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REGULATED FIBRE COST ALLOCATION

PREPARED FOR VODAFONE NEW ZEALAND

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1 SUMMARY

We have been asked by Vodafone New Zealand (Vodafone) to respond to aspects of the Commerce Commission's (Commission) Invitation to comment paper on a new regulatory framework for fibre applying to Chorus and Local Fibre Companies (LFCs).¹ In particular, we have been asked to consider how the Commission should approach input methodologies for cost allocation.

The key points we make in this paper are that:

- The regulatory regime for fibre, which involves a mix of constraints on prices, revenues and requirements to supply, is likely to produce a number of contentious cost allocation issues.
- The Commission has a choice about the level of prescriptiveness it can adopt in the input methodologies. By prescriptiveness, we mean the amount of discretion retained by Chorus and LFCs to allocate costs as they see fit, or according to general principles.
- In line with the framework we develop, a prescriptive methodology should be adopted where:
 - common costs are likely to be material in comparison to the total costs of the services that share costs and/or assets (meaning that the risks and consequences of misallocation are high)
 - Chorus or LFCs have incentives to allocate costs in ways that are detrimental to the interests of end-users directly, or detrimental to the competitive process (and so harm end users indirectly).
- A principles-based approach may be more suitable where these conditions are not likely to be relevant.
- The Commission's initial paper identifies two key cost allocation issues: allocation between regulated fixed fibre local access services (FFLAS) and non-regulated services, and between types of FFLAS services. The Commission also recognises that the allocation of assets to copper and fibre in the setting of the initial asset value is also critical.
- The initial value of regulated fibre assets should allow Chorus and LFCs an opportunity to recover their efficient costs, as would be expected in a workably competitive market. Most newly-deployed assets will be directly attributable to the fibre network; capex common to both fibre and copper during the rollout will be relatively small. However, for Chorus, a key allocation issue will be how the value of pre-existing assets is allocated between copper and fibre. If not sufficiently prescribed by the Commission, there will be a strong incentive for Chorus to allocate a high proportion of costs to fibre, leading to higher future fibre prices. This would likely lead to over-recovery of costs, and hence would not best promote the interests of end users.
 - A cost allocation method that reflects a workably competitive market should be prescribed by the Commission; in our view, a metric such as customer numbers provides a reasonable balance of interests.
- The allocation of costs between copper and fibre is also relevant for future capital and operating expenses. The quantum of common operating costs is uncertain, and further work will be required to determine the true scope of common costs. It will likely be efficient to allocate a higher proportion of asset costs to regulated FFLAS as the transition away from unregulated copper continues.
 - For costs that require allocation, for reasons of consistency and transparency the Commission should favour an approach that is similar to that adopted during the roll out period.

¹ Commerce Commission, *New regulatory framework for fibre - Invitation to comment on our proposed approach*, November 2018 (Commerce Commission 2018).

- There appear to be few costs that will be directly attributable to the anchor services. This means that judgements applied to allocation between different layer 2 FFLAS services materially affect the prices of anchor products, and there are incentives to keep anchor price ceilings as high as possible.
 - This supports a prescriptive allocation, even though the anchors themselves will be subject to change over time.
- Chorus has further obligations to supply unbundled layer 1 services. This will create issues where there are common costs between the supply of layer 1 and layer 2 services; for example, the costs of service installation. The appropriate cost allocation for layer 1 and layer 2 services should adhere to the Equivalence of Inputs (EOI) principles as laid out in the UFB deeds. In our understanding, the emphasis of unbundling is that it should promote end users interests by allowing for sufficient economic space between the layer 1 and 2 products for efficient competitors.
 - The Commission will need to weigh up static and dynamic efficiencies in considering cost allocation, but also ensure that a rigorous approach is taken to determine the true scope of common costs to facilitate efficient competition. A more detailed examination of the common costs would then ideally be performed, with costs allocated on the basis on which an access seeker would need to bear those costs in providing layer 2 service.

In the table below, we highlight the key findings.

Table 1: Overview of findings

COST ALLOCATION	RISK / CONSEQUENCE OF MISALLOCATION	INCENTIVES TO MISALLOCATE	IM PRESCRIPTIVENESS REQUIRED
Fibre vs copper: rollout	High	High	High
Fibre vs copper: post- implementation	Medium	High	Medium-High
Layer 1 vs layer 2	Medium	High	Medium-High
Anchor vs other products	High	Medium	Medium-High

Source: *Frontier Economics*

2 BACKGROUND AND CONTEXT

2.1 Background

The Commerce Commission has recently started the process of developing and implementing a new regulatory regime for fibre networks rolled out under the Ultra-Fast Broadband (UFB) initiative. This regime will replace the current regime.

The Commission is directed by the amended Act to develop input methodologies.² The input methodologies are intended to promote certainty for suppliers and consumers in relation to the rules, requirements and processes applying to the regulation of FFLAS.

In the Annex, we provide a high level overview of the new regime, including:

- the UFB project
- the deregulation of copper services
- the price and revenue constraints on LFCs
- anchor product regulation
- requirements for layer 1 (as well as regulated layer 2) access.

2.2 Cost allocation input methodology

Under s 175(1)(a)(iii), the Commission must determine the methodologies used to evaluate and determinate the allocation of common costs between (for example) activities, services, access seekers, and areas. Highlighted among the initial issues identified by the Commission related to the fibre input methodologies (IMs) are those dealing with cost allocation:

While many of the UFB providers costs may be specific to one type of service ('directly attributable'), other costs may relate to multiple services (or types of services) which may include both other telecommunications services and non- telecommunications services.³

The Commission highlights cost allocation issues by referring to two types of “common cost”. We refer to costs that relate to multiple services (or types of services) as 'common costs':

Common costs can include costs from two categories. Those that are incurred in providing specific services (eg, shared /joint costs relating to physical assets such as local exchanges or ducting), and those costs that do not relate to specific services (eg, corporate

² The Telecommunications (New Regulatory Framework) Amendment Bill received Royal Assent November 2018.

³ Commerce Commission (2018), 7.76.

overhead costs). The services concerned may also include both regulated FFLAS and other services.⁴

The Commission highlighted two key issues in cost allocation input methodology:

- How to allocate common costs between regulated fibre fixed line access services (FFLAS) and other services
- Whether common costs should be allocated between the different types of regulated FFLAS

There is also an overlap or interaction between the cost allocation methodology and asset valuation. Assets existing at the inception of the regime that are directly or otherwise attributable to the regulated services contribute to the calculation of revenues or prices.

2.3 This report

Vodafone has asked us to:

- identify cost allocation issues are likely to be relevant to the setting of input methodologies for price-quality paths and/or information disclosure
- consider the appropriate allocation approach that should be taken by the Commerce Commission, consistent with its legislative objectives.

⁴ Commerce Commission (2018), 7.76.

3 PRINCIPLES RELEVANT TO COST ALLOCATION

3.1 The Commission's objectives

The Commission's paper devotes some discussion to the objectives of the Act, and the particular relevance of cost allocation to the purpose statements.

The Commission notes that:

- The purpose of Part 6 is expressed in s 162, which is focused on promoting the long-term benefit of end-users in markets for FFLAS by promoting outcomes consistent with those produced in workably competitive markets.⁵
- It is required by s 166(2), when making recommendations, determinations or decisions, to give effect to s 162 and, to the extent it considers relevant, the promotion of workable competition in telecommunications markets for the long-term benefit of end-users of telecommunications services.⁶

Apart from the replacement of 'consumers' with 'end-users', this purpose statement is materially the same as s 52A of the Commerce Act. We understand that the primary reason for the replacement of 'consumers' with 'end users' is that there is a set of retail service providers that will use the fibre networks, which introduces objectives relating to the promotion of competition (rather than regulation simply acting as a surrogate for competition, as in other regulated sectors such as electricity).

We generally concur with the Commission's views that, in line with the High Court's views:

- The relevant standard is workably competitive rather than perfectly competitive markets
- Workable competition promotes economic efficiency, in one or more of its allocative, productive or dynamic characterisations
- Judgement may sometimes be required to trade off objectives
- Workable competition will promote or lead towards prices based on efficient costs and also be consistent with the outcomes in s 162.⁷

An important aspect of the approach to cost allocation is how the allocation of costs help achieve the s 162(b) and (c) purpose statements. The allocation of these common costs impacts how efficiency gains are to be shared with end-users; the allocation will also affect the incentives of suppliers to achieve efficiencies.

If the fraction allocated to regulated services is too high there is a risk of negative outcomes. Prices for end-users may be too high, and it may have the effect of lessening competition in downstream markets.

⁵ Commerce Commission (2018), 5.15.2.

⁶ Commerce Commission (2018), 5.15.3.

⁷ Commerce Commission (2018), 5.23.

3.2 Common cost allocation

We understand that the Commission's consideration of fibre input methodologies will likely build upon its experiences with input methodologies for existing regulated industries under Part 4.⁸

The nomenclature used by the Commission relating to common costs is the same as that adopted for its part 4 considerations:

- Directly attributable costs
- Not directly attributable costs

The Commission proposes to determine a cost allocation input methodology that allocates costs to regulated fibre services which are 'directly attributable' (wholly and solely associated with a single type of service), together with a proportion of costs 'not directly attributable' to those regulated services.

The Commission's input methodologies for electricity distribution and gas pipelines describe how these concepts have previously been applied in an IM:

The IM therefore requires that operating costs and asset values that are directly attributable to a particular type of regulated service are allocated to that type of regulated service. It also sets out rules for deciding what proportion of operating costs and asset values associated with but not directly attributable to a regulated service may be recovered from that regulated service.⁹

As noted by the Commission in 2010, these accounting cost concepts are different from those more commonly used in economics, such as incremental costs, stand alone costs and common costs.

