700 kbps. TelstraClear therefore appears to be requesting an upstream throughput rate that is more than five times greater than the 128 kbps maximum upstream throughput rate specified in the limits on access principles applicable to the designated bitstream service.

6. A requirement that Telecom provide TelstraClear with a bitstream service to the maximum speed of which the relevant DSLAM is capable without any rate shaping by Telecom, would effectively require Telecom to provide unconstrained capacity. When Telecom first introduced its JetStream services, it offered an unconstrained service. This service is in the process of being withdrawn. The increase in broadband uptake has meant that to provide an unconstrained service to a moderate to large number of end-users requires a significant amount of additional network resources, and this type of service can only be provided at a price that would be unattractive to the residential and SME markets.

7. Telecom notes that it is unclear what TelstraClear means by the term "rate shaping" as the term appears to be used to describe both the upstream/downstream throughput rate configuration of the designated bitstream service, as well as a form of traffic management.

8. Telecom uses the term "rate shaping" in the latter sense. This is a complicated area. Rate shaping is a form of traffic management which Telecom uses to enable efficient statistical multiplexing of multiple data streams with high burst rates (such as those typical of internet traffic). Essentially, rate shaping manages congestion on the network and ensures that customers do not get more capacity than they pay for. For the purposes of this submission Telecom assumes that TelstraClear also intends to use "rate shaping" in this sense of traffic management.

16.2(b)(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:**

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

9. This request is not properly framed. The reference to "the rate shaping options to be initially made available" means that it is unclear exactly what configurations TelstraClear is requesting and therefore it is not possible to assess if those configurations are within the service description.

10. Clause 6(a) of the limits on access principles provides that the standard access principles are limited by:

> "reasonable technical and operational practicability having regard to the access provider's network"

11. It is not technically or operationally practicable for Telecom to provide a bitstream service with an upstream/downstream speed profile of 8 Mbps/128 kbps. Telecom's current ADSL technology is only capable of providing a maximum speed profile of approximately 7.6 Mbps/700 kbps. This maximum speed profile could only ever be achieved by less than 20% of end-users who are in close proximity to the exchange. Even if it was possible to achieve an upstream/downstream speed profile of 8 Mbps/128 kbps the level of asymmetry inherent in such a configuration is likely to mean that the service is unstable and unable to provide a satisfactory end-user experience.

12. Technical and operational practicability issues also arise if Telecom is required to provide configurations of upstream and downstream speeds nominated by TelstraClear where Telecom does not have a comparable retail service. This is because:

    (a) the implementation of a configuration of upstream speeds, downstream speeds and quality characteristics is a complex and costly undertaking, which requires a significant amount of planning and testing, with the result that the ensuing wholesale product can only be provided at a price which may ultimately be unattractive to residential and SME end-users; and

    (b) there are significant operational issues associated with having multiple downstream and upstream configurations and quality characteristics that need to be supported by the network for individual customers. For example, each additional tailored solution will require Telecom to configure a new virtual path for each of Telecom's approximately 1,500 DSLAMs. If traffic from different variants of the service is mixed together, it is very difficult to deliver consistent service characteristics.

16.2(c) If Telecom introduces a new retail JetStream Service which has a combination of upstream/downstream speeds not currently offered by Telecom at the retail level, Telecom should include that combination as a rate shaping option available for the wholesale bitstream service if it does not already do so (provided this new option meets "the limitation on access principles" prescribed in the bitstream designated service).

13. There seems to be an inconsistency between paragraphs 16.2(b) and 16.2(c) in that on its face paragraph 16.2(b) seems very wide and paragraph 16.2(c) is unnecessary.

14. However, if what TelstraClear means by a combination of paragraphs 16.2(b) and 16.2(c) is that it only requires Telecom to provide combinations of upstream and downstream speeds which Telecom has available at retail, this is acceptable to Telecom, provided that the upstream/downstream speed configuration is consistent with the limits on access principles and that Telecom is not required to provide the service

on terms that are more onerous than those on which the relevant retail product is provided.

16.2(d) The parties should implement a phase program to achieve efficient direct electronic interfaces between their operational support systems for the service inquiry, service ordering, provisioning and fault reporting processes required to support the Requested Services, as follows:

(i) the initial electronic interfaces and the degree of reliance on manual vs. electronic processes should be substantially similar to those used to support residential wholesale services as at the date of first availability of the wholesale bitstream service;

(ii) within 6 months of the Commission's determination, the electronic interface should support direct real time interworking between each parties' operational support systems for key processes, including ordering, provisioning, fault reporting and closing of fault tickets;

(iii) within 12 months of the Commission's determination, the electronic interface must provide TelstraClear with access to Telecom's operational support systems which is equivalent to the access which Telecom supplies itself for its retail JetStream services; and

(iv) the parties are to agree on the specifications for electronic interfaces and an implementation program.

15. Telecom accepts that the provision of a certain level of Operational Support Systems (OSS) activities is an important part of the non-price terms and conditions on which the designated bitstream service is provided and is currently developing and implementing the necessary OSS, as part of the commercial UBS service rollout. Some of these systems are described in more detail below. However, Telecom is concerned that the level of detail sought by TelstraClear as part of the determination goes beyond simply specifying what Telecom must provide, which is adequately covered by the standard access principles, and extends to how OSS is actually provided.

16. The rollout of Telecom's customer electronic interface begins in December 2004 – it is called electronic ordering (eOR). Development of this interface started in March 2004 and it is currently undergoing testing in preparation for rollout.

17. Telecom will continue to develop this eOR to provide electronic interfaces where it is cost-effective to do so. As an example, Telecom is to implement a back-end interface between ICMS and the eOR for the residential reassignment process in the first quarter of 2005 because the volumes make it cost-effective to do so. Telecom is in discussions with TelstraClear on eOR and will include their requirements (and those of other relevant parties) in its further development, whether for UBS or other

services, where the volume and lack of complexity makes it cost-effective to do so.

18. However, as previously submitted to the Commission, for some processes and systems, electronic interfaces or automation are unlikely to ever be built because the volume and/or the complexity make doing so uneconomic. Telecom is in the process of rebuilding many of its retail systems, which Wholesale will also use (Telecom OSS Presentation to Commerce Commission, 11 November 2003, paragraphs 37-39).

19. Turning now to the specific aspects of what TelstraClear is requesting in paragraph 16.2(d) of its application, in paragraph 16.2(d)(i) TelstraClear requests that the initial electronic interfaces and the degree of reliance on manual versus electronic processes should be substantially similar to those used to support residential wholesale services as at the date of first availability of the wholesale bitstream service.

20. As is noted above, Telecom will use the appropriate processes and OSS, whether electronic or manual, to provide TelstraClear with access to the wholesale bitstream service as required under the standard access principles (ie the "what"). Some of these processes and OSS are new because the wholesale bitstream service is a new service provided differently to JetStream and not one Telecom provides at retail.

