PUBLIC VERSION

Chorus submission on the PQP2 draft expenditure decision

16 May 2024

CHORUS

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Executive summary

Reaching a sensible and balanced final expenditure decision

1. Chorus appreciates the Commerce Commission's (**Commission**) significant work in evaluating our expenditure proposal for our second regulatory period (**PQP2**). The Commission's decisions over the coming months are critical for ensuring that we can continue to deliver world-class fibre services for the long-term benefit of end-users.

2. The Commission's evaluation is taking place in an environment where fibre networks offer fast and reliable broadband connectivity to more than 87% of New Zealanders and where the Government is seeking to encourage increased infrastructure investment by the private sector. Chorus' network benchmarks well globally – broadband prices are in line with OECD averages (which is notable given New Zealand's low population density and challenging topography) – and the Commission's most recent Monitoring Report concludes that fibre speeds are good, with no major problems to address.[1]

3. Our expenditure proposal outlined the levels of investment needed to efficiently meet demand for our services while ensuring fibre remains affordable for end-users. Our proposal was subject to robust internal challenge, incorporated feedback from stakeholders, and was independently verified to the Commission's standards. The result was a careful balancing of expenditure and investment priorities to meet the long-term needs of end-users while allowing for a fair return.

4. Our assessment of the Commission's draft decision on Chorus' capital expenditure (**capex**) and operating expenditure (**opex**) allowances for 2025-2028 is:

    4.1 The Commission's evaluation of Chorus' capex forecasts, and most aspects of our opex forecasts, is consistent with what we would expect for a price-quality reset. The Commission's analysis is understandable, essentially agreeing with the Independent Verifier that the majority of our planned expenditure is efficient, leading to outcomes that customers value.

    4.2 However, in some key areas the Commission's draft decision affecting our opex proposal is surprising and unwarranted – notably, further large negative efficiency adjustments overlaid for most categories of opex and the rejection of proposed opex cost allocators that reflect the changed nature of our business. This departs significantly from investor and market expectations.

5. As a result, we have urgently re-examined the basis for our opex forecasts – and closely reviewed whether the Commission has applied the best information available in proposing such material reductions. Of particular concern is that:

    5.1 The draft decision implies we have missed something fundamental in our opex estimates, and that we are materially inefficient. Yet, we are unclear how or where that is established, especially given the concerted work of the Independent Verifier in confirming that the expenditure objective is met.

[1] Commerce Commission, 2022 Telecommunications Monitoring Report, 15 June 2023

5.2 It would not be possible to implement the proposed cuts without severe impacts on the provision of our fibre services, posing commercial risk to our operations and jeopardising the economic benefits expected by end-users.

6. After reviewing the draft decision against our proposal, our conclusions (supported by evidence) are:

6.1 Our business *is* run efficiently, although we should point more directly to relevant evidence demonstrating this (which we do throughout this submission). The corollary is that where the Commission has introduced new information to reach its draft decision, there is a need for it to demonstrate that information is relevant, appropriate and the best available evidence.

6.2 The top-down opex efficiency assumptions applied by the Commission based on estimations by Ofcom in the United Kingdom (**UK**) cannot be appropriately applied to Chorus, and should not be relied on. We explain why in this submission, supported by expert advice from NERA and Analysys Mason;

6.3 There is evidence that our business is transitioning even more rapidly to a fibre-only enterprise than previously forecast. We discuss why moving to a revenue cost allocator, or suitable alternative approach, reflects our changed business circumstances most accurately, supported by Incenta advice; and

6.4 Opex cuts of the magnitude proposed in the draft decision would prevent us from providing the services that our customers demand, and would be inconsistent with the purpose of Part 6 of the Telecommunications Act 2001 (**Act**). We do not believe this is the Commission's intention.

7. More broadly, the Government's view is that the infrastructure deficit is "one of the great barriers holding the New Zealand economy back from achieving its potential" and that it is "very open to opportunities for the private sector to invest its capital to deliver high quality infrastructure for New Zealanders."[2] We are concerned that the draft decision may be seen as out of step with this policy direction. Where regulatory processes produce unexpected and unnecessarily severe outcomes for infrastructure investors who are delivering for New Zealand consumers, it sends a strong negative signal to investors and is counter to the Government's objectives.

8. Our submission provides the necessary evidence and reasoning to address the issues the Commission has raised in the draft decision. It supports our case for a sensible and balanced final expenditure decision – allowing the critical fibre infrastructure we have been able to build to develop and grow, benefiting fibre consumers and wider telecommunications markets in New Zealand at a time when demand for broadband services is at its greatest.

Chorus operates efficiently

9. The Commission's draft decision appears to assume we are an inefficient monopoly, but does not present specific evidence of that. On the contrary, Chorus – a publicly listed company operating under capital market disciplines – has strong incentives to be efficient and to contain the risk of over-spending. The draft decision overlooks evidence that Chorus is already efficient, and is forecast to remain so:

[2] Both quotes from Hon Chris Bishop, speech to 2024 Infrastructure Symposium, 10 May 2024.

9.1 Chorus has a history of efficient network building, and a record of efficient delivery in challenging times.[3] It continues to operate rationally in the face of challenges such as 4G and 5G fixed wireless competition, and constraints on available funding - demonstrated by our recent decision to defer significant amounts of non-essential investment in network growth which current market settings could not support.[4]

9.2 Chorus' opex per connection benchmarks well against other LFCs already and we continue to pursue efficiencies, implementing a new operating model in 2023/24 designed to ensure Chorus is organised to best meet the evolving needs of customers. We have made it clear to investors that these changes are intended to improve customer outcomes.

9.3 The Independent Verifier supported most forecast capex and opex as prudent and efficient, deferring to the Commission on only one technical aspect of the opex forecast. The Verifier concluded:

> *...the financial and product market discipline Chorus faces has influenced our reviews … Chorus has stronger incentives to exercise financial discipline in making investment decisions and be cost efficient than if these external factors were not present. In our view, there is evidence of this financial discipline in the overall size of Chorus' proposed PQP2 expenditure program and choices that it is making in its investment decisions, including the proposed resilience and Fibre Frontier expenditure.*[5]

9.4 Observable 2023 data supports the basis for our base-step-trend (**BST**) methodology and our view that 2022 is a suitable base year for PQP2 forecasts.

9.5 The elasticities applied as part of the BST methodology are highly conservative, and, on balance, likely under-compensate Chorus. The Commission should only be troubled by the application of EDB elasticities if they demonstrably result in excessive opex for a given increase in connections.

9.6 As the Commission is aware, we have not sought to recover revenue at the full allowable rates through pricing to end-users. Consequently, we do not expect to fully earn our building block costs in PQP2 and will need to recover the return in later regulatory periods. This gives us a strong incentive to be efficient.

10. We believe our proposal contained a prudent and realistic opex forecast, based on business plans that reflected the real-world pressures of competition and regulatory constraints. We demonstrated ambitious, but achievable, expenditure efficiency reductions in our proposal. The draft decision to overlay additional high-level negative adjustments to our opex allowance – effectively 'double counting' the gains that have already been made or anticipated – is not justified.

[3] Since our PQP1 proposal was submitted in December 2021, we have completed UFB build, added 154,000 fibre broadband connections (28% more than our PQP1 forecast) and seen peak throughput demand grow from 3.1Tbps to 4.9Tbps (terabits per second). We have done this while managing through COVID-19 and its legacy including chronic labour shortages, severe inflationary pressure and responding to then recovering from Cyclone Gabrielle. We have met quality standards (aside from an early technical breach before we could adjust for the increased PQP1 standard) and addressed technician shortages, the root cause of provisioning delays.

[4] Chorus-Notification-of-material-change-to-capex-proposal-5-February-2024.pdf (comcom.govt.nz)

[5] Independent Verifier's report, page 50 https://comcom.govt.nz/__data/assets/pdf_file/0025/334249/13.-Chorus-C2A0Report-from-the-Independent-Verifier.pdf

UK-based efficiency adjustments are inappropriate for Chorus

11. The opex efficiency adjustments in the draft decision are derived from an Ofcom paper that was developed for a different purpose, in a different geography, at a different point in time in the relevant service's evolution. The Ofcom assumption has been taken out of context, and we are concerned the Commission does not appear to have applied the level of scrutiny we would expect for an input of such significance.

12. Ofcom checked its efficiency rates against actual operator data – had the Commission done this, it would have found that its assumed productivity factor was inappropriate. The proposed 3%, compounding annual rate of efficiency improvements for non-network opex implies a 17% total efficiency saving by the end of PQP2, which is highly unrealistic. The Commission, and its advisor CEPA, also previously rejected the use of point estimates from Ofcom decisions and we would hope for the consistent application of this principle.[6]

13. As explained in the attached expert reports by NERA and Analysys Mason, the Ofcom efficiency estimates are not relevant to Chorus – and have been incorrectly applied – because:

    13.1 they were not applied directly by Ofcom in order to determine regulatory allowances, instead they were used to check supplier data;

    13.2 they were not subject to detailed scrutiny and challenge by regulated firms, precisely because they were not applied directly;

    13.3 they were developed in the UK for a copper and fibre network - not an all-fibre network like Chorus' - and contained materially different assumptions; and

    13.4 they were developed in the context of a hypothetical build programme, where greater efficiencies might be expected, not for the post-build and more stable 'operate only' context Chorus is in.

Evidential basis for the efficiency adjustments

14. The Commission's approach has been to assess the evidence provided and place the burden on Chorus to justify our expenditure proposal. That is reasonable to the extent it is Chorus' role to provide information to support the Commission's analysis (and we provide substantial additional evidence with this submission). However, we note there is not a formal evidentiary standard that Chorus must meet. Instead, the Commission's role is to apply the expenditure objective to the best information available.

15. We would be concerned if the Commission's process was to expect a particular evidentiary threshold to be met, and, if it is not, to default to some lower number. That would imply there is systematic bias (because if the evidence is wrong, it could be supporting a proposal that is too low or too high, not necessarily always too high), and would not be consistent with the Part 6 purpose statement.

16. This is particularly relevant for the base year selection and elasticity inputs. The Commission's view is that Chorus has not justified the efficiency of the base year or

[6] Fibre Input Methodologies: Main final decisions Reasons Paper, 13 October 2020, paragraph 6.940. Also, paragraph M14 of: https://comcom.govt.nz/__data/assets/pdf_file/0027/60669/2015-NZCC-37-Final-pricing-review-determination-for-Chorus-unbundled-copper-local-loop-service-15-Dec-2015.pdf

the elasticities but does not present any clear evidence of its own to support this conclusion. The solution in the draft decision is to apply Ofcom productivity factors, but no analysis is presented to demonstrate these are best information available with regard to Chorus' prudent and efficient opex. For example, why are the Ofcom factors better evidence than Chorus' detailed proposal, which has been subject to verification and is supported by expert reports?

17. We encourage the Commission to reconsider its approach in this area, and remove the 3% and 1% efficiency adjustments proposed, given the evidence available.

Allocating costs to reflect the reality of Chorus' business

18. It is essential to get regulatory cost allocation right. Allocators that require too much cost to be recovered from our declining copper business would have an overall negative impact on continued operations and Chorus' ability to fund future fibre investment.

19. For PQP2, Chorus proposed a set of cost allocators to reflect the changing nature of our business, where the significance of copper in Chorus' activities is diminished:

    19.1 The advent of LEO satellite providers like Starlink has been a game-changer in regional New Zealand, driving an accelerated rate of copper disconnection.

    19.2 In March 2023, Chorus announced a 'stop sell' of copper connections in our UFB areas. We have publicly noted the accelerated depreciation of copper network assets, and expect to fully exit the provision of copper services in UFB areas by the end of 2026.

    19.3 Copper connections have reduced by 90% since we commenced the fibre rollout in 2011 and continue to reduce rapidly.

    19.4 Given our plans and current consumer trends, copper broadband is likely to be only a minor part of our business by part-way through the PQP2 period, and is expected to decrease further beyond that.

20. We support the draft decision to retain our proposed allocators where they remain unchanged from PQP1, and accept several of our proposed changes to allocator types. However, the draft decision rejects our proposal to use revenue-based allocators for certain IT systems-related costs and shared corporate costs.

21. Cost allocators are intended to be dynamic and responsive to the nature of the activities undertaken. The draft decision expresses concern that FFLAS charges under our proposed allocators might be cross-subsiding copper services during PQP2. This risk is unproven and counter to both the Commission's previous statements and Incenta's economic advice. In this submission we provide evidence to support our proposed allocators for IT systems-related costs and shared corporate costs.

22. While we recommend using a revenue-based allocation, we have asked Incenta to provide plausible alternatives based on their 2023 analysis. Incenta has suggested options where a mix of revenue and totex are applied to different IT systems-related costs and corporate costs. We explain these options in more detail in this submission.

Summary of key recommendations

23. The table below summarises the key recommendations put forward by Chorus in this submission.

Table 1: Summary of key recommendations

	Commission proposal	Chorus response and recommendation
1	Apply Ofcom-based efficiency adjustments	Having reviewed these carefully, we consider we have provided evidence that our business is efficient and these efficiency cuts are unjustified and not supported by the best available information. **Recommendation**: Remove the 3% and 1% efficiency adjustments, in order to account for efficiency appropriately.
2	Continue to use totex-based allocator types for certain IT systems-related costs and certain shared corporate costs	Retaining a totex-based allocation for CTO common costs and corporate costs over-allocates opex to non-FFLAS services. For corporate costs, the Commission has overestimated the proportion of shared costs which are incremental to copper withdrawal. **Recommendation**: Adopt our proposed revenue allocator type as it is objectively justifiable, demonstrably reasonable and best meets the purpose of Part 6 over PQP2. We provide additional evidence to show it is demonstrably reasonable. Alternatively, at a minimum, the Commission should consider the alternative allocator approach put forward by Incenta.
3	Assume further incremental gains achieved from IT capex	The draft decision assumes a higher level of savings should be achieved, but the analysis appears to be flawed. For example, the draft decision assumes there is an associated 10% ongoing cost with all IT optimisation capex. However, this cost does not exist and is not part of our proposal – most IT optimisation capex involves improvements to existing systems so does not generate additional opex. **Recommendation**: Accept Chorus' proposed IT efficiency gains of $12.7m.
4	CCI [ ] step change rejected due to uncertainty of the expected cost	While there is some uncertainty regarding the magnitude of this step change, there is high confidence that such a step will occur (i.e. the most reasonable estimate is not zero) and it is

	Commission proposal	Chorus response and recommendation
		unreasonable not to provide for it in the opex allowance. **Recommendation**: Accept the proposed CCI [ ] step change based on the evidence provided by Chorus.
5	Compliance cost step change rejected as not justified and likely built into base year	The draft decision view that additional regulatory compliance costs should already be catered for in the base year is incorrect, as major obligations such as information disclosure, wash-up reports and quality compliance statements were only required for the first time in 2023 (relating to the 2022 year, but reported in 2023). This step-change should be reinstated. **Recommendation**: Accept the proposed compliance cost step change based on the evidence provided by Chorus.
6	Self-insurance step change rejected due to lack of information	Chorus has now provided the evidence required to evaluate and approve self-insurance costs. This information was reviewed by the Independent Verifier, but not provided to the Commission. We apologise for this oversight. **Recommendation**: Accept the proposed self-insurance step change based on the evidence provided by Chorus.
7	Reject some of the proposed field sustain investment to replace slotted core fibre cables	We acknowledge there is a lack of clarity in the information we provided with our proposal. However, the replacement of slotted core cables is essential. These are high capacity DWDM ((dense-wave division multiplexing) transport routes. Under-investment in this area would risk supply to thousands of connections associated with Chorus' connectivity to our handover sites (POIs) as well as providing connectivity to a number of mobile cell sites over many of these routes. All of the replacement capex relates to cables at the end of their life where replacement is essential to maintain reliable supply. We have provided an updated model with more information on the prioritisation. **Recommendation**: Approve the full proposed slotted core replacement capex based on the evidence provided by Chorus.

