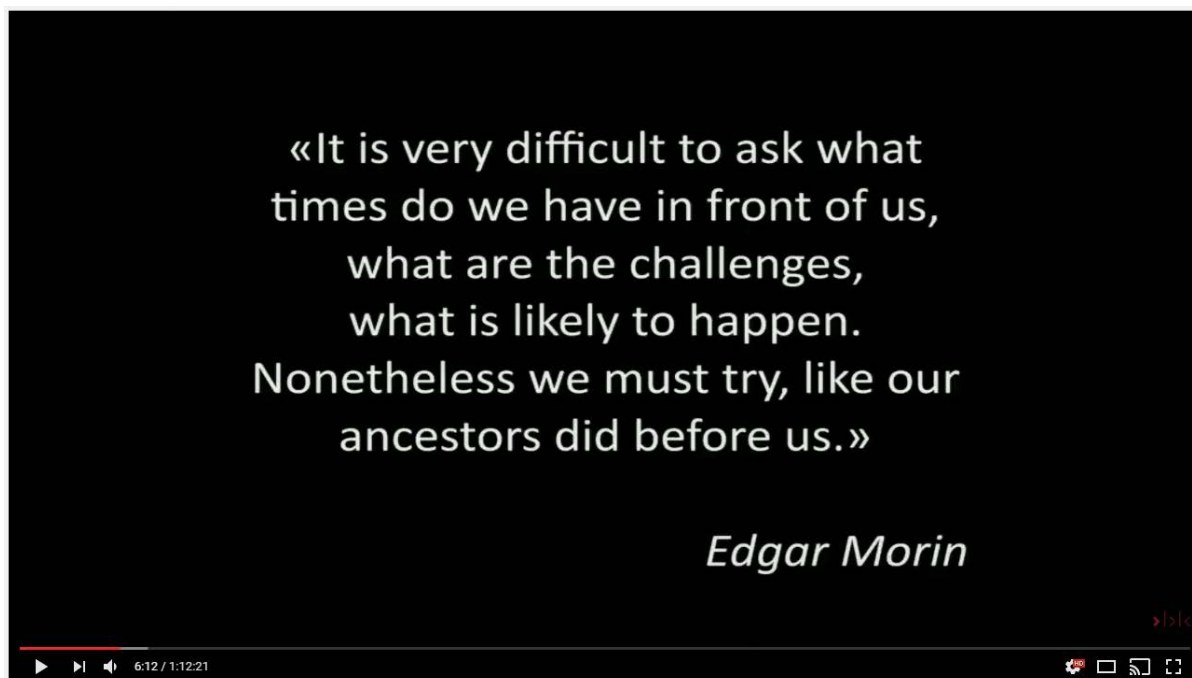


# Post-2020 Regulatory Framework for Fixed Line Services: A Response



## Summary

We have an opportunity and an obligation to lay a sound and stable foundation for the future of telecommunications in New Zealand. After years of struggle with a recalcitrant incumbent, Government has subsidised the deployment of a new medium and must take the opportunity to set a new framework unencumbered with concerns for the survival of past beneficiaries.

If the chance to set a proper BBM (Building Block Model) with the anchor product at Layer 1<sup>1</sup> is missed and the LFCs permitted to continue to ensconce themselves on the fibre we have subsidised them to lay, that opportunity will be missed and the obligation failed.

While the framework paper makes some concession to the wisdom of open access to passive network infrastructure, it defers confirming and affirming this as an essential element of any future telecommunications ecology with anchor product status. On the contrary it erects legislative and threshold barriers to this critical step.

LFCs must be required to provide reasonable and non-discriminatory access to the “natural monopoly,” not after 2024, not after the LFCs have grown to enjoy 65% uptake of the subsidised infrastructure, but as soon as the indulgence of the delayed open access undertakings expires, 1 January 2020.

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<sup>1</sup> “Layer 1 means layer 1 of the OSI Model, which is normally associated with passive network infrastructure” - Chorus Limited Deed of Open Access Undertakings for Fibre Services, <http://bit.ly/2kvA7Xf>

## Introduction

The response to the option paper was extremely encouraging. The direction has clearly moved toward a future of fibre and the waning of copper as the foundational passive infrastructure. The freeing of copper from regulation as soon as it has fibre competition and the relaxing of the TSO in the same way is a sensible approach which provides incentives to expand coverage and “mine” the copper asset as it will have no value to the RAB.