21. "How" the service is provided by process and OSS is part of the terms and conditions of supply. However, Telecom is planning to implement electronic ordering for its commercial UBS service in a coming version of eOR, assuming volumes make it cost-effective to do so. While this will make the bitstream service processes substantially similar to residential wholesale, to insist that this should occur at the date of first availability is technically and operationally impractical as it takes no account either of volumes nor of the development or implementation requirements of such processes and systems.

22. To the extent that TelstraClear is seeking to establish six and twelve month time limits on the implementation of the electronic interface for "direct real-time interworking" and equivalent access (paragraphs 16.2(d)(ii) and (iii) of the TelstraClear application), Telecom submits that this is not reasonably technically and operationally practicable.

23. Telecom is following a roughly five year programme of Information Systems ("IS") transformation, including OSS and electronic interfaces. Electronic interfaces are only part of this transformation which Telecom is undertaking. For wholesale, this is progressing through eOR enhancements to back-end systems such as the Single Service Order which improves the residential reassignment process and the provision of TeleZone, a web-based tool to assist in determining wholesale zones for the industry.

24. Specifying "direct real-time interworking" within six months, and equivalent access in twelve months, greatly oversimplifies the transformation underway to large scale, costly, and in many cases legacy systems

necessary to deliver these services. It also ignores the progress being made by Telecom with eOR and other systems and electronic interfaces for the industry. It further ignores the significant complexity of connecting legacy systems outside the environment they were designed for to perform process for which they were not designed.

25. Lastly, in relation to paragraph 16.2(d)(iv) of TelstraClear's application, Telecom submits that this is unnecessary. Telecom continues to discuss with the wider industry (including TelstraClear) the development of electronic interfaces and their implementation. Telecom submits that it is not appropriate for it to agree on such specifications and implementation with TelstraClear in the absence of an industry wide discussion.

26. TelstraClear's request for electronic interfaces is therefore unnecessary and appears to be an attempt to revisit the LLU Report when standard access principles are being complied with by Telecom and progress is being made towards electronic interfaces.

16.2(e) Telecom should configure the wholesale bitstream service so that TelstraClear can utilise static IP addresses for end-users supplied with services utilising the wholesale bitstream service.

27. Telecom currently provides static IP addresses to a limited number of residential and SME end-users. However, these end-users pay a monthly levy for their static IP addresses, which is commensurate with the fact that such addresses are typically only provided to business customers.

28. There are issues around address management and address extinction which need to be considered by the Commission. However, if the Commission determines that static IP addresses should be included in the designated bitstream service, then there is a value attributable to them over and above the price of the designated bitstream service.

16.2(f) Telecom should make available wholesale bitstream services in any Telecom network area where at least 35 individual ADSL services have been requested by end-users (whether subscribers to the Telecom retail services or services offered by Telecom wholesale customers). Telecom should provide TelstraClear with not less than 90 days' advance notice of the expected completion of upgrading of Telecom network in an area to support ADSL services and wholesale bitstream services should be made available no later than the date on which Telecom first commences to provide retail ADSL services in an area (including by way of a "soft launch")

29. A requirement that Telecom makes available wholesale bitstream services in any Telecom network area where at least 35 individual ADSL services have been requested by end-users (whether subscribers to the Telecom retail services or services offered by Telecom wholesale customers) potentially requires Telecom to make investment decisions based on the

demands of TelstraClear's customers. If strictly applied it would require Telecom to build new network components to service TelstraClear customers. Telecom's underlying concern is that its investment decisions would be determined by its wholesale customers not by Telecom.

30. In the LLU Report, the Commission, considered the potential risks that could threaten dynamic efficiency gains were bitstream access to be regulated and noted that "if entrants find that the services they offered were not supported in the market, the entrants could exit at minimum cost, while Telecom would bear the cost". To require Telecom to make available wholesale bitstream services in any Telecom network area where at least 35 individual ADSL services have been requested by end-users would inhibit dynamic efficiency in the manner contemplated by the Commission. The Commission must have regard to section 18 of the Telecommunications Act and should not require Telecom to satisfy TelstraClear's request where this is likely to be contrary to the best interests of end-users in telecommunications markets.

31. In any event, Telecom submits that it is not operationally practicable having regard to Telecom's network for it to provide 90 days advance notice of the expected completion of a network upgrade to support ADSL services. This is because Telecom's ADSL upgrade plans are very dynamic and responsive to changes in demand and are typically not finalised 90 days prior to the actual completion of any upgrade.

> **16.2(g)** **if a service transferral from Telecom Retail or a Telecom wholesale customer to TelstraClear occurs part way through the customer's Telecom billing cycle, Telecom should not charge the customer for the service in respect of the period between the date of service transferral and the end of that billing cycle. If the service transferral to TelstraClear occurs part way through the Telecom wholesale billing cycle, TelstraClear also should pay the first month's charges on a rateable basis. If a service transferral away from TelstraClear occurs part way through the wholesale billing cycle, Telecom should not charge TelstraClear for the service in respect of the period between the date of service transferral and the end of that wholesale billing cycle. If the service transferral away from TelstraClear occurs part way through the Telecom retail or wholesale billing cycle (as applicable), the retail or wholesale customer involved in the service transferral also should pay the first month's charges on a rateable basis**

32. This request is not operationally practicable. JetStream and commercial UBS service billing is offered monthly, and Telecom’s billing systems are designed to bill monthly for these services. As a result Telecom would have to significantly alter its billing systems to accommodate TelstraClear's proposal.

33. Telecom's IS transformation includes its billing systems. As part of the IS plans, a billing system that provides the ability for pro-ration is due for implementation in mid-2005. At the time that Telecom provides pro-ration

to its retail customers it will also provide it to wholesale services including the commercial UBS service (and any designated bitstream service). With this billing system, Telecom will also align the appropriate customers to the wholesale access seekers' billing cycles to further simplify billing issues such as pro-ration.

34. For Telecom's JetStream service, the customer pays a set monthly amount (effectively a subscription) for the service. As is the case with other similar subscription services such as Sky Television, gymnasium membership or carparking, the subscription is for that month's services. Should the customer cancel the subscription or move to another provider during that month, no refund is given. TelstraClear's proposal would mean radically altering the type of billing service from a monthly subscription to a daily one.

16.2(h) Telecom should provide the wholesale bitstream services in accordance with the service level, rebate and reporting requirements set out in Annex 1.

Annex 1

1.1 Minimum Service Specifications for wholesale bitstream service:

Specification	**Requirement**
Jitter	Jitter should not exceed latency
Latency	<50 ms
Delay Variation	Less than mean packet delay
Packet Loss	<0.1%
Contention Ratio from DSLAM to Core	1:20
Interleaving	Optional

Annex 1, Table 1 – Summary

35. The following comments are highly technical in nature. Each of the issues discussed below is comprised of multiple layers and will require detailed examination by the Commission. In the time available Telecom has endeavoured to canvas as fully as possible many of the relevant considerations. Inevitably there is a considerable amount of further detail that will need to be explored with the Commission during the conference.

