



Frontloading depreciation to account for asset stranding risk

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1. Introduction and summary

1. Chorus has asked us to prepare a report setting out how frontloading depreciation accounts for the risk of asset stranding, and more specifically how frontloading in this context is consistent with the ex ante allowance for the risk of asset stranding provided by the New Zealand Commerce Commission (NZCC) in the fibre Input Methodologies (IMs).¹
2. In summary, we find that:
 - a. The NZCC's framework for the ex ante allowance explicitly acknowledges that there may be stranding risk that is best dealt with by other tools, such as frontloading depreciation;
 - b. The NZCC did not compensate for stranding of the communal network and made various decisions in setting the 10 basis point (bp) ex ante allowance that tended towards a lower allowance;
 - c. The financial loss asset (FLA), by nature of being a sunk/historic cost and non-physical asset, is particularly prone to stranding. This risk was not accounted for when the NZCC set the 10bp allowance. Plausible estimates of the allowance that would be required for the FLA equate to at least a 29bp allowance (using a 10% probability of stranding), and potentially much higher. This calculation also assumes the FLA is the only asset subject to stranding risk and therefore understates the risk Chorus faces;
 - d. Chorus' ultra-fast broadband (UFB) assets in Wellington, which account for 11% of its physical regulatory asset base (RAB), are likely subject to a greater stranding risk than the other physical assets in the RAB. This is because of the competing cable network that is already present in Wellington (in addition to the threat from Fixed Wireless Access (FWA) that exists in other regions). Using a stranding probability of 10% to 20% for the assets in Wellington gives an ex ante stranding allowance of 8 to 18bp;
 - e. Therefore, there is likely to be material residual stranding risk that should be addressed by frontloading depreciation if it is not addressed via the ex ante stranding allowance; and
 - f. Using the 31 to 87bp ex ante allowance we calculated in our 22 January 2020 report for Chorus (filed with the NZCC in respect of the fibre IM proceedings)² and also incorporating the risk of FLA stranding and the higher risk of stranding in Wellington, yields an ex ante allowance of 57 to 135bp. A simple conversion of this allowance shows that, after accounting for the NZCC's 10bp allowance, there is a further \$26m to \$69m in annual revenue that is not reflected in the 10bp risk of asset stranding.
3. The remainder of this report is structured as follows:
 - a. Section 2 describes the NZCC's approach to compensating firms subject to price-quality regulation for the asymmetric risk of asset stranding;
 - b. Section 3 analyses whether Chorus will still face material residual stranding risk after receiving the ex ante allowance of 10bp; and
 - c. Section 4 undertakes a simple calculation of the annual revenue that is not reflected in the NZCC's 10bp allowance.

¹ NZCC (2020), "Fibre input methodologies: Main final decisions – reasons paper", 13 October (hereinafter referred to as "Fibre IMs Reasons Paper").

² NERA (2020), "Assessment of Type II asymmetric risk for Chorus' fibre network", report for Chorus, 22 January, paragraph 8(f).

2. NZCC's treatment of asymmetric risk of asset stranding

4. In the fibre IMs, the NZCC considered how to treat asymmetric risks faced by regulated providers. An asymmetric risk is a risk that a firm faces in which its returns are affected in one direction, without any offsetting impact on its returns in the other direction. The relevant asymmetric risks we consider for the purpose of this report are "Type II" asymmetric risks, which arise from events such as the threat of technological change, and competitive entry or expansion.³ Type II risks can result in asset stranding, for example where there is insufficient demand for a firm to earn a competitive return on its assets.
5. In the fibre IMs, the NZCC's treatment of Type II asymmetric risks was to provide regulated businesses with ex ante compensation in the form of a 10 basis point (bp) allowance implemented in cash flows.⁴ The 10bp allowance was calculated using a model set out in Dixit and Pindyck (1994), supplemented by some of the NZCC's own calculations.⁵ Using this analysis, the NZCC was able to translate combinations of the probability of stranding and the proportion of the regulatory asset base (RAB) that is stranded into an annual basis point allowance for stranding risk.
6. In particular, the NZCC found that:
 - a. The probability of stranding is in the range of 0%-10%; and
 - b. The proportion of the RAB subject to stranding is in the range of 10-30%.
7. Translating these inputs using the NZCC's framework, the NZCC found that the ex ante allowance is in the range of 5-30bp. The NZCC selected a low point in this range, to arrive at the 10bp allowance. This allowance applies to the entire RAB, including the financial loss asset (FLA).⁶
8. In addition to the 10bp ex ante allowance, the NZCC's decision in the fibre IMs was to allow regulated providers to retain assets in the RAB, or submit justification for a different depreciation profile (or reduced asset lives). These methods can provide some compensation for asset stranding risks because:
 - a. Retaining assets in the RAB means that the regulated provider continues to earn a return on those assets, even if they have been stranded; and
 - b. Bringing depreciation forward, or shortening asset lives, allows the regulated firm to recover more revenue earlier, mitigating the risk arising from stranding of assets prior to full recovery of capital being achieved. This approach is net present value (NPV)-neutral, even if no asset stranding occurs: while the firm recovers more revenue earlier (and less later), the revenue profile is spread out over the life of the asset in such a way as to retain the same NPV as an alternative (e.g., smoother) revenue profile.
9. The NZCC's decision to provide these additional methods was based on its view that the 10bp ex ante compensation on its own would be insufficient to compensate for stranding risk. For example, the NZCC states:⁷

³ In some regions Chorus faces existing competition, so the asymmetric risk manifests as a constraint on uptake.

