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PRELIMINARY QUESTIONS IN UNDERSTANDING DOMESTIC BACKHAUL SERVICES

This submission is made by Ultrafast Fibre Limited (UFF), a network operator providing wholesale fibre access as part of the Ultrafast Broadband Initiative. UFF wishes to provide industry insight for the Commission to consider in relation to the 'Preliminary Questions in Understanding Domestic Backhaul Services' Discussion Document dated 12 August 2016.

Whilst our current operational use of backhaul services is limited to interconnecting Central Offices in each regional city within UFB coverage areas, our interest in the Commission's study is high because we have limited ability to meet the network economics required to provide meshed path diversity around the central North Island and UFF may therefore add more backhaul services from third party providers in the future.

We provide the following information for your consideration:

1. ***In your view, have we adequately defined the scope of our domestic backhaul services study? Please explain your view.***

We agree with the scope of the study. But it is important to note that the Metro Ethernet Forum (MEF) has a different definition for *mobile backhaul*, being from the base stations and the network controller site. This definition may cause confusion with this study as it would include non-backhaul links (access network) and the precise definition of *fronthaul* vs. *backhaul* within a mobile context, should be stipulated in future studies.

<https://www.mef.net/carrier-ethernet/mobile-backhaul>
<https://wiki.mef.net/display/CESG/Mobile+Backhaul>

2. ***Do you agree with the geographic classification for domestic backhaul services? Please explain any proposed changes.***

We agree with the geographical classification.

3. ***Please comment on backhaul technologies. In particular, in your view: (i) have we overlooked any current or emerging backhaul transmission technologies at any layer? (ii) are there any material technological or geographical constraints on where the technologies could not be used to provide backhaul services? (iii) is Ethernet becoming the default technology of choice for backhaul services from main trunk to metropolitan? If so, why?***

Any regulation of backhaul services should not be prescriptive of the underlying technology as this will change over time and can fall outside any limitations in backhaul definition and boundaries.

4. ***We invite comments on the regulated backhaul services. We are particularly interested in your view on whether the choice of backhaul transmission service depends in any way on the type of traffic that is to be conveyed i.e., (i) whether transmission requirements for UCLL differ from those for UBA, whether transmission requirements for UCLL differ from those required for mobile backhaul; and any other relevant potential application for domestic backhaul services; (ii) what bandwidth options are required to meet future demand?***

We believe it is important to delineate that mobile backhaul requirements should be assessed separately due to the latency and meshed diversity requirements that are unique for 4G mobile.

5. ***We are also interested in your view on whether there are backhaul services which are not subject to competition that should be regulated? Please explain how your view is consistent with the section 18 purpose statement.***

Section 18 is focussed on promoting competition in telecommunications markets for the long-term benefit of end-users. Where backhaul providers have substantial market power and are unlikely to face little or no competition, buyers are left in the position where pricing and service options are limited because suppliers have no incentive to launch suitable products that allow Local Fibre Companies to meet Wholesale Services Agreement (WSA) obligations.

To remove the status quo UFF submit that incumbent backhaul providers should be assessed against the threshold for economic regulation as set down in s54G of the Commerce Act 1986 - which limits the use of regulation to markets where:

- (a) the goods or services are supplied in a market where there is both:
 - (i) little or no competition; and
 - (ii) little or no likelihood of a substantial increase in competition; and
- (b) there is scope for the exercise of substantial market power in relation to the goods or services, taking into account the effectiveness of existing regulation or arrangements (including ownership arrangements); and
- (c) the benefits of regulating the goods or services in meeting the purpose materially exceeds the costs of regulation.

6. ***Have we adequately captured and described the local access nodes which are of interest to access seekers and network operators? If not, what additions, or alterations would you recommend?***

Section 30.3: The UFB identify Points of Interconnection (POI) and Central Offices (CO). While this section is correct regarding layer 2 services, layer 1 services (Direct Fibre Access Service (DFAS)) are available only available within Cos which burdens a Retail Service Provider (RSP) with procuring an additional service to extend each DFAS back to a POI which is economically prohibitive for smaller RSP players in market. UFF offer a Fibre Interconnection Service to RSPs so that they can extend the DFAS and theoretically this could be misconstrued as a backhaul service within the scope of this study. Noting that this existing capability forms part of the regulated services within the UFB initiative.

