

Submission on Draft Determination in Section 30R review of Chorus' Unbundled Bitstream Access service

29 November 2016



**8 out of 10 homes and businesses
around the country can now get VDSL**

OUR SUBMISSION

Introduction and summary

1. We offer our comments on the Commerce Commission's (**Commission**) *Section 30R review of Chorus' Unbundled Bitstream Access Service Draft Determination (Draft Determination)*, released on 9 November 2016.
2. We support the overall direction of the Draft Determination. The Commission's proposals for the UBA STD generally strike a pragmatic balance in the context of an industry in the middle of a complex transition. In particular, we support the focus on network utilisation¹ as a significant and positive evolution for the UBA STD, reflecting how we manage the network in practice to meet increasing customer demand for high quality broadband.
3. Given our essential agreement with the outcomes of the Commission's review, we focus our submission on targeted improvements to the Commission's proposed changes to the UBA STD, to ensure those changes best promote the objectives of the service. We do not dwell on those areas where we continue to disagree with the Commission's framework or where we think the Commission could have taken a less prescriptive approach.

Our vision for better broadband

4. Our vision is to enable better broadband for all New Zealanders to maximise the potential economic and social benefits from full inclusion in the online future. We are aligned with the Government's long term vision for:

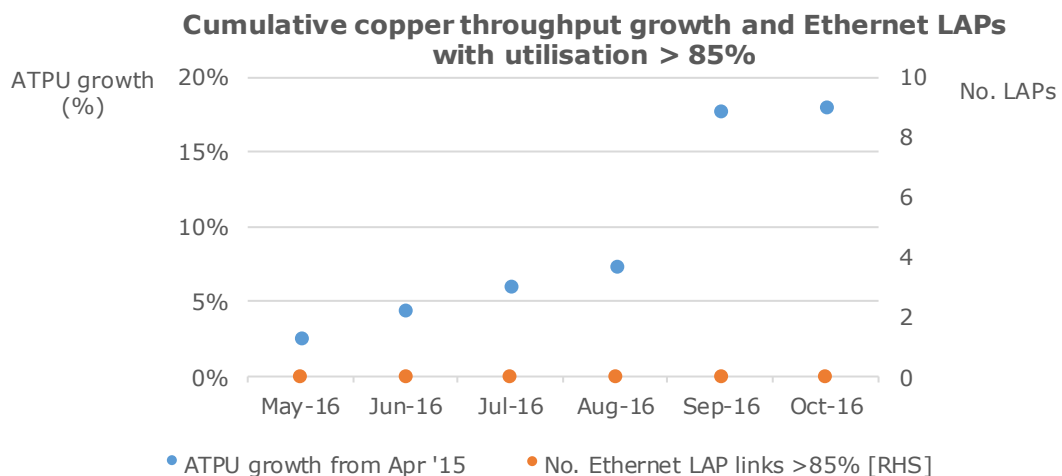
"A vibrant communications environment that provides high quality and affordable services for all New Zealanders, and enables our economy to grow, innovate or compete in a dynamic global environment."
5. High quality broadband is the fourth utility – an essential service for how New Zealanders work, live, learn and play in an increasingly digital environment. The Government's consultation on a new utility style framework for regulating fixed access acknowledges this.
6. Generational change is happening. The initial ultra-fast fibre to the home initiative – which will see UFB rolled out to 75% of the country – is well on track. The initial rural broadband initiative is complete. For our part, this saw an extension of the fibre to the cabinet programme and over 100,000 rural lines improved. And, we are now participating in the Government's tender process to extend future proofed fibre to more New Zealand homes and businesses.
7. For the UBA service, we think the Commission is right to focus on defining a "fit for purpose" service capable of supporting retail competition for services suitable for general internet use. The preferred approach may be different for other services, such as a fibre product set, where greater differentiation at the wholesale level is likely to be appropriate.