	Commission proposal	Chorus response and recommendation
8	Reject 14 resilience projects on the grounds they did not meet Chorus' internal architecture standard	Of the 14 projects, 7 do meet our network architecture standard, where resilience investment decisions are based on *projected* rather than *current* numbers of connections. Resilience investment is strongly supported by end-users and these 7 projects should be reinstated. **Recommendation**: Provide capex allowances for 7 of the disallowed resilience projects based on the evidence provided by Chorus.
9	Only approve first year of incentives expenditure	We acknowledge there is uncertainty in incentives expenditure and are resolved to needing to apply via ICPs for some of this expenditure. However, approving greater customer incentives in this decision would give more certainty for the market and support better incentive planning. It would also reduce the number of ICPs required during PQP2. **Recommendation**: Approve customer incentives capex for the first 18 months of PQP2.
10	Adjust connection capex unit rates	We accept the draft decision to reduce the unit cost for managed migrations for UFB2 in 2027. For other proposed changes, we consider the evidence supports the unit rates we have proposed and explain this in our submission below. **Recommendation**: Approve the originally proposed unit costs for connection capex (except for UFB2 managed migrations for 2027) based on the evidence provided by Chorus.

Areas of agreement

24. The areas where we are in agreement with the Commission's draft decision are summarised in Table 2.

Table 2: Summary of areas where we agree with the draft decision

	Commission proposal/ comments	Chorus response
1	Propose an alternative Hyperfibre demand forecast	The Commission has proposed a linear forecast of demand for Hyperfibre. New technology uptake is hard to forecast but a linear curve is extremely unlikely. However, given uncertainty associated with the uptake, we accept the draft decision and

	Commission proposal/ comments	Chorus response
		associated reduction in approved access capex. As this is non-essential investment, without an allowance for it, we will consider deferring such investment.
2	Further Fibre Frontier implications	We agree that the removal of a large tranche of our Fibre Frontier investment has a knock-on impact to other areas of our proposal. We appreciate that time constraints have required the Commission to estimate these impacts for the draft decision. We are pleased to share the revised regulatory templates with the Commission alongside this submission, and summarised in Appendix A5. Chorus' bottom-up modelling recommends an increase to expenditure allowances of $1.6m in relation to the Fibre Frontier investment and its consequential impacts.
3	Removal of some field sustain investment	We accept the removal of $5.7m of capex for replacement of PCM/CMAR routes with fibre backhaul.
4	Deliverability is not an issue	We agree with the Commission's assessment that the deliverability risk of our proposal is low.[7]
5	Advertising trend adjustment	We agree with the Commission's draft decision to not include the scaling of advertising costs by connections.
6	Managed migration connections unit cost	We agree with the Commission's draft decision to apply linear interpolation of the unit cost rate to calculate a lower rate for 2027.
7	Accept allocator type changes for costs relating to service company overheads and costs relating to co-location Accept asset and capex allocator types Accept opex allocator types that are unchanged from PQP1 Accept increased direct attribution of roles in	We welcome the Commission's agreement with these proposals.

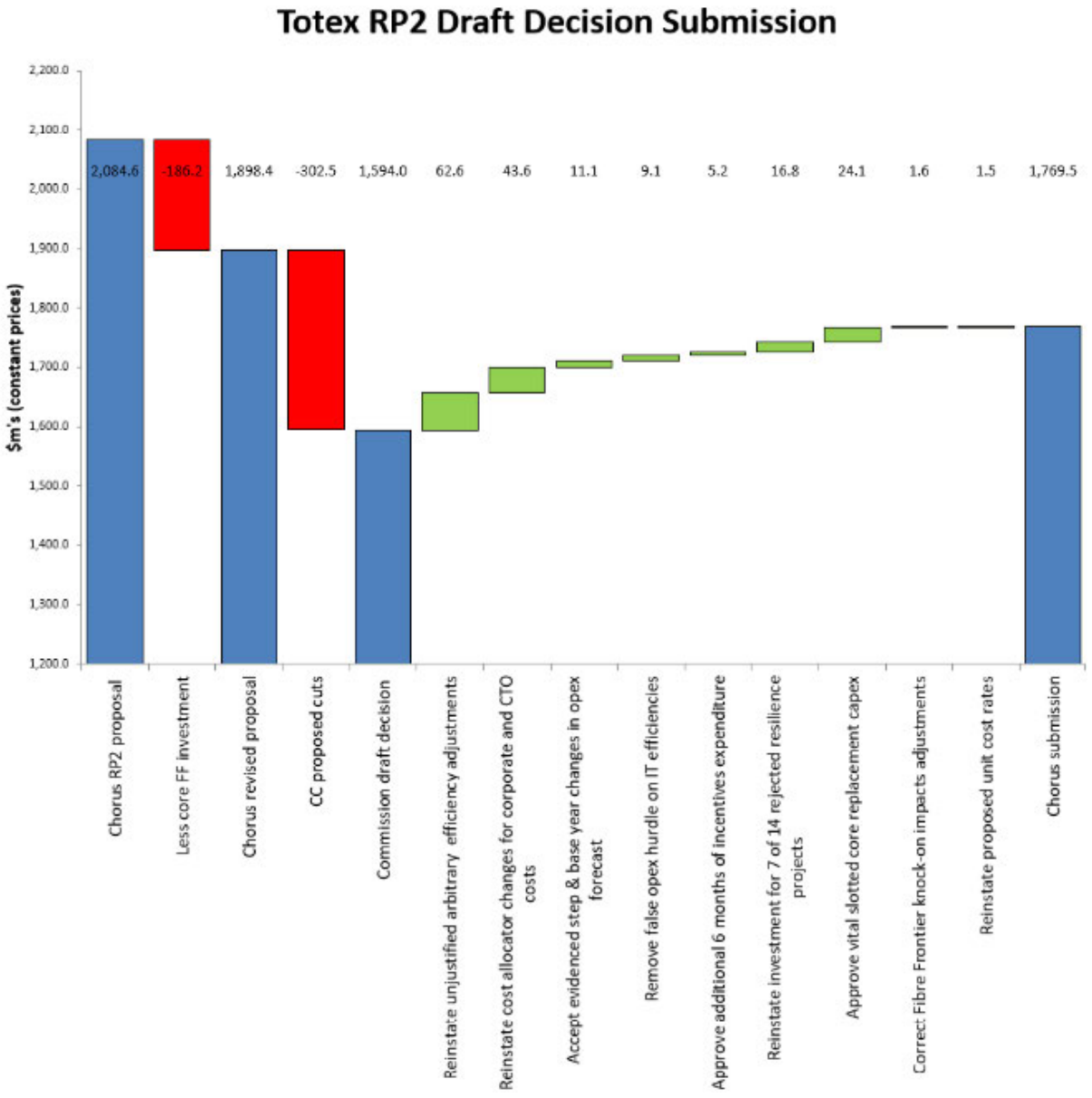
[7] Draft decision paragraph 4.112

	Commission proposal/ comments	Chorus response
	product, sales and marketing	

Summary of impact on allowances from this submission

25. The chart below summarises what we accept and where we disagree with the draft decision in financial terms. We recommend the reinstatement of just over half of the Commission's proposed cuts.

Figure 1: Summary of the total financial impact of the proposals in this submission



Submission overview

Evidence and assessment factors

26. In this submission, we address the Commission's specific points in turn, including referencing previously-provided evidence that appears to have been overlooked, and providing additional supporting evidence where relevant. We also focus on whether the evidence relied on by the Commission is the best available in the circumstances to support the expenditure objective.

27. In various places the draft decision states that Chorus has not addressed all relevant assessment factors. We address each instance where assessment factors are referred to. We note the large number of assessment factors necessitates some judgement as to relevance. In general, we followed the protocol agreed between the Independent Verifier and the Commission to determine which assessment factors are applicable to which expenditure type and category.

Structure of this submission

28. This submission covers the issues of most significance in the draft decision:

    28.1 **Opex allowance**

    28.2 **Cost allocation**

    28.3 **Capex allowance**

29. This submission is further supported by:

    29.1 **Appendix A1** – Chorus responses to other aspects of the draft decision

    29.2 **Appendix A2** – Additional information on BST step changes

    29.3 **Appendix A3** - Conservative allocation of corporate functions

    29.4 **Appendix A4** – Resilience

    29.5 **Appendix A5** – Fibre Frontier consequential impacts

    29.6 **Attachment B1** – Aon, Self-Insurance Quantification, 26 June 2023

    29.7 **Attachment B2** – Draft CY2023 Information Disclosure Schedule 5 (unaudited 2023 actual operating expenditure)

    29.8 **Attachment B3** – NERA, Chorus opex productivity target for PQP2 – Response to NZCC draft decision, 16 May 2024

    29.9 **Attachment B4** - Incenta Economic Consulting, Including a productivity assumption in opex forecasts, 3 August 2023

    29.10 **Attachment B5** – Incenta Economic Consulting, Commerce Commission draft decision on Chorus's expenditure allowance – reply to certain cost allocation issues, 16 May 2024

29.11 **Attachment B6** - Analysys Mason, Approaches to forecasting FTTH/FTTP opex, 13 May 2024

29.12 **Attachment B7** – Regulatory templates updated for the Fibre Frontier consequential impacts.[8]

Conventions

30. Unless otherwise stated, throughout this submission:

30.1 PQ FFLAS values are expressed in 2022 dollar terms.

30.2 Dollar value, and percentage, reductions in proposed allowances are relative to Chorus' PQP2 proposal, after the deferral of investment in our Fibre Frontier programme, as notified in February 2024.

Implications of the draft decision for quality standards

31. The draft decision relates to expenditure only and does not propose draft quality standards for PQP2. As discussed in our submission on the PQP2 Process and Approach paper, setting the expenditure allowances at a different time to the quality standards creates challenges. It would be unacceptable for a quality standard, with enforceable financial penalties, to be set without a sufficient expenditure allowance to achieve the standard. Further, end-users should not be required to fund a level of expenditure that exceeds that needed to meet the quality standard.[9]

32. Our expenditure proposal was based on delivering the quality standards set out in the proposal. Based on the draft expenditure decision, we do not expect the Commission to introduce any material increase to the quality standards, as the expenditure allowance would not reflect the costs of such a change.

Implications of draft decision for future expenditure and investment

33. Unless the proposed reductions are reversed, the decision will force us to conserve capital expenditure for PQP2 and reduce operating expenditure to a level below that needed for efficient operations, with detrimental consequences for both fibre end-users and competition in wider telecommunications markets. For example:

33.1 **Overly-constrained expenditure envelope** – which would force inefficient cost-cutting (such as deferring maintenance), increasing risks and associated whole-of-life costs affecting consumers in later periods and bringing about under-investment in areas such as asset knowledge and capability.

33.2 **Trust in the regulatory regime** – unwarranted and/or surprising cuts to expenditure erode supplier trust in the regulatory regime and would negatively affect decision making.

[8] These templates are based on the October 2023 PQP2 proposal numbers, adjusted for the Fibre Frontier reduction and its bottom-up modelled associated impacts, as outlined in Appendix 5. The templates do not account for any other changes proposed by the Commission in the draft decision.
[9] Chorus submission, *PQP2 Process and Approach*, 28 September 2023, paragraphs 20-24.

33.3 **No capacity for innovation projects** – our ability to unlock innovation initiatives would be hampered in, for example, the areas of asset management capability, sustainability, energy cost reduction and new service development.

33.4 **No further network expansion** – our entire focus would be on internal cost cutting with no support for fibre expansion beyond the current footprint. Investors have already expressed concern about the draft decision and noted that it reduces their willingness to support non-essential expenditure.

34. The draft decision anticipates future cost reductions (meant to be realised and shared with consumers over time) and extracts these before they are identified, proven or realised. We do not believe this is consistent with the basic principles of incentive regulation and would risk serious detriment to the regime's credibility.

Opex allowance

Overview

35. The draft decision proposes to largely accept Chorus' underlying base-step-trend (**BST**)-derived opex forecast for PQP2, with relatively few proposed changes focused on particular expenditure categories. We welcome the draft decision to approve many of our proposed step changes and base year adjustments. We also accept the draft decision that our proposed step change for advertising is not approved.

36. However, the draft decision proposes to also apply large and compounding cuts across most categories of opex. The draft decision presents these as productivity and efficiency improvements necessary to ensure Chorus' opex is prudent and efficient. The cuts are predicated on the assumption that Chorus is currently inefficient and that opex should reduce materially from current levels, when in fact neither assumption is valid. There is little evidence contained in the draft decision of potential efficiencies that could be achieved and the conclusion is fundamentally at odds with that of the Independent Verifier.

37. As a sense check, we have considered the effects of implementing the draft decision without further change. Our conclusion is that Chorus' ability to deliver adequate investment for the benefit of end-users would be severely jeopardised and our operations would be substantively impacted. Chorus would have less than three months' notice to understand where we would need to make material changes to our opex plans for PQP2 and would create the risk that FCM will not be achieved. We do not believe this would have been the Commission's intention.

38. On closer examination, the draft decision identifies few substantive issues with Chorus' opex proposal or with the forecast methodology employed. This mirrors the findings of the Independent Verifier which, after an extensive review, verified almost every aspect of Chorus' opex proposal.[10] In contrast, the analysis and logic articulated in the draft decision suggest proposed opex should only be approved once Chorus addresses specific matters raised in the draft decision.

39. This chapter refers to existing evidence, and provides further evidence and expert advice, to respond to:

    39.1 Proposed efficiency adjustments in the draft decision, based on UK precedent and further assumed IT capex efficiencies;

    39.2 The base year selected, the efficiency of expenditure incurred in that year, and the Commission's proposed base year adjustments for self-insurance;

    39.3 The Commission's proposed treatment of step changes in the base year to account for compliance costs and **CCI [ ]**; and

    39.4 Comments made by the Commission in the draft decision about the application of the BST forecasting methodology.

40. We note the Commission's proposed treatment of cost allocation for PQP2 also has a material impact on Chorus' opex allowances. The cost allocation methodology, and

[10] Minor qualifications in the IV report, supported by Chorus, reflect inevitable uncertainties, not, weaknesses or deficiencies.

the associated draft decision, for PQP2 are addressed in the Cost Allocation section of this submission.

Productivity and efficiency assumptions

Overview

41. The draft decision proposes to apply large and compounding efficiency cuts across most categories of Chorus' forecast opex, which are characterised as being necessary to ensure the amount of opex is prudent and efficient.

42. The draft decision appears to be influenced by:

    42.1 concern that Chorus' opex may not have been efficient in 2022 (the base year for BST purposes) or that Chorus has not yet demonstrated that 2022 was efficient or representative base year; and

    42.2 concern regarding the appropriateness of using electricity distribution business (**EDB**) data to determine the nature of Chorus' opex with respect to connection growth.

43. In response to these concerns, the draft decision applied productivity factors of 1% and 3% respectively to various categories of Chorus' opex. This would have the effect of reducing Chorus' allowable opex over PQP2 by $62.6m, or 8.4% from that initially proposed by Chorus.

44. As noted above, we do not believe these efficiency adjustments are reasonable or justifiable, nor would they be achievable without materially and adversely impacting essential business operations and services. The proposed efficiency adjustments are not supported by evidence.