⁴ That is to say, Chorus would receive a cashflow equal to 0.001 multiplied by the regulated asset base. See paragraphs [6.1163]-[6.1217] of Fibre IMs Reasons Paper.

⁵ Avinash Dixit and Robert Pindyck (1994), *Investment Under Uncertainty*, Princeton University Press.

⁶ Fibre IMs Reasons Paper, [6.1223].

⁷ Fibre IMs Reasons Paper, [6.1216].

...the stranding allowance is not intended to provide full compensation for stranding risk. Rather, it is designed to compensate for the expected shortfall in revenue that results from the quantum of risk that remains unmitigated after the other tools have been employed – retaining assets in the RAB and adjusting depreciation (or asset lives).

10. Therefore, the NZCC appears to contemplate that the 10bp ex ante allowance is only a partial form of compensation and therefore there will be residual risk of asset stranding if not all of the tools (i.e., ex ante allowance and retaining assets in the RAB/adjusting depreciation) are utilized. In section 3 we set out why we consider that, if only the 10bp ex ante allowance is used to mitigate stranding risk, then the residual risk of asset stranding is material.

11. We note that the NZCC also requires the regulated provider to demonstrate how an alternative depreciation profile is consistent with receipt of the ex ante allowance. The NZCC states:⁸

When we consider the shortening of asset lives (or alternative depreciation profiles) as part of specifying PQ paths, its consistency with the ex-ante allowance is also relevant. This places a greater burden on the regulated fibre service provider to demonstrate how its proposal is consistent with receipt of an ex-ante allowance.

12. In section 4 we set out some simplified calculations that can help inform the analysis demonstrating consistency between Chorus' proposed frontloading of depreciation and the 10bp ex ante allowance.

⁸ Fibre IMs Reasons Paper, [6.1233].

3. Material residual risk of asset stranding remains after ex ante compensation

13. In this section we explain why we consider the residual risk of asset stranding (after the 10bp ex ante compensation, and if no other tools to address stranding risk are utilized) is material, and therefore there is a strong case for Chorus to apply an additional mechanism (which in this case is frontloading of depreciation) to account for that risk.
14. We discuss in particular four reasons that suggest the residual risk is material:
 - a. The NZCC has made various decisions in setting the ex ante allowance that lead to a relatively lower allowance;
 - b. The NZCC pointed to signs of Fixed Wireless Access (FWA) uptake slowing, but recent evidence on FWA uptake shows that FWA uptake has continued to increase;
 - c. There is a higher risk of stranding of the financial loss asset than the physical assets in the RAB; and
 - d. There is a higher risk of stranding in the Wellington region than elsewhere, where in Wellington Chorus' fibre network already competes with an alternative network (the cable network).
15. Further detail on each of these points is set out in the following sections.

3.1. NZCC's decisions on ex ante allowance imply material residual risk

16. The NZCC has made various decisions in estimating the 10bp ex ante allowance which suggest that the allowance leaves a material amount of residual stranding risk.
17. First, the 10bp ex ante allowance only compensates for "material" risk bearing.⁹ In particular, it does not account for the risk of asset stranding of a large share of assets that may have a low stranding probability. The NZCC states:¹⁰

Our judgement is that this very low stranding probability for this very large extent of assets is not unique to the fibre network (ie arguably this is an attribute for electricity networks too) and is best mitigated through the other tools – potentially exercising the flexibility on the depreciation method to adopt, including shortening asset lives in excess of GAAP rules, and/or keeping unused assets in the RAB. That is how our Part 4 regime deals with stranding risks of this magnitude (except with less flexibility allowed than here over depreciation).

18. In our 22 January 2020 report for Chorus (filed with the NZCC in respect of the fibre IM proceedings), we noted that the communal network (being fibre assets that are shared across multiple customers) has a low probability of stranding (in the range of 0-5%) but makes up a large proportion of the RAB (which we estimated as 43% of the RAB).¹¹ The NZCC appears not to disagree *per se* with the communal network having a low probability of stranding, but rather it finds that this risk of stranding should not be reflected in the ex ante allowance.

⁹ Fibre IMs Reasons Paper, [6.1199].

¹⁰ Fibre IMs Reasons Paper, [6.1201].

¹¹ NERA (2020), "Assessment of Type II asymmetric risk for Chorus' fibre network", report for Chorus, 22 January, Table 5.2.

19. As context, we estimated in our 22 January 2020 report that the stranding risk associated with the communal network would be equivalent to an ex ante allowance (weighted by share of the RAB) of 0-22bp.
20. Accordingly, by not accounting for the risk of stranding to the parts of the network that have a low stranding probability, the NZCC has left a material amount of residual risk, that it acknowledges is best mitigated using an alternative depreciation profile (or the other tools the NZCC refers to).¹²
21. Second, the NZCC's estimation of the 10bp allowance includes the following decisions:
 - a. The decision to “err on the side of caution in terms of applying judgement to the probability of stranding”,¹³ and
 - b. The use of a low point (10bp) within the 5-30bp range, with the NZCC noting specifically in this regard that the 10bp allowance “is not intended to provide full compensation for stranding risk”.¹⁴
22. This suggests that the NZCC has chosen a relatively lower ex ante allowance, leaving material residual stranding risk remaining, which it acknowledges is best mitigated using an alternative depreciation profile (or the other tools the NZCC refers to).