8. We have been improving copper broadband to keep pace with demand not only when supported by Government funding but also on our own initiative in the absence of specific regulatory requirements – and what our customers are experiencing is high quality, resilient broadband:
- The average broadband connection speed across the country for copper has nearly doubled over the last four years.
 - Faster VDSL copper broadband is available to more people – around 80% of lines following the band plan change.
 - Dynamic line management is in place for VDSL which means improved download speeds and line stability for consumers.
 - At wholesale, faster VDSL is the same price as ADSL.
 - Demand for bandwidth has seen average throughput increase nearly tenfold from five years ago. We are continuing to invest to meet that growth with a “no congestion” philosophy – the vast majority of consumers experience a congestion free broadband network.
 - We have upgraded hundreds of ATM fed cabinets serving thousands of ADSL1 connections.
 - We intend to upgrade more cabinets following the recent completion of RBI – we are part-way through a Chorus initiated cabinet upgrade programme that will be completed by the end of the year and improve service for around 4,500 broadband consumers (reducing the number of consumers on the ATM network by a quarter). And, further investment in this area is potentially within the scope of the Government’s RBI2 tender process.
 - The number of broadband waiters has decreased by around 90%.
 - We have put in place a new outages website displaying unplanned outage information across both our fibre and copper network.²
9. We’ve also invested to meet bandwidth growth. In the year to June 2016, the average throughput per user grew from 440kbps to 670kbps across both copper and fibre – a 52% increase.

¹ As defined in Appendix C: Suggested changes to the UBA STD.

² <https://outages.chorus.co.nz/>.

10. The demand for bandwidth continues to grow. The average throughput per user is now 753kbps. Over the last 6 months, the average throughput per user for copper alone grew another 18%. Despite that continued growth, for the vast majority of our customers (i.e. those on Ethernet fibre-fed LAP links), we have delivered broadband over an uncongested network. As the following graph illustrates, no Ethernet fibre-based LAP has exceeded the proposed 95% utilisation limit, or the proposed 85% threshold for reporting upgrade plans.



11. This evidence supports the Commission's assessment that the general commercial practice is to plan for investment prior to utilisation reaching 85% in order to avoid congestion.

An industry in transition

12. At the same time, it is important to recognise the complexity of the transitional time the industry is in. It is important that the review be sensitive to how the Commission's decisions may impact investment decisions in the relevant markets. We think the Draft Determination largely does this.
13. The context for this review includes:
- The once in a generation migration of customers to a new technology, fibre, as the primary platform for broadband services in New Zealand, supported by the Government. The Government is currently considering the extension of the ultra-fast broadband, through the UFB2 initiative.
 - The migration of copper service capability from shared systems to independent Chorus capability and Spark's adoption of copper channel systems, in the face of uncertainty as to the efficiency of that investment in the context of customer migration.
 - The completion of RBI, which extended broadband services to rural, hard to reach areas beyond the ultra-fast broadband networks being constructed by Chorus and other LFCs. Further investment in this area is potentially within the scope of the Government's RBI2 tender process.

- The Government's current consultation on moving to a new utility-style framework for regulating fixed access.

Focus on network utilisation

Utilisation standard

14. We support the proposal to focus on utilisation as the key metric to ensure investment in network performance that continues to meet customers' growing demand for high quality, resilient broadband. We are also comfortable with the inclusion of a utilisation standard in the service specification, and with the standards and reporting obligations proposed. We do think that a clear and confined mechanism for handling exceptions to the utilisation standard is required, to address issues outside of our reasonable control.
15. We think the 95% threshold is an appropriate setting for the utilisation standard. We use 95% as a maximum utilisation threshold for capacity planning and plan our investment so that this threshold is not reached. This threshold is a failsafe figure – under normal operating conditions, customers should never experience the network at this level. We agree with the Commission that a lower threshold could result in inefficient capacity in the network.
16. The Commission's proposal aligns with what our network engineers do in practice. We monitor and forecast link utilisation, generally starting planning for upgrades when it reaches around 60%. Once triggered, upgrades are typically completed in just a few weeks. Operationally, our network capacity planning processes are delivering results for consumers – right now 99.4% of our Ethernet fibre-based LAPs have utilisation below 50% and none of the almost 8000 LAPs exceed 80%. So, we agree with the Commission that 95% leaves sufficient headroom between normal operation and a breach of the STD.
17. It is possible that unanticipated events beyond our control could lead to the utilisation standard not being met. We think a clear and confined exception to the standards is required, so that we are not in technical breach of the STD if this occurs.