45. With supporting evidence from Chorus' business, and expert reports from NERA, Incenta and Analysys Mason, we discuss below:

    45.1 The circumstances that ensure Chorus faces, and will continue to face, strong incentives to operate and invest efficiently;

    45.2 Why Chorus' proposed elasticity factors are appropriate and, in fact, likely to *underestimate* opex, and not overestimate it;

    45.3 Why a 0% productivity factor is appropriate, given the methodology and its consideration of productivity and efficiency gains elsewhere;

    45.4 Why Chorus is demonstrably efficient overall, and was efficient in 2022; and

    45.5 Why the application of UK efficiency factors – developed for a different purpose, in a different geography, with regard to a (hypothetical) new entrant in a dissimilar market – is inappropriate and, in any case, carried out incorrectly.

46. We also discuss the draft decision as it relates to IT capex efficiency. Chorus was conservative in our estimates of IT efficiency gains. The adjustments contained in the draft decision are difficult to understand and do not appear to be consistent with revenue recovery under the building blocks model. We recommend that our original assumptions are reinstated.

47. In summary, our PQP2 proposal contained a realistic opex forecast, based on a business plan that reflected the real-world pressures of competition and regulatory constraints. We included ambitious, but achievable, expenditure efficiency reductions in our proposal. The draft decision to apply further high-level downward efficiency adjustments to our opex allowance – effectively 'double counting' the gains that have already been made or anticipated – is not justified.

Efficiency adjustments

Chorus operates efficiently

48. Chorus – a publicly listed company operating under capital market disciplines – has strong incentives to be efficient and to contain risks of over-spending.

49. The draft decision overlooks evidence that Chorus is already efficient, and is forecast to remain so:

    49.1 Chorus has a history of efficient network build and a record of efficient delivery in challenging times.[11] It continues to operate rationally in the face of limitations such as 4G and 5G fixed wireless competition and constraints on available funding, demonstrated by our recent decision to defer significant amounts of non-essential investment on network growth, which current market settings could not support.[12]

    49.2 Chorus' opex per connection benchmarks well against other LFCs already, and we continue to pursue efficiencies, implementing a new operating model in 2023/24 designed to ensure Chorus is organised to best meet the evolving needs of customers. We have made it clear to investors that these changes are intended to improve customer outcomes, not cut costs.

    49.3 The Independent Verifier supported most forecast capex and opex as prudent and efficient, deferring to the Commission on only one technical aspect of the opex forecast. The Verifier concluded:

    > *the financial and product market discipline Chorus faces has influenced our reviews … Chorus has stronger incentives to exercise financial discipline in making investment decisions and be cost efficient than if these external factors were not present. In our view, there is evidence of this financial discipline in the overall size of Chorus' proposed PQP2 expenditure program and choices that it is making in its investment decisions, including the proposed resilience and Fibre Frontier expenditure.*[13]

    49.4 Observed 2023 actuals support the basis for our BST methodology and our view that 2022 is a suitable base year for PQP2 forecasts.

    49.5 The elasticities applied as part of the BST methodology are highly conservative, and, on balance, likely under-compensate Chorus. The Commission should only

[11] Since our PQP1 proposal was submitted in December 2021, we have completed UFB build, added 154,000 fibre broadband connections (28% more than our PQP1 forecast) and seen peak throughput demand grow from 3.1Tbps to 4.9Tbps (terabits per second). We have done this while managing through COVID-19 and its legacy including chronic labour shortages, severe inflationary pressure and responding to then recovering from Cyclone Gabrielle. We have met quality standards (aside from an early technical breach before we could adjust for the increased PQP1 standard) and addressed technician shortages, the root cause of provisioning delays.

[12] Chorus-Notification-of-material-change-to-capex-proposal-5-February-2024.pdf (comcom.govt.nz)

[13] Independent Verifier's report, page 50 https://comcom.govt.nz/__data/assets/pdf_file/0025/334249/13.-Chorus-C2A0Report-from-the-Independent-Verifier.pdf

be troubled by the application of EDB elasticities if they demonstrably result in excessive opex for a given increase in connections.

49.6 As the Commission is aware, we have not sought to recover revenue at higher rates through pricing to end-users, having largely only passed through CPI increases. Consequently, we do not expect to fully earn our building block costs in PQP2 and will need to recover the return in later regulatory periods. This gives us a strong incentive to be efficient.

Chorus' proposed elasticity factors

50. Chorus developed an 'output growth trend' by applying Commission-estimated elasticities for EDBs to calculate how the forecast change in connection volumes would affect opex over time. Chorus' proposal – accepted by the Independent Verifier – was to apply a productivity factor of 0% for opex. Productivity targets were accounted for in Chorus' proposed step changes and elasticities. We discuss these components of our forecast below.

51. The draft decision states:[14]

> *We consider there are issues with applying a scale factor on the basis of EDB elasticities to allow for growth in opex. We note that the Independent Verifier also expressed concerns with Chorus' approach, noting it had some concerns with the way in which the approach had been applied to derive FFLAS opex forecasts in PQP2*
>
> *We have two fundamental concerns:*
>
> - *Elasticities can be used in a relatively stable business environment where opex is recurring and predictable, the future is similar to the past, and where there is a long enough time series of data to utilise in the calculations. We do not consider this is the case for Chorus (opex assessment factors (a), (c) and (j)).*
> - *In respect of the use of DPP3 EDB elasticities, we consider that while both Chorus and EDBs are network businesses and some functions are similar, Chorus' cost drivers and mix of cost elements are likely to be quite different.*
>
> *While we consider there are issues with use of EDB elasticities, we have not attempted to re-forecast Chorus' proposed opex. We have not been able to identify alternative elasticity estimates from another jurisdiction that would be suitable given the level of information provided by Chorus. Instead, our approach has been to account for the weaknesses with the use of the elasticities by addressing the efficiency assumptions used by Chorus within its proposal.*

52. We agree that Chorus' cost drivers and mix of cost elements are different to those found in electricity distribution, but do not believe this detrimentally affects the suitability of EDB elasticities in order to determine an appropriate opex allowance, given the very similar network business structures and operational profiles of the respective sectors.

[14] Draft decision, 7.37-7.38.

53. NERA highlights[15] the fact the Commission does not justify the *direction* of its concerns regarding EDB elasticities and offers no evidence that the application of EDB elasticities overestimates, and not underestimates, the resulting opex measure. The Commission's proposed approach is only justified by the application of EDB elasticities if they demonstrably result in excessive opex for a given increase in connections. Conversely, if the Commission found the EDB elasticities resulted in an opex allowance that was too low, this would be exacerbated through the application of a further productivity factor.

54. We note our proposed elasticities, and the way in which they are applied, have the effect of accounting for both economies of scale and productivity gains over the forecast period. This is because Chorus adopted a highly conservative approach by using the partial elasticity from a two-factor output model for its one-factor model. The partial elasticity of 0.45 is likely to significantly underestimate how much network opex scales in line with connections because it deliberately omits the portion of network opex growth relating to line length growth. NERA demonstrates[16] a reasonable estimate of Chorus' elasticities should in fact be markedly higher than 0.45. NERA steps through this analysis in detail in its report.

55. NERA finds an appropriate one-output connection growth elasticity would be 0.78 for network opex and 0.81 for non-network opex (although the latter becomes moot if no elasticity is applied to advertising).[17]

56. The draft decision expresses the view that Chorus has not justified the elasticities but does not present any clear evidence of its own to support this conclusion. The solution in the draft decision is to apply Ofcom productivity factors, but no analysis is presented to demonstrate these are the best information available illustrating Chorus' prudent and efficient opex. We would be concerned if the Commission's process was to expect a particular evidentiary threshold to be met, and if it is not, to default to a lower number. That would imply there is some systematic bias (if the evidence is wrong, it could be supporting a proposal that is too low – which seems more likely than not in terms of the EDB elasticities), and would not be consistent with the purpose statement.

57. The Commission refers to opex **assessment factors (a), (c) and (j)** in its justification for this element of the draft decision. We address these in turn:

58. **Assessment factor (a)** Historic operating expenditure and consideration of historic rates of expenditure.

59. Chorus has provided extensive information detailing historic opex. We have explained the reasons for movements in opex over that time period and to the end of the forecast period. This is provided in chapters 11 to 14 of 'Our Fibre Assets'.

60. **Assessment factor (c)** Approach to forecasting opex, including models used to develop the opex forecasts.

61. The draft decision identifies few substantive issues with the forecast methodology which informed Chorus' opex proposal. This mirrors the findings of the Independent Verifier which, after an extensive review, verified almost every aspect of Chorus' opex proposal.

[15] NERA, Chorus opex productivity target for PQP2: Response to NZCC draft decision, 16 May 2024.
[16] NERA, Chorus opex productivity target for PQP2: Response to NZCC draft decision, 16 May 2024.
[17] NERA, Analysis of NZCC, Econometric model for opex – EDB DPP3 final determination, November 2019.

62. **Assessment factor (j)** The reasonableness of the key assumptions, methodologies, planning and technical standards relied upon.

63. The draft decision identifies few substantive issues with Chorus' opex proposal. This mirrors the findings of the Independent Verifier which, after an extensive review, verified almost every aspect of Chorus' opex proposal.

Why Chorus' proposed 0% productivity factor is appropriate

64. We accept that forecasting opex – particularly over the medium and long term – is difficult. However, the use of a BST methodology is well understood, adaptable and likely to yield the best estimate of our costs over time. We have considered the Commission's views carefully and sought expert advice from NERA.

65. NERA's report demonstrates the application of an efficiency factor in the draft decision is unjustified when substantial catch-up and scale economy targets are already accounted for in Chorus' application of the BST model. These catch-up gains are clearly identifiable when reviewing historical time series[18], with the sharp fall in total opex and PQ-FFLAS opex per connection levelling off in the early 2020s.

66. If the Commission simply applied a zero elasticity factor to every opex category, in conjunction with a zero productivity factor, there would be a smaller impact on Chorus' allowable opex than what is proposed in the draft decision.[19] However, applying elasticities of zero is clearly not credible, which highlights that the impact of the proposed efficiency factors is out of step with what would reasonably be expected.

67. Importantly, Chorus' proposed base year step changes include 'frontier shift' – namely our ability to increase our efficiency over time, producing more output for a given volume of inputs (or, similarly, to maintain outputs but with a lower volume of inputs and thus costs) – and 'catch-up'. If the Commission were to apply a productivity adjustment based on frontier shift, this would double-count these efficiencies, resulting in an allowance below our efficient costs, in turn negatively affecting consumer outcomes, competition and the legitimate expectation of shareholders.

68. The draft decision does not provide details of the rationale for rejecting a zero productivity factor. This makes this element of the decision difficult to respond to. However, the Commission should take comfort from the Independent Verifier's conclusion that "a zero percentage opex productivity assumption satisfies the Assessment Factor regarding reasonableness of key assumptions and methodologies, provided Chorus is committed to proceeding with the solar and IT optimisation capex/opex trade-off."[20] We confirm Chorus is committed to the solar and IT optimisation capex programmes.

69. The Independent Verifier reached its view following the review of additional evidence provided by Chorus. We provide this evidence with this submission – please see Attachment B4: Incenta Economic Consulting, *Including a productivity assumption in opex forecasts*, 3 August 2023.

[18] PQP2 proposal, Our Fibre Assets, chapters 11, 12, 13, 14.
[19] NERA, Chorus opex productivity target for PQP2: Response to NZCC draft decision, 16 May 2024, paragraph 58.
[20] Independent Verifier's report, pages 21-22 and 220.

70. The basis for the Commission's application of an efficiency factor is partly predicated on perceived concerns regarding the suitability of EBD elasticities, which we discuss above.

71. The Independent Verifier interrogated Chorus' proposal to exclude – or rather adopt a zero - productivity offset factor when deriving Chorus' opex expenditure forecast. Incenta Economic Consulting was engaged to respond to the IV's query. Incenta found:

> '***Chorus's proposal to exclude an explicit "productivity offset" is reasonable*** *because Chorus has already accounted for key sources of expected productivity growth.*' [emphasis added][21]

72. We have adopted an assumption of no change in productivity (i.e. 0%). This reflects that we separately identified and accounted for the key factors the productivity adjustment is set to capture:

    72.1 We accounted for the realisation of economies of scale and scope by including a measure of elasticity as part of the growth trend. This captures the assumption that opex will grow more slowly than output.

    72.2 We have incorporated material reductions in opex that capture expected benefits (in terms of opex reduction) from a range of projects, such that adding a general productivity improvement assumption would be double counting.

    72.3 Our operating environment strongly incentivises Chorus to maintain a lean approach that will be challenging to sustain as our network and its operation matures. As such, there is a risk of setting allowances below efficient levels.

    72.4 While historically we have been in a period of "catch-up" where productivity gains have been high due to period of rapid growth and the displacement of copper, growth has flattened out and any forward productivity gains are expected to be fronter shifts only, and therefore not as significant.

    72.5 This is consistent with the Commission's standard method, which is to apply a cost elasticity assumption as the first change (reflecting economies of scale and scope), and then separately consider whether there are further factors that justify any additional productivity assumptions, of which there are none.

73. The draft decision suggests that **CCI [**

]

74. Finally, the draft decision states that it has exempted the IT component of non-network costs from the 3% adjustment, but NERA demonstrates[23] it is unclear whether this exemption has been applied correctly.

75. The Commission refers to opex **assessment factors (c), (d) and (j)** in its justification for this element of the draft decision. We address these below:

[21] Incenta Economic Consulting, Including a productivity assumption in opex forecasts, 3 August 2023.
[22] Draft decision, paragraph 7.41.
[23] NERA, Chorus opex productivity target for PQP2: Response to NZCC draft decision, 16 May 2024.

76. **Assessment factors (c)** Approach to forecasting opex, including models used to develop the opex forecasts, **(d)** Relevant financial information including evidence of efficiency improvements in proposed opex and **(j)** The reasonableness of the key assumptions, methodologies, planning and technical standards relied upon.

77. Detailed models were provided to the Commission in response to RFI 008, building on information in Chapters 11-14 of Our Fibre Assets. As noted above, we provide additional evidence alongside this submission in the form of expert reports by Incenta (which satisfied the Independent Verifier that a productivity factor of 0% was justified) and by NERA in response to the draft decision.

Chorus' level of efficiency

78. The Commission states:

> *Chorus has not substantiated its claim that 2022 is an efficient base year. Chorus itself has frequently commented that it is in a transition from a build focus to a operate and maintain model. We also note that 2022 was the last year of Chorus' UFB rollout, so it is unlikely to be representative of its future operating environment.*[24]

79. We have provided evidence to substantiate the fact 2022 is an efficient base year.[25] Our transition from a 'build' phase to an 'operate and maintain' phase was largely complete in 2022, and the remaining operational shift is not expected to yield significant additional efficiency benefits beyond those we pursue in the ordinary course of business. Importantly, opex reductions will overwhelmingly arise in relation to copper services as volumes decline and are eventually withdrawn.

Ofcom efficiency factors

80. The Commission proposes to apply productivity factors of 1% and 3% respectively to certain components of Chorus' opex. This would have the effect of reducing Chorus' allowable opex over PQP2 by $62.6m or 8.4%.

81. Setting aside the fact the Commission has applied a productivity offset factor in error, we do not believe it is reasonable to rely on efficiency assumptions developed by Ofcom in the United Kingdom. They were developed for a different purpose, in a different geography, with regard to a hypothetical new entrant in a different market, and were not used for the purpose of revenue or price setting. We address these points below.