36. Table 1 of Annex 1 is key to understanding the nature of the service being requested by TelstraClear. Note that the service specifications need to be considered for both upstream and downstream traffic separately. In summary:

(a) For both upstream and downstream traffic there is a material lack of clarity around the minimum service specifications in Annex 1, Table 1 which makes it impossible for the Commission (or Telecom) to assess precisely what TelstraClear is asking for and therefore whether the request is within the designated bitstream service limits.

(b) For the upstream traffic, Telecom's view is that TelstraClear is asking for minimum service specifications which place the requested service outside of the 128 kbps upstream limit (see below).

(c) For downstream traffic (if Telecom's definitions of the minimum service specifications are applied) then it is likely that in many circumstances the minimum service specifications could be met – subject to two important exceptions (ie latency and delay variation) which are discussed below. However, any form of absolute commitment to such service specifications is not currently provided by Telecom in relation to its commercial UBS or JetStream services so providing them to TelstraClear will probably (significantly) increase the cost of the service.

37. These points are now expanded on in turn.

Lack of Clarity Over Table 1 Minimum Service Specifications

38. The minimum service specifications requested by TelstraClear relating to jitter, latency, delay variation, packet loss and contention ratio are imprecisely defined making it impossible at this stage for the Commission (or Telecom) to reasonably form a view on whether the terms could be ordered under section 29. The definitions of these terms are discussed generally below in relation to both upstream and downstream traffic.

Jitter and Delay Variation

39. TelstraClear has requested:

(a) that jitter not exceed latency; and

(b) delay variation of less than mean packet latency.

40. This request is unclear and internally inconsistent. "Jitter" and "delay variation" are terms used to define the same performance attribute. TelstraClear therefore appears to have requested two different service specifications for the same performance attribute.

41. Telecom understands the terms "delay variation" and "jitter" to refer to the difference in packet transfer time between the minimum absolute Packet Transfer Delay and the maximum absolute Packet Transfer Delay of any packet over a 1 minute measurement interval for a stream of packets that are all the same size but in the presence of 1472 byte packets with randomly varying arrival times. This definition is the 2 point definition used in ITU-T Y1541 and Appendix II of ITU-T Y1540. It is also the third type packet selection function discussed in IETF RFC3393 section 2.5.

42. TelstraClear's request is therefore unclear as it fails to specify the following parameters:

(a) the points between which the specification is to be measured;

(b) the time interval over which the specification is to be measured;

(c) the size of packet to be used in the measurement;

(d) the type and characteristics of any rate shaping being applied to the service;

(e) the specific conditions under which the measurement is to be undertaken including the random arrival of other packets; and

(f) the percentage of time for which the measure is to be achieved.

Latency

43. TelstraClear has requested latency of less than 50ms.

44. Telecom understands the term "latency" to refer to the absolute time measured from the time the first bit of an IP packet is passed to the source (ingress) User Network Interface to the time the last bit of the packet is transmitted by the destination (egress) User Network Interface towards the user's equipment or the host. Packet Transfer Delay is commonly referred to as Latency. Ref ITU-T Y1540 and Y1541.

45. TelstraClear's request is therefore unclear as it fails to specify the following parameters:

(a) the points between which the specification is to be measured;

(b) the size of packet to be used in the measurement;

(c) the application of interleaving; and

(d) the percentage of time for which the measure is to be achieved.

Packet loss

46. TelstraClear has requested a minimum service specification of packet loss of less than 0.1%.

47. Telecom understands the term "packet loss" to refer to the ratio of the total lost IP packet outcomes to the total transmitted IP packets in a population of interest (ITU Rec Y1540). Lost packets are defined as those discarded or those severely delayed in relation to the service contract. The population of interest is defined as the sample of packets measured over a 15 minute interval for all flow bandwidths above 64kbit/s and on 30 minute intervals for all bandwidth of 64kbit/s and below. The populations are sampled regularly and averaged over a period of one month.

48. TelstraClear's request is therefore unclear as it fails to specify the following parameters:

    (a) the points between which the specification is to be measured;

    (b) the time interval over which the specification is to be measured;

    (c) the size of packet to be used in the measurement;

    (d) the type and characteristics of any rate shaping being applied to the service; and

    (e) the percentage of time for which the measure is to be achieved.

Contention Ratio from DSLAM to Core

49. TelstraClear has requested a contention ratio from the DSLAM to the core of 1:20.

50. There are many different ways in which the term "contention ratio" can be defined.

51. Telecom understands the term "contention ratio" to refer to the number of end-user services of defined peak bandwidth for each megabit per second of allocated bandwidth between the DSLAM and the first ATM switch during the peak busy hour of any day. The peak busy hour is normally defined as the busiest hour of a given year and is typically adjusted annually based on actual measurement.

52. TelstraClear's request is therefore unclear as it fails to specify the following parameters:

    (a) the reference point for the contention. For example, is it the number of ports used, the number of customers or the number of active customers? If it is the number of active customers, is it during the peak busy hour, on a weekly basis, a monthly basis, or annual basis;

    (b) the type and characteristics of any rate shaping applied to the services; and

    (c) the percentage of time for which the measure is to be achieved.

53. In addition, Telecom notes that latency, delay variation, packet loss and the contention ratio from DSLAM to the Core are all interrelated. For example, it would be possible to reduce delay variation by reducing the size of the buffer Telecom uses for shaping. The trade off would be increased packet loss. Telecom considers that end-users would prefer a regular slight delay when sending or receiving data such as a web page, rather than sometimes waiting for the retransmission of a portion of a page that is missing due to packet loss. This approach is reflected in Telecom's

Wholesale Services Agreement and has been accepted by 16 wholesale customers who have signed that agreement.

54. Given the asymmetry inherent in an ADSL service, any form of minimum service specifications relating to latency, delay variation, packet loss and the contention ratio from DSLAM to Core requested by TelstraClear should be separately defined for both upstream and downstream traffic.

Upstream Traffic – Telecom's Comments on Table 1 Minimum Service Specifications

55. The service specifications requested by TelstraClear need to be considered separately for both upstream and downstream data traffic.

56. Telecom submits that, applying Telecom's understanding of the terms latency, delay variation, packet loss and contention ratio from DSLAM to Core it is not technically possible, as a matter of physics, for Telecom to satisfy the minimum service specifications requested by TelstraClear in relation to upstream data traffic, given the maximum upstream throughput rate of 128 kbps applicable to the designated bitstream service.