The major difference in costs is that directly attributable costs are likely to be a close approximation to short-run incremental costs. In the longer run, directly attributable costs are a subset of incremental costs.

Costs that are not directly attributable costs are termed common costs by the Commission:

We refer to costs that relate to multiple services (or types of services) as 'common costs'. Common costs can include costs from two categories. Those that are incurred in providing specific services (eg, shared/joint costs relating to physical assets such as local exchanges

⁸ Commerce Commission (2018), 5.14.

⁹ Commerce Commission, EDB and GPB input methodology reasons paper, December 2010, p. 62 (Commerce Commission 2010).

or ducting), and those costs that do not relate to specific services (eg, corporate overhead costs).¹⁰

While directly attributable costs do not have an obvious economic interpretation, incremental costs have an economic interpretation in the context of efficient prices of regulated services and workably competitive markets.

In particular, prices in workably competitive markets would not be expected to fall below incremental costs (or, in aggregate, revenues for a service would not be expected to fall below incremental costs across those units of output). Incremental costs would include capital costs if the specific assets are related to the provision of that service only.

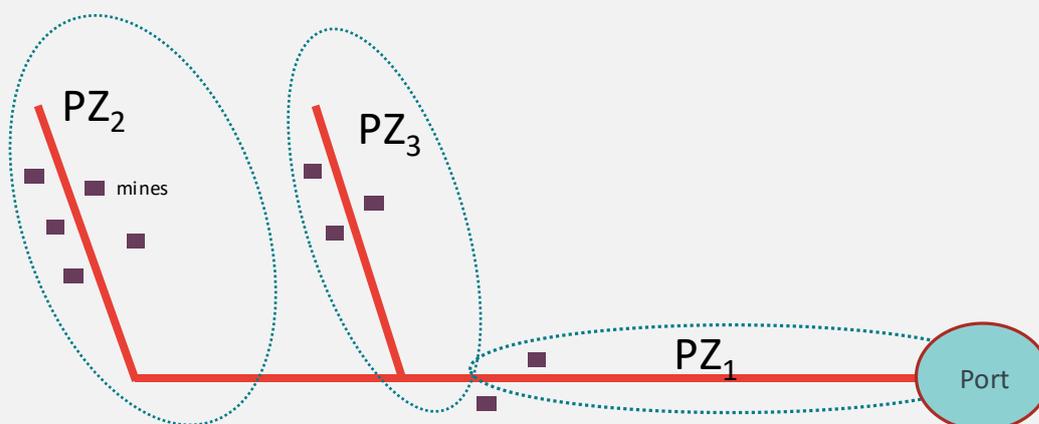
The recovery of common costs (above incremental costs) in workably competitive markets is, as the Commission has recognised, complicated.¹¹ Willingness to pay is clearly relevant to cost recovery across multiple services, but in regulated markets the complexity and instability of efficiency-based allocation approaches means they often lack transparency and objectivity.

3.2.1 Identifying common costs

In our view, the Commission will need to take some care in not just considering how costs should be allocated but also in how costs are defined. This is because it may be advantageous for regulated entities to claim that a higher proportion of costs are common as this can provide more flexibility to allocate costs to (say) regulated services. See Box 1: for an example of this.

Box 1: Cost allocation in the Australian Hunter Valley railway

A useful example of how cost allocation needs careful regulatory oversight comes from regulation of rail tracks in the Hunter Valley. The track supplier (ARTC) supplied rail track services in the Hunter Valley to coal mines in three pricing areas or zones, which it called pricing zones 1-3. This is shown in a stylised way in the following figure, where mines all take their coal through the same port.



Users (miners) in all pricing zones must traverse PZ1 – so costs of PZ1 must be shared between the three sets of users. In broad terms, costs consisted of traffic-sensitive costs such as

¹⁰ Commerce Commission (2018), 7.76.

¹¹ Commerce Commission (2010), from 3.2.8 and 7.3

maintenance, and capacity costs which vary with traffic in the longer run (and are incremental to that user or group of users).

ARTC had undertaken considerable investment in tracks in PZ3 reflecting the development of new coal mines. To facilitate that investment, ARTC accumulated losses accruing in PZ3, as it could not immediately recover its investment costs.

The Australian Competition and Consumer Commission (ACCC) regulates ARTC's pricing and checks compliance with ARTC's pricing undertaking. On reviewing the way in which ARTC allocated revenues to the different pricing zones, the ACCC became concerned that ARTC's existing revenue allocation practices resulted in PZ3 users being cross-subsidised by users in PZ1, PZ2. This occurred as:

- Users in PZ3 were only recovering the direct (but not incremental) costs of their usage of PZ1. That is, users only paid for the short run maintenance costs of keeping the line in service, but were not contributing to the incremental costs of new capacity that was required to service their traffic in PZ1.
- Users in PZ1 and PZ2 faced an inflated ceiling revenue limit that was above their stand alone economic cost, as the stand alone costs should take into account the incremental costs attributed to PZ3 users' use of PZ1 and PZ2.

There are two points of interest in comparison to the present fibre cost allocation process:

- ARTC was able to use its cost and revenue allocation practices to engineer a shift of cost from one group of users to another, to improve its overall chances of cost recovery. This was not immediately obvious to the ACCC, but once identified was found to not be in the interests of PZ2 users and resulted in a cross subsidy.
- In the ACCC's view, ARTC had not undertaken sufficient work on (long run) cost drivers to identify causal relationships. It was required to re-visit its costing approach to ensure that no less than incremental costs were (approximately) recovered from each group of users in a pricing zone. This was required to promote economic efficiency.

Source: ACCC, WIK-Consult¹²

The Commission's framework applied to EDBs and GPBs addresses this issue through an accounting-based allocation approach (ABAA), which "requires operating costs and asset values to be allocated based on causal factors, or based on proxy factors where causal-based allocators are not available."¹³

This approach of focusing on causal factors is appropriate, even if, in some instances, it may not be practicable to precisely identify and measure causal allocators of cost. In such cases, it may be necessary to substitute a close approximation (proxy) for an ideal causal allocator, to provide allocations that do not differ materially from a causal allocation.

The approach of seeking identifiable cause-and-effect relationships is widely used by regulators in telecommunications. For example, it was formalised by the Australian regulator of Telstra's copper

¹² A consultancy report by WIK for the ACCC is available at: <https://www.accc.gov.au/system/files/WIK-Consult%20T%C3%9CV%20-%20Consultant%20report%20for%202013%20Annual%20Compliance%20%28PUBLIC%29.pdf>

¹³ Commerce Commission (2010), 3.3.3.

network (the ACCC) in its use of “fixed principles”. The fixed principles related to cost allocation are highlighted in Box 2:

Box 2: ACCC’s cost allocation principles

The ACCC’s final access determinations (FADs) may contain ‘fixed principles’ provisions that lock in certain matters until a nominal termination date. Such a provision would allow the ACCC to ‘lock-in’ a term so that it would be consistent across multiple FADs. The ACCC made use of the fixed principles provisions in relation to the regulation of Telstra’s copper network. It included the following fixed principle relating to cost allocation.

“Cost allocation factors – Where possible, the determination of cost allocation factors should reflect the following principles:

- the allocation of the costs of operating the PSTN should reflect the relative usage of the network by various services;
- direct costs should be attributed to the service;
- the cost allocation factors for shared costs should reflect causal relationships between supplying services and incurring costs; and
- no cost should be allocated more than once to any service”¹⁴

Source: ACCC

3.3 Input methodologies for cost allocation

The Commission highlighted two key issues in cost allocation input methodology:

- How to allocate common costs between regulated fibre fixed line access services (FFLAS) and other services
- Whether common costs should be allocated between the different types of regulated FFLAS

Beyond the issue of allocation of common costs to regulated versus non-regulated services, the allocation of common costs between different regulated fibre services will also influence outcomes. In particular:

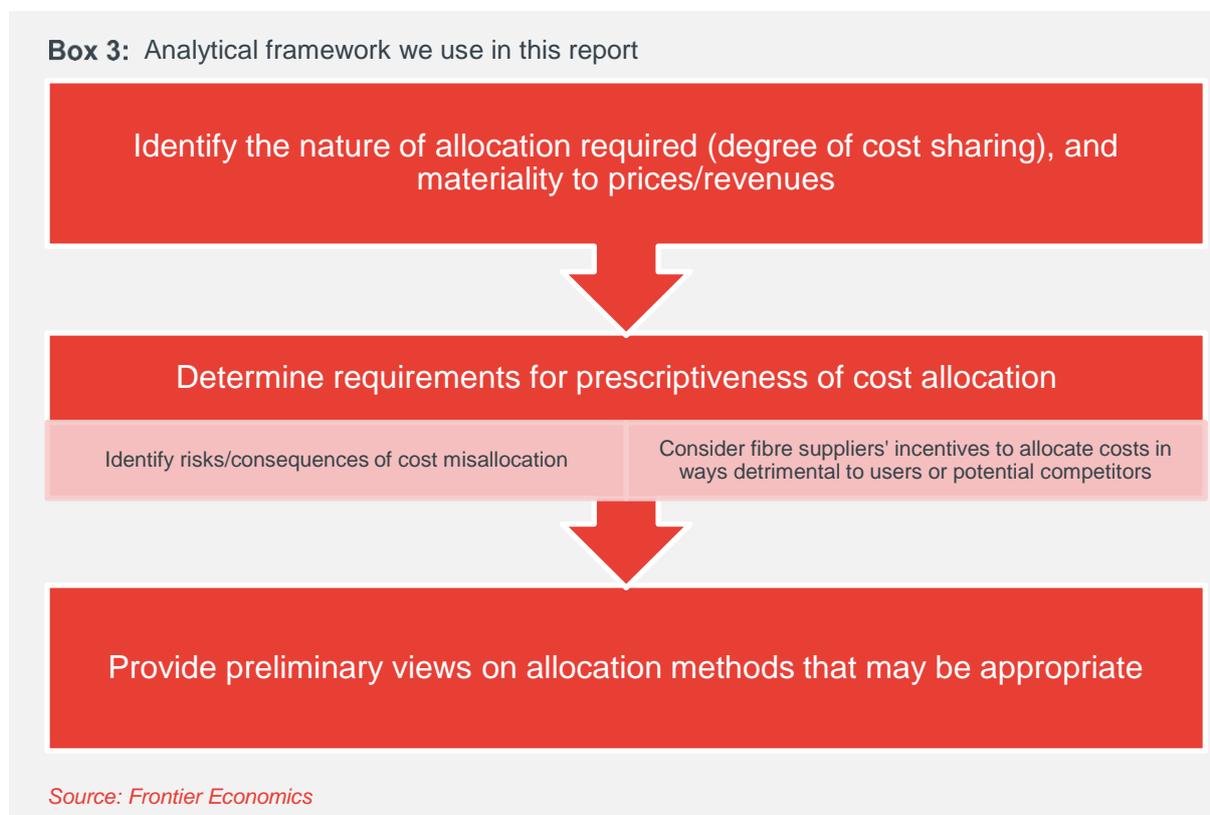
- the impact of cost allocation on economic headroom between layer 1 and layer 2 services; certain stakeholders may favour allocating costs to layer 1 services to protect their position as suppliers of layer 2 services.
- the anchor pricing approach may lead to preferences of infrastructure owners for certain allocations of common costs, specifically those that allocate a large share of common costs to anchor services.