3.2. FWA uptake shows no signs of slowing

23. One of the key stranding risks is consumers switching to FWA broadband products, particularly with a 5G network service. In the fibre IMs, the NZCC noted that the evidence on switching from fibre to FWA was mixed,¹⁵ and that uptake of FWA appeared to have slowed in recent years.¹⁶
24. The FWA data that the NZCC analysed in its fibre IMs went through to June 2019. Since the fibre IMs decision, the NZCC has released more up-to-date data with FWA connections through to June 2020 – see Figure 1. This shows that FWA connections are continuing to increase, particularly from around December 2019. There are no signs of any slowing in FWA uptake. FWA connections as at June 2020 had nearly overtaken each of ADSL and VDSL connections.

¹² As already noted, stranding can also be dealt with by leaving assets in the RAB, if the willingness to pay of remaining customers is sufficient to pay for the stranded assets. However, requiring customers to pay for assets they are not using may itself result in further stranding if it leads to those customers switching to an alternative network. This is commonly referred to as the “death spiral” when discussing the economic stranding of electricity network assets.

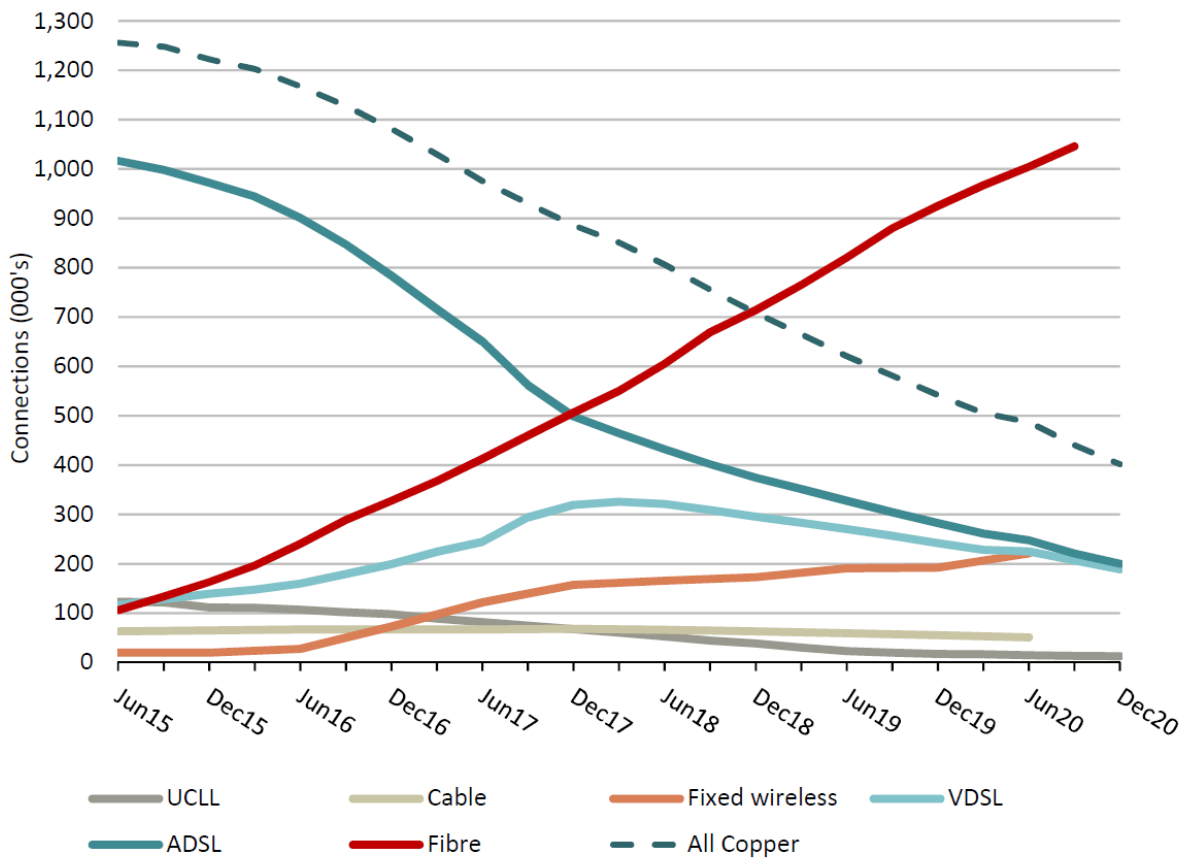
¹³ Fibre IMs Reasons Paper, [6.1205].

¹⁴ Fibre IMs Reasons Paper, [6.1216].

¹⁵ Fibre IMs Reasons Paper, [6.1207.2].

¹⁶ Fibre IMs Reasons Paper, [6.1207.3].