At the same time, the framework retains the originally proposed anchor products (telephony and basic broadband) and firmly excludes by delay and a legislative threshold Layer 1 anchor products of any kind. This is not a time for further prudence or caution, access to Layer 1 must be secured to possible competitors as soon as possible.

For reasons LFCs have been obliged to produce Layer 2<sup>2</sup> services over what I term, a “Founder’s Frequency,” a Layer 1 lambda allocation. It is an incentive to investment both per se and it was kept competition free, enhancing that value. But it must not be allowed to exclude Layer 2 competitors any longer than already agreed by participants.

This initiative must follow through. There is no future bridge to cross, it is here now, either cross it, or leave continued uncertainty as to whether there will ever be foundational guarantees that Layer 2 will be contested with intra-fibre competition.

## Purpose

The framework succinctly describes its purpose thus:

“The framework will limit excess profits arising from natural monopoly services.”

Excess profits would be those beyond the reasonable, investment encouraging return an investor in such a utility natural monopoly might expect.

It would thus make sense for the BBM access, price and quality regulation to focus on the natural monopoly. The natural monopoly is the costly, but simple, Layer 1.

## Actual Anchor Products

Using one of the existing examples from Part 4 of the Commerce Act 1986, we find that Anchor products are those that permit intra-Layer 1 resource competition that would otherwise be dominated by the operator of Layer 1.

In Section 56A “Meaning of specified airport services” the following appears, “(3) Terms used in subsection (1)(a) to (c) have the same meanings as in section 2 of the Airport Authorities Act 1966” which reads in part:

“**identified airport activities** means any 1 or more of the following, as the case may be:

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<sup>2</sup> “Layer 2 means layer 2 of the OSI Model, which is normally associated with active network infrastructure.” - Chorus Limited Deed of Open Access Undertakings for Fibre Services, <http://bit.ly/2kvA7Xf>

- (a) airfield activities:
- (b) aircraft and freight activities:
- (c) specified passenger terminal activities”

And the elaboration of those items fully clarifies that “anchor” products have nothing to do with customer services except as the airline operator is a customer of the airport for the fair and impartial use of the runway, passenger and aircraft facilities.

There is no basic air service requirement. Planes are Layer 2, many Planes can land on a single Layer 1 runway. The manner and matter of dealing with congestion is acknowledged and may be different in various utilities. There is no attempt to ensure airports provide passengers with any basic flight offering, nor does anyone struggle to determine how fast and how far a passenger service might fly in 2024 for example.

What “features unique to fixed line services [are] necessary to apply this regulation to this class of Technology?”

None that don't relate to the passing of copper and the single vertically integrated telco as the dominant model.

Once the signal isn't bound to the copper the ease of splitting Layer 1 and Layer 2 couldn't be greater in the three domains of telecommunication signal propagation, free-space, fibre and copper.

An anchor product is shared and scarce and doesn't change over time. Runways, pipelines, and electrical transmission lines don't require regular upgrading the way “basic broadband” will. Nor does a lambda, nor the fibre. In fact that the “anchor” product requires any attention to remain current probably indicates it is a poor choice or a merely transitional provision.

## Proposed Anchor Products

Telephony is no longer a natural monopoly. It was, “twenty years ago,” but as described in the TSO section of the framework: “There are now many affordable options for end-users seeking basic voice calling services.”

It would seem that the anchor products are being selected for their transitional importance rather than their quality of natural monopoly. This is unnecessary, the framework provides ample transitional control in the “Copper withdrawal requirements” section for areas with a fibre alternative and where there isn't the existing regulation continues to operate.

There is a “a ‘basic broadband’ UFB fibre service, being based on the 100/20Mbps regulated service” that is being proposed as an UFB anchor service. It is already available, it is already subject to contractual obligation and competition and it does not need to be an anchor product.

In the same way as copper regulation is repealed by the availability of fibre, competition at Layer 2 would remove the requirement mandatory basic broadband requirements.

## Proper Anchor Products

There are two possible Layer 1 services; access to the fibre, or control of a frequency, a colour of light, a lambda<sup>3</sup>.

These can be used for a range of services, particularly when combined with the Direct Fibre Access Service<sup>4</sup>. While open access to this service appears to be limited in application to Chorus, it should apply to all LFCs.