3.3.1 Framework for determining cost allocation methodologies

The Commission indicates it is also considering the appropriate level of prescription within each of the fibre input methodologies. It notes there could be benefits to using a more ‘principle-based’ regulatory approach in some of the fibre input methodologies and the subsequent price-quality and information disclosure regimes.

¹⁴ ACCC, *Inquiry to make final access determinations for the declared fixed line services*, July 2011, 6.14.

In thinking about appropriate approaches to cost allocation and the appropriate level of prescription to adopt, we have used the following framework to consider the particular issues identified by the Commission.



There are three key steps.

The **first** step is to identify the specific nature of the cost allocation required, and its materiality. As an example, it appears straightforward that deployment of fibre and copper networks will use a number of types of shared assets, and the allocation of these costs will have a material financial impact on service costs. This is consequently deserving of more attention than allocations required between services that do not share costs to a material degree.

The **second** step is to determine requirements for how prescriptive the Commission should be with its input methodology. This requires consideration of the risks and consequences of misallocation of costs, and the incentives of fibre suppliers to implement cost allocation methods that would have harmful effects on competition or end users. This will be of particular concern in situations of vertical integration, as it is clear that (for example) cost shifting to regulated services can lead to anti-competitive vertical foreclosure. It may also be pertinent where particular groups of users bear too much or too little cost (cross subsidy).

The **final** step is to consider which kinds of allocation methods are likely to be more or less suitable for the key allocation issues identified by the Commission. Here, we expect that the Commission may decide that the prescriptiveness of the approach should balance incentive issues with regulatory burdens. We also consider that the Commission should further take account of:

- the transparency and consistency of allocations; users should have confidence that cost allocations are not performed in discretionary ways, and that treatment is applied in a consistent manner across services. For example, is it clear that all costs are only recovered once?

- the feasibility of the cost allocation methodology; feasibility will typically involve allocating cost allocators based upon allocator factors that are measurable. However, the Commission may also need to consider requiring the collection of data to support an approach; information can often be collected at reasonable cost using sampling techniques.

4 ALLOCATING COSTS BETWEEN REGULATED FFLAS AND UNREGULATED SERVICES

As we have noted, the Commission identifies two broad common cost allocation topics: allocating between regulated FFLAS and other services, and allocating between different types of FFLAS. These are issues 6 and 7 in the Commission's paper.

Issue 4 – scope of the regulated asset base and its valuation – also touches on a critical allocation issue: what proportion of the RAB assets that are common between existing (e.g. copper) networks and new fibre networks should be allocated to the fibre activities.

In this Chapter, we address the regulated asset base and issue 4, and in the follow Chapter we consider allocation between different kinds of FFLAS.

4.1 Treatment of fibre and copper common costs during initial stages of the roll-out

4.1.1 Nature of allocation required

The Act says the Commission must set an input methodology for the “valuation of assets, including depreciation, and treatment of revaluations”.¹⁵ More precisely, “the cost allocation input methodology will set out how asset values (i.e., the RAB) and operating expenditure will be allocated between activities, businesses, access seekers, regulated services, or geographic areas”.¹⁶

We understand that there are a number of key assets shared between the fibre and copper networks. This includes copper and fibre share ducts/trenches, poles, exchanges, buildings, and back office costs.

The Commission proposes a ‘high level’ approach to the inclusion of assets in the RAB under Part 6 of the Amended Act, recognising that there may be a need to develop detailed rules for particular types of assets.¹⁷

The “initial value” of a fibre asset is set out in Section 177(1) of the Act: either the cost incurred (net of contributions) for assets constructed during the rollout, or the recorded value published by Chorus as of 1 December 2011.

While the starting *valuation* of the assets is set as above, the role of the IMs is to set out how the asset value is to be allocated in each regulatory year between copper and fibre. As we understand the likely methodology as set out in Issue 5, the Commission will calculate a ‘fibre RAB’ so that it can calculate

¹⁵ Commerce Commission (2018), 7.52.

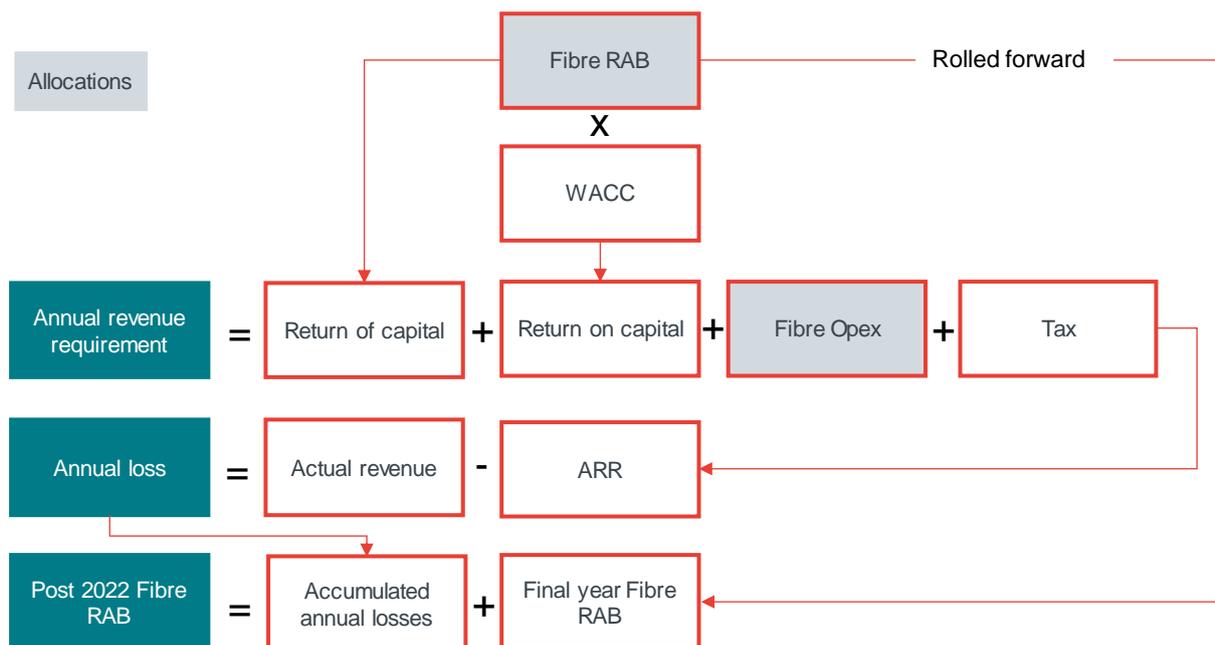
¹⁶ Commerce Commission (2018), 3.20.3.

¹⁷ Commerce Commission (2018), 7.55.

annual “losses” using a building block approach. The RAB value is relevant to return on and of capital; the higher is the allocation to fibre, the higher are these allowances and the larger will be any calculated losses.

As set in **Figure 1**, more asset costs allocated to fibre will mean larger losses which will be rolled forward to produce a “fibre asset” to be included in the starting RAB value in 2022.¹⁸ More operating costs allocated to fibre during the rollout will influence the calculated losses during the model, and therefore the starting RAB.

Figure 1: Overview of key allocations and effects



Source: Frontier Economics

4.1.2 Prescriptiveness of approach required

Risks and consequences of misallocation

As described above, the allocation of common costs has a direct bearing on losses incurred during the roll-out period, 2011-22, and therefore to the opening RAB in the new regime.