Figure 1: Fixed line broadband connections by technology, NZCC data



Source: Figure 1 of NZCC (2021), “Annual Telecommunications Monitor Report: 2020 Key Facts”, 16 March.

25. We note that the NZCC data shown in Figure 1 above has FWA data only through to June 2020. Chorus also provided us with data that shows FWA connections through to December 2020 (shown in Figure 5 of the confidential appendix). This shows growth in FWA has continued through to December 2020, with no evidence of any slowing in the uptake of FWA.
26. Public statements by FWA providers, particularly since the NZCC’s fibre IMs decisions in October 2020, are more generally supportive of the increased push towards FWA. The media has reported that Spark and Vodafone have been “pushing wireless broadband hard – and will be ramping up their efforts as their faster 5G mobile networks expand”,¹⁷ and refer to this push as “an aggressive new strategy”.¹⁸ Similarly, 2degrees has signalled it is expanding its FWA coverage.¹⁹

¹⁷ “Vodafone heats up wireless broadband war with \$40 a month offer”, *New Zealand Herald*, 5 March 2021, available at: <https://www.nzherald.co.nz/business/vodafone-heats-up-wireless-broadband-war-with-40-a-month-offer/RDMMZ4ZJRL4ZEAA73JYN2YUGAU/>

¹⁸ “Spark, Vodafone trying to lure more people on their broadband networks”, *Newstalk ZB*, 16 March 2021, available at: <https://www.newstalkzb.co.nz/on-air/heather-du-plexis-allan-drive/audio/arie-dekker-spark-vodafone-trying-to-lure-more-people-on-their-broadband-networks/>

¹⁹ “2degrees to build ‘almost brand new network’ with Ericsson to get into 5G”, *Stuff*, 14 April 2021, available at: <https://www.stuff.co.nz/business/124828171/2degrees-to-build-almost-brand-new-network-with-ericsson-to-get-into-5g>

27. It is worth also responding to the NZCC's view regarding the Covid-19 lockdown in 2020 as highlighting the advantages of fibre over FWA. The NZCC stated:²⁰

The recent lockdown can be seen as a natural experiment in the sense that it resulted in significantly higher and unprecedented levels of broadband demand. If anything, it highlighted the superiority of fibre over currently available FWA when broadband demand increases (as is expected in future)...

28. However, it is not clear why this highlights the superiority of fibre over FWA, given that FWA demand also increased during the lockdown. In particular, Vodafone reported that “[a]n interesting consequence of the lockdown has been an increased uptake in wireless broadband (also referred to as Fixed Wireless Access)...”.²¹ In addition, the NZCC's statement focuses on the *current* relativity between fibre and FWA. As highlighted in our 22 January 2020 report, it is the arrival of 5G (in particular applications of FWA using mmWave spectrum) that could result in FWA posing the largest constraint on fibre.²²

29. In summary, even if the NZCC was correct at the time to downplay the stranding risk from FWA (although as we noted in our 22 January 2020 report, we considered that the NZCC may have understated the views of the investment community on this risk),²³ the more recent evidence shows no signs of any slowdown in FWA uptake.

30. As noted in our 22 January 2020 report, a key asset affected by the risk of stranding due to FWA is the fibre lead-in.²⁴ As we show in Table 1 later in this report, the fibre lead-in constitutes approximately 19% of Chorus' estimated RAB of \$5.5b (as at 1 January 2022).²⁵ If these were the only assets subject to stranding risk, then the NZCC's 10bp ex ante allowance would imply a stranding probability of approximately 5%.²⁶ However, based on the analysis above, it seems unlikely that the stranding risk for the fibre lead-in is any less than the 10-20% we estimated in our 22 January 2020 report.

3.3. Higher risk of asset stranding for the Financial Loss Asset

31. The financial loss asset (FLA) reflects Chorus' financial losses accumulated during the initial period of operating the fibre network, due to investing ahead of demand (so that revenues were not sufficient to meet costs). These losses are capitalised and treated as an asset in the RAB. Chorus has estimated a conservative base case RAB of \$5.5b (as at 1 January 2022), of which \$1.5b (or 27%) is the FLA (calculated in accordance with Schedule B of the fibre IMs).²⁷ As noted earlier, the 10bp ex ante allowance for stranding risk also applies to the FLA.

²⁰ Fibre IMs Reasons Paper, [6.1206.4].

²¹ “‘Digital as usual’: balancing increased demands with reduced revenue entering level 3 – Vodafone NZ network report”, 1 May 2020, available at: <https://news.vodafone.co.nz/networkreport1may>

²² NERA (2020), “Assessment of Type II asymmetric risk for Chorus' fibre network”, report for Chorus, 22 January, at paragraphs 60-62.

²³ NERA (2020), “Assessment of Type II asymmetric risk for Chorus' fibre network”, report for Chorus, 22 January, at paragraph 68(b).

²⁴ NERA (2020), “Assessment of Type II asymmetric risk for Chorus' fibre network”, report for Chorus, 22 January, at paragraph 84.