82. Ofcom's review was designed to promote investment and competition in fibre networks – i.e. the purpose of the review was not to determine a revenue or price cap. If Ofcom's review was intended to determine regulated revenues, it would have been subject to significantly more analysis and scrutiny (than the assumption included in the Ofcom report was).

83. The 1% and 3% assumptions resulted from a cost modelling exercise undertaken by Ofcom where it used a 'bottom-up' model to estimate the costs a new entrant would face when deploying and operating a new large-scale fibre network. The bottom-up

[24] Draft decision paragraph 7.26
[25] Please refer to base year section of this chapter below for more information on base year efficiency

model relies on a number of assumptions, as opposed to a top-down model which relies on historic data.[26]

84. Analysys Mason carried out a detailed review[27] of the relevant models referred to in the draft decision on behalf of Chorus. Analysys Mason concludes:

> *It is our view that the Commerce Commission is not correctly applying the assumptions from the Ofcom model that it considers a reasonable benchmark.*

85. Importantly, Ofcom's bottom-up model did not relate to a specific fibre operator, since it was used to determine a benchmark for hypothetical market entry, rather than set actual regulatory allowances. For example, Ofcom explains (emphasis added):[28]

> *We have taken a bottom-up approach to modelling a fibre network. We consider that a bottom-up approach provides better flexibility to assess the costs across different geographies and for different scales of deployment.* ***Furthermore, it would be difficult to conduct top-down modelling for estimating the costs of a large-scale fibre network since one does not exist yet in the UK****, i.e. total network cost information is unavailable.*

86. NERA also suggests the Commission may have misinterpreted the relevant opex cost categories:[29]

86.1 The driver opex elements (which received the 3% efficiency factor) appear to consist of a mix of network elements (e.g. poles, ducts, compensation for network failure) and non-network elements (e.g. systems and processing costs), with the cost drivers including things like number of new connections, line rentals, and metres of poles/ducts.

86.2 Similarly, the Gross Replacement Cost (**GRC**) opex elements (which received the 1% trend reduction) also consist of a mix of network elements (e.g. repairs and maintenance) and non-network elements (including all corporate overheads).

87. NERA concludes:[30]

> *It therefore appears completely arbitrary that the NZCC has interpreted the 1% as relating to network opex and 3% as relating to non-network opex.*

88. Further, we note, as part of the cost of capital for regulated fibre telecommunication services in New Zealand (response to submissions on the Input Methodologies Draft Decision) process in 2020 several submitters – including Chorus - suggested the Commission refer to the asset betas proposed by Ofcom in its 2020 Wholesale Fixed Telecoms Market Review 2021-26 (WFTMR) for different segments of BT Group (i.e. the same review the Commission proposes to rely on for its efficiency factors).

[26] Ofcom, Promoting investment and competition in fibre networks – Wholesale Fixed Telecoms Market Review 2021-26, March 2021, Annex 15, paras A15.4 and A15.8.
[27] Analysys Mason, Approaches to forecasting FTTH/FTTP opex, 13 May 2024.
[28] Ofcom, Promoting investment and competition in fibre networks – Wholesale Fixed Telecoms Market Review 2021-26, March 2021, Annex 15, para A15.9.
[29] Ofcom, Promoting investment and competition in fibre networks – Wholesale Fixed Telecoms Market Review 2021-26, March 2021, Annex 14, para A15.59 and Table A15.1.
[30] NERA, Chorus opex productivity target for PQP2: Response to NZCC draft decision, 16 May 2024.

89. The response of the Commission's advisor (CEPA), endorsed by the Commission in the final IM review decision, was to dismiss the use of Ofcom estimates as follows.

> *These submissions argue that the Commission should consider Ofcom's estimates as a benchmark. While other regulatory determinations can be useful to highlight relevant issues, we do not agree that this evidence can be relied upon to directly set cost of capital parameters. This is because estimates adopted by other regulators will naturally depend on the specific nature of their regulatory framework, the context of each regulator's previous decisions, and the characteristics of the services that are being regulated. Without careful consideration of these issues, relying on point estimates adopted by other regulators risks selecting parameters that are simply not relevant for New Zealand.*[31]

90. The Commission does not appear to have carried out an assessment of the type suggested by CEPA in its earlier advice. We would have expected such an assessment to be carried out, particularly given the material impact of these efficiency assumptions on Chorus' allowed opex. We provide information here to demonstrate the importance of such an assessment of these points.

91. We note the Commission decided to use Chorus' network opex as the basis for its assessment of opex – and disregarded international benchmarks – in its 2015 final pricing review determination for Chorus' unbundled copper local loop service:[32]

> *Consistent with our regulatory framework that evidence often drives our modelling decisions, we believe that Chorus' operating costs are the best objective starting point for estimating the network opex for a nationwide fixed line telecommunications network in New Zealand. As the modelled opex needs to be consistent with New Zealand conditions, the best evidence of this is opex available from an existing New Zealand telecommunications provider. International benchmarks applied under the mark-up on capex approach may not necessarily be representative of New Zealand conditions.*
>
> *For this reason, our final decision is to use Chorus' network opex as the starting point to assess opex for the FTTH network in our TSLRIC model.*

92. The draft decision does not explain why it is now reasonable to rely on point estimates adopted by other regulators. Stakeholders are likely to be very sensitive to any perception the Commission applies a different standard to inputs from overseas jurisdictions depending on the outcome they have on allowable revenues. We note, for example, the comparability of asset betas is likely to be superior to the comparability of efficiency estimates, given the latter are highly dependent on factors such as firm age and type, and geographical and financial differences.

93. The draft decision states the Commission has considered evidence on how efficiency is accounted for in other jurisdictions, including Australia. It is unclear what consideration the Commission has given to regulatory precedent in Australia, or even what the Australian findings were.

[31] CEPA, New Zealand Commerce Commission, Cost of capital for regulated fibre telecommunication services in New Zealand: Response to submissions on the Input Methodologies Draft Decision, 6 July 2020. Also see final IM reasons paper, paragraph 6.940.
[32] Commerce Commission, Final pricing review determination for Chorus' unbundled copper local loop service, 15 December 2015. Refers to WIK: Wissenschaftliches Institut für Infrastruktur und Kommunikationsdienste GmbH.

94. In addition, NERA provided evidence of a range of productivity adjustment comparators – from 0% - 3.5% - with a recommendation of 0% as being appropriate for Chorus for PQP2. The Commission appears to have disregarded this evidence, without explaining why.

95. NERA sets out further arguments against the adoption of an estimate as severe as the Ofcom estimate as follows[33]:

> *As we set out in our report to Chorus which was provided to the IV, frontier shift targets for regulated utilities in NZ and Australia have typically ranged between 0-0.5%. This does expand to 1.25% when considering the UK, but 2.1% remains well above this bound.*[34]
>
> *The NZCC said that a zero productivity factor would have to be justified in the context of an efficient base year.*[35] *This is an unusual viewpoint – a firm can be efficient and still have a frontier shift target.*
>
> *The issue seems to be that the NZCC is also attempting to deal with catch-up productivity through the productivity factor, without considering how it has already been accounted for by the other mechanisms.*

96. On the basis of this analysis, having carefully considered the proposed efficiency adjustments, we do not believe they are sufficiently supported by evidence and cannot be substantiated. We recommend the Commission does not apply these factors to Chorus and instead relies on the evidence provided in our proposal and this submission, demonstrating that Chorus is an efficient business.

IT capex efficiency adjustments

97. The draft decision states Chorus has "underestimated the efficiencies to be gained from its proposed IT capex investment"[36] and has therefore proposed "including the amended IT optimisation opex savings of $20.4m over PQP2 which equates to a further incremental opex reduction of $7.7m over and above that proposed by Chorus."[37] It is unclear from the draft decision how this conclusion was reached.[38]

98. The increase in reductions appears to be primarily driven by the Commission's benefits ratio assumption. The draft decision assumes that the benefits ratio will be 36.91% (significantly higher than Chorus' proposed 25%). This difference in benefit ratios appears to be due to the Commission applying 10% of the initial IT optimisation capex per year as *additional* opex costs – which the benefits of the IT optimisation investment need to overcome (in addition to the capex) – for it to be considered economically justified.[39] There are three main issues with the reasoning in the draft decision:

[33] NERA, Chorus opex productivity target for PQP2: Response to NZCC draft decision, 16 May 2024.
[34] NERA, Regulatory Period 2 – Recommended options for applying a base-step-trend model, June 2023, p.32.
[35] As well as the appropriateness of EDB elasticities. NZCC, PQP2 expenditure allowances for Chorus draft decision – reasons paper, April 2024, para 7.23.6.
[36] Draft decision paragraph 7.23.8
[37] Draft decision paragraph 7.5.6
[38] We requested sight of the Commission's analysis. The Commission provided an email description of its approach, but this did not explain it sufficiently. The main driver of the different outcomes appears to be the Commission's assumption of a 40% benefits ratio, the basis for which was not explained in the email.
[39] Draft decision paragraph 7.47.5

98.1 The Commission provides no evidence for the 10% opex assumption. In PQP1 the Commission made no such assumption about additional opex costs, so we would have expected such a decision to be validated and explained.

98.2 In almost all cases IT optimisation capex is invested in existing systems and platforms and does not trigger additional opex in order to upgrade and enhance these systems. Therefore, the Commission's assumption does not reflect forecast costs for Chorus, nor do these costs form part of our proposal.

98.3 Even if it is correct that IT optimisation investment will increase opex by 10% of the initial investment, Chorus' expenditure allowance should then *increase* because of this assumption, not decrease (noting that the costs assumed by the Commission were not part of our proposal).

99. Chorus was conservative in our estimates of IT efficiency gains, calculating benefits over the lifetime of the assets but applying them in their entirety in PQP2. This was consistent with the Commission's approach in PQP1 and provides assurance we are not understating the potential efficiency gains. The estimated benefits within PQP2 are approximately $6.7m, significantly lower than the $12.7m we propose and far lower than the draft decision of $20.4m.

100. There also appears to be a discrepancy between the value of the additional efficiency proposed in the draft decision compared to the underlying modelling. The draft decision states it is suggesting a further $7.7m of cuts for IT efficiency, however the underlying model suggests that $9.1m has been applied in the draft decision. We request that the Commission clarify its workings and approach to ensure the correct outcome for the final decision.

101. If the Commission rejects our recommendation to reinstate our original IT efficiency assumptions, we request a meeting with the Commission to better understand the revised methodologies it is applying so we can:

101.1 Understand the mechanics and the discrepancies we are currently seeing;

101.2 Understand the rationale in order to help inform future proposals;

101.3 Decide whether we wish to proceed with proposed IT optimisation capex.

102. We address specific assessment factors identified by the Commission below:

103. **Assessment factor (c)** Approach to forecasting opex, including models used to develop the opex forecasts.

104. Chorus provided the Commission with modelling showing that for an assumed capex investment, asset life and discount rate, a benefits ratio of 25% is NPV neutral.[40]

105. **Assessment factor (h)** The dependency and trade-off between the proposed opex and related capital expenditure to ensure least whole-of-life cost for managing assets and cost-efficient solutions.

106. Chorus' proposed efficiency gains are consistent with least whole-of-life costs for managing assets, as our modelling shows they are at least NPV neutral. Chorus

[40] Provided as part of RFI 065

provided the Commission with specific examples of IT investments and how they would decrease costs, and improve customer and/or business outcomes.[41]

107. **Assessment factor (j)** The reasonableness of the key assumptions, methodologies, planning and technical standards relied upon.

108. The draft decision proposes to apply an additional opex standard, over and above that submitted by Chorus. As noted above, there is no basis for this assumption as IT optimisation investments are typically incremental, and carried out on existing systems and processes.

109. We recommend the Commission accepts our proposed IT efficiency gains of $12.7m. Our proposed efficiency adjustment already reflects a conservative level of efficiency gains, greater than what would be expected over PQP2. The Commission's proposed adjustments are difficult to understand and do not appear to be consistent with revenue recovery under the building block model.

Base year

110. The draft decision makes several references to the base year in terms of:

    110.1 base year selection;

    110.2 base year efficiency; and

    110.3 the rejection of the base year adjustment for self-insurance which impacts on the forecast opex allowance for PQP2.

111. In this section we discuss why 2022 is the appropriate base year on which to establish the PQP2 forecast and that it demonstrates efficiency. The self-insurance base year adjustment is discussed in the 'forecasting methodology' section at the end of this chapter.

Base year selection

112. The Independent Verifier and the draft decision[42] accept 2022 as an appropriate base year. However, both the Independent Verifier and the Commission proposed to use 2023 as the base year, if 2023 actuals were available:

> *If possible, we support use of CY23 data for the base year once available, as we think the most recent available reported data should be used to set the base year for PQP2 consistent with standard regulatory practice applying the BST methodology. We also think that an additional year of reported data will provide a stronger evidentiary base for the PQP2 BST Opex forecast, particularly Chorus' proposed base year adjustments.*[43]
>
> *Utilising the actuals from the most recent base year to the start of PQP2 will result in more accuracy. This will result in less reliance on forecasts and less need for a wash-up. At this stage, we intend to use year-end 31 December 2023 as the base year.*[44]

[41] Presentation on Network & Customer IT capex provided as part of RFI 016.
[42] PQP2 draft decision, paragraph 7.25
[43] Report from the Independent Verifier, section 11.4.1, page 211
[44] Proposed process and approach for the 2025-2028 regulatory period, paragraph 2.23

113. In our response to the Process and Approach paper, we raised practical concerns about 2023 being the base year, but supported the use of 2023 actuals as a sense check of base year data. We supply unaudited 2023 actuals in Attachment B2 to this submission (the full audited actuals will be published as part of our 2023 Information Disclosure at the end of May).

114. Based on the 2023 ID actuals, we have reviewed the suitability of 2022 as a base year. Unaudited FFLAS opex for 2023 is **CCI [ ]**. This is **CCI [ ]** than we anticipated in our PQP2 proposal.[45]

115. Table 3 demonstrates that the base-year adjustments proposed by Chorus were sound. **CCI [**

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116. These actuals indicate that using 2023 as the base year would deliver an opex allowance that is the same or higher than using 2022. Assessment of 2023 actuals should therefore alleviate concerns flagged with the use of 2022 as the base year. If 2023 was to be used as the base year, this would create modelling challenges for Chorus and the Commission. If the Commission decides to use 2023, we request early discussions regarding modelling practicalities.

Table 3: Alternative base year

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117. Additionally, the draft decision showed some charts 'correcting' our trending. This is represented as the black line on the chart below. We further 'correct' the grey 2023 bar on the chart, using 2023 actuals. As is demonstrated, the draft decision miscalculates the trajectory of our actual costs, with the Commission's estimated 2023 value being **CCI [ ]** than our actual costs.[46] We note that Chorus' forecasts for PQP2 (the purple bars from 2025-2028) include proposed allocator changes where the draft decision trend line does not.

[45] On a nominal basis, with 2023 forecast opex being $172.4m per our RT01 schedule in the October 2023 submission and our draft unaudited 2023 actuals at **CCI [ ]**.

[46] The chart shows the PQP2 proposal forecast from 2024 onwards and has just updated the 2023 forecast costs we presented in the October submission with the unaudited actuals. The Commission's draft decision trend line has been overlaid for visual comparison.

Figure 2: Operating expenditure adjusted for CY2023 draft unaudited actuals

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118. Based on this analysis we continue to view 2022 as the best available base year for Chorus' PQP2 proposal and recommend this is applied, with 2023 actuals used as a cross-check. The selection of 2022 as the base year does not justify large downward efficiency adjustments as applied in the draft decision.