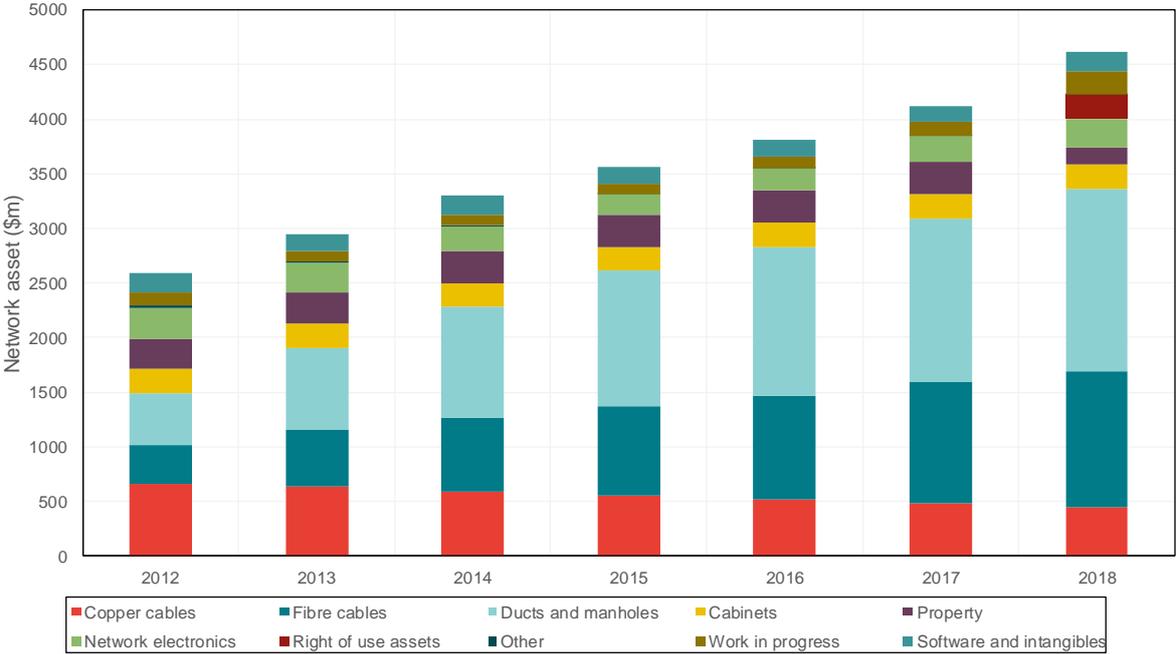
The risks and consequences of misallocation are largely dependent on:

- the sharing between copper and fibre services and the value attached to those assets in comparison to the costs of fibre deployment as a whole
- the sharing between copper and fibre services as it relates to operating expenses, such as maintenance of the network.

For Chorus, we are able to gain some insight into the value of assets shared between copper and fibre services that were already in existence prior to 2011. This includes assets such as ducts and trenches that would clearly have ongoing value, but appear to have been significantly depreciated; see **Figure 2**.

¹⁸ Commerce Commission (2018), 7.65.

Figure 2: Network assets

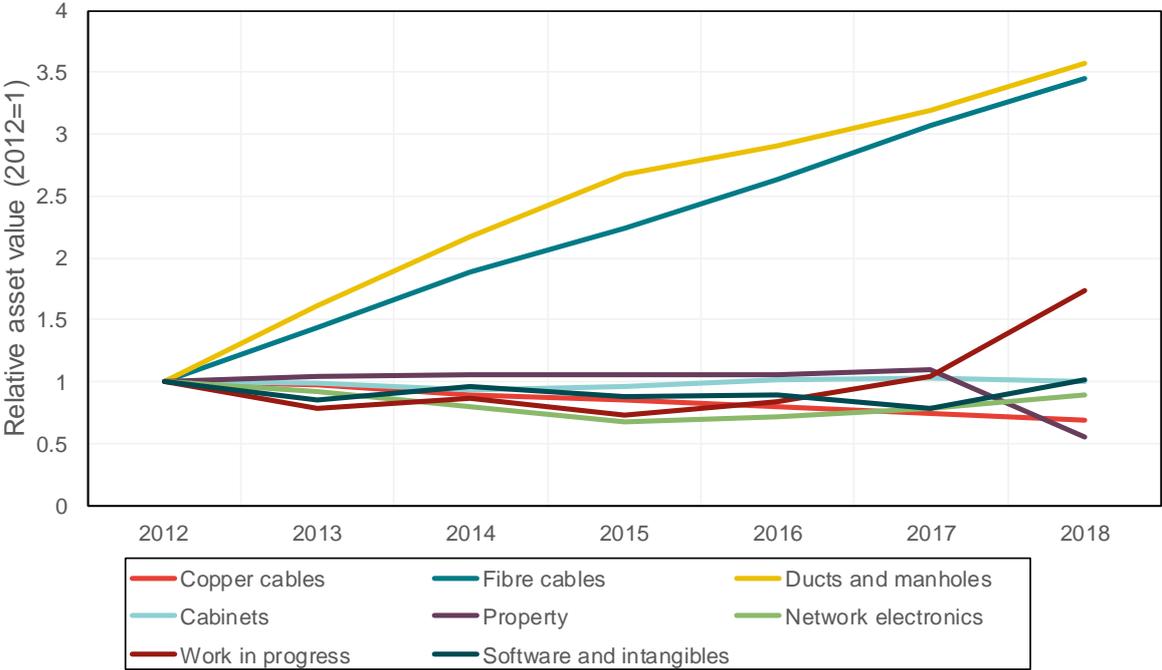


Source: Chorus annual reports

From this Figure, we can identify that:

- a reasonable proportion of the asset base (copper and fibre cables) should be directly attributable
- the relative changes in asset values suggests that the duct assets added during the rollout are likely to be claimed by Chorus to be attributable to fibre
- other asset types, which have retained a similar dollar value, are not obviously connected directly to the fibre rollout, and so require allocation. Cabinets for example may be primarily be used by the copper network.

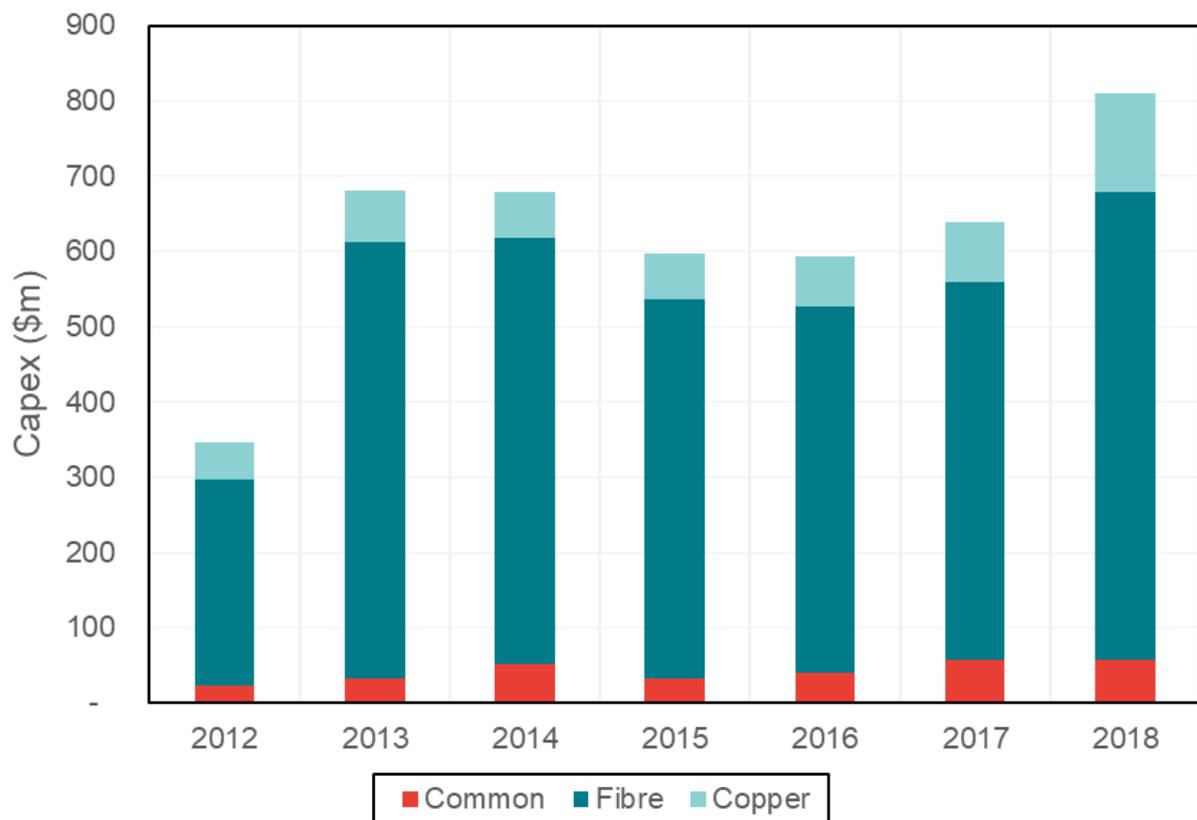
Figure 3: Asset values relative to 2012 values



Source: Chorus annual reports

The capex expenditure during the rollout, shown in Figure 4, illustrates that the size of common fibre-copper capex may be small compared to capex directly attributable to fibre, yet may still form a non-trivial portion of assets; common capex has been approximately 10% of directly attributable fibre capex through the rollout, consisting primarily of information technology and building and engineering services.¹⁹