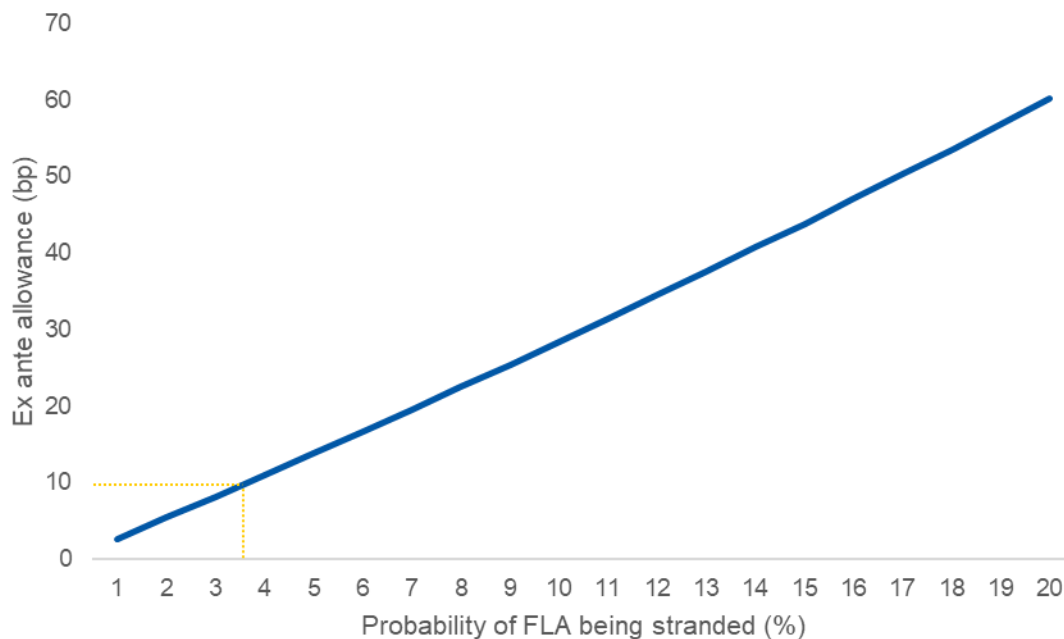
²⁵ Chorus (2020), “Initial Asset Value Model”, 26 March, available at: <https://chorus-nzx.hosting.outwide.net/api/announcements/download/2021/1624123a-07ba-42d9-add7-f071903383a8/f7095463-c0ce-4f8b-aae6-f8413bd26e7b/343108.pdf>

²⁶ Based on the NZCC's calculations shown in Table 6.19 in the Fibre IMs Reasons Paper.

²⁷ Chorus (2020), “Initial Asset Value Model”, 26 March, available at: <https://chorus-nzx.hosting.outwide.net/api/announcements/download/2021/1624123a-07ba-42d9-add7-f071903383a8/f7095463-c0ce-4f8b-aae6-f8413bd26e7b/343108.pdf>

32. However, the risk of asset stranding for the FLA is likely to be materially higher than estimated by the NZCC in determining the 10bp allowance. This is because the FLA embodies a (capitalised) historic cost, i.e., its forward-looking cost is zero. This cost will also have to be recovered over a long period of time, corresponding to the weighted average life of the UFB-related core fibre assets in the initial RAB as at the implementation date²⁸ (which we understand from Chorus is likely to be greater than 10 years). Put another way, recovering the FLA requires including a cost in prices that an alternative entrant network may not need to occur, and applying that additional cost over a long period of time. In the context of competitive stranding, the FLA is therefore particularly prone.
33. Indeed, by definition, asset stranding risk occurs when forward-looking revenues are earned from historic capital expenditure. For example, Guthrie (2020, p.273) states that “[r]egulated firms are exposed to asset-stranding risk whenever allowed revenue depends on past capital expenditure”.²⁹ If there is some competition/technology shock that leads to lower demand, historic capital expenditure is not recoverable.
34. By a similar rationale to that set out in the previous section, if there is some share of the RAB that is subject to a higher risk of stranding, it would warrant a higher ex ante allowance for stranding risk. To illustrate what allowance might be appropriate, we start by showing in Figure 2 below the ex ante allowance that would be applied to the RAB for various stranding probabilities for the FLA, calculated using the NZCC’s model with the FLA making up 27% of the RAB.

Figure 2: Ex ante stranding allowance applying to the RAB if FLA is only asset subject to stranding risk



Source: NERA calculations using NZCC Dixit and Pindyck framework

35. This figure shows that the NZCC’s 10bp allowance is consistent with the FLA having a probability of stranding of 3.5%, *if this is the only stranding risk that is compensated for*. If the 27% of the RAB that is the FLA were to have a stranding risk of (say) 20%, this would imply a

²⁸ NZCC (2020), “Fibre Input Methodologies Determination 2020”, [2020] NZCC 21, 13 October, clause 2.2.10(1)(d)(i).

²⁹ Graeme Guthrie (2020), “Regulation, Welfare, and the Risk of Asset Stranding”, *Quarterly Review of Economics and Finance*, 78, 273-287.

much higher allowance of 61bp using the NZCC's framework.³⁰ Even a lower probability of 10% (which, as noted above, is the top of the range of probabilities used by the NZCC to determine the 10bp allowance), would give an ex ante allowance of 29bp. The probability of stranding is likely to be much higher than this. In our 22 January 2020 report we considered that a plausible estimate for the risk of stranding of the fibre lead-ins was 10-20%.³¹ We did not consider the FLA in that report, but as described above the risk of stranding of the FLA is much higher than for other parts of the RAB.