Base year efficiency

119. The draft decision is based on a view that Chorus has not substantiated its claim that 2022 is an efficient base year. The draft decision also states "Chorus itself has frequently commented that it is in a transition from a build focus to an operate and maintain model. We also note that 2022 was the last year of Chorus' 2022 UFB rollout, so it is unlikely to be representative of its future operating environment."[47]

120. The Commission's solution in the draft decision is to apply Ofcom productivity factors, but no analysis is presented to demonstrate this is a better approach than Chorus' proposal. As noted above, the Commission should not automatically apply a reduction to allowances where information is uncertain. That would imply a systematic bias and would not be consistent with the purpose statement. We consider the Commission has an accurate and reliable set of information supporting Chorus' opex proposal.

121. In relation to the suggestion in the draft decision statement that the transition from 'build' has yet to occur, we clarify that this shift has already happened. This resulted in significant downsizing prior to the commencement of PQP1 as build planning and delivery teams were significantly scaled back. Build (network extension) work during 2022 was residual only and, on Chorus' part, limited to overseeing delivery of the final stages of build that was already planned, consented and contracted.

[47] Draft decision, paragraph 7.

122. Chapter 11 of 'Our Fibre Assets' in our proposal directly addresses our view that the base year is efficient and provides substantiation for this view. Section 11.4.2 of 'Our Fibre Assets' states:

> *"…As above, we have used actual 2022 expenditure as the starting point for determining an efficient base level of recurring expenditure. 2022 provides the most recent available full-year record of actual expenditure. It also captures the accumulated impact of efficiency gains we have made prior to PQP1 and during the first year of PQP1. Since the formation of Chorus, we have had strong incentives to manage expenditure down to an efficient level because:*
>
> - *pricing for our legacy copper services were regulated down 25% in 2014, prompting a severe tightening of revenue and intense pressure to manage costs down*
> - *delivering the UFB programme created a steep financing challenge, with a lengthy period of up-front build costs significantly exceeding revenue, driving good cost management disciplines*
> - *during PQP1 our actual fibre revenue is lower than our maximum allowable revenue, encouraging continued careful management of operating profits and reinvestment levels*
> - *fibre competes with other technologies, such that maintaining a competitive cost base and service offering is of fundamental strategic importance*
> - *Chorus is a listed company, which brings constructive scrutiny and pressure from investors and investment advisors."*
>
> *Chorus' operating environment provides confidence that revealed (actual) opex is broadly efficient. In addition, the 2022 year:*
>
> - *was not as severely impacted by COVID-19 effects as the prior year*
> - *was at the tail end of delivering the UFB programmes, with network extension activity comparable in scale to that proposed for PQP2."*

123. While changes to our Fibre Frontier capex proposal are counter to the final bullet point above, the principal effect on opex of reducing network extension is to reduce the capitalisation rate of labour rather than to reduce gross opex.

124. Chapter 11 of 'Our Fibre Assets' also describes:

    124.1 key factors affecting future opex (in each Commission priority area), for example, market and labour trends, forecast methodology, how capex / opex trade-offs have been accounted for, and labour capitalisation; and

    124.2 how and why unallocated and FFLAS opex per connection have declined sharply since 2016 with FFLAS opex per connection stabilising around 2021 (after base year adjustments) as fibre uptake reached critical mass. From that point FFLAS opex per connection increases slowly in constant price terms, mainly driven by:

        124.2a an increased allocation of shared costs as copper volumes continue to decline; and

124.2b increasing unit costs as reducing work volumes erode economies of scale in field services.

125. Additionally, the Independent Verifier concluded that 2022 is an appropriate base year unless 2023 information was available in time.[48] The verifier also acknowledged the alignment between the adjusted base year and the opex allowance for 2022.[49] That allowance was considered by the Commission to reflect prudent and efficient operator costs, having regard to good telecommunications industry practice and the opex assessment factors in December 2021.

126. With regard to the statement that Chorus has not satisfied opex assessment factors (a), (b), (d) and (j),[50] we note these are general requirements for demonstrating the prudency and efficiency of proposed opex. They do not relate specifically to the efficiency of the base year, however, the PQP2 proposal, including the sections quoted above, and further detailed information provided in response to RFI008 comprehensively address each of these assessment factors.

127. **Assessment factor (a)** Historic operating expenditure and consideration of historic rates of expenditure

128. Chorus has provided extensive information detailing historical opex, including unallocated and PQ FFLAS from 2016, and explained the reasons for movements in opex over that period and to the end of the forecast period. This is provided in chapters 11 to 14 of 'Our Fibre Assets'. Further detail relating specifically to the forecast period is provided in responses to RFI008, specifically, "BST adjustment evidence Complete Pack v2".

129. **Assessment factor (b)** Quantitative or economic analysis related to the proposed opex, including sensitivity analysis and impact analysis undertaken.

130. Each of the assessment factor (b) requirements is addressed through: the information described under assessment factor (a), coupled with the document "Chorus BST model documentation v1.0", the opex BST model ("BST Model.url"), "BST Adjustment evidence tracker" and "IT optimisation benefits model". These documents were all provided through RFI008.

131. **Assessment factor (d)** Relevant financial information including evidence of efficiency improvements in proposed opex.

132. Chorus has provided extensive relevant financial information through the documents and quantitative analysis described in response to assessment factors (a) and (b). Specifically:

    132.1 opex reductions arising from capex (IT and solar),

    132.2 the absorption of internal costs associated with price quality and information disclosure compliance, and external assurance for price quality proposals; and

    132.3 price risk for **CCI [ ]** above the proposed step.

[48] Synergies Economic Consulting, Independent Verification report – Chorus' PQP2 expenditure proposal (CY2025-28), page 20, pages 210-211.
[49] Synergies Economic Consulting, Independent Verification report – Chorus' PQP2 expenditure proposal (CY2025-28), page 20, page 215.
[50] Draft decision, paragraph 7.23.1

133. Please also refer to the Efficiencies and Productivity section above, which further details how we have addressed efficiency improvements in our proposed opex.

134. **Assessment factor (e)** Approach to forecasting capital expenditure, including models used to develop the capital expenditure forecasts.

135. **Assessment factor (j)** The reasonableness of key assumptions, methodologies, planning and technical standards relied upon.

136. Chorus has provided documentation supporting the reasonableness of key assumptions and methodologies in the documents referred to in response to assessment factors (a), (b) and (d). We note the consistency of our planning assumptions across capex and opex forecasts and alignment to proposed quality standards. Applicable planning and technical standards are described in the relevant sections of 'Our Fibre Assets' with governance over planning processes (and subsequent expenditure approval) in the governance section of 'our fibre plans'.

137. On this basis we demonstrate that Chorus is efficient overall, and was efficient in 2022. We recommend the Commission removes the large, compounding cuts across most categories of Chorus' forecast opex, reflecting productivity and efficiency improvements assumed to be achievable by Chorus during PQP2.

Step changes

138. Chorus proposed step changes to the base year to reflect anticipated changes in operating expenditure in future periods. The Commission has accepted several of the step-changes proposed by Chorus. However, it proposes to reject step-changes relating to increased compliance costs and **CCI [ ]**.

CCI [ ]

139. The Commission proposes not to accept the proposed step change for **CCI [ ]**. The draft decision states:

> ***CCI [ ]*** *The level of uncertainty combined with both a lack of evidence to support the efficiency of the base year, and the use of EDB elasticities (as discussed below) as a method of trending the expenditure forward means we do not consider it would be prudent and efficient* ***CCI [ ]*** *within the opex for PQP2 (opex assessment factors (a), (b), (c), and (d)).*"[51]

140. The draft decision appears to conflate multiple issues in the statement above, which we attempt to break down:

> *"…lack of evidence to support the efficiency of the base year…"*
>
> This matter is discrete from the proposed step change. It is addressed earlier in this section. For the avoidance of doubt, we consider we have substantiated our view that the base year is efficient.

[51] draft decision, paragraph 7.34

"…the use of EDB elasticities… as a method of trending the expenditure forward…"

This matter is discrete from the proposed step change. It is addressed earlier in this section. For the avoidance of doubt, we consider we have substantiated our view that EDB elasticities are a reasonable proxy for Chorus.

CCI [ ]

We see this as the operative question in relation to the proposed step change. We acknowledge there is always pricing uncertainty associated with such costs. **CCI [ ]**. This was acknowledged by the Independent Verifier in its decision to verify the proposed step.[52] The Independent Verifier did qualify its verification, stating:

*"However, it is less clear that the Assessment Factor regarding the accuracy and reliability of the data upon which the **CCI [ ]** million step change is estimated is satisfied."*

141. In the document 'BST adjustment evidence Complete Pack v2' provided in response to RFI008, Chorus provided a detailed description of the basis for the step change. We include the relevant extract from this evidence (in Appendix A2) for completeness, as the draft decision does not engage with this analysis, and it appears it may have been overlooked. The extract summarises:

    141.1 The description and need for the step;

    141.2 Some financial analysis to support the step;

    141.3 Assessment against criteria for a step; and

    141.4 Options assessment.

142. It is unclear whether the statement in the draft decision regarding the satisfaction of assessment factors (a), (b), (c), (d) relates to the **CCI [ ]** step or one of the other issues cited in paragraph 7.34. For completeness, we address each of the assessment factors here:

143. **Assessment factor (a)** Historic operating expenditure and consideration of historic rates of expenditure

144. The base year reflects unit rates under prevailing **CCI [ ]**. Historical actuals expenditure by expenditure sub-category have been provided from 2016 to 2022.[53] Chorus also provided both the IV and the Commission with (a) a breakdown of costs and trends over time for each priority opex expenditure category[54] and (b) an evidence pack contained appropriate cost breakdowns over time for each adjustment proposed and, in regard to **CCI [**

[52] Independent Verifiers Report, page 222
[53] PQP2 proposal: Regulatory Template RT01 and 'Our Fibre Assets' document.
[54] PQP2 proposal, 'Our Fibre Assets' document, sections 11-14, network opex is addressed in section 13.

].[55]

145. **Assessment factor (b)** Quantitative or economic analysis related to the proposed opex, including sensitivity analysis and impact analysis undertaken.

146. Quantitative analysis related to the proposed opex was provided response to RFI008 in Excel workbook 'BST adjustment evidence tracker' ('Compliance Step' tab).

147. **CCI [**

].

148. **CCI [**
]. That change, coupled with contractual and IT interface enhancements allowed Chorus to realise efficiencies of $73.1m over three years. Of that, $10.4m accrued to opex and the balance to capex. These benefits are partially reflected in 2022 actuals (approximately three quarters) and fully reflected in 2023 actuals.

149. This was a very intensive process, the conclusion of which was weighted average price increases of approximately 5% across capex and opex pricing. In achieving this outcome, Chorus exhausted options which might enable significant future efficiencies, specifically:

149.1 **CCI [**

149.2

149.3

149.4
]

150. The opportunities are no longer available. Chorus' estimate that the weighted average price will increase by **CCI [**

]. It is slightly below the mid-point between prices revealed through the **CCI [**

].

151. We note that while pressure on **CCI [** **]** is primarily a function of scale, cost pressure is exacerbated by increasing:

[55] 'BST adjustment evidence Complete Pack v2' provided in response to Commission RFI008 and through document 11J as referred to in the IV Report (for the IV we provided disaggregated files per adjustment, but combined these when sharing the evidence with the Commission)

151.1 **CCI [**

151.2

151.3

].

152. **Assessment factor (d)** Relevant financial information including evidence of efficiency improvements in proposed opex.

153. Please refer to the response to assessment factor (a) above. Relevant financial information including evidence of efficiency improvements is provided in response to RFI008 in Excel workbook 'BST adjustment evidence tracker' **CCI [ ]** tab and document "BST adjustment evidence Complete Pack v2" which provides additional qualitative and quantitative information.

154. We recommend the Commission reconsiders the evidence provided and approves this step change in the PQP2 opex forecast.

Compliance costs

155. The Commission accepts two of three components of the compliance costs step, but does not accept the third, with the draft decision stating:

> *"… However, Chorus has also included an uplift relating to other compliance obligations which has not been justified (opex assessment factors (a), (b) and (d)). We consider the costs associated with compliance obligations are likely to have already been incorporated into the base year costs and Chorus has not justified the proposed uplift. Accordingly, our draft decision is to not include this portion of the step change."* [56]

156. The third component relates to external assurance costs associated with operating under price quality and information disclosure regulation. Chorus proposed a step to include the incremental costs (in excess of those incurred in the base year) of meeting new external audit requirements imposed by this regulation.

157. These costs exceeded those incurred in the base year because new regulatory obligations only applied for the first time in 2023 and so are not reflected in 2022 costs. As the Commission will understand, Chorus was not required to prepare and submit connection capex reports, wash-up reports, PQ annual compliance statements for quality, or Information Disclosures under Part 6 until 2023, even where these related to the 2022 year. Therefore, the costs are first seen in the 2023 year.

158. The cost of this step change stated in the draft decision does not accord with information we provided to the Commission or that included in the relevant step change. It could be that the Commission has used the incorrect cost line ("compliance step" tab, row 10) and not netted off the avoided costs of stopping 'old ID' audit. The correct step for this component is **CCI [ ]** at "compliance step" tab, row 13.[57]

[56] draft decision, paragraph 7.35
[57] Please refer to Excel file 'BST adjustment evidence tracker' provided to the Commission under RFI008.

159. This component of the proposed compliance step is based on:

- Actual 2023 costs for the **connection capex audit**
- Actual 2023 costs for the **wash up audit**
- Actual 2023 costs for the **annual compliance statement audit**
- Actual 2023 costs for the '**new information disclosure' audit**

Minus:

- Actual 2022 costs for the **'old ID' audit**
- **CCI [ ]**.

160. Chorus provided a comprehensive explanation of compliance related costs in the PQP2 proposal and in response to RFI008, specifically in 'BST adjustment evidence Complete Pack v2' and 'BST Adjustment evidence tracker'. These costs included **CCI [ ]** of external audit costs required by the Commission to comply with external audit requirements for price quality and information disclosure.

161. For the avoidance of doubt, neither the compliance step nor the 2022 base year include costs that are required to be incurred to comply with Commission requirements to **audit and independently verify price quality proposals**. These costs are incurred once per regulatory period in the penultimate year (2023 for PQP1). These costs are reflected in 2023 actuals and total approximately **CCI [ ]**.

162. For completeness, approximately 10% of the costs of preparing the price quality proposal and supporting the Commission's evaluation process (incurred once per regulatory period) were incurred in 2022. Work on the PQP2 proposal commenced in 2022, however the bulk of the costs fall in the penultimate and final years of PQP1 (2023 and 2024).

163. In relation to satisfaction of assessment factors ("*which has not been justified (opex assessment factors (a), (b) and (d)).*"[58]) we note:

164. **Assessment factor (a)** Historic operating expenditure and consideration of historic rates of expenditure

165. Chorus described the nature of PQ and ID related external assurance costs in section 14.3.3 of 'Our Fibre Assets'. Specifically, that additional external assurance costs were necessary to comply with price quality and information disclosure requirements.

166. A more complete breakdown was provided in responses to RFI008, specifically, "BST adjustment evidence Complete Pack v2". This document was also provided to the IV, and states:

[58] draft decision, paragraph 7.35

CCI [

]

167. Supporting calculations are provided in the supporting Excel workbook 'BST adjustment evidence tracker' ('Compliance Step' tab).

168. These costs are unavoidable and arise directly as a result of the requirements of price-quality and information disclosure regulation that took effect in 2022, but for which the main external audit requirements first occurred in 2023.

169. **Assessment factor (b)** Quantitative or economic analysis related to the proposed opex, including sensitivity analysis and impact analysis undertaken.