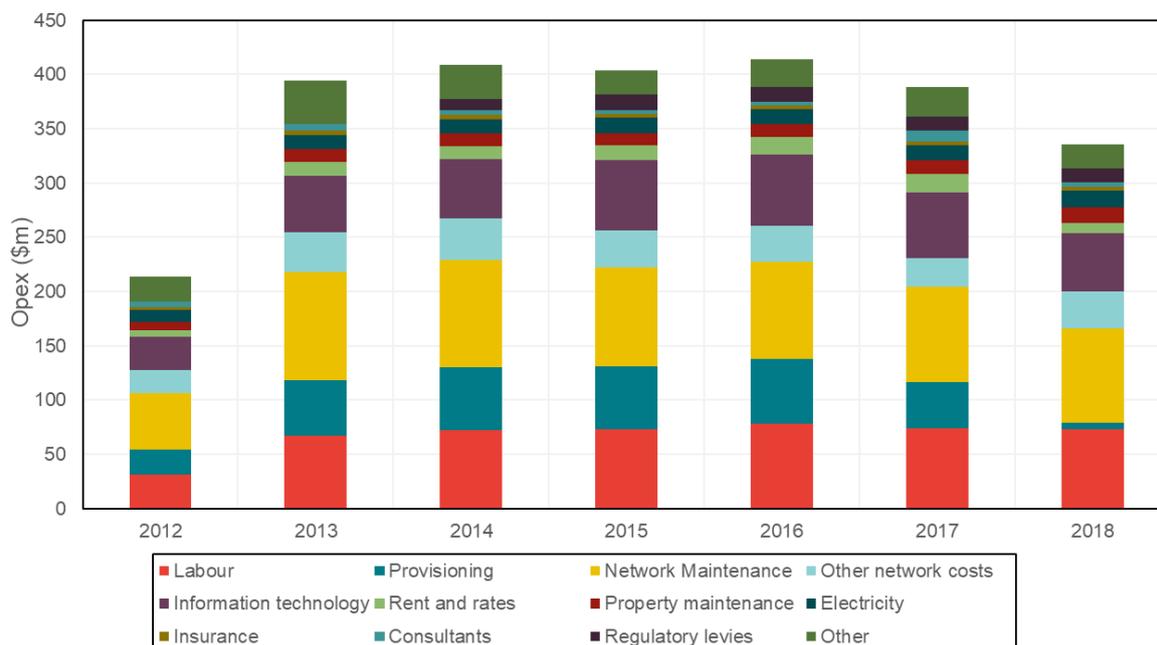
¹⁹ It should be noted that capex was low in 2012 as Chorus was not operating for the entirety of 2012. Similarly with opex.

Figure 4: Chorus' categorisation of capex between fibre, copper and common

Source: Chorus annual reports

Less is currently known about the opex cost categories. It is clear, however, that once the rollout finishes, opex allocations between fibre and copper will become relatively much more significant.

As we have discussed, the allocation of opex during the rollout will also be important in establishing an opening RAB. Some indication of the scale and relativities of different kinds of operating costs are shown in **Figure 5**. These indicate that network maintenance, which would have been entirely attributable to copper services in 2012, has not materially changed over this period. This is consistent with little direct maintenance of the fibre network and that copper services cause more maintenance cost per customer than does fibre; this would need to be confirmed through further analysis. Other categories appear general and could potentially require a material allocation exercise (that is, few costs may be directly attributable to fibre or copper services).

Figure 5: Opex profile

Source: Chorus annual reports

Overall, there is a strong case that the consequences of misallocation are likely to be material. This is accentuated by the potential for cost over-recovery as a result of existing copper prices facilitating full recovery of relevant common costs; allowing for “double recovery” of costs would clearly not be in the interests of end users.

Chorus and LFC incentives

Chorus and LFCs have strong incentives to allocate as much of the common cost incurred to the regulated fibre products as possible: any losses incurred will be capitalised into the RAB in the new regime as described in **Figure 1**. By allocating a large share of common assets, capex and opex to fibre, Chorus will be able to increase its revenue requirement going forward. Further, if accepted by the Commission, the allocation method adopted by Chorus may also serve as a precedent for the division of assets between copper and fibre post-implementation.

Conclusion

Given the consequences of misallocation, we recommend a prescriptive approach to promote outcomes consistent with workably competitive markets in the interests of end users.

4.1.3 Preliminary views on allocation approaches

In relation to allocation of shared capital and operating costs, the Commission says:

Simplifying assumptions could be used to allocate capital and operating expenditure costs between assets shared between UFB and non-UFB (eg, copper) services. For example,

allocation values could be determined with respect to the relative revenues received from end-users of UFB and non-UFB services.²⁰

It is not entirely clear to us that simplifying assumptions are necessary or desirable in this case. This is because, as we have set out, the consequences of misallocation are potentially material. Nor is it obvious that relative revenue is a useful allocator, as it is not a cost driver and nor could it readily be used on a forward-looking basis (as it would be circular – higher allocations to (say) fibre would increase fibre revenues and so allocations).

We accept that proxy allocators might be required for cost allocation relating to some classes of shared capital and operating costs. In the absence of clear causal relationships between cost and output, there are a number of proxy factors which may be used in ABAA or similar approaches. For example:

- Customer numbers
- Premises ready to connect
- Share of revenue
- Share of data traffic
- Share of connection speed
- Relative proportions of directly attributable costs (sometimes called equi-proportionate markup or EPMU²¹)

An appropriate allocation of common costs may well depend on the nature of the services across which the common costs are shared. In particular, it is sensible to allocate a small share of common costs to services which are in their initial stages, for example the start-up stage of a business division because this is how firms operate in workably-competitive markets. This is particularly applicable to fixed-line broadband networks, with revenue lagging behind network rollout.

There are three relevant factors that need to be considered with respect to allocation between fibre and copper services.

- The first is that in workably competitive markets firms consider new investments by comparing the incremental costs that will be incurred with incremental revenues. Any line of business that can meet this criterion will rationally be undertaken as a new activity.
- The second factor is that there will be a transition between copper and fibre; over time, fibre services will displace and ultimately replace entirely copper services.
- The third factor is that cost allocation will continue to arise until the copper network closes down. There would be benefits if the cost allocator, at least during the later stage of the rollout, was consistent with forward-looking cost allocations.

The combination of these factors suggests that the allocation of the value of assets common to copper and fibre should change over time. This would best reflect how a competitive firm allocates costs between activities when considering an investment decision. Existing assets and capex incurred at the start of the rollout may be used entirely by copper services yet may be used to generate income from fibre services in subsequent years. Instead of “locking in” a division of the capex to fibre vs copper, which would require detailed forecasts of how the asset is to be shared, and appropriate discount rates,

²⁰ Commerce Commission (2018), 7.68.

²¹ Ofcom uses this approach to allocate costs between copper (MPF) and fibre (GEA) services. Ofcom, *Wholesale Local Access Market Review: Statement – Volume 2 Charge control design and implementation*. March 2018, at 2.60. (Ofcom 2018)

allocating asset values based on some measure of utilisation would be more transparent and feasible while in principle accomplishing the same objective. In the early stages of network deployment, this would imply very little (if any) common cost would be allocated to fibre services, and, over time, this proportion would increase as copper customers are displaced by fibre customers.

4.2 Treatment of fibre and copper common costs – forward looking allocation

4.2.1 Nature of allocation required

As we indicate above, unregulated copper and regulated fibre share assets and common costs – including the duct network, poles, exchanges, buildings, and back office costs.

We expect that:

- New capital and operating expenditure will be increasingly driven by fibre services as Chorus will seek to defer all non-essential expenditure on its copper network. However, until the copper network is closed in a particular region, it will remain efficient for copper services to bear some common costs.
- In contrast to the rollout phase, where capex/assets were arguably the most important cost allocation, operating expenses may form a high proportion of expenses.

As we describe in **Figure 5**, some operating expense categories may be attributable on a causal basis.

- Provisioning, for example, could be allocated using records of new or changed services. The costs per service should depend on the service type: “The provisioning cost per truck roll for VDSL installations is higher (due to it being a more labour intensive product to provision)”.²² Such an approach would require relatively detailed information on the provisioning services performed by Chorus, although at this point it is unclear if detailed accounting records are available.
- Network maintenance, while common to some degree, may be more attributable to copper due to degradation of existing copper assets and electronics located in the many cabinets used by Chorus. Any records of maintenance tasks may be used to allocate these costs; such an approach may be more appropriate than using some proxy variable.

Where accounting information is presently unavailable, for significant cost types, it may be necessary for Chorus to undertake costing studies to determine causal relationships.

4.2.2 Prescriptiveness of approach required

Risks and consequences of misallocation

The relative prices of fibre and copper will affect the transition between these services. Cost allocation could lead to a transition between copper to fibre that is too fast or too slow, from an intertemporal efficiency perspective. Efficiency in this context requires the maximisation of consumer surplus over time (subject to a budget constraint of zero economic profits). However, misallocation could also increase total costs if copper services continue in circumstances where it would be efficient to shut the network down and fully transition to existing fibre assets. More generally, misallocation will distort prices, potentially leading to high prices of regulated fibre services.

²² Chorus, Management Commentary, 2014.

Chorus and/or LFC incentives

Chorus will likely wish to allocate as much cost as possible to fibre; there is little downside from doing so as copper prices will become unregulated and there are no barriers to pricing below regulatory allowances or price caps. This allows scope to distort cost allocation if unchecked by the Commission.

As an example, copper service prices may become unregulated for areas/customers for whom regulated fibre is available, reflecting that, in principle, the price which Chorus (and LFCs) charges for fibre services constrains the price which they are able to profitably offer for copper services. Putting aside the degree to which fibre pricing constrains the ability of Chorus to set prices for copper, there remains an incentive to increase fibre prices by misallocating common costs towards regulated fibre. In this way, allocating costs to fibre may – somewhat paradoxically – facilitate increases in copper services prices.