The LFCs have received a “Founder’s Frequency” and the opportunity to manage the implementation of other Layer 1 services lightly regulated by a registry expansion of the existing spectrum management capability of RSM<sup>5</sup>.

## Regulated Asset Base

Since it is agreed that BBM should be applied only to fibre let coverage inform the price cap. The greater the coverage within the area of interest, the higher the price cap.

## LFCs & Line Companies

With the separation of copper and fibre into the past and the future it seems wise that we quickly move to a consistent treatment of the fibre context. The regulation continues to speak of Chorus and then the LFCs, maintaining differential requirements for each type.

Both Chorus and the LFCs have a copper past, one that Chorus is exiting, but one that for the LFC/Line Companies is the foundation of their existence, and will be going forward, electricity distribution.

The concern is that both electricity generation and distribution is expanding from the simple central generation and star distribution with the inclusion of distributed generation, storage, and the need for a better managed and monitored mesh and “store and forward” distribution of electricity.

This shift with its uncertainty and requirement for the development of new skillsets within these organisations is risky, particularly in combination with the LFC (Layer 1) and UFB (Layer 2) developments that are happening with customary rapidity within the telecommunications environment.<sup>6</sup>

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<sup>3</sup> “Wavelength is commonly designated by the Greek letter lambda ( $\lambda$ )” Wikipedia. <https://en.wikipedia.org/wiki/Wavelength>. Accessed 15 Feb. 2017.

<sup>4</sup> “Direct Fibre Access Service means a point-to-point Layer 1 fibre access service the specifications and terms of which are contained in a Reference Offer.” - Chorus Limited Deed of Open Access Undertakings for Fibre Services, <http://bit.ly/2kvA7Xf>

<sup>5</sup> “Radio Spectrum Management.” <https://www.rsm.govt.nz/>. Accessed 2 Mar. 2017.

<sup>6</sup> “Northpower in 10Gbps world first test run | Bill Bennett.” 16 Feb. 2017, <https://billbennett.co.nz/2017/02/16/northpower-10gbps-world-first/>. Accessed 1 Mar. 2017.

It appears that for some parts of the country, their electricity and telecommunications will both be under the stewardship of a single or closely related entity.

There is not time to allow uncertainty with respect to access to intra-fibre competition to develop. It must be a foundational expectation for new entrants.

It may be helpful to limit, as line companies have been with respect to generation, the activities Layer 1 providers can indulge in. It doesn't seem wise to leave the decision about open fibre access unsettled when it was one of the prime reasons for the initial structure of the UFB over LFC project.

## RSPs

While new entrants in the RSP market are abundant, there seems a concern that a legacy market dominant incumbent might rush in to dark fibre and build a private layer 2 vertically integrated network. Sure, they might, mistakes are allowed to happen if they don't affect the consumer.

If an RSP was to make such a move, or even selectively identify areas where the demand is such that a second service might still be wise though economies of scale are sacrificed, so be it. The LFC has been obliged with a "Founder's Frequency," and appear to be competing well with incumbent copper services<sup>7</sup>.

There is nothing to suggest that a large RSP is a guaranteed winner in the volume production and management of bitstreams. Indeed, they have only been supreme at it under conditions of natural and legislative monopoly.

Nothing gets to the customer end of an optical fibre that's laid in the ground, quicker than service. That does not require regulation. Best supply of service comes from competing providers at both Layer 2 and Retail. It is conceivable that the LFC might lease their own lambda to a third party with the obligation to supply if that's seen as beneficial.

New entrants will find options among suppliers of Layer 2 bitstream services. There's no need to protect the LFC in this market, they have a subsidised monopoly in the fibre RAB.

## Open Access Fibre

Reasonable concerns about the future of telecommunications exist, but access to the most stable layer in the telecommunications stack solves the rapid change issue by opening all layers of the stack up to competition and innovation. Glass is glass, but coarse wave division multiplexing, "lanes" in the fibre. allows intra-fibre competition and differentiation.

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<sup>7</sup> "WEL Networks takes majority shareholding in Ultrafast Fibre | Scoop ...." 7 Sep. 2016, <http://www.scoop.co.nz/stories/BU1609/S00241/wel-networks-takes-majority-shareholding-in-ultrafast-fibre.htm>. Accessed 1 Mar. 2017.

