

Study into fibre services

Summary report issued under s 9A of the Telecommunications Act 2001

Date: 17 December 2018

Purpose of the study

1. This report summarises the findings from our study into fibre services in New Zealand under s 9A of the Telecommunications Act 2001 (**Act**). The purpose of the study was to improve our understanding of the nature of fibre networks and operations, allowing us to prepare for the regulation of fibre networks in the future.
2. We considered that it was important to further our understanding of current industry practices while the shape of the future regulation of fibre services was still being finalised. We expected our improved understanding to inform our future work in implementing the new fibre regime, regardless of the form that regulation might take.
3. We were interested in finding out more about the Local Fibre Companies (**LFCs**) that we expect to be regulated under the new regulatory framework.¹ These are made up of Chorus Limited (**Chorus**) and the other LFCs (Enable Networks (**Enable**), Northpower Fibre and Northpower LFC2 (**Northpower**), and Ultrafast Fibre (**Ultrafast**)). These companies were formed as part of the government’s Ultrafast Broadband (**UFB**) initiative to deliver wholesale fibre services in certain areas.
4. As the Telecommunications (New Regulatory Framework) Amendment Act 2018 (**Amendment Act**) has passed, we have decided to conclude this study so that we can focus on implementing the new framework for regulating fibre services.
5. The Amendment Act requires the Commission to develop the IMs that will apply to the development and operation of price-quality (**PQ**) and information disclosure (**ID**) regulation. The information we received throughout this study provides useful insight into issues that will be relevant throughout our process of setting the IMs for the new regulatory framework.² In addition, details about the sort of information LFCs report on, as well as their information systems, may assist us in developing the new ID requirements.
6. The findings from this study provide useful background information about the nature of fibre networks. This will allow us to be more effective as we engage with stakeholders and implement the new framework, as we will have more insight into the businesses of the LFCs we are going to regulate.
7. The rest of this report sets out the issues we focused on in this study, how these issues influenced the information we requested, and our key findings from parties’ responses to requests. The views presented by LFCs in response to information requests do not necessarily align with the views of the Commission.

¹ Regulations will specify who the regulated fibre service providers are and the type of regulation each will be subject to.

² While s 178(3) of the Amendment Act allows us to take into account work done on the input methodologies (IMs) before the amendments commence, this s 9A study is separate from the Commission’s fibre IM consultation process. See page 47 of “New regulatory framework for fibre – Invitation to comment on our proposed approach” <https://comcom.govt.nz/regulated-industries/input-methodologies/fibre-input-methodologies>.

Scope of the study

8. We commenced this study with a letter to interested parties on 27 April 2018.³ In that letter we explained that the information we intended to gather would likely include data on management of fibre networks, planning for future growth and improvements, product development, and accounting systems.
9. Specifically, we looked into issues such as:
 - 9.1 accounting policies;
 - 9.2 how LFCs manage fibre networks and future planning;
 - 9.3 product development;
 - 9.4 quality dimensions of fibre services;
 - 9.5 asset sharing;
 - 9.6 the transition to fibre; and
 - 9.7 how costs are shared between fibre fixed line access services (**FFLAS**) that will be regulated and other services.
10. We requested this information to further our understanding of fibre service providers' networks, fibre services, network operations and business practices.

Information requests

11. We undertook our study using a series of three information requests; in May, June and August 2018. The first two requests were sent to the four LFCs: Chorus, Enable, Ultrafast and Northpower. The third request was sent only to Chorus. We have also spoken with representatives from each LFC.
12. We wish to thank LFCs for responding to our information requests voluntarily. This is much appreciated, as we realise that much time and effort was needed to compile the responses. We also appreciate the level of detail included in the responses.
13. Our first information request asked about related parties, accounting policies, asset management, information provided to Crown Infrastructure Partners (**CIP**), geographic information systems (**GIS**) data, fibre connections, and product information. This information improved our understanding of the LFCs and helped us determine what information to seek in our later requests.
14. The second request focussed on aspects of quality, which is an important issue in the new framework. We asked how LFCs report on technical measures of the quality of service. This included asking how easily they could achieve increased granularity and

³ For more information see the Terms of Reference for this study at <https://comcom.govt.nz/regulated-industries/telecommunications/regulated-services/fibre-regulation/fibre-services-study>.

scope of reporting on metrics such as latency, packet loss, jitter, contention ratios, and any other issues that affect the quality of the end-user's experience.