36. Moreover, many of the mitigations that the NZCC refers to (when addressing the risk of asset stranding for the RAB more generally) do not apply to the FLA. In particular, the NZCC refers to the following mitigations:³²
- a. Even if a substantial area were to be deregulated due to competition, not all assets in the area would be fully stranded;
 - b. Following a loss of demand due to FWA, some demand may be recaptured by providing fibre to cell sites;
 - c. Some revenue can be extracted from the highest-value end users which remain on the fibre network (although the NZCC recognises that the ability to do this is “limited”);
 - d. Layer 2 assets are not irreversible, as they can be redeployed and sold; and
 - e. Stranded fibre assets may become “unstranded” over time.
37. Each of these mitigations (with the exception of extracting value from remaining users, which the NZCC recognised was limited) implies that there is some forward-looking value to be derived from the fibre assets, i.e., they can continue to be utilized in some way to earn revenue. However, by definition, the FLA has no forward-looking value. It is a capitalised historic loss, rather than a physical asset, and therefore cannot continue to be used going-forward in the event of stranding.
38. In sum, the 10bp allowance is highly unlikely to sufficiently recover the risk of stranding for the FLA in particular, and most of the mitigations which pointed the NZCC towards a “modest allowance”³³ are not applicable to the FLA.

3.4. Higher risk of asset stranding in the Wellington region

39. In Wellington and Christchurch, Vodafone operates its cable network – we focus on Wellington in this report, because Chorus does not provide the main UFB coverage in Christchurch (where Enable is the main UFB provider). The Vodafone cable network was rolled out prior to the fibre network being rolled out under the UFB program. In Figure 3 below we show Chorus' fibre (purple shading) and Vodafone's cable (orange shading) coverage. It can be seen that cable coverage is relatively widespread across the broader Wellington region (including Kapiti), though the overlap is not perfect, with cable not available in the northern suburbs.

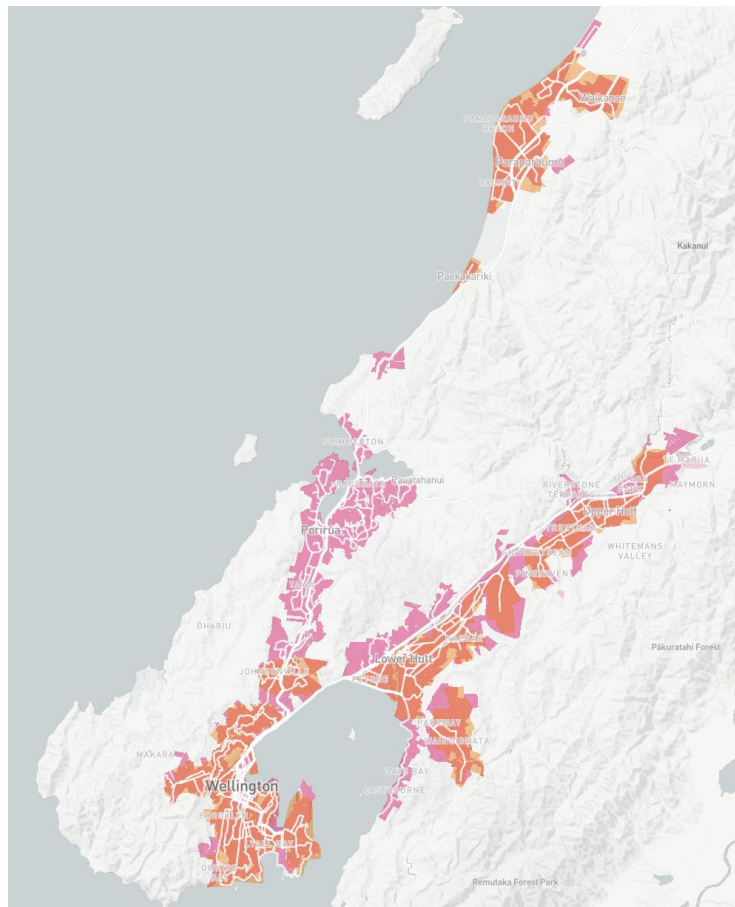
³⁰ As we described in our 22 January 2020 report, the NZCC's framework for calculating the ex ante allowance uses the equation $-\ln(1-Q)/T$, where Q is the probability of stranding and T is set to 10 years. The result is multiplied by the proportion of the RAB that is stranded to determine the ex ante allowance (and multiplied by 10,000 to convert to basis points). Note also that all the calculations we set out in this report are based on using unrounded numbers e.g., the 27% of the RAB that is the FLA is, more precisely, 27.272727...%, and we use this unrounded number in our calculations.

³¹ NERA (2020), “Assessment of Type II asymmetric risk for Chorus' fibre network”, report for Chorus, 22 January, at paragraph 8(e).

³² Fibre IMs Reasons Paper, [6.1176].

³³ Fibre IMs Reasons Paper, [6.1176.5].