Non-fibre fed LAPs (including ATM-based services)

18. We endorse the approach taken by the Commission to exclude ATM-based and non-fibre based LAPs from the specified utilisation standard. There appears to be broad agreement between the Commission, Chorus and the RSPs that the STD should not require the upgrade of the ATM network.
19. The generational broadband infrastructure and services transformation we are currently undertaking is a journey. And part of that journey is the transition from legacy technologies that serve around 1% of our UBA customers. As mentioned above:
 - we have upgraded hundreds of ATM fed cabinets serving thousands of ADSL1 connections (including as part of RBI);

- we intend to upgrade more cabinets despite the recent completion of RBI – we are part-way through a cabinet upgrade programme that will reduce the number of consumers on the ATM network by a quarter; and
 - over 25% of these connections have a better UBA service available via the Ethernet network.
20. The remaining connections supported by non-fibre-fed LAPs are progressively more challenging, because of their location and the civil works involved. These are the areas that are potentially within the scope of the Government’s RBI2 tender process. The Government’s efforts and policy direction should not be pre-empted by the Commission requiring inefficient investment through the STD regime.
21. In endorsing the Commission’s pragmatic approach to this issue, it is important to be clear that we continue to disagree with the Commission’s view that it has the power to specify service standards that are not practical to achieve for the current network. However, given the Commission’s view in the Draft Determination that it will exclude ATM-based and non-fibre services from the utilisation requirement, we do not address this point in detail in this submission.

Reporting of LAP utilisation and investment plans

22. We support the Commission’s proposed monthly reporting of LAP utilisation and upgrade plans. We do think it is important that the Determination provide additional clarity on what is required to be disclosed.
23. We propose to report the following planning information for LAPs with utilisation greater than 85%:
- cabinet identification and location of approved upgrades; and
 - estimated completion date, with commentary where available.
24. We think it’s important to ensure that only approved investment plans are reported, to ensure that information provided is robust and to avoid disclosing commercially sensitive information. 85% is an appropriate threshold for reporting investment plans. A 10% buffer between upgrade planning and the maximum allowable utilisation level is also a reasonable and appropriate level to give the Commission and RSPs visibility of what work is planned to avoid the utilisation standard being breached. While we start to plan upgrades where links reach around 65% utilisation, if a link has reached 85% utilisation we are likely to have clear plans to upgrade. We are happy to share these.

25. The information we propose to report on is aligned with the information we already make available for ATM-based LAPs on our customer portal.³ We think this information will give the Commission and RSPs clarity of our confirmed investment plans in the network, while ensuring the reporting is proportionate to that goal and avoids disclosing commercially sensitive material.

Operational issues

26. We agree with the Commission that the procedures in clause 9 of the UBA General Terms are appropriate to address the operational concerns RSPs have raised in the s 30R review process to date. We take those concerns seriously, and are committed to working with RSPs in good faith to resolve them.
27. We have already started informal discussions with RSPs and have made good progress. For example, in the provisioning space we are considering steps to provide RSPs with better visibility of the status of home wiring, by providing splitter guidelines and a snapshot (on our customer portal) of where and when we have installed a splitter. And, in the restoration space, we have now launched an outages website, displaying unplanned outage information across both our fibre and copper network.
28. Following on from these discussions, we intend to give notice under clause 9.12 to conduct a review of specific proposals for increased transparency. We agree with the Commission's principles set out in the Draft Determination and will incorporate these into the terms of reference for the review.
29. Based on what has been proposed our current thinking is that there may be some merit in using TCF as the forum for this review. The TCF has established processes which can be a good way to facilitate multi-party engagement on technical matters. We think this can be done within the consultation framework proposed by the Commission.