15. We also asked LFCs to describe the information they have on end-user expectations about the quality of fibre products and services, such as research on end-user preferences and cost-quality trade-offs. We asked what research data they hold on customer experiences regarding installation of new fibre connections, fault rectification, and network performance.
16. The third request related to Chorus only because it sought information on the relationship between their fibre and copper services. Aspects of asset sharing and the transition from copper to fibre are issues that are unique to Chorus.
17. The responses provided us with new and valuable information that will assist us in implementing the new regulatory regime. Some of the responses clarified and confirmed our current understanding, which was also helpful and informative. The responses to these information requests increased our wider understanding of fibre networks, and we have been able to use this information to help plan our future implementation of the new regime.
18. This report contains summaries of our findings from this study. Where relevant, we have included comparisons between the LFCs' responses. In some cases, the information provided by LFCs is too detailed to be included in this summary report. In other cases, the responses to information requests have been identified as confidential or commercially sensitive by LFCs. As such, we have opted not to publish all the information we received.

Our findings

19. Many of our findings from this study confirmed our understanding of issues relevant to fibre regulation, while building on our existing knowledge base. For example, we obtained information on the significant differences between organisations in terms of size, as well as relationships with other regulated activities. In several areas our findings also reflect the fact that the LFCs are relatively new organisations.

Systems and product information

20. We obtained information on the extent to which the LFCs share resources such as network assets and management services between their fibre and electricity distribution businesses.⁴
21. There were also differences between the way Chorus and the LFCs conduct their business, largely related to the fact that Chorus is also a provider of legacy copper-based services.

⁴ Northpower Ltd has obligations to Northpower Fibre Limited, including related party transactions which range from operational support to funding obligations and asset construction; and Ultrafast Fibre currently leases access to third party poles under arms-length commercially negotiated contracts with Waipa Networks, WEL Networks, Powerco and Chorus.

22. Any differences in the way fibre companies operate may impact our approach to implementing the new regulatory framework. It will be crucial to ensure the regulatory requirements are appropriate for each LFC. For example:
- 22.1 on issues such as cost allocation, the differences between the way Chorus and the LFCs operate will be relevant;
 - 22.2 for Chorus, we will need to consider the allocation of common costs between FFLAS and other services;⁵ and
 - 22.3 for some of the LFCs, we may need to look at the sharing of physical assets and processes with electricity distribution businesses. We may also need to consider the regulatory approach to related party transactions.
23. In terms of products, the LFCs offer a range of products with considerable spread in pricing and specifications. We also found that new or revised product offerings are likely to be introduced in the future. Information on the UFB products on offer is available on each LFC's website.

Reporting requirements and information systems

24. We were also interested in gaining more insight into the types of information that the LFCs are already collecting about their fibre networks and services. We wanted to know how this information is managed, and how suitable it may be for the future regulatory framework. Our findings on this issue helped us understand what may be involved for both the Commission and the LFCs as we implement the new framework, and where challenges may arise.
25. We found that the LFCs use a variety of information systems, each serving a different purpose; such as network fault management, customer support or financial reporting. As the LFCs are relatively new companies, many of their systems are also new, although Chorus has some older systems.
26. A considerable amount of the information LFCs collect is used internally, largely to support operations and internal planning. Other information is provided to the Commission under the current ID requirements, or to CIP as part of their obligations under UFB contracts. Information provided to CIP covers topics such as health and safety, regulatory compliance, contract issues, business plans, orders received, performance against service level agreements, average installations per business day, network capacity and traffic, customer survey results, outages, and average downtime minutes.
27. We found that the preparation of standard form information for both ID and CIP reporting provides useful base line data, and these obligations have usefully introduced LFCs to the process of regulatory reporting. The information relating to the build of the UFB network, such as expenditure on new fibre network assets is of particular relevance. Key non-financial metrics such as network coverage, asset

⁵ See below where we outline Chorus' responses regarding cost allocation.

quantities, and fibre up-take will also be relevant as we look to implement the new regulatory framework.