4.2.3 Preliminary views on allocation approaches

As we noted for the “backward looking” allocation, the high risks and consequences of misallocation mean that genuine efforts must be taken to establish causal relationships between cost and outputs. Where such relationships cannot be found or are unclear, there are likely to be a number of proxy factors which may be used in accounting-based approaches; a challenge for the Commission is that there are a wide range of proxy factors that Chorus and LFCs may wish to apply. For example:

- Customer numbers
- Premises ready to connect
- Share of revenue
- Share of data traffic
- Share of connection speed
- Relative proportions of directly attributable costs (EPMU)

It has been noted by the Commission that more EDB costs have been allocated to regulated activities when costs are allocated based on causal factors than when proxy factors are used, and that this may be indicative of EDBs applying the IMs incorrectly.²³ A proposed solution was to strengthen the requirement to justify the use of proxy allocators. That is, the regulated business should be able to demonstrate that:

- A causal relationship cannot be established and
- The proxy factor is appropriate.²⁴

We think that the Commission will need to be equally or more vigilant here.

Comments on options

With the caveats above noted, we have the following comments on proxy allocators:

- Share of revenue cannot be used in a forward-looking approach as it will lead to a circular cost allocation due to the direct impact of cost allocation on revenues of regulated services.
- Other methods, such as the share of traffic and or connection speed, may be distortionary due to the considerably higher speeds of fibre connections, and the empirical observation that fibre customers

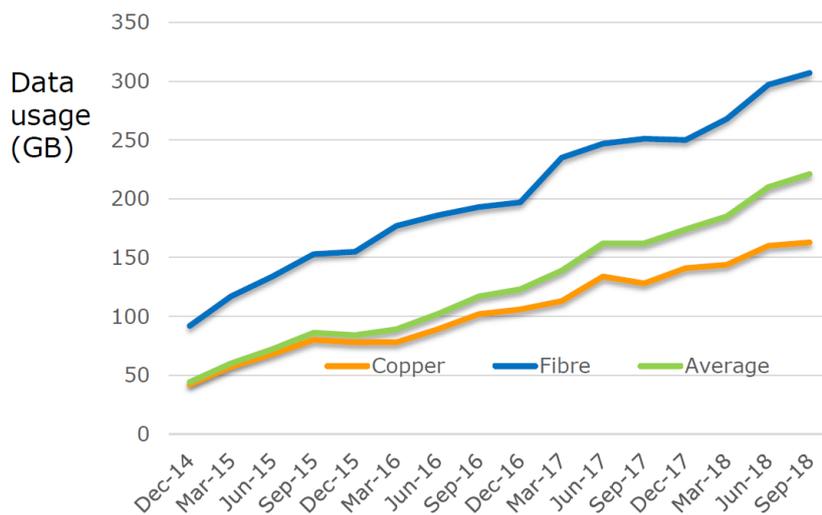
²³ Commerce Commission, Input methodologies review decisions - Topic paper 3: The future impact of emerging technologies in the energy sector, December 2016 (Commerce Commission 2016), paragraphs 150-151

²⁴ Commerce Commission (2016), paragraph 152.

download substantially more than copper customers. To the extent these do not capture willingness to pay, they will not be ideal allocators.

Figure 6 below highlights the potentially distortionary impact of a usage-based method, allocating costs based on throughput, if costs are not actually driven by throughput.

Figure 6: Monthly average data usage per connection on Chorus' network



Source: Chorus Investor Roadshow, October 2018

- Using equal mark-ups on directly attributable costs is simple to apply but might not produce the best incentives. In particular, it may reduce the incentive to reduce the directly observable costs of regulated fibre assets. Reducing those costs reduces prices both through the actual lowered costs, but also the lower share of (potentially fixed) common costs. While it will increase the incentive to reduce the directly observable costs of copper services, this may not provide any benefit to end users as these prices are unregulated. However, the materiality of this incentive is, at this stage, uncertain.
- The share of customer numbers may be a useful proxy. However, it may lead to too few costs being allocated to copper towards the end of the rollout. Despite the copper network carrying relatively few customers by this stage, the copper network may indirectly drive a substantial share of costs (for example, maintenance costs, which could be allocated on some other basis).

4.2.4 Useful precedents

The Commission has developed considerable experience with cost allocation principles during the recent IMs review, specifically regarding EDBs. It would be valuable to relate the issues relating to cost allocation of unregulated copper and regulated fibre to those relating to EDBs.

5 ALLOCATING BETWEEN DIFFERENT TYPES OF FFLAS

5.1 Allocation between layer 1 and layer 2 services

5.1.1 Nature of allocation required

Chorus' deeds require it to supply layer 1 unbundled services on an equivalence of inputs (EOI) basis from January 2020.²⁵ In offering layer 1 services to access seekers, Chorus and/or the Commission may rely on costs to inform whether the prices offered to access seekers are appropriate. Thus, while the allocation of costs between layer 1 and layer 2 may be for information disclosure purposes, the Commission should place emphasis on gathering the information both for the purposes of transparency, and to afford any future reviews of the layer 1 price. Where there are common costs shared by layer 1 and layer 2 services, an allocation method will be required to determine the relevant costs.

As noted by the Commission, the cost allocation methodology “might be concerned primarily with the price at which competition at the layer 2 is likely to emerge”.²⁶ Chorus is obliged to offer the layer 1 input to itself and access seekers on the same terms and conditions, including price.

Vodafone has received further advice²⁷ that the EOI obligation requires ‘sufficient economic space’ such that an equally efficient access seeker purchasing the layer 1 service from the UFB provider will be able to compete against the UFB provider in respect of the layer 2 service or an RSP re-supplying one of the layer 2 services at retail.

There are two main options for determining a price for unbundled layer 1 services; a bottom up cost oriented approach, or a top-down “wholesale minus” approach. In either case, the price offered for layer 1 should be constrained by a price that affords sufficient economic space between the layer 1 and layer 2 prices offered by Chorus (and LFCs).

- A ‘wholesale minus’ approach would take the price of a benchmark wholesale product, and subtract a margin corresponding to the additional costs of layer 2 service. In determining the margin, the Commerce Commission may examine the additional costs of Chorus in providing the layer 2 service; in doing this, common costs must be allocated between layer 1 and layer 2.
- Alternatively, the price of the layer 1 service may be determined using a bottom-up cost-oriented price. Similar to above, the costs of the layer 1 service must be determined, and therefore the common costs must be allocated between layer 1 and layer 2.

In either case, the allocation of common costs between layer 1 and layer 2 will be important in determining whether the layer 1 price offered by Chorus meets EOI obligations. Further, the analysis may depend on the benchmark product considered: the allocation of common costs shared between different bitstream products would then be relevant.

²⁵ Chorus Limited Deed of Open Access Undertakings for Fibre Services, October 2012, clauses 6.2 and 6.3.

²⁶ Commerce Commission (2018), 7.87.

²⁷ James Every-Palmer, Equivalence of inputs obligation: Implications for pricing of layer 1 services, 2016.

5.1.2 Prescriptiveness of approach required

Risks and consequences of misallocation

Our preliminary view is that the risks of misallocation are moderate, but the consequences are potentially severe. This would support a prescriptive approach to common cost allocation.

The risks of misallocation are higher where the common costs between services are more material. There is a limited amount of sharing between layer 1 and layer 2 services, although two obvious issues would be:

- how to allocate the costs of a call out to install lead ins and active equipment at a customer premises. While some costs will be direct (the incremental time for layer 1 install, and incremental time for layer 2 install), there will also be a significant shared cost (such as the call out fee).
- layer 1 services will share exchange space with layer 2 services (where the access seeker installs equipment). In this situation, Chorus will need to allocate the costs of exchange space.

The consequences of misallocation are potentially severe. The ability of access seekers to offer layer 2 services using layer 1 access from Chorus is highly dependent on the price at which Chorus offers layer 1 access.

A layer 1 access price that deters entry will reduce competition and reduce efficiency in two ways. Limiting the degree to which Chorus is exposed to competition will likely reduce the incentive for Chorus to reduce prices of layer 2 services and reduce costs. Furthermore, limiting competition will impact dynamic efficiency: entrants may offer new products that Chorus may not.²⁸

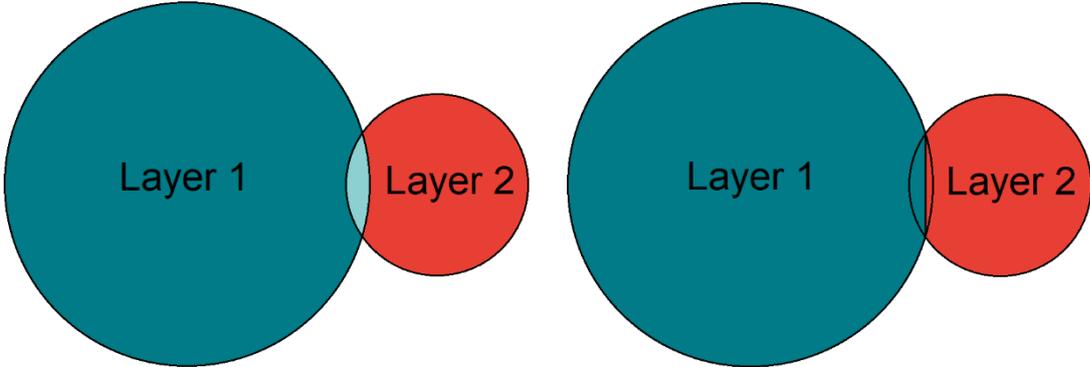
While the legislation does not obligate Chorus to apply a specific method to determining the layer 1 price, the terms (including price) should meet the EOI obligations. Even small differences in prices offered are likely to influence the entry decisions of potential layer 2 competitors.

It is important to emphasise that it is not just the method of common cost allocation that affects economic space, and the potential benefits from layer 2 cost. The initial allocation/attribution of costs to directly attributable and common costs is also highly influential on the economic space available for layer 2 services post allocation of common costs to layer 1 and layer 2. Two examples highlight this significance:

- In **Figure 7**, there are few costs remaining that can be classified as common costs, for example if maintenance costs are attributed based on records of individual maintenance tasks.
- In **Figure 8** however there are many costs that have been classified as common costs. In this circumstance, the common cost allocation will be critical to whether competition actually emerges.

