

Dear Mr. Deuchars,

Telco2 provides consultancy on and value added resale of telecommunications services. It purchases wholesale telecommunications services from three providers. One of Telco2's suppliers bundles backhaul with tail circuit on a national basis.

Thank you for the opportunity to respond to this study.

Regards,

Jonathan Brewer

1.) In my view the Commission has not adequately defined the scope of domestic backhaul services study.

Figure 1 shows "Cellular/Wireless RBI" services backhauling to Local Access Network nodes, but from a practical standpoint access to these assets has been collapsed such that products are only available between towers and Regional backhaul nodes. Further the text in sections 17-21 lacks specific mention of backhaul services from Cellular/Wireless RBI locations. Neither the figure nor the text mentions backhaul to schools or priority user locations such as hospitals. As schools are the centre of many remote communities, and the only locations where some remote communities receive fibre services, they should be considered in the backhaul study.

2.) The geographic classification for domestic backhaul is overly stratified. Modern network architectures for both fixed and mobile services require a greater amount of aggregation than is represented in this study. Backhaul services should be evaluated from handover locations to regional backhaul nodes, and between regional backhaul nodes.

3i.) The Commission has overlooked CWDM as a current transmission technology. In December 2011 Chorus announced a contract with Huawei to use their Coarse Wavelength Division Multiplexing equipment to help fulfil their RBI obligations. http://www.computerworld.co.nz/article/493404/huawei_wins_chorus_rural_fibre_contract/ CWDM is a valid layer 1 backhaul technology particularly in areas of low population density and low installed fibre counts.

3ii.) No.

3iii.) Yes. All telecommunications and entertainment services have converged around the Internet Protocol (IP), and the most cost-efficient way of handling IP traffic is Ethernet.

4.) I support Spark's statement in section 25.1.

4i.) It's no longer economic for providers to use UCLL services, so UCLL backhaul doesn't matter.

4ii.) VDSL supports up to 70mbps downstream. LTE supports more than 100mbps downstream. gPON supports 1,000mbps downstream. Bandwidth options of 100mbps for

backhaul are no longer sufficient for any widely deployed technology. Services of 1, 10, and 100gbps should be considered.

5.) The commerce commission has stated that "section 18(2A) requires the Commission to consider the incentives and risks facing investors in major new telecommunications infrastructure" Backhaul services to grant-funded rural infrastructure such as RBI towers, schools, hospitals, and other priority locations - which are often the only buildings in rural communities with fibre available - should be regulated because no reasonable provider will invest in access infrastructure in remote communities if they cannot access reasonably priced backhaul.

6.) Yes, however the "RBI and UFB handover points as determined by the RBI and UFB programmes" have become a moving target. The number of handover points has diminished significantly since the initiation of the programs to the detriment of local and regional providers.

7i.) I believe the majority of traffic in New Zealand is carried on self-supply backhaul services and that existing and future demand for regulated services (by the smallest providers) can be accurately modelled.

7ii.) By 2019 the first Low Earth Orbit broadband networks (OneWorld, LEOSat, SpaceX) will significantly change the availability of bandwidth for backhaul in remote locations and the amount of competition available - unless the utility of these networks is restricted by their failure to gain sufficient radio spectrum.

8i.) The acquisition of Vocus by either Vodafone or Spark would reduce the availability of competitive backhaul services.

8ii.) Nearly infinite backhaul capacity exists between all major markets.

8iii.) Legislative measures including the resource management act and regulations impeding the installation of fibre optic cables on power poles where they cross private land make it uneconomic to add backhaul capacity in nearly all areas of low population density.

8iv.) Adding incremental capacity to existing fibre backhaul routes can be done in a matter of days or weeks. Adding capacity to microwave routes can take months.

9.) No answer.

10.) Not necessarily, but in practice most "national" deals will involve Chorus components.

11.) UFB and RBI have already impacted the demand, supply, capacity and price of backhaul services. Little or no progress on coverage (available on a wholesale basis) has been made since the separation of Chorus and Spark in 2011.

12.) No answer.

13.) A push towards gigabit to the home will significantly change requirements for domestic backhaul. Any move by Sky Television to reduce satellite capacity in favour of terrestrial IP based delivery could have a similar impact.

14.) No answer.

15.) As the majority of backhaul is self-supply, and the majority of non self-supply is priced traditionally, I don't believe price structures are moving away from the traditional model.

16.) Local access speeds in metro markets will have the greatest impact on the price of commercial backhaul.

17.) I am very concerned about pricing behaviour in provision of backhaul to grant-funded rural infrastructure such as RBI wireless towers.

18.) A response to question 18 is provided commercial-in-confidence under separate cover.

19i.) Any market with three backhaul providers (considering Chorus, Spark, Vodafone, Vocus, and Kordia) should be considered competitive.

19ii.) In a market with competitive metro fibre services (for example provided by a non-Chorus LFC or a lines company) distance of 10km is close enough. In a market without competitive metro fibre services, 150m may be an appropriate figure.