28. The technical requirements set by CIP have also provided some consistency in how technical concepts, such as hand over points, are reported on by LFCs.
29. The study enabled us to collect information from the LFCs on aspects of their GIS systems and processes specific to our assessment of specified fibre areas, such as processes for recording fibre connections.⁶ We found that each LFC uses a similar process for determining when premises are passed, or end-users are connected. All LFCs use GIS systems as part of recording the location of customers and premises passed.
30. In terms of reporting, additional information may be required under the new regulatory framework. This may include reporting requirements that reflect a shift in focus from building the UFB network, to meeting end-user expectations of a reliable and durable network for years to come.
31. Our s 9A study found that LFCs' current accounting policies, and the presentation of financial information, are based on New Zealand International Financial Reporting Standards (**NZ IFRS**). This standard forms the basis for statutory reporting and for much of the current fibre ID disclosures.
32. LFCs may also need to introduce additional accounting practices for future regulatory reporting. This is because reporting requirements and methodologies for the new regulatory regime may differ from those required for current statutory and regulatory reporting requirements.
33. One specific issue that we found is that while Chorus' public financial reporting is consistent with NZ IFRS, the fibre networks and services are part of a wider financial reporting entity. In other words, Chorus does not provide a separate view of its fibre services and network in its annual report. This means that in the future Chorus will be publishing financial information for two noticeably different views of its business. In contrast, the other LFCs are separate legal entities that have separate financial reporting.
34. We also found that there may be issues for LFCs in terms of the availability of data, as well as how data is currently defined and collected. In many cases, LFCs indicated that changes to reporting systems and processes could involve considerable time and expense. For example, it may be difficult to change the way information is collected, such as by reporting at a more disaggregated level. As we implement the new regime, we will need to consider the compliance costs and timing impacts of the possible approaches to reporting.

⁶ The Amendment Act requires also us to carry out an assessment to determine the geographic areas in which specified fibre services are available to end-users. These geographic areas will be known as specified fibre areas. For more information see our "Determining specified fibre areas process and issues paper" available at <https://comcom.govt.nz/regulated-industries/telecommunications/projects/specified-fibre-areas?target=timeline>.

Asset management plans

35. We found that most LFCs' asset management planning practices have focussed on constructing the UFB network. Some LFCs indicated that they are looking to move towards compliance with a formal asset management standard. Some also noted that their asset management planning will need to factor in the fact that they are transitioning from being a network builder and new connection manager into a long-term asset owner and operator.
36. The implication of our findings on this issue is that preparing asset management plans beyond the completion of the UFB rollout will be a new and significant undertaking for some LFCs. The difference in network size, scope and age between Chorus, Enable, Ultrafast and Northpower may result in different asset management planning requirements for each of the LFCs.
37. We consider that having some form of long-term asset management plan in place would assist their internal planning for future reporting which may be required under the new fibre regulation.
38. Asset management planning is a practice used by utility businesses in other sectors we regulate under Part 4 of the Commerce Act 1986. In some of their responses to our information requests, LFCs indicated that they understand the differences between telecommunications and other sectors. These differences may affect asset management planning for fibre networks.

Findings about quality

39. The second request focussed on aspects of quality, and responses ranged in length and detail. All firms have structured approaches for key processes to connect customers, manage faults, and collect customer feedback on installations.
40. Other key findings from the responses included:
 - 40.1 firms reiterated the view that they only have control over some aspects of quality experienced by end-users;
 - 40.2 many firms noted the impact of retail service providers (**RSPs**) and end-user equipment on overall quality experience;
 - 40.3 quality has multiple dimensions, from technical metrics such as latency, availability, to the overall customer experience;
 - 40.4 firms collect monthly data on latency, jitter, packet loss, bandwidth;
 - 40.5 effort is being spent on improving installation experience, since there is potential for cost savings and improved customer experience;
 - 40.6 firms undertake surveys of customer satisfaction, especially with installations; and