Intra-fibre competition will require spectrum management. Rather than have a diversity of solutions decided by LFCs, spectrum management is a well solved problem in free-space by Radio Spectrum Management (RSM<sup>8</sup>). There's not a lot of novelty managing it in glass.

The LFC has received a "Founder's Frequency" as part of the conditions of the contract. Control of this frequency should be retained by the LFC, for lease, BSS/OSS, or operating Layer 2.

All other lambda resource in the fibre should be an anchor product with returns to the LFC via regulated contracts vi IRU<sup>9</sup>, lease, regionally or nationally.

Any potential problems with Layer 2 dominance remain whether dark fibre or lambdas are an anchor product or not. The Open Access Undertakings remain valid. Making Layer 1 an anchor product permits planning and certainty that was contractually deferred to 1 Jan 2020 at the outset of the UFB project.

## The Future

It is always difficult to predict the future, more so when certainties change as quickly as we see in the telecommunications ecosystem. "Unlimited" cellular data, impossible one day, within a week all four US cellcos are doing it.<sup>10</sup>

Long promised technologies, "4,425 satellites into low-Earth orbits<sup>11</sup>," "a network of balloons traveling on the edge of space<sup>12</sup>," or "a fleet of Aquilas flying together at 60,000 feet, communicating with each other with lasers and staying aloft for months at a time"<sup>13</sup> might appear.

5G is pretty much a creature of press releases and pilots<sup>14</sup>. But the 5G proposal has the problems of X.400, a failed email standard, identified by Marshal T. Rose, "this is why a heavy-duty core will always lose...by definition, it must offer services which are of interest to only a subset of its users and yet all users are impacted by them... /mtr" It seems unlikely to be a holistic success. Parts may have value, rather like TeamTalk.

Given all this velocity and uncertainty about the future, better I think we deal with the bird in the hand.

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<sup>8</sup> "Radio Spectrum Management: HomePage." <https://www.rsm.govt.nz/>. Accessed 3 Mar. 2017.

<sup>9</sup> "Indefeasible rights of use - Wikipedia." [https://en.wikipedia.org/wiki/Indefeasible\\_rights\\_of\\_use](https://en.wikipedia.org/wiki/Indefeasible_rights_of_use). Accessed 2 Mar. 2017.

<sup>10</sup> "Which Unlimited Data Plan Is the Best? - Gizmodo." 17 Feb. 2017, <http://gizmodo.com/which-unlimited-data-plan-is-the-best-1792476535>. Accessed 1 Mar. 2017.

<sup>11</sup> "SpaceX plans worldwide satellite Internet with low latency, gigabit speed." 18 Nov. 2016, <https://arstechnica.co.uk/information-technology/2016/11/spacex-plans-worldwide-satellite-internet-with-low-latency-gigabit-speed/>. Accessed 1 Mar. 2017.

<sup>12</sup> "Project Loon - X." <https://x.company/loon/>. Accessed 1 Mar. 2017.

<sup>13</sup> "The technology behind Aquila - Facebook." <https://www.facebook.com/notes/mark-zuckerberg/the-technology-behind-aquila/10153916136506634/>. Accessed 1 Mar. 2017.

<sup>14</sup> Considerable doubt expressed in many articles that 5G is feasible <http://delta.geek.nz/tagged/5G>

When there are rapid changes, it is possible to hunker down lower in the stack where the movement is slowest. That's a feature we prefer in foundations. Free-space, fibre and copper. Control those, set the framework on that foundation, anchor the door open to intra-fibre competition, and the task becomes shared between regulation at the lowest and simplest level and competition.

While past performance may not be the best guide, at present LFCs are doing much better than their business plans for 15% uptake, indeed 30% seems to be the present level. They are being bought out of their joint ventures because of their success and security. They do not need legislative or regulatory protection from competition, because they have a monopoly underneath them and a lambda as well.

The Government has comprehensive information about the LFC deployment and can set a reasonable utility rate of return based on the reliability of the demand. Network extension incentives can be offered in the relationship between price cap and coverage. All connection prices are averaged for the cap, because everyone benefits from more users and usage.

Then whatever happens, as in spectrum licensing, new technologies can enter and old ones can leave, beyond the control and permission of those fortunate enough to have the privilege of building the new model network medium. They are well rewarded with their "Founder's Frequency" and the management right implementation task.

All we need to do to ensure this opportunity is following through the first courageous step and placing the anchor products where they do the most good for all participants, in Layer 1.

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