Further detail on our proposals

30. Further detail on the specific, targeted changes we propose to the Draft Determination are set out in the Appendices to this submission:
 - **Appendix A** provides further information about our proposed refinements to the utilisation service standard, and associated reporting requirements;
 - **Appendix B** provides our views and proposed refinements on the other issues raised in the Draft Determination; and
 - **Appendix C** sets out our proposed changes to the STD.

³ See, for example: <https://customer.chorus.co.nz/network-upgrade-reports-rollout-addresses-and-network-shape-files/network-updates/reports-ufb-rbi-and-copper-service-availability>.

APPENDIX A: UTILISATION SERVICE STANDARD

31. In this Appendix, we set out our proposed refinements of the proposed amendments to the STD relating to the utilisation service standard. These are:
- proposed amendments to the definition of utilisation to increase clarity;
 - a proposed exception to the utilisation standard; and
 - a proposed approach to reporting utilisation and planning information.

Utilisation definition

32. We propose the following refinements to the definition of utilisation (see **Appendix C** for drafting detail):
- The proposed definition of utilisation in the STD refers to “the highest throughput during any 15 minute period divided by the capacity of the LAP”. For clarity, this should refer to the highest average throughput over a 15 minute period.
 - The throughput used should be the maximum of the upstream and downstream average throughput. This is what we monitor for network planning and is a more general definition than proposed.
33. For clarity, for a given LAP, the utilisation used for the monthly reporting, as indicated in Appendix L, would be the highest of all of the 15 minute averages in the month: i.e., the highest of 5760 averages for a 30 day month.

Exceptions to the utilisation standard

34. In general, investment in our network is managed so that we never reach 95% utilisation, save for unexpected circumstances. In these circumstances, certain links may reach 100% utilisation for limited periods of time. For example:
- *Diversity restoration.* When a failure event happens to part of the network, a restoration path may not have the full capacity of the main link. For example in the recent Kaikoura fibre cable failure. One restoration option was a 200 Mbps backup Ethernet Radio link. In that case the link would have potentially been congested, until the fibre was repaired;
 - *Large unexpected demand peaks in bandwidth.* Events could include unanticipated RSP promotions, unexpected 16K video capability launches and major event driven traffic to a specific location. These could temporarily overwhelm available network capacity until it is augmented;
 - *DOS (denial of service) attack.* This can cause massive traffic spikes, directed at a particular location, either maliciously or through customer equipment malfunction, which could congest parts of the network until resolved. Generally the industry will work together to restrict DOS attacks, while managing traffic capacity; and

- *Unexpected ISP testing.* An RSP testing network capacity by running high speed interfaces at full speed for extended periods can cause congestion.
35. Efficient network planning does not involve investing in capacity to handle capacity and demand changes from these sorts of exceptional events. To ensure the STD sets realistic targets, we think something needs to be included to acknowledge this. It is not appropriate that Chorus can be put in technical breach of the STD for situations outside of what we can reasonably plan for.
 36. Some of these situations may be addressed by the current general force majeure provisions in clause 20 of the STD. However, this is not fit for purpose for exceptions to the utilisation standard. A breach of the utilisation standard will likely be short-lived and only result in a degraded service (in some cases, by a relatively minor level) rather than a loss of service. The force majeure notification obligations will not always be practical or useful. And, the effect of the force majeure provisions – that the RSP is not required to pay for the service for the duration of the event – is likely to be disproportionate.
 37. We have taken account of the Commission’s view that a general “exceptional circumstances” exception to the utilisation standard doesn’t have sufficient certainty. We agree that the exception should be proportionate and as specific as possible. We therefore propose that the exception is limited to events beyond our reasonable control, and which Chorus could not have avoided by exercising reasonable care at a reasonable cost. This adopts language and concepts already used in the STD, but applies them to the specific context of utilisation.⁴ Detailed drafting is provided in **Appendix C**.