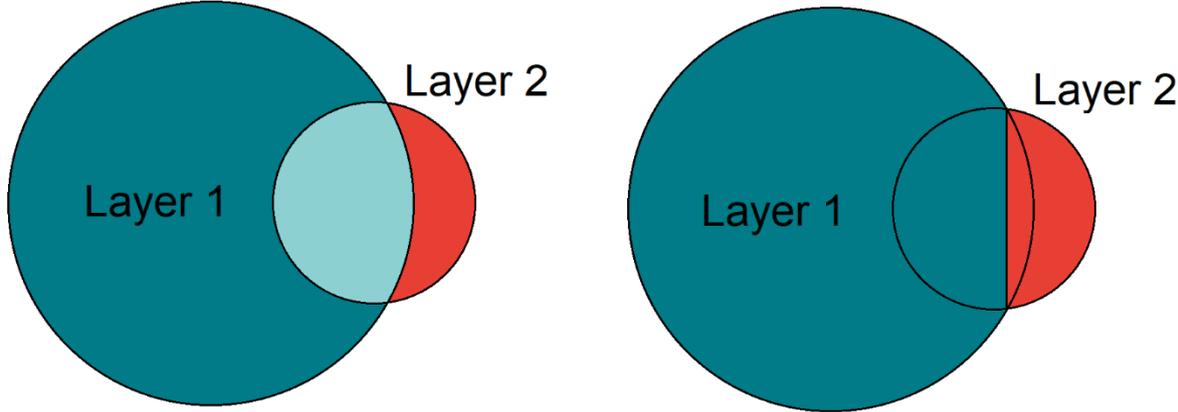
²⁸ It is also feasible that an allocation that attributes excessive costs to layer 2 may require low layer 1 prices to be consistent with EOI obligations. If set too low there is a risk of excessive uneconomic duplication of layer 2 network assets. It might also lead to excessive prices of layer 2 services from Chorus in an attempt to increase the layer 1 price: this might occur because the layer 2 benchmark price may not include the anchor products subject to price regulation.

Figure 7: Low proportion of costs are common



Source: Frontier Economics

Figure 8: High proportion of costs are common

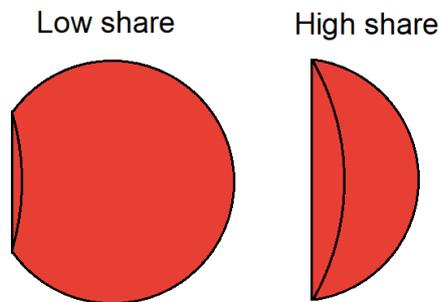


Source: Frontier Economics

The different shares of common costs lead to different layer 2 costs after the common costs have been allocated, as highlighted in **Figure 9**. While a range of common costs allocations may afford

sufficient economic space when there are few common costs, the same cannot be said for when there is a large proportion of common costs.

Figure 9: Economic space



Source: Frontier Economics

Chorus and/or LFC incentives

If Chorus considers that it would be better off if there was no downstream competition for the supplier of layer 2 wholesale services, it will have a strong incentive to reduce the economic space between the price of layer 1 and layer 2 services it provides.

If a customer currently receiving service by an RSP purchasing a layer 2 service from Chorus is switched to a service supplied using only layer 1 service from Chorus, the effect on Chorus is likely to be negative. As the layer 1 product is passive fibre, any differences in the layer 2 service (Chorus vs Vodafone for example) would not lead to any additional utilisation of layer 1. The impact would therefore be a loss of the additional revenue that the layer 2 service attracts, offset by any reduction in costs associated with the loss of the layer 2 service.

A substantial portion of the layer 2 costs may be fixed, leading to negligible cost savings.²⁹ As a consequence of reduced revenue with little to no offset in costs, it is likely that Chorus has an incentive to restrict access seekers by offering high layer 1 prices.³⁰

5.1.3 Preliminary views on allocation approaches

There are essentially two different ways of treating the shared cost of layer 1 and 2 activities:

- to identify causal or proxy allocators of costs between layer 1 and layer 2; for example, based on the time spent on each activity for call outs and share of exchange space for exchange costs.
- to weight shared costs towards layer 2 to reflect the potential costs faced by a potential competitor building a stand-alone layer 2 network, promoting competition as required under s166.

The second method would be more consistent with the costs that would be incurred by a notionally efficient competitor that operates a stand-alone business. The benefit of this approach is that it would best promote the objective of promoting workable competition in the market for layer 2 services; an approach that, say, allocated a high proportion of common costs to layer 1 services would discourage

²⁹ It is, however, possible that assets may be made available for other customers, leading to some cost savings.

³⁰ This may be offset to a degree if Chorus can sell more layer 1 services as a result of differentiation by layer 2 providers (a market expansion effect).

entry because entrants would need to have lower costs in other elements of the service package to compete with retail prices offered by Chorus.

If the Commission finds that the economic space is appropriate when reviewing the price and terms offered by Chorus, the costs of the layer 2 services provided by Chorus will be crucial in determining if the prices offered by Chorus satisfy the deeds agreed to by Chorus and s166. However, with this approach the costs must include sufficient common costs to allow a notionally efficient competitor to compete. On this basis the cost allocation to be applied here differs substantially from the allocation relating to fibre vs copper.

At the low end, the cost of the layer 2 service may be the costs directly attributable to layer 2 services. However, attributing all common costs to layer 1 will preclude the entry of a notionally efficient competitor. Attributing all common costs to layer 2 will however allow entry, though is unlikely to be proposed by Chorus.

A more detailed examination of the common costs would ideally be performed, with costs allocated on the basis on which an access seeker would need to bear those costs in providing layer 2 service. In this way, the costs of installing equipment would be born on layer 2 assets, reflecting the incremental nature of those costs to a potential entrant. In allocating the common exchange costs, the co-location terms offered by Chorus should be informative, in line with the EOI principles.

Useful precedents

The Commission may find it helpful should consider the experience of Ofcom in the UK in promoting competition between downstream suppliers of superfast broadband service providers.³¹ This is highlighted in Box 4. In conclusion, Ofcom's approach took seriously the potential advantages of an incumbent layer 2 supplier, and made adjustments to reflect the position of new entrants and the dynamic efficiencies that would be expected from downstream competition.

Box 4: Ofcom and the VULA margin

In 2015, Ofcom, the communications regulatory in the UK, determined a margin between wholesale and retail prices for superfast broadband services (VULA margin). In determining the VULA margin, Ofcom applied a LRIC+ cost standard, a cost-oriented approach, to an adjusted equally efficient operator approach (adjusted EEO). In our view, the principles applied by Ofcom are broadly relevant to the approach that should be considered by the Commission in allocating costs between layer 1 and layer 2 activities.

The adjusted EEO approach involves assessing whether the vertically integrated firm's downstream arm could operate profitably if it had to pay an equivalent wholesale price as charged to downstream competitors. This approach assesses whether firms that are as efficient as BT would be able to match its retail prices. However, Ofcom did not simply use BT's costs in doing so, but made certain key adjustments based on certain advantages held by BT. This approach results in a larger minimum margin than the EEO approach.

The reasonably efficient operator approach, based on the hypothetical costs of a reasonably efficient entrant, was not adopted by Ofcom, and was seen to be a more onerous approach. In selecting adjusted EEO, Ofcom did not adjust for scale, primarily because competitors to BT had broadly similar scale, and economies of scale were less important for retail networks. Such arguments are not applicable to the current context of layer 1 unbundling in New Zealand. While

³¹ As set out in Ofcom, *Fixed Access Market Reviews: Approach to the VULA margin*, March 2015.

adjustments for scale may play a role in setting the margin rather than cost allocation, the principle implies that common costs of the type that would be borne by layer 1 access seekers should not be excluded from the costs of the layer 2 service.

In adopting LRIC+ rather than LRIC, Ofcom required superfast broadband subscribers to contribute to common costs. In the current context, this would be requiring purchases of layer 2 access services to contribute to the recovery of costs common to layer 1 and layer 2 services. Ofcom recognised that increasing the layer 2 margin may promote retail competition by encouraging entry; the risk of reductions in static efficiency needed to be balanced with the potential dynamic efficiency benefits of enhanced competition in fibre broadband. Thus, the LRIC+ approach reduced the risk of adverse consequences for end users.

Source: Ofcom, Frontier Economics

5.2 Allocation between anchor products and other bitstream products

5.2.1 Nature of allocation required

Section 207 of the Amendment Bill provides that the purpose of anchor services is (a) to ensure that baseband equivalent voice and basic broadband services are available to end-users at reasonable prices; and (b) to provide a reference to act as an appropriate constraint on the price and quality of other fibre fixed line access services. Following the first regulatory period the Commission may set maximum prices for anchor products based on the costs of supply; that is, a 'cost-based price'.

It is clear that, according to the Commission's definition of common costs, the costs of these anchor services are primarily common costs shared with other services which will need to be allocated. The relevant costs likely include costs associated with ducts, cables, electronics and network maintenance. To the extent that the prices of anchor services will cover at least the incremental costs of service, cost allocation can therefore be expected to be a material component of the setting of any cost-based price.

5.2.2 Prescriptiveness of approach required

Risks and consequences of misallocation

The high degree of sharing of costs means that the risks of misallocation are high.

As one of the purposes of the anchor service is to constrain other FFLAS prices, the consequences of misallocation are also high. Higher prices for anchor services will allow for higher prices of all other constrained services.

The consequences will be mitigated to some degree by the overall limits on revenue that can be recovered; high prices for anchor products which lead to high prices for other services will not allow Chorus or LFCs to recover more than their efficient costs, overall.