170. This is provided in response to RFI008 in Excel workbook 'BST adjustment evidence tracker' ('Compliance Step' tab). The only sensitivity analysis undertaken is the incorporation of **CCI [ ]**.

171. **Assessment factor (d)** Relevant financial information including evidence of efficiency improvements in proposed opex.

172. This is provided in response to RFI008 in Excel workbook 'BST adjustment evidence tracker' ('Compliance Step' tab) and includes actual costs for 2023 and an adjustment for future efficiencies.

173. The document "BST adjustment evidence Complete Pack v2" provides additional qualitative and quantitative information, as quoted in above under assessment factor (a).

174. **Assessment factor (j)** The reasonableness of key assumptions, methodologies, planning and technical standards relied upon.

175. The main assumption is that Chorus will continue to be required to externally audit the specified price quality and information disclosure reports and compliance statements. Audits are performed to the appropriate standard.

176. There is an assumption that efficiencies will be able to be realised.

177. We recommend the Commission approve the compliance step-changes in full.

Forecasting methodology

178. The Independent Verifier and draft decision both comment on the opex forecasting methodology, specifically the use of the BST approach. Both comment on the challenges of implementing a BST methodology, then evaluate Chorus' proposed implementation. The Commission also questions the granularity of the forecasts and how they are presented. This section addresses these comments.

Availability of alternative, bottom-up estimate

179. The draft decision suggests a bottom-up estimate might have been used as an alternative to the BST.[59]

180. We agree that forecasting opex in the medium to longer term can be difficult. We also agree there are issues to overcome in implementing BST opex forecasting. We consider that our proposed PQP2 BST opex both overcame these issues, and demonstrated this satisfactorily to the Independent Verifier and the Commission through our proposal and supporting information (including through the 'request for information' process).

181. Chorus used a 'bottom-up' forecast for its PQP1 opex proposal. While compressed timeframes necessitated this, it was recognised at the time that (with a few exceptions[60]) the efficacy of bottom-up forecasting reduces as the forecast horizon extends.

182. In planning for the PQP2 proposal, we considered whether a bottom-up forecast would be suitable for some or all of the PQP2 opex forecast or whether a different forecast approach was necessary. Key considerations were:

    182.1 Feedback from the Commission on Chorus' use of a bottom-up methodology for forecasting opex in PQP1;[61]

    182.2 The expectation of a 4-year PQP2 and potentially 5-year PQP3 necessitating forecasts of 6 years or longer;

    182.3 Forecast methodologies used by the Commission for energy networks in New Zealand;

    182.4 Forecast methodologies used by other economic regulators applying similar regulatory regimes internationally; and

    182.5 A stabilising FFLAS opex outlook as copper volumes decline in PQP1 to approximately 10% of total connections and copper network close off in UFB areas during PQP2.

183. In light of this consideration, we concluded:

    183.1 **Bottom-up forecasts were unlikely to provide the most robust forecast** over the PQP2 forecast period.

    Bottom-up forecasts are most effective for near term planning - when information quality is higher and granular outputs are required - but

[59] Draft decision paragraphs 7.7 – 7.8
[60] For example, where large scheduled events and associated costs can be accurately predicted.
[61] Commerce Commission, price-quality path from 1 January 2022 – Final Decision, paragraph 4.397.1

degrade as the forecast horizon extends. This is due to reliance on a large amount of granular information and a very large number of planning assumptions. While a bottom-up forecast will provide more granularity and the appearance of precision, this precision will likely prove to be false.

183.2 **A BST forecast would be the most robust forecast methodology** for PQP2 and subsequent periods. We identified a number of challenges, including those subsequently flagged by the Independent Verifier and Commission, however concluded that:

"We do not consider the limitations described above to be technically or substantively material and consider that the BST will produce a more robust forecast than the alternative detailed bottom-up view applied for PQP1.

We recognise we will learn through this application of BST, incorporating feedback from the independent verification and Commission evaluation processes. We plan to adapt and evolve our approach as we progress through PQP2 and into PQP3.

To combat the BST limitations described above, we have:

- *Tested and refined our approach against a BST framework (developed by Chorus with reference to prior Commission and other regulatory precedent and guidance).*
- *Engaged extensively with Chorus subject matter experts, who have reviewed and challenged our BST process and results to ensure they make sense from an operational perspective.*
- *Worked with NERA throughout the development process to review and test our approach to ensure it is as robust as possible, incorporating their feedback where relevant. Please refer to their report NERA recommendations for Chorus' BST Model for PQP2 for more details.*
- *Identified areas we plan to develop for future regulatory periods."*[62]

183.3 **We identified no areas where a bottom-up forecast would be more robust.** We initially thought a 'hybrid' BST and bottom-up might be needed; however, on examination, identified no expenditure areas or work plans where a bottom-up approach would likely produce a more robust forecast than the BST. This reflects the predominantly volumetric nature of Chorus' opex-centric activities.

184. We note that both the Independent Verifier and the draft decision acknowledge that BST is an appropriate forecast methodology.[63] That there are informational and other issues to overcome is not surprising. Chorus' use of the BST should be neither surprising nor controversial, having been signalled to, and then discussed with, the Commission during its development in the year preceding submission.

[62] Detailed in: Chorus BST Model Documentation v1.0, pages 3-4.
[63] Independent verifiers report, section 11.4 & 11.5

185. In the sections below we address specific comments and proposals from the draft decision.

BST data presentation

186. The draft decision comments on the level of granularity in the forecast and its categorisation.[64] The categories align with the Commission-agreed expenditure categories (those in the regulatory templates), and the Commission had several opportunities in 2023 to provide opinions on categorisation.

187. Different categories have been used to break down the application of trends. That is because the regulatory template opex categories are not homogeneous when it comes to future expenditure trending – we therefore apply a matrix approach to ensure expenditure categories and trend categories are applied correctly. The mapping between expenditure drivers and opex categories is shown in Table 11.5 of the Our Fibre Assets document in our proposal.

Historical trends and benchmarking

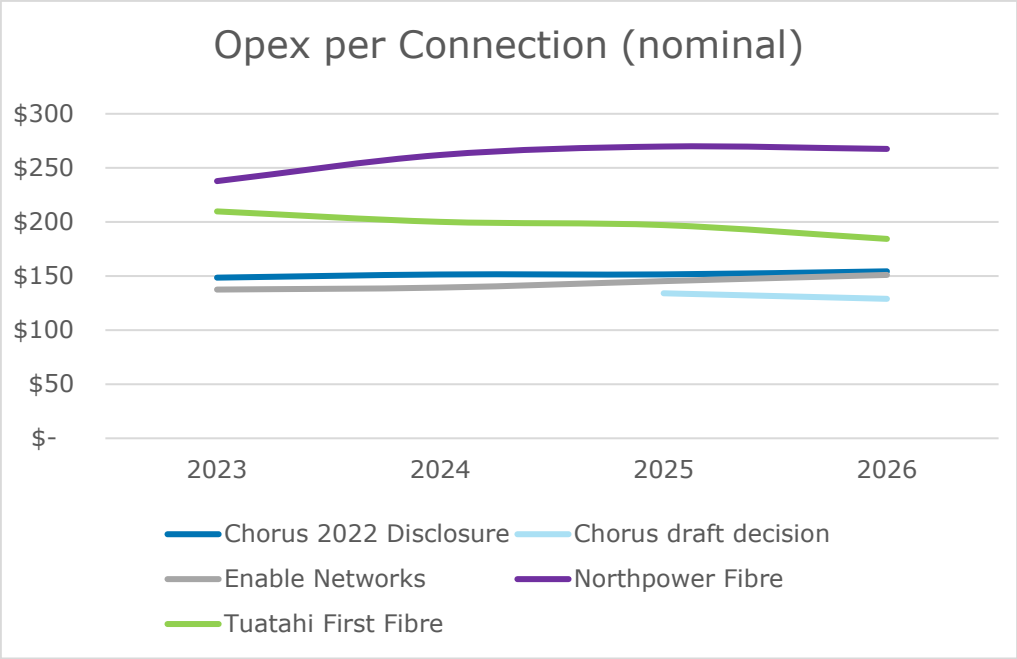
188. The Commission states in paragraph 7.8 of the draft decision that it has "instead focused on utilising the information presented by Chorus within its proposal, and as much as possible using the historical trends in expenditure data, and benchmarking using external reference data from Australia and the United Kingdom (UK) to consider what a prudent and efficient forecast would likely be."

189. Historical trends do not always predict future trends. The point of the structure of the BST is to allow for adjustments to historical actuals.

190. Whilst benchmarking can be a useful tool, each country and each entity is different. The Commission does not provide evidence or analysis to support its approach in the draft decision to place more reliance on benchmarking against other countries, than on the benchmarking available within New Zealand. The recent LFC benchmarking[65] shows that Chorus' opex per connection compares favourably to other LFCs.

[64] Draft decision, paragraph 7.10.
[65] Chart based on Information Disclosure data for each LFC. Due to different disclosure years, the chart is based on the 2022 Chorus disclosure year and the 2023 disclosure year for other LFCs (i.e. the latest information for each LFC).

Figure 3: Opex per connection comparison with other LFCs



191. We ask that the Commission takes account of the evidence and issues discussed above in its final decision.

Base year adjustments – self-insurance

192. We welcome the draft decision to accept the base year adjustments for:

    192.1 advertising costs, that were constrained by labour shortages;

    192.2 property maintenance, that was suppressed during the transition to a new supplier; and

    192.3 **CCI [ ]**

193. The draft decision requests further substantiation before accepting the base year adjustment for self-insurance, stating:

> *"Chorus has not provided information on the basis for the uplift including how the uplift is treated in the context of its other insurance arrangements, how the adjustments to the base year account for self-insurance, or how Chorus would determine events subject to self-insurance arrangements."*[66]

194. As a matter of principle, we understand the Commission accepts the need for and efficiency of self-insurance, where it is not possible or uneconomic to purchase insurance cover. This is consistent with the PQP1 decision on this matter. We also understand the draft decision to reject this base year adjustment for PQP2 is due to insufficient justification, which was due to an oversight by Chorus.

[66] Draft decision paragraph 7.23.3

195. In preparing the PQP2 proposal, Chorus followed the same process for forecasting and evidencing prudent and efficient self-insurance costs as for PQP1. This included obtaining an independent actuary's report estimating the appropriate provision for self-insurance. The proposed base year adjustment reflected the independent actuary's advice.

196. In reviewing the draft decision feedback, we identified that our October 2023 proposal submission omitted the final actuarial report that this base year adjustment was predicated on.[67] We provide the final actuarial report as a confidential attachment to this submission. We note that the final actuary's report was provided to the Independent Verifier as part of their assessment.[68]

197. We believe the actuarial report substantiates the base year adjustment for self-insurance and addresses the unintentional omission from our proposal. As the report was not available during the RFI process, we are available to discuss the report with the Commission. If the Commission would like to discuss the actuarial report with the actuary, this can also be arranged.

198. In summary, Chorus purchases insurance where it is available and economic to do so. Where insurance cover is not economically available, Chorus self-insures against this risk. Chorus also self-insures for retained losses on insured assets (the amounts below and above the insured values). This risk is compensated through a self-insurance premium based on an actuary's assessment of the cost carried by Chorus.

199. The actuarial report states:

CCI [

]

200. The actuary's report details exclusions from insurance purchased by Chorus, the scope of self-insurance and the methodology for estimating the cost of self-insurance.

201. Further, whilst other insurance costs are reflected in the base year, we note that self-insurance costs are not present in opex actuals in the base year.

[67] ***CCI [*** ***]***
[68] Referred to as document reference 11N in the Report from the Independent Verifier

202. In relation to the statement in the draft decision that:

> "*We consider that insufficient justification has been provided to demonstrate the prudence and efficiency of the claimed uplift (opex assessment factors (a), (b) and (d)) and Chorus has not demonstrated that it has taken a risk based approach (opex assessment factors (b), (c), and (d)) or demonstrated the trade-off it has made in relation to its overall insurance cover (opex assessment factor (h)).*"[69]

203. Chorus considers that the actuarial report addresses these assessment factors. We note the Independent Verifier's conclusion on review of the actuarial report:

> *The advertising and self-insurance adjustments have been reasonably substantiated, including additional information provided by Chorus following our Draft IV Report explaining its overarching approach to insuring its major risk exposures*.[70]

204. **Assessment factor (a)** Historic operating expenditure and consideration of historic rates of expenditure

205. Chorus has provided extensive information detailing historical opex, including unallocated and PQ FFLAS from 2016, and explained the reasons for movements in opex over that time period and to the end of the forecast period. This is provided in chapters 11 to 14 of 'Our Fibre Assets'. Further detail relating specifically to the forecast period is provided in responses to RFI008, specifically, "BST adjustment evidence Complete Pack v2".

206. This information does not explicitly address the cost of self-insurance, as self-insurance costs are not included in actuals. However, our proposed step is consistent with the actuarial report for PQP2, as well as being not dissimilar to the PQP1 actuarial report and corresponding proposal adjustment.

207. **Assessment factor (b)** Quantitative or economic analysis related to the proposed opex, including sensitivity analysis and impact analysis undertaken.

208. This is addressed in the actuarial report.

209. **Assessment factor (d)** Relevant financial information including evidence of efficiency improvements in proposed opex.

210. Self-insurance costs estimated by Aon reflect their expert assessment of the efficient cost for self-insuring the insured risks.

211. **Assessment factor (j)** The reasonableness of key assumptions, methodologies, planning and technical standards relied upon.

212. This is addressed in the actuarial report.

[69] Draft decision, paragraph 7.31
[70] Report from the Independent Verifier, page 20

Cost allocation

Overview

213. Our PQP2 proposal put forward a limited number of changes to opex allocator types for PQP2, including changes to reflect the changed nature of our business.[71] It is essential to get regulatory cost allocation right, as allocators that require too much cost to be recovered from our declining copper business would have an overall negative impact on continued operations and Chorus' ability to fund further fibre investment.

214. The Commission accepts two of the changes (relating to co-location opex and service company opex) but proposes not to accept allocator types in two other instances (relating to corporate opex and IT systems-related opex[72]). Our PQP2 proposal also put forward changes to the PSM allocation *driver* which reflected updated direct attribution[73] which was accepted by the Commission in the draft decision.

215. We did not propose changing any other opex allocator types or asset allocator types and the Commission accepted this was appropriate for PQP2.[74]

216. In this chapter we provide further evidence and expert advice to demonstrate that revenue - rather than totex - is the more appropriate basis for allocation of certain shared corporate and IT systems-related opex for PQP2. We note there does not appear to be fundamental disagreement about the economic principles to be applied to substantiate the allocator selection - rather the Commission has focused on the perceived risk of our proposed allocators over-allocating costs to FFLAS in practice.

217. In summary, we recommend that:

    217.1 The Commission approves the use of a revenue-based allocation for certain corporate and IT systems-related opex (consistent with our expenditure proposal). Using this allocation basis is objectively justifiable and demonstrably reasonable, and better meets the purpose of Part 6 for PQP2 because it reflects a more current view of economic costs.

    217.2 Alternatively, at a minimum, we believe the Commission should approve our alternative allocator approach for PQP2, which draws on Incenta's analysis but is conservative in that it does not assume any change in underlying cost structure during PQP2.

218. To support these recommendations, Incenta has provided an expert report that responds to the Commission's draft decision on cost allocation,[75] including addressing the Commission's concern that FFLAS charges under our proposed allocators might be cross-subsiding copper services during PQP2.