- 40.7 quality can involve investment in systems and processes which need lead time to implement.
41. Some more specific examples of our findings on quality:
- 41.1 Northpower explained that they use a type of predicative monitoring to help identify issues within the RSP network configuration, which would cause a traffic drop or an abnormal increase of specific traffic type.
- 41.2 Ultrafast explained that the technical measurements they receive are only an estimation of the end-user's actual service performance because they are not able to monitor the end-user's traffic without intercepting it. They further explained that they look at aggregated usage patterns to identify the increasing demands of each end-user.
- 41.3 On customer experience research data, Northpower also explained that they use an external party to survey new customers and how they have found the connection process, as well as the speed, reliability and performance of their fibre.
- 41.4 Enable explained that they obtain monthly data on latency, jitter, packet loss, throughput bandwidth. They mention some of the issues that affect the quality of the end-user experience, such as their device, age of their software, and in-home WiFi performance.
- 41.5 Chorus' answer covers installation of new fibre connections, in respect of which Chorus conducts various types of surveys. They do fault rectification research, including customer experience workshops. They also look at the data they collect on capacity and network performance to ensure customers receive an experience they expect. On end-user satisfaction they look at "pain points" for end customers relating to communication, coordination and expectations.
42. One quality issue which may be challenging going forward is which aspects of quality the LFC can control. On this issue:
- 42.1 Enable and Chorus both stated that they can control aspects such as the performance of their own network infrastructure and equipment, as well as the training of their own technicians. They claim that they cannot control civil construction contractors working around their network causing outages, nor the parts of the customer experience RSPs are responsible for (such as communication or network issues).
- 42.2 Ultrafast stated that they can directly control quality issues such as asset loss, fibre installation, and the quality of reinstatement of any disturbed areas or sections of the end-user's property where they perform the required installation works. However, they also explained that they cannot control issues such as end-user equipment, nor the plan or service that an end-user is subscribed to or offered or supplied by their RSP.

Asset sharing, cost allocation, and the transition to fibre on Chorus' network

43. We also issued an information request to Chorus which asked about asset sharing, transitioning to fibre and cost allocation. We issued this request as we understood that Chorus provides its regulated fibre services using assets and processes that are shared with its other telecommunications services. We wished to understand more about the extent and nature of this sharing to help us develop future regulations.
44. Chorus's response included several views that may be useful to explore further as we look to implement the new regulatory framework for fibre. For example, they consider:⁷
- 44.1 That they operate one network that includes two technologies, copper and fibre, across different areas in New Zealand. This results in a significant sharing of network and non-network assets (such as IT systems) today. Chorus expects that the extent of sharing to support FFLAS will increase substantially in the near future.
- 44.2 That cost allocation is going to be a significant and dynamic exercise. Chorus say that this is not only due to fibre migration, but because the nature and use of an asset can change over time (eg, from backhaul to access or vice versa).
- 44.3 That the approach taken to allocating cost between copper and fibre services through the existing ID process is likely to be of limited relevance to the approach required for establishing an allocated regulated asset base (**RAB**).
45. Chorus also stated that it factors asset sharing into any planning for investment in fibre networks. The starting point, from the perspective of network planning, is that all existing assets should be shared where possible and efficient. This is to ensure Chorus are as efficient as they can be in fibre network deployment. For example, when new fibre is deployed an existing duct will often be used for drawing through the fibre cable.
46. In practice, there may be constraints that limit the assets that can be reused. For example, it may be more cost effective to install a new duct than to reuse an existing duct made of asbestos given the hazard protection costs incurred when working in an asbestos contaminated environment.

⁷ Please note that the Commission does not necessarily agree with Chorus' views. We will look to form views on these and other issues throughout our IM consultation process.

Attachment A – Glossary

Act	The Telecommunications Act 2001.
Amendment Act	The Telecommunications Act, as amended by the Telecommunications (New Regulatory Framework) Amendment Bill.
Chorus	Chorus Limited is a provider of telecommunications infrastructure throughout New Zealand. It provides fixed line telecommunications services using both legacy copper and newer fibre technology and is the largest supplier of fibre fixed line access services in New Zealand.
CIP	Crown Infrastructure Partners (formerly Crown Fibre Holdings).
Copper	The original national fixed line telephone network is a copper network. It allows electrical currents to flow, and was designed exclusively for telephony, but is now also used for internet services. The network is owned and operated by Chorus.
FFLAS	Fibre fixed line access services. This means a telecommunications service that enables access to, and interconnection with, a regulated fibre service provider's fibre network.
ID	Information disclosure. This sets out the requirements for disclosure of financial and other network-related information by regulated suppliers.
IMs	Input methodologies. These are a set of rules designed to increase regulatory predictability, whereby the regulator develops and specifies binding methodologies for determining the various inputs into price-monitoring, price-setting and other regulatory activities prior to those activities occurring.
LFCs	Local Fibre Companies that were formed with the government's partners in the UFB initiative to deliver wholesale fibre services in certain areas. These are made up of Chorus and the other LFCs—Enable Networks, Northpower Fibre and Northpower LFC2 (together referred to as Northpower) and Ultrafast Fibre—and any such companies formed under the extension to the UFB initiative.
RSPs	Retail service providers. RSPs provide telecommunications services to end-users.