Chorus and/or LFC incentives

There appears to be little downside for Chorus to allocate as much cost as possible to the regulated anchor products. As more costs are allocated to anchor bitstream services, it becomes more feasible for Chorus to demonstrate that it is pricing below cost; this would allow Chorus to present a case for a review of anchor prices, affording subsequent price increases. As noted, the broad RAB-based framework will provide some overall limit on revenues that can be obtained from non-anchor products;

however, to the extent that higher prices for anchor products may deter layer 2 competition, incentives would favour this approach.

A further consideration here is whether there is a need to define an IM prior to the declaration of the anchor services and price-quality regulation. In our view, there would be a strong interest in providing a methodology that would reduce discretion given the incentives described. This would facilitate transparency on the calculation of anchor prices, maximise consistency of approach over time, and provide useful information for the price review process.

5.2.3 Preliminary views on allocation approaches

Given the close relationship between anchor services and other FFLAS services, establishing causal relationships will be difficult and we expect the Commission will likely need to allocate much of the common cost based on proxy factors (at least initially).

The choice of proxy factors across different cost items may be a contentious issue:

- Due to the large share of common costs and similar directly attributable costs per service, applying the ratio of directly attributable costs to total costs (EPMU) may produce undesirable outcomes – such as very similar allocations for different quality services.
- In principle, higher quality bitstream products could be expected to account for a higher share of common costs, if only due to the higher grade of equipment that was required to make these products available. However:
 - Using revenue as a proxy will be subject to circularity
 - Bandwidth may be useful as a proxy factor, however the bitstream products exhibit considerable variation in bandwidth (more so than variation in price). Moreover, the products differ in other quality dimensions such as CIR, priority and business/residential classes.
 - Other measures of usage such as volumes downloaded over a reference period may potentially be more useful, to the extent this reflects willingness to pay and can feasibly be measured.

5.2.4 Useful precedents

The key characteristics of anchor services is that for them to have an anchoring effect, they will need to be similar to other services. This also implies the proportion of shared costs is likely to be high and concerns over cost allocation heightened (particularly where there are potential competitive threats for higher value services).

Our understanding is that Ofcom has recently faced an issue similar to that facing the Commission. In its most recent regulatory statements on wholesale broadband access, it had to determine how to allocate common costs between the 40/10mbps “anchor” generic ethernet access (GEA) product and other GEA products. Ofcom noted that the network resources used to provide different GEA variants is nearly identical and so the increment costs of different services would be very similar. Proportional mark-ups would therefore lead to a very flat tariff gradient (i.e. near identical charges).³²

Ofcom suggest that a standard mark-up approach would not likely lead to efficient prices. This is because it would not account for customers’ willingness to pay, as reflected in differing elasticities of demand. It proposed an approach to allocation based on retail pricing structures, which allowed an efficient wholesale structure to be inferred.³³ Given Chorus’ and LFC’s separation, such an approach

³² Ofcom (2018) at 2.76.

³³ Ofcom (2018) at 2.78.

could obviously not be applied directly based on New Zealand data. However, data generated from other jurisdictions could potentially be used as a basis for designing an allocation gradient.

One further precedent which the Commission may wish to further explore is the pricing of basic letter services. In most postal systems, only basic letters are regulated while non-standard services are not subject to binding price regulation even though they share the same collection and delivery network. Although NZ Post is subject to minimal regulation relating to prices, in Australia, Australia Post has requirements developed over many years relating to its obligations to notify of price changes.

The relevance of this case is not the particular allocation methodology but the rigour that is likely to be required when considering allocations of costs towards similar services, where there is a strong incentive to allocate costs towards the regulated service.

Box 5: Australia Post and cost allocation of regulated letter and other services

The ACCC for many years reviewed Australia Post's prices to determine whether cross-subsidies were likely. Although it did not formally review Australia Post's activity-based cost allocation methodology (CAM) as part of its annual cross-subsidy assessment process, the ACCC:

- prepared record-keeping rules (similar to information disclosure requirements)
- required Australia Post to allocate revenues, costs, and assets between service groups, with costs reported as direct, attributable or unattributable account items.
- required the regulatory accounts to be reviewed by an independent auditor who audits Australia Post's compliance with the RKR and Australian Auditing Standards
- engaged a consultant to review Australia Post's cost allocation model, which included:
 - the reasonableness of the allocation of Australia Post's direct and shared costs between reserved and non-reserved services including regular and priority letter services
 - the appropriateness of the model given relevant accounting standards, the trend of declining letter volumes and increasing parcel volumes, and current and future cost differences in the delivery of regular and priority letter services
 - the extent to which the model provides a reasonable model to derive efficient costs and prices for regular and priority letter services.³⁴

Source: ACCC, Frontier Economics

³⁴ ACCC decision on Australian Postal Corporation 2015 price notification, December 2015.

A THE REGULATORY ENVIRONMENT

In this Annex we provide an overview of the relevant regulatory environment; the Commerce Commission is currently working on implementing proposed fibre regulation.

Ultra-Fast Broadband

The Ultra-Fast Broadband project is administered by the New Zealand Government to provide fibre broadband access to a substantial share of the New Zealand population. It is a public-private partnership with four companies: Chorus (which accounts for most of the rollout) and three local fibre companies (LFCs). The companies do not compete with other, instead they serve different geographic areas. The LFCs Northpower and Enable Networks for example cover Whangarei and Christchurch respectively.

Chorus and LFCs offer wholesale bitstream services to ISPs, who then offer retail services to customers; Chorus and LFCs do not offer retail services.

The rollout is currently 74.8% complete³⁵ with 87% of New Zealanders able to access fibre by the end of 2022.

Deregulated copper

The Telecommunications (New Regulatory Framework) Amendment Bill (the Bill), passed November 2018, will allow for deregulation of copper lines in areas where fibre and copper compete. The copper network, which provides internet access via ADSL (and variants) is owned by Chorus; the Commerce Commission sets the wholesale prices that Chorus may charge access seekers. However, once regulated fibre is available in an area the justification for regulation of copper prices weaken: the two products are substitutes and the copper network is essentially being replaced by UFB. While copper prices may be unregulated, they will be constrained by the regulated prices of fibre services.

Along with the deregulation of copper, the service obligation will be removed: Chorus will be able to withdraw the copper service, subject to the availability of alternative UFB service. Where fibre is not available, copper will remain regulated with prices capped at 2019 levels adjusted for inflation; the service obligation applies.

Price and revenue caps

The Bill proposes to implement a building block model regulatory framework, similar to that used for regulated energy networks. In such a framework, the companies may face an annual revenue constraint such that they may earn a fair return on the regulatory asset base, allowing for regulatory depreciation, tax expenses, and operating expenses associated with the regulated activities (revaluation gains are to be subtracted from allowable revenue). A wash-up mechanism will apply; allowed revenues may be smoothed over regulatory periods in certain circumstances.

In addition to the revenue requirement, price constraints may apply to certain fibre bitstream services, the two anchor products as described below, and direct fibre access services (DFAS) often referred to as layer 1 fibre.

³⁵ As at June 2018, see <https://www.mbie.govt.nz/info-services/sectors-industries/technology-communications/fast-broadband/documents-image-library/jun-2018-quarterly-broadband-report.pdf>

Anchor pricing

As referenced above, Chorus currently faces a price cap for two 'anchor' products: the 100/20 UFB service and a basic voice only service. In agreement with Crown Infrastructure Partners, Chorus is currently subject to a price cap of \$45 for the 100/20 UFB product until July 2019, subsequently \$46 through to December 2019. Under the new regime, a new regulated price cap will likely be introduced in 2020 for the 100/20 anchor service, initially set at the 2019 level adjusting for inflation. A voice only service will similarly serve as an anchor product, subject to regulation.

The 100Mbps downlink 20Mbps uplink service and voice only service act as anchor products; these service faces a price cap which then influences the prices set for other services. While the 100/20 anchor product is not the fastest product (gigabit services are available), and is sometimes described as an entry level product, it is substantially higher quality than other services offered by chorus, for example 50/10 services.

Aside from the price cap and obligation to offer the service, the anchor pricing has further implications for layer 1 access.

Layer 1 access

Chorus and LFCs currently offer layer 2 access to access seekers; ISPs purchase these services which provides communication from the exchange to the customers premises. However, ISPs may seek access to layer 1 fibre: the dark/passive fibre that connects the exchange building to the external termination point at the customers premises. The ISP would then add hardware, for example network equipment at the exchange, to obtain layer 2 fibre. In doing this the ISP may obtain a product differentiated from the offering of Chorus and compete against Chorus using the dark fibre assets of Chorus.

Access seekers Vodafone and Vocus are currently requesting layer 1 access from Chorus and the LFCs, unbundling the layer 1 fibre from the layer 2 product. The price and service levels are to be set on an "Equivalence" standard, i.e. at the same terms that Chorus offers the service to itself for use in layer 2 fibre. One issue in determining/challenging a price for layer 1 access is that legislation prohibits the Commission from considering the 100/20 anchor price in any calculation of the layer 1 price.

Capitalised losses

The losses incurred during the rollout phase of the UFB network will be capitalised into the opening RAB at the implementation date (likely to be 2022), treating them as an additional asset. A rate of return may apply to these capitalized losses, for example applying the WACC. This would reflect the obligation to consider any "accumulated unrecovered returns", interpreted by the Commission to require the application of a building blocks approach during the loss period.

frontier economics

BRISBANE | MELBOURNE | SINGAPORE | SYDNEY

Frontier Economics Pty Ltd
395 Collins Street Melbourne Victoria 3000

Tel: +61 (0)3 9620 4488

www.frontier-economics.com.au

ACN: 087 553 124 ABN: 13 087 553