7. ***We invite any comments on the existing suppliers of domestic backhaul services. We are particularly interested in the following: (i) the extent to which existing suppliers self-supply backhaul services; and (ii) any major changes that recently occurred, or are expected to occur in the foreseeable future, in the provision of domestic backhaul services?***

We use the Fibre Interconnection Service to: (a) interconnect the Central Officers and POIs for aggregating layer 2 traffic with each RSP at the POI; (b) provide management circuits for the management of the Public Network Elements; and (c) In the future, interconnect corporate office networks with diverse path for cloud access. We are also aware that Kordia has publically announced the completion of its national backhaul footprint providing much needed path diversity options for UFB across the central North Island.

8. ***We also invite comments on expansion conditions in the provision of domestic backhaul services. We are particularly interested in: (i) any factors that could impede expansion in the provision of domestic backhaul services; (ii) whether excess capacity is available, and where; (iii) whether there is a lack in capacity for backhaul services such as mobile backhaul services (iv) and how long expansion to add capacity incrementally takes.***

Subject to the outcome of the Select Committee's current review of the present land access legislation and the Electricity Act supplementary order paper proposed by Northpower Limited (and supported by the industry and Federated Farmers), gaining access to high voltage electrical lines infrastructure between provinces will enable further path diversity for future backhaul services as well as providing increased network assurance by reducing strike potential (i.e. outage disruption) with the use of aerial deployment for fibre assets.

9. ***Please explain (i) to what extent are transmission services currently supplied on a link-by-link basis, and to what extent is transmission services supplied as a national service? (ii) what are the drivers to supply backhaul services as a national service rather than the traditional link-by-link basis?; and (iii) whether there is a developing trend towards supplying domestic backhaul on the basis of a national service rather than on a link-by-link basis?***

- (i) In areas where backhaul services are limited, large enterprises who may have exclusive managed service relationships with a single network access provider, often need to obtain single links with an alternate due to backhaul coverage gaps. This creates management complexity and exposes the end user to potential pricing spikes.
- (ii) The drivers for our RSP customers to have a national service wrapper revolve around reducing management complexity and to reduce underlying backhaul spends with "link" procurements in bulk.
- (iii) No evident market trend exists because currently no domestic provider reaches the density of POI's required by RSPs, but there is definitely market demand for backhaul providers to offer "both path diversity and duct corridor diversity" for business continuity.

10. ***In the instance when a RSP requires a national deal from a non-Chorus provider, would that non-Chorus provider have to deal with Chorus to provide transmission capacity on a national level?***

Yes on almost every occasion RSPs face this market reality which was compounded during the UFB1 initiative, because LFC are contractually prohibited from operating outside of UFB1 candidate areas; but it is important to note that the 48 RSPs currently on our network continue to ask us for help with product options in areas where UFF is prohibited from operating.

11. ***In your view, what is the likely impact of RBI and UFB on backhaul services (e.g., demand, supply, capacity, coverage and price)?***

We see that demand will increase but in remote areas, it may not be sufficient to make diverse connections economical. RBI and UFB2 offers a mixed mode of backhaul technologies (e.g. fibre, microwave, etc.) that will vary the access throughputs and these should be considered as part of the backhaul capacity (and therefore the backhaul throughput will have an impact due to technology and as well as environmental factors). For this reason, the RBI/UFB2 comparison with UFB is unlikely to be the same. The largest economic constraint to a successful RBI2 footprint remains the prohibitive backhaul costs in areas with low populations, so it will be important for any market participants related to this initiative to share infrastructure to keep costs down by mandating duct corridors.



12. In your view, what non-price service attributes are important to demand for domestic backhaul services? Please explain your reasons.