Reporting obligations

38. We agree with the proposed approach to reporting utilisation and planning upgrade information, for both Ethernet fibre-based LAPs and LAPs other than Ethernet fibre-based LAPs (including ATM). What the Commission proposes is feasible and practicable, although we note that we continue to be dependent on Spark to obtain utilisation reporting for ATM-based LAPs.

Utilisation reporting

39. For utilisation reporting (Appendix L), the proposal is sensible and largely aligns with operational practice. For clarity and alignment with the definitions in 3.14 and 4.12, we suggest that the column headings be (see **Appendix C**):
 - Ethernet fibre-based LAPs; and
 - LAPs other than Ethernet fibre-based LAPs.
40. This ensures that all combinations of network and LAP configuration are captured to provide a “one network” view of LAP links. An example of a LAP other than an Ethernet fibre-based LAP is where an Ethernet DSLAM is connected with a combination of fibre and radio (for example Great Barrier Island’s connection).

⁴ See Appendix C for drafting of this exception to the utilisation standard.

Upgrade plans

41. For planning information, we understand the need for confidence that Chorus is investing to meet throughput growth. Where utilisation reaches the proposed 85% standard, we propose to provide the following information:
 - cabinet identification and location of approved upgrades; and
 - estimated completion date, with commentary where available.
42. We consider that the reference to “plans” for upgrades in the STD should be confirmed as limited to this information. We think that disclosure of approved investment plans achieves the objective of disclosure in a proportionate manner, while avoiding disclosure of commercially sensitive information. This information should be specifically defined in the STD: **see Appendix C**.
43. At present, for ATM links, we provide planning information through our report on copper service availability in the Broadband Coverage Report.⁵
44. An example of a planned upgrade is shown in the table below, derived from the Broadband Coverage report issued on 14 November 2016. It shows upgrade information for a DSLAM in Levin. This includes cabinet identification, location, and the planned date for the upgrade (Levin is 13 December, 2016).

Exchange / Cabinet Details / Local Wire Centre	Exchange or Cabinet Name	LEVIN
	Exchange or Cabinet ID	LVN/BU
	LWC	LVN/BU
	Type of DSL Equipment at Site	ASAM
Local Handover Point	EUBA & VDSL2	TAIHAPE
	BUBA & UBS (ATM)	Palmerston North 1
	BUBA & UBS (Ethernet)	Palmerston North 1
Coverage Area	EUBA & VDSL2	TAIHAPE
	BUBA & UBS	Manawatu
Broadband Access Availability	BUBA & UBS	AVAILABLE
	EUBA	PLANNED
	VDSL2	13-Dec-16
Urbanisation	BUBA / EUBA/ VDSL2	Non-Urban

⁵ <https://customer.chorus.co.nz/file/74900/Broadband-Coverage-Report-3-October-2016.xlsx>.

APPENDIX B: OTHER ISSUES

45. Our position on the other issues addressed in the Draft Determination are set the following table.

Issue	Commission position	Our response
VDSL	Regulated service includes VDSL where available.	We agree with the Commission’s treatment of VDSL, while ensuring that the STD remains technology neutral.
Technology specific service specifications	STD is technology neutral.	<p>We agree the STD should be technology neutral. However, we think the STD should be amended to clarify that, where particular technology is specified, this does not give rise to an obligation to use, or make available, particular technology. Our preference is for an explicit statement in the STD to make it clear that we aren’t required to maintain legacy technologies at the request of access seekers. This would, for example, clarify our ability to grandfather ATM technology where Ethernet is available.</p> <p>These changes are included in Appendix C. The detailed reasons for these changes were set out in our previous cross-submission.⁶</p>

⁶ Chorus “Cross-submission on UBA Section 30R Process and Issues Paper” (1 July 2016) at [76] to [83] and Appendix A.