[71] Chorus Modelling and cost allocation report, page 18.
[72] These are called CTO common costs in our modelling and PQP2 proposal, however we refer to them as IT systems-related opex in this section for clarity.
[73] Chorus Modelling and cost allocation, table 7.
[74] Draft decision at 4.17.2.
[75] Incenta, Commerce Commission draft decision on Chorus's expenditure allowance – reply to certain cost allocation issues (May 2024).

219. Incenta's key findings are:

219.1 It is unlikely that there are material UFB-related costs within the 2022 base year and, even if there were, our proposed revenue-based allocation for certain shared corporate and IT operating costs would under-allocate cost to FFLAS, counter to the Commission's concern.[76]

219.2 It is highly unlikely copper decommissioning costs are included in the shared IT costs that the proposed allocator relates to, therefore the allocator does not over-allocate cost to FFLAS.[77] The allocator affects costs related to systems, whereas decommissioning costs are largely labour-related.

219.3 The considerable decrease in shared IT system expenditure suggests that copper decommissioning costs are not included within these cost items.[78]

219.4 While there is potential for copper decommissioning costs to be included in the corporate costs, these are far less material than UFB-related costs.[79]

219.5 Where the Commission disagrees that a simple allocation is more robust to changes, the more reasonable alternative is to use our detailed allocation rather than use the PQP1 allocation.[80]

219.6 While the Commission highlights the increase in allocated cost from PQP1 to PQP2 due to the change in allocator types, this may also reflect a correction for under allocation in PQP1.[81] The revenue allocator value exceeded the totex allocator value at the beginning of PQP1, consistent with the end of the UFB build, and if the revenue allocator was used in PQP1 then no step change in allocation would be observed for PQP2.

220. Our view is that the risks of over-allocation to FFLAS in the draft decision are unproven, and counter to the Commission's previous statements[82] and Incenta's economic advice. Our conclusions are that:

220.1 Retaining a totex-based allocation for IT systems-related costs and corporate costs over-allocates opex to non-FFLAS services; and

220.2 For corporate costs, the Commission has overestimated the proportion of shared costs which are incremental to copper withdrawal.

221. Accordingly, we recommend adopting a revenue-based allocation for PQP2, or a suitable alternative that uses a mix of revenue and totex applied to different IT systems-related costs and corporate costs.

[76] Ibid at [13]
[77] Ibid at [14a]
[78] Ibid at [15]
[79] Ibid at [14b]
[80] Ibid at [16]
[81] Ibid at [86]
[82] Commerce Commission, Chorus' transitional initial price-quality regulatory asset base as at 1 January 2022 – Final Decision (16 December 2021), figure 5.4 and paragraphs 5.216-5.217 and Commerce Commission, Chorus' initial regulatory asset base as at 1 January 2022 – Draft Decisions (19 August 2021) , figure 5.5 and paragraphs 5.168-5.169 which highlight totex was important in the early years of the UFB rollout.

Chorus' network business has changed

222. The context of the selection of more up-to-date allocators for certain shared corporate and IT systems-related opex is important to understand, as it emphasises how these allocators better reflect our changed network business, and better meet the purpose of Part 6 price-quality regulation.

223. Chorus built approximately three-quarters of New Zealand's FFLAS network under a contract with the Crown. Chorus' build program took advantage of existing copper network assets wherever possible, significantly reducing the whole-of-life cost to New Zealand.

224. Utility-style economic regulation was implemented for Chorus on 1 January 2022, recognising consumers' growing reliance on internet services. In establishing this regulation, the cost allocator types for PQ regulation for the pre-implementation 'network build' period were also applied for the 3-year PQP1 period which covered the transition into the 'operate' lifecycle stage.

225. For ID reporting purposes, Chorus was required to review our choice of cost allocator types from the implementation date at least every 18 months. Under PQ regulation, Chorus must propose allocator types for the forthcoming regulatory period, PQP2.

    225.1 Allocator types should be selected that, ideally, result in the most accurate allocation of the costs which remain shared between fibre and non-fibre services.

    225.2 In terms of evidence, the allocators selected must be demonstrably reasonable and objectively justifiable.

226. The obligation to review and select allocators is therefore dynamic, and responsive to the nature of current and forecast activities.

227. In our PQP2 proposal we put forward a change in allocator types to reflect the changed nature of our business, where the significance of copper in Chorus' activities has declined and continues to do so rapidly. The advent of LEO satellite providers like Starlink, particularly, has been a game-changer in regional New Zealand, driving an accelerated rate of copper disconnection. This will increase if other LEO satellite providers enter the market and provide further competition and consumer choice.

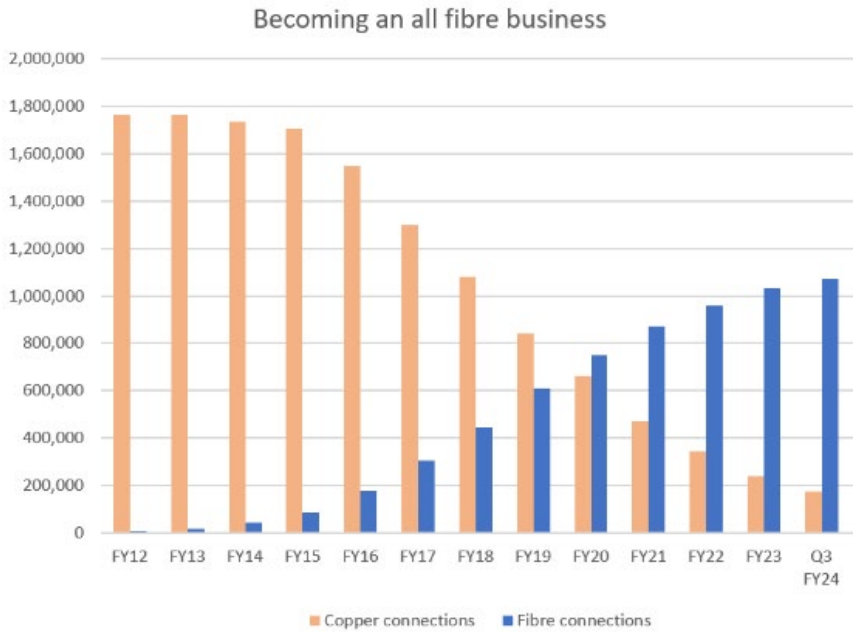
228. Notably, in March 2023, Chorus announced a 'stop sell' of copper connections in our UFB areas[83] – meaning there are no new copper connections in these areas and copper connection activity has ceased. We have publicly advised of the accelerated depreciation of copper network assets, and expect to fully exit the provision of copper services in UFB areas by the end of 2026.

229. Given our plans - and current consumer trends - copper broadband is likely to become a minor part of our business part-way through the PQP2 period, and continue to decrease further. This has become even more evident since our PQP2 proposal was submitted in October last year, due to the acceleration of our copper withdrawal programme and ongoing migration to alternative rural networks.

[83] https://company.chorus.co.nz/media/releases/chorus-announces-stop-sell-new-copper-services-fibre-areas

230. The chart below shows the extent of the decline in copper connections and our transition to an all-fibre business. Copper connections have reduced by 90% since we commenced the fibre rollout in 2011 and continue to decline rapidly.[84]

Figure 4: Becoming an all-fibre business



Our proposed PQP2 allocators are objectively justifiable and demonstrably reasonable

231. As mentioned above, the fibre input methodologies require a review of cost allocators applied to shared costs for ID purposes at least every 18 months, and, under PQ regulation, Chorus must propose allocator types for the upcoming PQP2 period.

232. To support our review, we analysed a substantial amount of data to produce a demonstrably reasonable allocation. Subject matter experts within Chorus analysed all shared costs and allocator types, and we engaged Incenta throughout the review to provide supporting economic advice.[85] For IT systems-related opex alone we analysed over 400 cost items, of which over 100 were shared. For corporate costs we reviewed each team being allocated. In addition, in 2023 and 2024 we surveyed Chorus people leaders to cross check that our recommended changes accorded with actual activity.

233. As a result of our cost allocation review, our PQP2 proposal put forward[86] a number of more up-to-date allocator types for the upcoming PQP2 period. The changes applied to four categories of cost:

[84] The Commission has observed that the decline in copper broadband has outstripped the number of copper lines withdrawn by Chorus, suggesting that a major factor has been commercial decisions made by some RSPs to stop selling copper services ahead of withdrawal and consumer preferences for faster speeds or cheaper prices on other technologies. See Commerce Commission *2022 Telecommunications Monitoring Report*, 15 June 2023, page 28.
[85] Incenta, Cost allocation issues for RP2 (October 2023), section 3.3 and 3.4.
[86] Chorus Modelling and cost allocation report, page 18.

233.1 Chorus' operating cost related to managing service companies;

233.2 Chorus' operating cost relating to co-location, in particular connections and relinquishments;

233.3 Certain Chorus corporate overheads, largely related to personnel cost; and

233.4 Chorus IT systems-related costs, which we also term CTO common costs.

234. In addition, we also noted changes to the PSM allocation *driver* which reflected updated direct attribution.[87]

235. The supporting certification and assurance opinion that accompanied our proposal showed that all our cost and asset allocators were objectively justifiable, demonstrably reasonable, and best met the purpose of fibre regulation in Part 6 of the Act. The Commission accepted that all of the cost allocators in our PQP2 proposal, including the proposed changes, were objectively justifiable and are calculated correctly and based on accurate records.[88]

236. Cost allocation was outside the scope of independent verification, however we provided our Modelling and Cost Allocation Report to the Verifier[89] and it was briefed on proposed changes.

The Commission's rationale for not accepting changes to CTO allocator types is overly conservative

237. In the draft decision, the Commission is concerned that our changes to the allocators may mean that FFLAS charges cross-subsidise copper services.[90] This risk is not proven, and is counter to the Commission's previous discussions about totex[91] and Incenta's economic advice.[92] We provide additional evidence in this submission to demonstrate the validity of our proposed allocators.

Proposed change to IT systems-related cost allocation

238. The Commission's draft decision is to not approve a revenue allocator for certain IT systems-related costs. Rather, it proposes to continue using totex-based allocator types.[93] The Commission focuses on three points, which we address below:

238.1 That there is a risk of incremental copper cost within the shared costs that would be allocated to FFLAS; [94]

238.2 The directly attributable portion of technology costs should be increasing;[95] and

[87] Chorus Modelling and cost allocation report, table 7
[88] Draft decision at 4.14 and footnote 63.
[89] Independent verifiers report, section 4.7.1
[90] Draft decision 4.26 and 4.41
[91] Commerce Commission, Chorus' transitional initial price-quality regulatory asset base as at 1 January 2022 – Final Decision (16 December 2021), figure 5.4 and paragraphs 5.216-5.217 and Commerce Commission, Chorus' initial regulatory asset base as at 1 January 2022 – Draft Decisions (19 August 2021) , figure 5.5 and paragraphs 5.168-5.169 which highlight totex was important in the early years of the UFB rollout.
[92] Incenta, Cost allocation issues for RP2 (October 2023)
[93] Draft decision 4.42.2
[94] Draft decision at 4.80, 4.66 and 4.69
[95] Draft decision at 4.72 and 4.73

238.3 Allocating variable cost as fixed cost could materially over-allocate CTO cost to FFLAS. [96]

239. These points do not justify the retention of the PQP1 allocator type for IT systems-related costs, and a materially better allocation would apply the revenue-based allocation in our expenditure proposal. However, if the Commission does not consider that the benefits of a more simplified allocation outweigh the reduced accuracy, then we also propose a conservative - but more complex - allocation that is also consistent with the analysis from our review of allocators.

The likelihood of incremental copper withdrawal costs being included in IT systems-related cost during PQP2 is very low

240. The Commission notes the use of a connections-based allocation for IT systems-related cost during the pre-implementation period (2011-2021) would have under-allocated cost toward FFLAS, and it now believes there is a risk that applying a revenue-based allocator would under-allocate shared cost to non-FFLAS from PQP2. This assumption is not demonstrably reasonable.[97] The circumstances that applied during the pre-implementation period are not equivalent to those in PQP2 – the likelihood of incremental copper withdrawal costs being included in IT systems-related-cost during PQP2 is extremely low because:

240.1 The pre-implementation period included a significant amount of time where Chorus was establishing new IT systems, transitioning from a number of older legacy systems;

240.2 Any costs related to IT systems that we are exiting are immaterial,[98] and these are now recorded separately as project opex rather than being included within the IT systems-related costs category; and

240.3 The majority of these systems will not be exited until after PQP2, when the cost of maintaining the systems for use outside fibre areas becomes disproportionately high relative to the number of copper connections.

241. We expand on these points below.

242. IT systems-related costs refer to a range of IT and systems opex which are predominantly fixed, economic common costs. Thus, the risk of under-allocation during the pre-implementation period was not related to managerial effort[99] – these costs do not sit within the Support Technology narrative category. Instead, it was related to incremental setup costs for supporting, maintaining and licencing new systems previously not required.

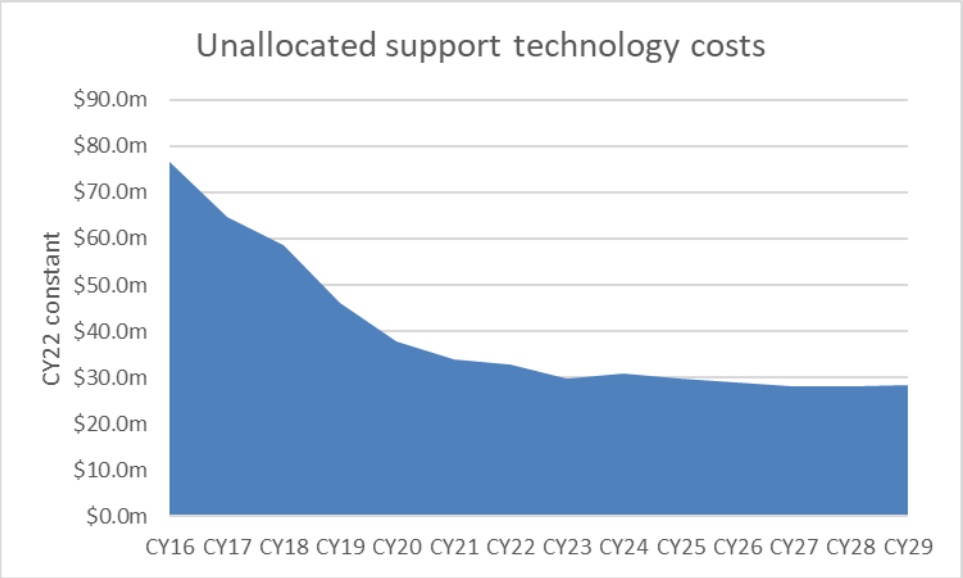
243. During the pre-implementation period there was a significant amount of time where Chorus was establishing new IT systems and transitioning from a number of shared Spark systems (inherited from Telecom) and moving away from systems that were copper-focused. This was not a business-as-usual (BAU) state.

244. The magnitude of these costs will not be repeated as copper is withdrawn; the commencement of PQP2 will occur 14 years after the Telecom demerger and

[96] Draft decision at 4.66 and 4.79
[97] Draft decision, paragraph 4.69
[98] IT systems-related opex is largely for software and the opex costs for exiting these are less than opex costs for exiting physical network equipment.
[99] Draft decision, paragraph 4.63

virtually all of our IT systems will have been moved to common systems (and are fixed) and FFLAS systems. The extended time series of support technology expenditure[100] in figure 5 is evidence of this decline in overall technology opex over time and the relative stability of spend as Chorus enters PQP2.