57. TelstraClear either:

(a) does not understand the underlying physics; or

(b) without overtly requesting it, is seeking to obtain a wholesale bitstream service with an upstream throughput rate of more than 128 kbps. Such a request is contrary to the additional limits on access principles applicable to the designated bitstream service, which provide that the service requires a maximum upstream throughput rate of 128 kbps for data traffic sent from the end-user.

58. These points are elaborated on below.

Latency

59. It is not technically possible, as a matter of physics, for Telecom to achieve latency of less than 50 ms in relation to upstream data traffic sent from the end-user of an ADSL service with a 128 kbps upstream throughput rate.

60. In general terms, there are three sources of latency within Telecom's network:

(a) latency caused by interleaving – this is approximately 28 ms;

(b) latency caused by the time taken by the packet to traverse Telecom's network – this varies depending upon the packet size (IP packets generally range in size from 32 bytes to 1472 bytes); and

(c) nominal latency caused by various processes processing information – this is approximately 5 ms.

61. For a 32 byte IP packet, the minimum one way upstream latency experienced from the customer modem UNI to the first ATM switch NNI will be:

> *28 ms + 1.6 ms + 5 ms = 34.6 ms.*
> *(where 1.6 ms is the time taken for the packet to transverse Telecom's network)*

Although this is within the 50 ms requested by TelstraClear, as the packet size increases it becomes impossible for Telecom to satisfy this requirement.

62. For a 1472 byte IP packet (the size of packet typically used to carry an email attachment), the minimum one way upstream latency experienced from the customer modem UNI to the first ATM switch NNI will be:

> *28 ms + 73.6 ms + 5 ms = 106.6 ms.*
> *(where 73.6 ms is the time taken for the packet to transverse Telecom's network)*

63. This result is more than twice the 50 ms latency requested by TelstraClear. Even if latency caused by interleaving and nominal latency are ignored, the latency caused by the time the packet takes to traverse Telecom's network is substantially in excess of the 50 ms requested by TelstraClear.

64. Hence the minimum one way upstream packet latency will lie within the range of 35-107 ms for the most likely range of packet sizes to be carried across the wholesale bitstream service.

65. There are only two ways Telecom could achieve latency of less than 50 ms for the majority of packets carried over its network. These are:

(a) by limiting the packet size - Telecom assumes that this is not what TelstraClear is requesting given that 1472 bytes is the standard packet size generated by a vast number of applications including Microsoft Outlook; and

(b) by increasing the upstream throughput above 128 kbps - this is something that TelstraClear cannot request as it is clearly outside the limits on access principles applicable to the designated bitstream service.

Delay Variation

66. It is not technically possible for Telecom, as a matter of physics, to achieve delay variation of less than mean packet delay in relation to upstream data traffic sent from the end-user of an ADSL service with a 128 kbps upstream throughput rate.

67. This point is illustrated by the following example:

68. Applying Telecom's definition of the term delay variation, the one way delay variation for 99.9% of samples will lie between 0ms and a maximum of (73.6*3) ms + 500 ms = 720.8 ms.

*Where (73.6*3) assumes that up to three 1472 byte packets could be transmitted before the next short packet (this is three standard deviations away from the mean) and 500 ms represents the size of the buffer used in shaping the wholesale and equivalent bitstream services. It would be possible to reduce delay variation by reducing the 500 ms buffer and accepting increased packet loss as the trade off. However, even ignoring the 500 ms buffer, delay variation of 73.6 x 3 is still outside TelstraClear's requirement that delay variation be less than mean packet latency.*

69. Based on this analysis, the absolute maximum one way packet transfer delay will be 827.4 ms for a 1472 byte upstream packet.

70. The absolute variation in one way packet transfer delay can vary from 34.6 ms for a 32 byte packet under uncongested conditions through to 827.4 ms for a 1472 byte packet under congested conditions (99.9% of samples).

Packet Loss Ratio and Contention Ratio

71. It is technically possible for Telecom to achieve packet loss of less than 0.1% in relation to upstream data traffic sent from the end-user of an ADSL service with a 128 kbps upstream throughput rate. However, the conditions under which this measure is to be achieved need to be carefully defined. For example, with a contention ratio of 1:20 and delay variation of less than mean packet latency, the requirement for packet loss of less than 0.1% should be achieved for 95% of the time. By contrast, if the requirement is to achieve 0.1% packet loss for 99.9% of the time then either the delay buffer will need to be increased or the contention ratio decreased to achieve this level of performance.

Downstream Traffic – Telecom's Comments on Table 1 Service Specifications

72. If Telecom's definitions are applied to the minimum service specifications requested by TelstraClear, it is likely that in many circumstances it will be technically possible for Telecom to achieve those minimum service specifications in relation to downstream data traffic.

73. There are however two principal exceptions to this:

(a) latency of less than 50 ms could only be achieved for downstream throughput rates above 512 kbps; and

(b) delay variation less than mean packet delay could not be achieved for any bitrate unless the rate shaping buffers used were reduced to below 50 ms. If the rate shaping buffers were reduced in this manner with a contention ratio of 1:20, packet loss would exceed 0.1% for more than 10% of the time.

74. Telecom notes minimum service specifications such as those requested by TelstraClear are not provided by Telecom in relation to its commercial UBS or JetStream services. If Telecom was required to meet the minimum service specifications requested by TelstraClear it would have to provision significantly more network resources to the wholesale bitstream service. This would significantly increase the cost of the wholesale bitstream service. The resulting retail price for the service may be beyond the reach of most residential and SME end-users.

75. In addition, Telecom notes that TelstraClear has not defined how the minimum service specifications will be measured. Telecom typically measures the performance attributes of its JetStream services by using one reference customer on a sample of DSLAMs. Any requirement for Telecom to measure the minimum service specifications requested by TelstraClear on any basis other than the basis it currently uses to measure the performance attributes of its commercial UBS and JetStream services would significantly increase the cost of the designated bitstream service.

Interleaving

76. Telecom understands the term "interleaving" to refer to the rearrangement of parts of the DSL line signal so that they alternate in a different known sequence so that when restored the line signal retains its integrity under conditions of injected line noise. Interleaving works in conjunction with information encoding algorithms that can restore segments of the line signal that have been impacted by noise. In this manner the line signal is greatly enhanced in terms of its immunity to noise. However, the compromise for the application of interleaving is the insertion of some delay ranging from around 15 to 30 ms depending on DSLAM type and line speed. Interleaving is applied to all Telecom ADSL connections in service today.

77. Telecom submits that it is not technically or operationally practicable having regard to Telecom's network for Telecom to enable TelstraClear to elect not to use interleaving. All of Telecom's ADSL data services use interleaving. Telecom could not enable TelstraClear to turn off interleaving without conducting extensive trials to assess the implications of this on the particular copper line connecting the end-user to the DLSAM and Telecom's network as a whole. If the Commission required Telecom to provide TelstraClear with the option to turn interleaving off, this would significantly increase the operational complexity of the wholesale bitstream service.