The UFB initiative has specified the performance of the layer 2 circuits in terms of Frame Delay, Frame Delay Variation and Frame Loss Ratio. These attributes are important in the selection of a suitable backhaul service to extend a UFB based service. The backhaul service should also provide transparent layer 2 transport which is responsive to layer 2 PCP (priority) level and VLAN tagging. The service restoration times, annual service availability SLAs and path/corridor diversity are also important attributes for UFB network operators because of the regulated SLAs that we operate under. To date, there has not been any requirement for backhaul service providers to deliver services to meet the UFB1 contracted SLAs. This subject is further compounded by the fact that those providers will not offer back-to-back SLAs (i.e. mapped to UFB1 service restoration timeframes), including in towns such as Hawera or Tokoroa.

13. In your view, what are the major recent changes and expected changes in the foreseeable future in the demand for domestic backhaul services?

With more and more backhaul capabilities moving to an IP based routing, the routing techniques available today offer greater flexibility for alternative routing capabilities based on service router failures, route congestion and/or route failure (link failures). This should also be considered as part of the backhaul capabilities and capacity. We submit that mandatory path and duct diversity should become the operating construct for NZ backhaul service providers operating within a known earthquake geography.

14. For each of the options described, we invite comments, and evidence to support your comments, on: (i) whether you agree with our description of the options available to purchase domestic backhaul; (ii) in your view, what drives the choice of each option; (iii) the differences (if any) in the customers buying each of the options; (iv) In your view what relative share of the backhaul market is purchased under each of the above options?

No comment.

15. Explain whether pricing structures are moving away from the traditional pricing model. If so, please explain the new alternative pricing structure(s) and the rationale for adopting new pricing structures.

The current pricing methodology for backhaul is based on bandwidth and distance, which often create complications when assessing product price parity. In market today the number of backhaul providers is very limited and is sometimes constrained to monopoly holders (on selected geographic routes) who do not offer a cost or service advantages to meet the wholesale access provider (e.g. UFB Network Operators) service level requirements. There should be some incentives for backhaul providers to invest, innovate and improve - the product and pricing terms they offer to wholesale access providers so that their product offerings can be attractive and allow wholesale access providers to deliver end-to-end service - and support- offerings to RSPs.

In the future New Zealand should strive toward a model where bandwidth on demand can be offered to backhaul customers, and this option should be considered within the backhaul 'product offering' (e.g. 10Gbps service) and correspondingly a flexible and dynamic price list should also be considered in such an eventuality. This will also likely to have an impact on the port connectivity/throughput offered (e.g. 100Gbps) that is not proportional to the actual product offering being purchased (e.g. the port throughput may be 100Gbps, but the product offering purchased is only 10Gbps).



16. In your view, what are the drivers of the significant drop in commercial backhaul prices in New Zealand?

The initial backhaul price friction was solely due to a new entrant arriving in the mid-2000's which disrupted the incumbent's status quo with superior technology and pricing. Looking ahead, we believe there should be a cost advantage offered to wholesale access providers when offered backhaul services, so as to allow the wholesale access providers to compete on a level playing field in their respective network areas.

17. Are you concerned about any pricing behaviour in the provision of backhaul that may raise potential competition concerns?

In locations where diverse routes are being offered for reliability, there should not be any disadvantage in the pricing model to achieve this. In areas where a single backhaul path and single provider exists, the evident outcome is price spiking in market today.

18. Please provide evidence on any price differentials between routes that you would deem to be competitive and uncompetitive.

This is a well-known problem on both the western and eastern tips of the North Island. Whilst UFF do not currently operate on the eastern cape of the Hawkes Bay region, we do have this experience in Taranaki where the backhaul pricing (and diversity) options available in market are sub-optimal.

19. We invite views on the criteria for assessment of competition for domestic backhaul services. We are particularly interested in your view on (i) the most appropriate criteria that should be used in future competition test assessments, and also what criteria should remain intact; (ii) how far is close enough to a Chorus exchange to be a competitive constraint on Chorus and why?

No comment.

If you have any questions or clarifications regarding this submission, please contact:

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Yours faithfully,



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