Figure 3: Fibre and cable coverage in the Wellington region



Source: <https://broadbandmap.nz/availability/>

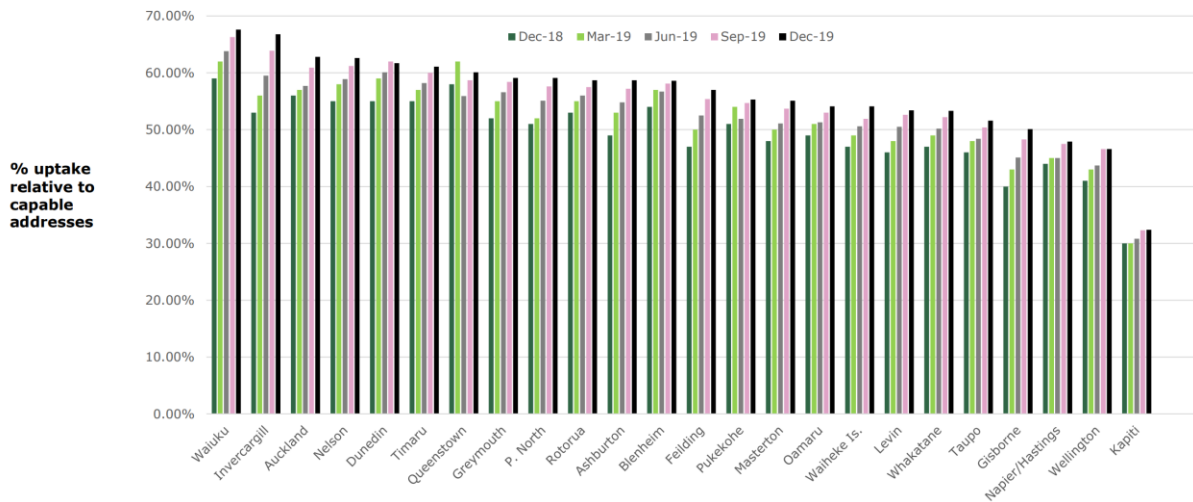
40. The presence of the cable network in Wellington suggests that the probability of network stranding in this region is higher. This will be particularly the case for the communal network (layer 1 assets before the property boundary termination point), where (as Figure 3 illustrates) Chorus has rolled-out the fibre communal network even in areas where there is existing cable coverage. We note that while the NZCC states in the fibre IMs that “[t]he competitive constraint imposed by alternative fixed line access technologies such as cable has not increased...”,³⁴ nor has that constraint appeared to materially decrease. Cable subscriptions have remained relatively flat over the last five years, with only a very marginal downward trend, as was shown in Figure 1. While cable share has been relatively flat nationally, cable technology is likely to continue to progress in the future, driven by jurisdictions such as the United States where cable internet is a large feature of the market due to the presence of cable TV networks. For example, the specification for the next technology standard for cable, DOCSIS 4.0, was published on 26 March 2020.³⁵ This technology would increase the theoretical download speed of a cable broadband network from the 1Gbps available with DOCSIS 3.1 to 10Gbps. As cable technology progress, the constraint from cable on the fibre network may increase.
41. We note also that Chorus’ fibre uptake has been relatively lower in the areas where there is cable coverage. Indeed, where customers are already connected to the cable network, it is likely to make it more difficult for Chorus to migrate them to fibre (particularly as those cable customers are serviced by Vodafone, a large vertically-integrated entity that is a significant player in the

³⁴ Fibre IMs Reasons Paper, [6.1206.5].

³⁵ <https://www.cablelabs.com/on-the-path-to-10g-cablelabs-publishes-docsis-4-0-specification>

telco space). Therefore, we would expect that any assets directly associated with customers that are already on cable would be particularly prone to stranding, though we have not attempted to unpick what proportion of the Wellington RAB that would be. As shown in Figure 4, the areas of lowest percentage uptake are Wellington and Kapiti, with Kapiti in particular (where Figure 3 indicates substantial cable coverage) showing both materially lower uptake and an apparent slower growth rate in uptake over the period shown.

Figure 4: Chorus UFB uptake by region



Source: Chorus, H1 FY20 Results Presentation, 24 February 2020, p.45.

42. We understand from Chorus that at least 11% of the RAB (excluding the FLA) is estimated to be in the Wellington region, or 8% of the RAB including the FLA.³⁶ The probability of stranding in Wellington could be materially greater than stranding probabilities we have previously estimated. On the other hand, there has been at least some uptake of fibre in Wellington and Kapiti (see Figure 4), and some parts of Wellington face no competition from the cable network (e.g., Porirua and Pauatahanui, as shown in Figure 3). We have previously estimated that the communal network more generally faces a stranding risk of 0-5%, and the fibre lead-ins face a higher stranding risk of 10-20%, due predominately to the risk of FWA substitution. We have calculated an ex ante allowance using a stranding risk for the Wellington region in the range of 10-20%, which is the same as that for fibre lead-ins, although this is likely to be conservative.
43. Applying the NZCC’s framework, if 8% of the RAB (including the FLA) is subject to a stranding risk of 10-20%, then this would imply an ex ante allowance of 8 to 18 basis points. Accordingly, the NZCC’s 10bp ex ante allowance leaves some residual risk of asset stranding in the Wellington region.