QUESTIONS FOR TELSTRACLEAR ON THE ANNEX 1 MINIMUM SERVICE SPECIFICATIONS

78. Telecom sets out below a list of questions which it considers TelstraClear must answer before the Commission or Telecom can properly understand what service TelstraClear is requesting and respond appropriately.

General Questions

(a) Given the asymmetry inherent in an ADSL service, any form of minimum service specifications relating to latency, delay variation, packet loss and the contention ratio from DSLAM to Core requested by TelstraClear should be separately defined for both upstream and downstream traffic. Do the minimum service specifications requested by TelstraClear refer to the upstream or downstream throughput rate?

(b) How does TelstraClear require the minimum performance specifications to be measured (eg on a per customer basis or using a sample customer on each DSLAM)?

Jitter and Delay Variation

(a) How does TelstraClear define "jitter" and "delay variation"?

(b) What does TelstraClear mean by "jitter" as compared with "delay variation"?

(c) Between which point is the specification to be measured?

(d) What is the time interval over which the specification is to be measured?

(e) What is the size of the packet to be used in the measurement?

(f) What type and configuration of rate shaping is TelstraClear requesting?

(g) What are the specific conditions under which the measurement is to be undertaken (including the random arrival of other packets)?

(h) For what percentage of time is the measure to be achieved?

Latency

(a) How does TelstraClear define "latency"?

(b) Between which point is the specification to be measured?

(c) What is the size of the packet to be used in the measurement?

(d) Does the requirement assume interleaving is on?

(e) For what percentage of time is the measure to be achieved?

Packet Loss

(a) How does TelstraClear define "packet loss"?

(b) Between which point is the specification is to be measured?

(c) What is the time interval over which the specification is to be measured?

(d) For what percentage of time is the measure to be achieved?

(e) What is the size of the packet to be used in the measurement?

(f) What type and configuration of rate shaping is TelstraClear requesting?

Contention Ratio from DSLAM to Core

(a) How does TelstraClear define "Contention ratio from DSLAM to Core"?

(b) What type and configuration of rate shaping is TelstraClear requesting?

(c) For what percentage of time is the measure to be achieved?

1.2 Service levels

The wholesale bitstream service shall be provided in accordance with the following service levels:

Table 2: Service Levels

	Service Level	Quantum
a	Service level for confirmation of new service requests and transferral requests	No more than 4 working hours from the receipt of a valid service request
b	Service level for implementation of new service requests and transferral requests	No more than 2 working days from the receipt of a valid service request
c	Service level for confirmation of requests for moves, adds and changes	No more than 4 working hours from the receipt of a valid service request
d	Service level for implementation of requests for moves, adds and changes	No more than 2 working days from the receipt of a valid service request
e	Service availability	Each individual wholesale bitstream service must not be less than 99.9% measured on a rolling 30 day period
f	Service level for confirmation of fault notifications	Fault acknowledgement within 1 hour of the fault notification by TelstraClear
g	Service level for fault repairs	Fault response (ie work on repairing must commence) within 6 hours of the fault notification by TelstraClear
h	Service level for notification of fault clearance	Service must be restored within 24 hours of the fault notification by TelstraClear

1.3 Telecom will provide the following rebates for failing to meet the service levels listed as (a) to (e) in table 2:

Table 3: Rebates

Actual performance against service level	Rebate against total monthly access charge for services
80-90%	5 %
70-79%	10%
50-69%	15%
Less than 50%	30%

1.4 Telecom's performance against each service level will be measured a monthly basis and any rebates will be applied against each individual service in the next following month:

1.5 Telecom will provide the following rebates for service outages (including for individual service faults) in an individual wholesale bitstream service:

Table 4: Individual Line Outages

Cumulative outage period in each 30 day period	Rebate against monthly access charge
4-12 hours	10%
13-24 hours	20%
25-40 hours	50%
41 hours or more	100%

1.6 The rebate will be applied against the access charge for the relevant service in the next following month.

1.7 Telecom will provide TelstraClear with quarterly reports on the following metrics (measured monthly) for the wholesale bitstream service and its own retail JetStream services:

a) mean packet transfer delay;

b) delay variance experience;

c) packet loss;

d) results for the service levels listed as (a) to (h) in table 2;

e) the number and duration of planned outages; and

f) the number and duration of unplanned outages.

79. The service levels, and rebates for failing to meet those service levels, requested by TelstraClear are not operationally practicable.

80. Telecom provides separate comments on the reporting requirements sought by TelstraClear in paragraph 1.7 of Annex 1 at the end of this section of the submissions.

81. Telecom does not provide minimum service specifications, service levels, rebates, individual line outages of the kind requested by TelstraClear in relation to its JetStream or commercial UBS services.

82. The service levels requested by TelstraClear are similar to those Telecom provides in relation to Constant Bit Rate ("CBR") point to point business grade data services such as Frame Relay, Dedicated Data Service, Megalink and ATM Committed Bit Rate services. All of these services are intended to deliver mission critical applications, which require real-time network performance or availability, to larger businesses or those with a

specific service need. These services cost upwards of $600 per month. For example, the wholesale price for a Dedicated (CBR) Unbundled Partial Circuit 128 kbps national service is $600 per month. Service Level Agreements including rebates are part of these services depending on the customer's requirements and the price charged. By comparison, Telecom's ADSL internet grade services are priced around $49.95 per month.

83. Appendix 5 of the Commerce Commission's final report of 22 December 2003 into LLU states:

> "The DSL service provider would commonly guarantee a number of network service level parameters, including:
>
> - service availability;
> - latency or average network response time;
> - mean and maximum time to repair; and
> - provisioning, maintenance and repair reporting.
>
> (clause 2, Technical Description)"

84. Appendix II of Telecom's UBS Service Guide (November 2004) specifically includes these requirements of Appendix 5 of the Commission's report in it. This guide and the Wholesale Services Agreement set out the terms and conditions appropriate to an internet grade service such as JetStream and the Wholesale Bitstream Service. What TelstraClear are seeking in Annex 1 of their application is well above these requirements which are reflected in Appendix II of Telecom's UBS Service User Guide. As an example, the management component of Telecom's Lanlink service, which a number of TelstraClear's requests are either close to or better than, carries a minimum cost of **[ ] TCNZRI** per customer end per month.

85. For the reporting requirements listed under paragraph 1.7 of Annex 1, Telecom makes the following further submissions:

(a) In relation to paragraph 1.7(a)-(c) (being reports on mean packet transfer delay, delay variance experience and packet loss), these again are not provided by Telecom for UBR internet-grade best-efforts services such as the Wholesale Bitstream Service. Telecom does not provide these services to itself for its JetStream UBR service.

(b) In relation to paragraph 1.7(d), Telecom does not provide the service levels listed as (a) to (h) in Table 2 of Annex 1.