Issue	Commission position	Our response
10 GigE	10 GigE handover added to the STD.	<p>We still think there is no need to regulate 10 GigE handovers. But, if there is to be regulation, we think the Commission’s proposal is reasonable.</p> <p>In particular, we support:</p> <ul style="list-style-type: none"> ■ the price for 10 GigE handovers being set based on the FPP TSLRIC assessment; ■ the availability of 10 GigE handovers being limited to those links where it is available, with the decision left to us to determine whether there is sufficient demand. <p>This last point should be clearly set out in in the STD – we would be happy to propose drafting that achieves this. We will be incentivised to make efficient choices by the Commission’s proposal to cap prices for 1 GigE handovers where a 10 GigE handover is unavailable (discussed below).</p>
	10 GigE handover priced at TSLRIC (multiple 1GigE handover capped at 10 GigE price where 10 GigE is unavailable).	<p>We agree that a price cap on multiple 1GigE handovers is a pragmatic way to incentivise availability of 10 GigE handovers where demand justifies this.</p> <p>However, consistent with this, the cap should only apply where 10 GigE handovers are not available for as long as 10 GigE handovers are not available. The Draft Determination does not include drafting to achieve this, but it should be included in the Final Determination. Again, we would be happy to propose drafting that achieves this.</p>
Commercial variants	No amendment to clause 10 service specifications.	Given the lack of demand for commercial variants, we agree. The current clause 10 process is consistent with the Commission’s powers and functions under the Act, and enables appropriate scrutiny of proposed commercial variants.

Issue	Commission position	Our response
Operational issues	Operational issues raised in section 30R should be advanced through existing STD mechanisms.	<p>We agree with the Commission’s proposal.</p> <p>Since the Commission’s workshop, we have had a number of constructive discussions with Spark and we have already started to take steps to address some of the concerns identified. These include considering the provision of:</p> <ul style="list-style-type: none"> ■ information about use of DSL splitters; ■ data where and when DSL splitters have been installed on Chorus’ customer portal; ■ a new outages website https://outages.chorus.co.nz/ displaying unplanned outage information across both our fibre and copper network; and ■ API access to fibre and copper test tools. <p>There appears to be a common understanding in the industry, supported by efforts to date, that these type of technical or operational matters are best resolved by industry discussion rather than Commission imposed requirements. An industry discussion assists all parties to better understand issues, drivers, priorities, potential resolutions and the practical implementation of solutions. This can be achieved through the formal review procedures set out in the General Terms – and we intend to give notice under clause 9.12 commencing a review to formalise our discussions.</p>

Issue	Commission position	Our response
	<p>Enhanced consultation requirements regarding Operations Manual review.</p>	<p>The principles and criteria provided in the Draft Determination provide a useful basis for the discussions, and we will incorporate these into the terms of reference for the review.</p> <p>Based on what has been proposed, there may be some merit in using TCF as the forum for this review. The TCF has established processes which can be a good way to facilitate multi-party engagement on technical matters. TCF could be done within the consultation framework proposed by the Commission. We are generally comfortable with the proposed consultation requirements proposed in the Draft Determination. However, we are unclear about the proposed changes to clauses 9.13 and 9.14. We understand the process relating to Chorus-initiated changes to the Operations Manual under clause 9 to involve:</p> <ul style="list-style-type: none"> ■ a review of the Operations Manual by Chorus; ■ if any changes are proposed, clause 9.13 requires notice to be given under clause 9.3 and the process in clauses 9.4 to 9.11 are to be followed; and ■ agreed or determined changes are finally submitted to the Commission for its approval under clause 9.15. The information required under clause 9.14 must be provided. <p>The proposed change to clause 9.13 appears to make the review, rather than changes from the review, subject to the process in clauses 9.4 to 9.11. It is not clear how this would work. The processes in clause 9.4 to 9.11 envisage a formal proposal for change which can be subject to specific consultation, whereas a review would ordinarily be conducted in a more informal, information gathering way. We agree consultation on the review is appropriate, but are uncertain these changes best give effect to this.</p> <p>And, as clause 9.14 applies to all changes, not simply those under clause 9.12, we are not sure including a requirement to submit a report summarising the results of that review works in this clause, as in other cases under clause 9.2 and 9.3 there will not be a review to report on.</p> <p>We propose amendments in Appendix C to address these concerns.</p>

APPENDIX C: SUGGESTED CHANGES TO THE UBA STD

Amendments to the existing STD text proposed by the Commission in the Draft Determination are marked up in black.