³⁶ Based on Chorus’ initial and conservative estimate of the RAB of \$4,000m excluding the FLA, and \$5,500m including the FLA. Chorus (2020), “Initial Asset Value Model”, 26 March, available at: <https://chorus-nzx.hosting.outside.net/api/announcements/download/2021/1624123a-07ba-42d9-add7-f071903383a8/f7095463-c0ce-4f8b-aae6-f8413bd26e7b/343108.pdf>

4. Converting the ex ante allowance into a revenue requirement

44. We note that the NZCC's approach to calculating a revenue requirement from the 10bp ex ante allowance is as follows:³⁷

The annual ex-ante allowance for asset stranding is the amount determined in accordance with the formula-

$$A \times B$$

where

(a) A is 0.001; and

(b) B is the average of-

- i. the sum of opening RAB values for each regulatory year of the regulatory period for all core fibre assets and the opening RAB value for the financial loss asset; and*
- ii. the sum of closing RAB values for each regulatory year of the regulatory period for all core fibre assets and the closing RAB value for the financial loss asset.*

45. Assuming for simplicity that Chorus' estimated RAB (of \$5.5b) from its initial asset value model³⁸ is both the opening and closing RAB in the first year of RP1, this would imply that the NZCC 10bp ex ante allowance is equivalent to annual revenue of \$5.5m per year in RP1.

46. As we discussed above, however, this does not sufficiently account for all of the risk of asset stranding. In comparison to the NZCC 10bp allowance, we note that:

- a. Our 22 January 2020 report estimated that an appropriate stranding allowance was in the range of 31bp to 87bp, reflecting both stranding of the communal network (which the NZCC did not allow for) and stranding of the lead-in and layer 2 equipment, but not reflecting stranding of the FLA;³⁹
- b. We estimated above that the higher risk from stranding of the FLA translates to a 29bp to 61bp ex ante allowance, and the risk may actually be higher than this;
- c. We estimated above that the higher risk of stranding in the Wellington region translates to an 8 to 18bp ex ante allowance; and
- d. As also discussed above, the NZCC made various conservative decisions in setting the 10bp ex ante allowance, suggesting that material residual stranding risk remains after the NZCC's 10bp allowance.

47. We can re-estimate an appropriate stranding allowance to reflect both the 31-87bp from our 22 January 2020 report and the stranding risk associated with the FLA and Wellington RAB discussed above. Our calculation is set out in Table 1. In our 22 January 2020 report, we estimated that the UFB communal, UFB connections and L2, and Residual asset categories add to a RAB of \$4,500m (excluding the FLA). We have therefore adjusted the size of these asset

³⁷ NZCC (2020), "Fibre Input Methodologies Determination 2020", [2020] NZCC 21, 13 October, clause 3.3.5(2).

³⁸ Based on Chorus' conservative estimate from Chorus (2020), "Initial Asset Value Model", 26 March, available at: <https://chorus-nzx.hosting.outside.net/api/announcements/download/2021/1624123a-07ba-42d9-add7-f071903383a8/f7095463-c0ce-4f8b-aae6-f8413bd26e7b/343108.pdf>

³⁹ NERA (2020), "Assessment of Type II asymmetric risk for Chorus' fibre network", report for Chorus, 22 January, at paragraph 8(f).

categories to be the same share of \$3,560m in RAB (calculated as the \$5,500m total RAB, less the \$1,500m FLA, and less the Wellington region share of \$440m (11%)).^{40,41}

Table 1: Re-calculation of stranding allowance to incorporate stranding of FLA and Wellington region

| Asset category | \$m | % of RAB incl FLA | Probability of asset stranding | Ex ante allowance |
|------------------------------------|----------------|--------------------------|---------------------------------------|--------------------------|
| Wellington region | \$440 | 8% | 10-20% | 8-18bp |
| UFB communal (excl Wgtn) | \$1,536 | 28% | 0-5% | 0-14bp |
| UFB connections and L2 (excl Wgtn) | \$1,034 | 19% | 10-20% | 20-42bp |
| Residual | \$990 | 18% | 0% | 0bp |
| Total RAB excl FLA | \$4,000 | | | |
| FLA | \$1,500 | 27% | 10-20% | 29-61bp |
| Total RAB | \$5,500 | | | 57-135bp |

48. The total ex ante allowance estimated using this approach is in the range of 57bp to 135bp. Converting this to an annual revenue requirement gives \$31.3m to \$74.2m. Based on the above calculation, the NZCC's 10bp allowance only accounts for \$5.5m in annual revenue requirement, which suggests that the residual stranding risk not being accounted for is in the range of \$25.8m to \$68.7m.

⁴⁰ That is, in our 22 January 2020 report, the UFB communal network was 43% of the \$4,500m RAB. We therefore calculate the UFB communal network RAB to be 43% of the updated \$3,560m RAB figure, and so on for the other asset categories.

⁴¹ Chorus (2020), "Initial Asset Value Model", 26 March, available at: <https://chorus-nzx.hosting.outside.net/api/announcements/download/2021/1624123a-07ba-42d9-add7-f071903383a8/f7095463-c0ce-4f8b-aae6-f8413bd26e7b/343108.pdf>

Appendix A. Chorus confidential appendix

Figure 5: Fixed line broadband connections by technology

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