(c) In relation to paragraph 1.7(e), Telecom already advises TelstraClear of the number and duration of planned outages in advance of such outages. As TelstraClear are provided with this information, additional quarterly reports are unnecessary.

(d) In relation to paragraph 1.7(f), Telecom advises TelstraClear of all unplanned outages through the abnormal events process by email

update. As TelstraClear are provided with this information, additional quarterly reports are unnecessary.

NON-PRICE TERMS FOR THE BACKHAUL SERVICE

86. We deal with each of the relevant non-price terms in relation to backhaul from paragraph 16.3 of TelstraClear's application in turn.

> **16.3(a) collocation for backhaul services (if required) should be provided on a co-mingled basis and TelstraClear employees and contractors should have access to the collocated equipment on Telecom's standard access and security procedures which apply to Telecom's own employees and contractors**

87. It is not reasonably operationally practicable having regard to its network for Telecom to provide the service requested by TelstraClear. Providing co-location for backhaul services on the basis as requested by TelstraClear may breach existing contractual obligations of confidentiality owed by Telecom to other customers.

88. TelstraClear is requesting that it be permitted to locate its equipment (such as switches and routers) on Telecom's premises. This is not necessary in order for TelstraClear to have access to Telecom's backhaul services. There are three options for TelstraClear in this respect:

(a) A commercial User Network Interface ("UNI"). This is a commercial ATM link between the Telecom exchange building and TelstraClear's premises. There is no reason for TelstraClear to have collocation of equipment at the Telecom exchange under this option as Telecom carries the backhaul service through to TelstraClear's premises.

(b) A hosted Network to Network Interface ("NNI"). Under this option Telecom provides a fibre optic cable which again terminates at TelstraClear's premises. Again there is no reason for TelstraClear to have collocation of equipment at the Telecom exchange as Telecom carries the backhaul service through to TelstraClear's premises.

(c) Shared-Cost NNI. Under this option, the handover between Telecom and TelstraClear is half way between the Telecom exchange building and TelstraClear's premises. Under this option Telecom and TelstraClear share the costs. There is no need for TelstraClear to collocate equipment at the Telecom exchange building since all that is needed is a cable connection with the Telecom exchange building through the footway box. To the extent that space is required in the Telecom exchange building for the provision of a Shared-Cost NNI Telecom will provide space in the designated Interconnect space for that exchange building. This is detailed in the NNI Establishment Guidelines document

which Telecom has recently prepared for consultation with the industry.

89. Telecom has consulted widely throughout the industry concerning delivery of UBS traffic.

90. To require Telecom to provide co-location services in these circumstances is unnecessary, would deprive retail customers for whom co-location is necessary from receiving this service, and effectively require Telecom to subsidise TelstraClear's points of presence.

91. In addition, for Telecom to provide space for collocation of equipment by TelstraClear, Telecom would need to expand some of its exchange buildings. This would incur further cost to Telecom. TelstraClear has not indicated that it would be prepared to meet such costs.

92. With respect to Telecom's existing contractual obligations, if TelstraClear's employees and contractors had access to the co-mingled equipment space at Telecom's sites, this would enable them to view the customer-specific equipment, and would potentially reveal information as to the nature and scope of business that the end-customer is transacting with Telecom. Telecom considers that this may place it at risk of breaching its existing legal duties to provide confidentiality to customers who install equipment on its sites and preserve their intellectual property rights.

16.3(b) backhaul services can be used, to the extent technically feasible, to carry aggregated traffic from the wholesale bitstream services and any other services TelstraClear acquires from Telecom, whether pursuant to a determination of the Commission or an agreement between the parties

93. Telecom will provide backhaul services to carry aggregated traffic from the designated wholesale bitstream service if required by TelstraClear, and considers Uncommitted Bit Rate (UBR) to be the appropriate ATM bearer service for the designated backhaul service.

94. However, as discussed in the section III, the designated backhaul service is to be used in conjunction with the designated bitstream service. It is not intended to be used to carry aggregated traffic from other services.

95. In any event, there are potential technical problems with using an aggregated UBR grade backhaul service for "any other service" that Telecom offers to TelstraClear. If necessary, Telecom can elaborate on those issues at a later date.

16.3(c) there should be no minimum number of PoPs required before TelstraClear is permitted to order backhaul services for individual routes to ESAs

96. This request is not reasonably operationally practicable having regard to Telecom's network and it also raises network security and safety issues.

97. As an initial point, Telecom notes that there must be a minimum of one NNI or else the service does not exist. Telecom therefore assumes that TelstraClear is seeking to avoid aggregate data caps which Telecom applies to its backhaul services. Under the terms sought by TelstraClear, Telecom would be required to accept the average per user throughput limit for all connections and at all handover points, regardless of whether backhaul is used at that handover point. Allowing TelstraClear to "unpick" these terms would permit them to face no limit on data throughput as part of an entry-level internet grade service.

98. If Telecom was required to provide the designated backhaul service in a manner that avoided aggregate limits on data throughput, this would create operational and safety issues for Telecom's network:

(a) Telecom has developed its network dimension plans based on end-user behaviour which is predictable, given that the end-user is subject to excess data charges should they consume additional bandwidth across Telecom's network. If TelstraClear were to be granted dispensation from any average limit per access line, Telecom would not then have any basis on which to adequately dimension the backhaul services it provides to its wholesale customers;

(b) Telecom would have no control of the data traffic over its links which would result in additional build costs to keep the service working;

(c) Telecom could not send cost signals to service providers who are consuming more than their share of a shared network infrastructure which others are paying for and sharing; and

(d) Telecom's network links may well be flooded resulting in its service degrading to the point where all customers lose the service.

16.3(d) Telecom should provide the backhaul services in accordance with the service levels rebate and reporting requirements specified in Annex 1

99. The level of service guarantees TelstraClear requires depart from the internet grade model for backhaul. Any service levels, rebates and reporting requirements should be consistent with a UBR grade of service.

Annex 1, para. 2.1 - A Gigabit Ethernet interface should be utilised, where technically feasible. Otherwise a shared NNI interface will be used

100. Telecom is currently able to provide a Gigabit Ethernet Interface in relation to its JetStream services as these services are delivered as layer 3 services. However, it is not reasonably technically and operationally practicable for Telecom to provide a Gigabit Ethernet Interface in relation to a layer 2 bitstream service for two primary reasons.

101. Firstly, Telecom provides backhaul services using ATM. An ATM service cannot connect to an Ethernet service without the use of switches to convert ATM into Ethernet. Telecom uses Riverstone Ethernet switches to deliver Ethernet services. These switches do not support “JUMBO FRAMES”, which would be required to deliver an Ethernet interface to an ATM-based backhaul service. Telecom does not have switches within its network that can be used to convert ATM into Ethernet for large volumes of customers, and has no near term plans to implement such switches.