Our proposed amendments are marked up in red.

Proposed changes to the UBA General Terms:

2.5 The type of DSL technology used to deliver the UBA Service is determined by Chorus.

9.12 In addition to any change proposed under clause 9.2:

9.12.1 ~~Telecom Chorus~~ must review the UBA Operations Manual every 24 months (with the first review commencing on the second anniversary of the UBA Standard Terms Determination being made). Chorus must give Notice to Access Seekers and the Commission of the commencement of the review; ~~and~~

9.12.2 ~~Telecom Chorus~~ may review the UBA Operations Manual at any time at its discretion, including where any Access Seeker makes a request for an earlier review and Chorus agrees;

9.12.3 Chorus must provide a report to the Commission and Access Seekers summarising the results of the review.

9.13 Any changes Chorus determines to be necessary or desirable as a result of a review under clause 9.12 must be proposed using the change process under this section 9.

9.14 Chorus must submit any proposed change to the Commission copying Access Seekers. The proposed change must have with:

9.14.1 ~~an updated version of the of the UBA Operations Manual or UBA Service Level Terms (as the case may be) containing the proposed change;~~

9.14.2 ~~the reasons for the proposed change; and~~ and

9.14.3 ~~information on which Parties agree or disagree with the proposed change.~~ and

9.14.1 a report summarising the results of the review.

and the Commission will advise whether a proposed change is approved or not within 10 Working Days of receipt of that proposed change, unless otherwise agreed between the Commission and the Parties.

Proposed changes to Schedule 1 (UBA Service Description):

Exceptional Utilisation Event means an increase in Utilisation in a Coverage Area arising from an increase in demand or reduction in capacity due to an event beyond the control of Chorus that could not have avoided or overcome by exercising reasonable care at a reasonable cost.

Utilisation means the highest average throughput (upstream or downstream) during any 15 minute period divided by the capacity of the LAP.

3.14 Where the Basic UBA Service does not use ATM and is supplied using a fibre-based LAP, the Utilisation of that LAP must not reach 95% other than in an Exceptional Utilisation Event.

4.12 Where the Enhanced UBA Services are supplied using a fibre-based LAP, the Utilisation of that LAP must not reach 95% other than in an Exceptional Utilisation Event.

Proposed changes to Schedule 4 (UBA Operations Manual):

18.1 LAP Utilisation reporting

18 LAP Utilisation reporting

18.1.1 Chorus must each month make available on a website accessible by the Access Seekers and the Commission a report showing the peak Utilisation (as defined in the UBA Service Description) of LAPs used to provide the UBA Service in the preceding month. This report must set out:

- (a) total number of LAPs in each Utilisation band (as defined in the UBA Service Description) increment, in the format of Appendix L;
- (b) plans for each LAP where the report shows peak Utilisation is greater than 85%:

- a. cabinet identification and location for any approved upgrade; and
- b. estimated completion date, together with any commentary (if relevant).

APPENDIX L – Chorus’ link utilisation dashboard

Month [XXX] of Year [XXX]			
<u>Utilisation increment</u>	<u>ATM LAP other than Ethernet Fibre-based LAP</u>	<u>Ethernet Fibre-based LAP</u>	<u>Total</u>
<u>0-25%</u>			
<u>25-35%</u>			
<u>35-45%</u>			
<u>45-55%</u>			
<u>55-65%</u>			
<u>65-75%</u>			
<u>75-85%</u>			
<u>85-95%</u>			
<u>95-100%</u>			

Add a new clause 1.7 to the Price List:

1.7 Some items in this UBA Price List relate to specific technologies (e.g. STM-1 and STM-4 handover connections). The type of technology used to deliver the UBA Service is determined by Chorus and technology specific prices apply where Chorus has chosen to make that technology available. Chorus is under no obligation to use, or make available, a particular technology because it appears in this Price List.