102. TelstraClear's request suggests that Telecom is only required to provide a Gigabit Ethernet Interface "where technically feasible". The issue in relation to this point is that smaller switches are available to convert ATM into Ethernet for smaller numbers of customers (for instance a couple of thousand customers). TelstraClear may seek to argue that Telecom should be required to purchase large numbers of these smaller switches on the basis that this is technically feasible. However, this would be operationally impractical since the prime reason for having a Gigabit Ethernet connection is to replace multiple connections of lower bandwidth. It is not practical to replace multiple ATM connections with multiple 10/100 Mbps Ethernet connections.

103. The second reason relates to operational practicability. Telecom's JetStream and commercial UBS services are a PPPoA (Point to Point Protocol over ATM) services and not a PPPoE (Point to Point Protocol over Ethernet). End customers' computer modems are set up on a PPPoA basis which links with the DSLAM. If a Gigabit Ethernet interface were used, then end customers would need to have their modem settings altered to a PPPoE.

104. A significant amount of the discussions with ISPs and carriers around the development of the UBS service focused on ensuring that the commercial UBS service used **identical** modem settings to the retail JetStream service. This was in order to avoid the requirement to have a site visit to change an end-users' modem parameters should they switch from a JetStream service to a commercial UBS service. Telecom does not currently offer PPoE services.

> **Annex 1, para. 2.2 - Telecom shall provide the backhaul service at service levels (including rebates or compensation for failure to meet service levels) which are no less favourable to TelstraClear than the standard service levels and associated terms (including rebates or compensation for failure to meet service levels) on which Telecom supplies ATM services to end-users or backhaul to wholesale customers (whichever is more favourable to TelstraClear).**

105. Telecom provides a range of ATM services with different quality of service characteristics. Many of these ATM services are tailored to the needs of large corporate users and have service levels and pricing structure commensurate with this. The service levels associated with these high end ATM services are inconsistent with the designated backhaul service which is intended to be used in conjunction with the internet grade designated bitstream service.

OTHER NON-PRICE TERMS

106. Paragraph 16.5 of TelstraClear's application requests:

> **The other non-price terms of Decision 497 (the Wholesale Determination) should apply to the supply of the wholesale bitstream service and the backhaul service.**

107. Telecom considers that the other non-price terms should be on the same basis as the Wholesale Services Agreement it has with 16 other ISPs.

APPENDIX B

Broadband Network Competition

Competitor	Network	Plan	Speed	Cost	Data Limit	Coverage
TCL	Owner	Paradise High Speed 1G	2Mbps	$39.95	1G	Greater Wellington and Christchurch
		Paradise High Speed 5G	2Mbps	$59.95	5G	Greater Wellington and Christchurch
		Paradise Light Speed 10G	10Mbps	$139.95	10G	Greater Wellington and Christchurch
Woosh	Owner	Woosh Everyday	>256	$54.95	10G	Greater Auckland, Metro Wellington and Christchurch
		Woosh Express 1	>256	$39.95	1G	Greater Auckland, Metro Wellington and Christchurch
Wired Country	Owner/Wholesaler					
Pacific.net	Owner	Lightning local	>256	$70.00	Free local	Greater Nelson, Tasman, Motueka, Golden Bay, Westport, Blenheim. Marlborough Sounds coverage due early 05
		Lightning national	>256	$110.00	Free local; 2G national	Greater Nelson, Tasman, Motueka, Golden Bay, Westport, Blenheim. Marlborough Sounds coverage due early 06
		Lightning 2.6GB+	>256	$134.00	Free local, 2G national, 600Mb international	Greater Nelson, Tasman, Motueka, Golden Bay, Westport, Blenheim. Marlborough Sounds coverage due early 07
ICONZ	BCL Reseller	X1	256	$99.00	1G	New Zealand wide
		X2	256	$120.00	5G	New Zealand wide
		X3	256	$150.00	10G	New Zealand wide
		X4	256	$211.00	1G	New Zealand wide
		X5	256	$232.00	5G	New Zealand wide
		X6	256	$262.00	10G	New Zealand wide
	CityLink reseller	Connect 1	4Mbps	$199.00	1G	Wellington and Auckland metro
		Connect 5	4Mbps	$249.00	5G	Wellington and Auckland metro
		Connect 10	4Mbps	$349.00	10G	Wellington and Auckland metro
BCL	Wholesaler					
CityLink	Owner	CafeNet	>256	Pre-pay	pay as you go	Wellington CBD
		Connect 4 1G	4Mbps	$199.00	1G	Wellington and Auckland metro
		Connect 4 5G	4Mbps	$249.00	5G	Wellington and Auckland metro
		Connect 4 10G	4Mbps	$349.00	10G	Wellington and Auckland metro
Actrix	CityLink reseller	FibreLite 1	4Mbps	$199.00	1G	Wellington and Auckland metro
		FibreLite 5	4Mbps	$249.00	5G	Wellington and Auckland metro
		FibreLite 10	4Mbps	$349.00	10G	Wellington and Auckland metro
		FibreLite 20	4Mbps	$649.00	20G	Wellington and Auckland metro
Gasp Wireless	Owner	Wireless 3-5	256	$250.00	Unlimited	Auckland CBD, Lower Hutt
		Wirelss 5-10	512	$450.00	Unlimited	Auckland CBD, Lower Hutt
		Wireless 20	1Mbps	$800.00	Unlimited	Auckland CBD, Lower Hutt
		GASP unlimited residential	256	$70.00	Unlimited	Auckland CBD, Lower Hutt
		GASP everyday residential	256	$40.00	10G national, 1.5G international	Auckland CBD, Lower Hutt
South.Net	Owner	Internet 800	>256	$79.95	800Mb	Invercargill, Queenstown
WISE	Owner	Residential	>3Mbps	$73.13	Flat rate	Wairarapa - exact reach uncertain
		Business 1	>3Mbps	$73.12	1-2G	Wairarapa - exact reach uncertain
		Business 2	>3Mbps	$135.00	2G	Wairarapa - exact reach uncertain
		Business 3	>3Mbps	$281.25	3G	Wairarapa - exact reach uncertain
		Business 4	>3Mbps	$437.50	4-5G	Wairarapa - exact reach uncertain
Vector	Owner/Wholesaler					
Inspire.net	Owner	MetroLAN Wireless 5	1Mbps	$112.50	5G	Palmerston North

		MetroLAN Wireless 10	1Mbps	$225.00	10G	Palmerston North
		MetroLAN Wireless 20	1Mbps	$337.50	20G	Palmerston North
		MetroLAN Wireless Lite	512	$69.96	10G	Palmerston North
	BCL Reseller	Extend 256	256	$99.00	5G	New Zealand wide
	BCL Reseller	Extend 512	512	$129.00	5G	New Zealand wide
EOL	Owner	EOLWireless	>2Mbps	$96.12	1G	Greater Tauranga
DTS	CityLink reseller	Connect 4 1G	4Mbps	$199.00	1G	Wellington and Auckland metro
		Connect 4 5G	4Mbps	$249.00	5G	Wellington and Auckland metro
		Connect 4 10G	4Mbps	$349.00	10G	Wellington and Auckland metro
ACSOnline	CityLink reseller	Lite	4Mbps	$190.00	1G	Wellington and Auckland metro
		Standard	4Mbps	$240.00	5G	Wellington and Auckland metro
		Ultimate	4Mbps	$340.00	10G	Wellington and Auckland metro
Xtreme Networks	CityLink reseller	Connect 4 5G	4Mbps	$199.00	5G	Wellington and Auckland metro
		Connect 4 10G	4Mbps	$299.00	10G	Wellington and Auckland metro
Ihug	Owner	Ultra Fast 1000	1Mbps	$44.95	1G	New Zealand wide
		Ultra Fast 2000	1Mbps	$59.95	2G	New Zealand wide
		Ultra Fast 3000	1Mbps	$79.95	3G	New Zealand wide
	Wired Country reseller	Bband 256	256	$44.95	6.5G	Auckland, Pukekohe, Hamilton
		Bband 1000	1Mbps	$64.95	10G	Auckland, Pukekohe, Hamilton
		Bband 2000	2Mbps	$114.95	20G	Auckland, Pukekohe, Hamilton
Cyberscape	Wired Country reseller	Cyber Optic 10	>256	$150.00	?	Pukekohe
		Cyber Wire 10	>256	$200.00	?	Pukekohe
Packing shed	Wired Country reseller	PS Wired Home 2000	256	$45.00	2G	Pukekohe
		PS Wired Home 10000	256	$60.00	10G	Pukekohe
		PS Wired Home 2000	1Mbps	$60.00	2G	Pukekohe
		PS Wired Home 10000	1Mbps	$75.00	10G	Pukekohe
		PS Wired 2000	256	$75.00	2G	Pukekohe
		PS Wired 6000	256	$120.00	6G	Pukekohe
		PS Wired 2000	1Mbps	$125.00	2G	Pukekohe
		PS Wired 6000	1Mbps	$200.00	6G	Pukekohe
		PS Wired 10000	1Mbps	$300.00	10G	Pukekohe
Wave Internet	Wired Country reseller	600	256	$78.00	600Mb	Auckland, Pukekohe, Hamilton
		1500	256	$123.00	1.5G	Auckland, Pukekohe, Hamilton
		3000	256	$194.00	3G	Auckland, Pukekohe, Hamilton
		5000	256	$233.00	5G	Auckland, Pukekohe, Hamilton
		10000	256	$455.00	10G	Auckland, Pukekohe, Hamilton
		600	1Mbps	$118.00	600Mb	Auckland, Pukekohe, Hamilton
		1500	1Mbps	$163.00	1.5G	Auckland, Pukekohe, Hamilton
		3000	1Mbps	$234.00	3G	Auckland, Pukekohe, Hamilton
		5000	1Mbps	$278.00	5G	Auckland, Pukekohe, Hamilton
		10000	1Mbps	$495.00	10G	Auckland, Pukekohe, Hamilton
		600	2Mbps	$148.00	600Mb	Auckland, Pukekohe, Hamilton
		1500	2Mbps	$193.00	1.5G	Auckland, Pukekohe, Hamilton
		3000	2Mbps	$264.00	3G	Auckland, Pukekohe, Hamilton
		5000	2Mbps	$308.00	5G	Auckland, Pukekohe, Hamilton
		10000	2Mbps	$525.00	10G	Auckland, Pukekohe, Hamilton
Watch Dog	Wired Country reseller	256	256	$39.95	1G	Auckland, Pukekohe, Hamilton
		256 (flat rate)	256	$54.95	Flat rate	Auckland, Pukekohe, Hamilton
		Premium 1	1Mbps	$69.95	2G	Auckland, Pukekohe, Hamilton
		Premium 1 flat rate	1Mbps	$99.95	Flat rate	Auckland, Pukekohe, Hamilton
		Premium 2	2Mbps	$99.95	2G	Auckland, Pukekohe, Hamilton
		Premium 2 flat rate	2Mbps	$149.00	Flat rate	Auckland, Pukekohe, Hamilton
		Corporate 1G	256	$129.00	1G	Auckland, Pukekohe, Hamilton
		Corporate 256	256	$199.00	Flat rate	Auckland, Pukekohe, Hamilton

		Corporate 1	1Mbps	$199.00	1G	Auckland, Pukekohe, Hamilton
		Corporate 5	1Mbps	$299.00	5G	Auckland, Pukekohe, Hamilton
		campus unlimited	1Mbps	$399.00	Flat rate	Auckland, Pukekohe, Hamilton
		campus unlimited secondary	1Mbps	$699.00	Flat rate	Auckland, Pukekohe, Hamilton
		Corproate 2 1G	2Mbps	$249.00	1`G	Auckland, Pukekohe, Hamilton
		Corporate 2 5G	2Mbps	$349.00	5G	Auckland, Pukekohe, Hamilton
		Corproate 2 10G	2Mbps	$499.00	10G	Auckland, Pukekohe, Hamilton
		Corporate 2 20G	2Mbps	$799.00	20G	Auckland, Pukekohe, Hamilton
		Corporate 5 5G	5Mbps	$599.00	5G	Auckland, Pukekohe, Hamilton
		Corproate 5 10G	5Mbps	$749.00	10G	Auckland, Pukekohe, Hamilton
		Corporate 5 20	5Mbps	$999.00	20G	Auckland, Pukekohe, Hamilton
Ezysurf	Wired Country reseller	Ezywireless 256 flat rate	256	$36.25	200Mb	Auckland, Pukekohe, Hamilton
		Ezywireless 256 5G	256	$55.00	5G	Auckland, Pukekohe, Hamilton
		Ezywireless 1 10G	1Mbps	$99.00	10G	Auckland, Pukekohe, Hamilton
		Ezywireless 2 20G	2Mbps	$109.00	20G	Auckland, Pukekohe, Hamilton
PC Connect	Wired Country reseller	MegaSurf	256	$49.95	flat rate	Auckland, Pukekohe, Hamilton
Worldnet	Wired Country reseller	Megapass 256	256	$59.00	Flat rate	Auckland, Pukekohe, Hamilton
		Megapass 1M	1M	$99.00	Flat rate	Auckland, Pukekohe, Hamilton
		Megapass 2M	2M	$149.00	Flat rate	Auckland, Pukekohe, Hamilton
		Megapass 256 Business	256	$99.00	Flat rate	Auckland, Pukekohe, Hamilton
		Megapass 1M Business	1M	$149.00	Flat rate	Auckland, Pukekohe, Hamilton
		Megapass 2M Business	2M	$199.00	Flat rate	Auckland, Pukekohe, Hamilton