Figure 5: Technology expenditure has declined considerably, highlighting the low likelihood of incremental copper IT costs in PQP2 compared to the high likelihood of incremental fibre costs during the pre-implementation period



245. Costs related to exiting IT systems are immaterial and are not included with IT systems, therefore these cannot be considered as incremental within certain IT systems related costs. These costs largely related to the secure management and storage of data (largely labour-related) and project opex which are not included in the costs we are proposing to change allocators for. As an example, we have shown unallocated project opex in table 4 which relates to vendor costs – only a small portion of this is used for copper systems.

Table 4: The cost to exit systems is immaterial and excluded from the IT systems-related cost being allocated

	CY16	CY17	CY18	CY19	CY20	CY21	CY22	CY223	CY24	CY25	CY26	CY27	CY28
Unallocated project opex (CY22, constant)	$5.9m	$7.1m	$6.6m	$2.7m	$4.1m	$2.2m	$2.0m	$2.7m	$2.0m	$2.0m	$2.0m	$2.0m	$2.0m

246. Even though the costs to exit copper IT systems are excluded from IT systems-related costs, the likelihood that these costs are included within our PQP2 forecasts is further mitigated by the fact that these costs will mostly be incurred after PQP2. Systems that are required to support copper services outside our fibre areas will be exited when the costs of using them outweigh the costs of alternatives and this will occur closer to the time where copper services are withdrawn nationally (since IT

[100] This is consistent with the data the Commission used to analyse directly attributable cost.

systems generally are not specific to geographic areas). Our current working assumption is that this could be expected to take place in the early 2030s.[101]

The directly attributable portion of opex cannot be used as the only indicator of incremental costs

247. The assumption in the draft decision that there are incremental costs within IT systems-related costs if the directly attributable portion of cost declines over PQP2 is not sound. [102] This trend also does not indicate that a move toward using revenue as the allocator type will allocate incremental copper costs to fibre. As Incenta notes, over time, as record-keeping practices improve, regulated businesses should be able to better identify economic incremental and common costs. However, this will not necessarily result in an increase in directly attributable fibre costs. The amount of directly attributable costs forecast will vary depending on several factors including the types of projects, productivity gains and the services being provided.

248. In the case of IT systems-related costs, we often replace software that is specific to a service with software that can be used for multiple services in order to achieve cost efficiencies. These are largely IT-related opex and in many cases where there is copper-specific, or FFLAS-specific, software then these are replaced with software that can be used across multiple services. Using the same software across multiple services allows us to achieve cost efficiencies via economies of scope since there are multiple services that we provide that are non-FFLAS and non-copper[103] – it does not mean that there is specifically incremental copper cost.

249. The analysis in the draft decision of IT systems-related cost overstates the degree to which direct attribution[104] decreases. In fact, it is forecast to be largely stable, as the Commission expects. Table 5 below shows an expanded version of the Commission's analysis, and from this we can see:

    249.1 The Commission is only looking at some CTO costs. It has reviewed costs within the Support narrative category and Technology sub-category, however some CTO cost resides within the Network category;

    249.2 While the proportion of total directly attributable cost decreases from PQP1 to PQP2, the proportion of cost directly attributable to FFLAS is similar to historical data during pre-implementation (i.e. prior to CY22);

    249.3 Costs that are directly attributable to non-FFLAS have fallen significantly faster than costs that are directly attributable to FFLAS. Between CY16 and CY22 (the base year) costs that are directly attributable to non-FFLAS decreased by 77%, whereas costs that are directly attributable to FFLAS have only fallen 23%;

    249.4 The decrease in direct attribution the Commission notes (approximately 30% in PQP1 to 25% in PQP2[105]) occurs between CY24 and CY25 and is

[101] Chorus FY23 Investor presentation, page 27, https://assets.ctfassets.net/7urik9yedtqc/5HEZKMCr51rFgSQ76jOdAW/5ac859f42f9ccc37f3a1296dd4750ecf/chorus-financial-results-full-year-fy23-02-investor-presentation.pdf
[102] Draft decision 4.71-4.73.
[103] For example, Chorus Regional Transport (CRT), commercial co-location and new property developments
[104] Direct attribution for the purposes of this analysis is defined as costs that have an Allocated service of either "FFLAS (fibre) directly attributed" or "Non-FFLAS (copper) directly attributed" in the RT03 Cost allocation regulatory template.
[105] Draft decision at 4.73.

clearly an artefact of forecasting/modelling rather than a step change in cost structure. We discuss this further below.

Table 5: Support/Technology costs (constant, CY22 $m)

	CY16	CY17	CY18	CY19	CY20	CY21	CY22	CY23	CY24	CY25	CY26	CY27	CY28
Directly attributable to FFLAS	$7.6m	$7.0m	$6.8m	$5.9m	$4.9m	$4.5m	$5.8m	$5.6m	$5.5m	$4.4m	$4.3m	$4.2m	$4.2m
Directly attributable to non-FFLAS	15.5m	$13.4m	$13.3m	$9.0m	$5.8m	$5.5m	$4.2m	$3.9m	$3.9m	$3.1m	$3.0m	$2.9m	$2.9m
Shared cost[106]	$41.3m	$34.8m	$30.8m	$25.7m	$23.3m	$21.5m	$22.7m	$20.4m	$21.3m	$22.3m	$21.7m	$21.1m	$21.2m
Total	$64.3m	$55.3m	$50.9m	$40.7m	$34.0m	$31.5m	$32.7m	$29.9m	$30.8m	$29.8m	$28.9m	$28.1m	$28.2m
	CY16	**CY17**	**CY18**	**CY19**	**CY20**	**CY21**	**CY22**	**CY23**	**CY24**	**CY25**	**CY26**	**CY27**	**CY28**
Directly attributable to FFLAS %	11.78%	12.74%	13.32%	14.59%	14.40%	14.21%	17.75%	18.69%	17.93%	14.85%	14.82%	14.78%	14.79%
Directly attributable %	35.85%	37.02%	39.49%	36.81%	31.34%	31.78%	30.58%	31.59%	30.72%	25.12%	25.02%	24.93%	24.91%

250. The decrease in direct attribution between CY24 (17.93% and CY25 (14.85%) is an artefact of forecasting/modelling rather than a step change in economic costs. This means that the results should not be read as implying incremental copper costs are increasing. Opex allocation in our modelling is a multi-step process. In simple terms, costs are allocated to cost items, then allocated to service categories and then allocated to geographic areas (e.g. PQ, ID-only). The decrease in direct attribution is driven by the change to the revenue allocator type when allocating to service categories - which removes some of the allocation to fibre applied by the personnel cost and CTO overhead allocators. This is illustrated below in table 6, which shows that the fibre portion of the "directly attributable" costs stays relatively constant, whereas the portion resulting from CTO overhead allocation decreases due to the change to revenue allocation. This is what the Commission is observing, not an underlying change in incremental cost.

Table 6: Percentage of Support/Technology costs directly attributable to FFLAS

	CY24	CY25
Fibre	14.86%	14.83%
Chorus reactive maintenance overhead	0.02%	0.02%
Service company overhead	0.00%	0.00%
All non-CTO NPC costs	0.35%	0.00%

[106] Shared cost for the purposes of this analysis are costs that are not directly attributable in the RT03 Cost allocation regulatory template.

	CY24	CY25
CTO overhead avoiding circularity	2.68%	0.00%
Total support/technology costs directly attributable to FFLAS	**17.93%**	**14.85%**

Chorus' IT systems-related allocation is supported by evidence and is demonstrably reasonable

251. We demonstrate above why there is a very low risk that incremental copper costs are included within IT systems-related costs, and that a revenue-based allocator would not allocate copper costs to fibre. Below, we discuss the evidence that demonstrates moving to a revenue-based allocation for PQP2 is reasonable.

252. In its economic report provided with our proposal, Incenta discusses why a review of our allocators, specifically the use of totex, is warranted for PQP2.[107] This report highlights:

    252.1 Chorus is required to review allocator types every 18 months for the purposes of ID;

    252.2 Totex was used to allocate a range of CTO costs where specific drivers could not be identified and which could not be directly attributed;

    252.3 Chorus was required to allocate costs over ten years of historical data and the information going back that far is imperfect for allocating economic cost;

    252.4 The ten year period covered the initial UFB rollout period in which the principal risk was managing the UFB rollout – and that this was a material risk. The UFB rollout was completed early in PQP1; and

    252.5 Record-keeping typically improves over time to provide more accurate allocations.[108]

253. As a result, we reviewed each cost in detail (covering more than 100 costs that aren't directly attributable) to establish a demonstrably reasonable and objectively justifiable allocation.[109] Within IT systems-related cost we considered the nature of each cost, whether the cost was fixed, variable or semi-variable, and for those costs which were semi-variable we also considered the degree of variability. Over 80% of costs were identified as fixed.

254. Based on this, Incenta considered two options:

    254.1 One (recommended) option was to use a revenue allocator which would be more robust to changes over time;

    254.2 The alternative option was to apply a revenue allocator to 80% of fixed costs and identify individual allocators for the remaining 20%. Incenta's

[107] Incenta, Cost allocation issues for RP2, section 3.1
[108] We note that this primarily relates to accounting data for actuals and is not the same as forecasts including assumed structural changes in record keeping.
[109] This process is discussed in detail in Incenta's report, Cost allocation issues for RP2, section 3.3.

advice was that this did not better meet the requirements of the IMs and the Part 6 purpose than an overall revenue allocator.

255. In its draft decision to retain the PQP1 allocator types, the Commission considered that the risk of over-allocating variable costs to FFLAS outweighs the benefit of a revenue-based allocation that is more robust to changes in cost and cost structure over time.[110] However, it did not consider the alternative option.

256. For PQP2, our view is that one of the two options that Incenta considered must be chosen – these are objectively justifiable and demonstrably reasonable as both are based on the analysis of underlying costs. Because of this, they both reflect a recent view of economic costs and therefore meet the Part 6 purpose, whereas maintaining the PQP1 allocators for the 4-year PQP2 period does not.

Alternative IT systems-related cost allocation approach

257. While we recommend the use of a revenue-based allocation, we have asked Incenta to provide a workable alternative based on its 2023 analysis. Incenta has advised that a workable allocation would include a portion of totex where a cost is semi-variable. Where the cost is variable a suitable proxy allocator should be based on Chorus personnel cost. This is detailed in table 7 below.

Table 7: Cost allocation options for IT systems-related (CTO common) cost

Cost variability	Estimated proportion of cost	PQP2 proposal allocation (recommended)	Alternative, conservative option
Unknown[111]	4%	100% revenue	100% totex
Fixed	44%	100% revenue	100% revenue
Some variability, high proportion of fixed cost	37%	100% revenue	75% revenue, 25% totex
Some variability, moderate proportion of fixed cost	8%	100% revenue	50% revenue, 50% totex
Variable	6%	100% revenue	100% Chorus personnel cost

258. This alternative allocation approach is conservative in that it largely relies on assumptions predicated on the current cost structure, however it remains objectively justifiable and demonstrably reasonable as:

258.1 The analysis remains consistent with our detailed review of each cost item and so reflects a recent view of costs;

258.2 Fixed costs are allocated by revenue, consistent with economic principle;

[110] Draft decision at paragraphs 4.66 and 4.79.
[111] In Incenta's analysis, the unknown portion was pro-rated out to other categories.

258.3 Where it is too complex to derive allocators for semi-variable cost,[112] totex is used, consistent with PQP1;

258.4 The proportion of totex applied to semi-variable cost is defined based on an independent risk management framework;

258.5 For the remaining variable cost, where it is too complex to identify causal allocators, Chorus' personnel cost is a reasonable proxy allocator as some of these costs vary by the number of users.

The Commission's rationale for not accepting changes to corporate allocator types is overly conservative

259. In seeking to retain the PQP1 allocator for corporate costs, the Commission is concerned there are incremental copper withdrawal costs within shared costs that would be allocated to FFLAS if a revenue allocation is used for PQP2. In reaching this view the Commission notes there is ongoing management of copper services and that it is not persuaded that less than 11% of shared corporate costs are incremental to copper services.[113]

260. Our view is that the risk of incremental copper withdrawal cost residing within corporate shared cost is low. In its response to the Commission's draft decision Incenta notes that:

260.1 The lower level of expenditure, and risk, required for copper withdrawal will be significantly less than that of the rollout of a new network;

260.2 Decommissioning assets requires significantly less strategic management compared to starting a business and building a new network; and

260.3 As the level of expenditure is expected to be lower, the level of finance-related tasks is expected to be lower.

261. In order to cross check our assessment of the most appropriate corporate allocator, Chorus conducted a survey of its people leaders to determine their estimates of staff time allocated to fibre. This is an update of our previous survey in early 2023, and was conducted in May 2024 so it could include the effect of a major internal restructure which was implemented on 1 February 2024. The restructure is part of broader changes as Chorus transitions from building to operating the network. The updated survey results show the time spent on fibre compared to copper has increased since 2023, confirming the trend of Chorus activity being increasingly focused on fibre, and is higher than would be allocated by totex.

Alternative corporate allocation approach

262. While the risk is low, Incenta expanded upon its analysis in 2023[114] which reviewed corporate costs team-by-team. Incenta suggests that, where a risk arises, it is higher for regulatory functions. As a result, we have identified a more conservative proposal for PQP2 in which:

262.1 Functions that are fixed use an economic common cost allocator, namely revenue. These functions, such as the Executive team, Finance and

[112] Incenta, Cost allocation issues for RP2 (Oct 2023) at 63.
[113] Draft decision, paragraph 4.70.
[114] Incenta, Cost allocation Issues for RP2, appendix B

Executive Assistants, do not vary considerably with the amount of effort placed on various services;

262.2 Functions whose effort could be variable use a proxy allocator to reflect potential cost drivers. For example, the People and Culture team will have some variability with the number of staff. Regulatory functions potentially devote more time and effort to copper policy. The costs of these functions could be allocated by totex;

262.3 For workability, where teams are in the same cost centre then the proposal is to use the same allocator, ensuring it can be applied in the current model.

263. This scenario is presented in Appendix A3.

Chorus' corporate cost allocation is supported by evidence and is demonstrably reasonable

264. This alternative option is conservative in that it largely relies on the current cost structure, but allows for incremental work related to copper withdrawal. However, it remains objectively justifiable and demonstrably reasonable as:

264.1 The analysis remains consistent with our detailed review of each team and so reflects a recent view of costs;

264.2 Fixed costs are allocated by revenue, consistent with economic principle;

264.3 Where costs are variable, revenue is a suitable proxy allocator for the cost driver; and

264.4 Where there is potential for incremental copper withdrawal cost, totex is used for consistency with PQP1.

265. In summary, we do not consider this alternative basis to be better than our preferred one, but it presents a materially better option than retaining totex-based allocators, based on the best information available.

Capex allowance

Overview

266. The Commission's draft decision proposes to largely accept Chorus' capex forecast for PQP2, with some changes proposed for particular expenditure categories. We welcome the Commission's decision to approve the proposed expenditure in 10 base capex categories in full. We also accept some draft decisions to reduce the allowable expenditure. However, there are areas where the draft decision would disallow essential investment that is strongly supported by end-users, and this should be reinstated. We provide further evidence in this submission and attached material to support this case.

267. In this chapter we refer to existing evidence, and provide further evidence and expert advice, to respond to:

    267.1 Field sustain capex

    267.2 Resilience capex

    267.3 Customer incentives

    267.4 Connection capex

    267.5 Fibre Frontier

    267.6 Demand forecasting.

Field sustain capex

Introduction

268. The draft decision proposed significant reductions to field sustain capex by reducing expenditure on the replacement of slotted core cables by $24.1m and excluding $5.7m of Chorus' proposed expenditure for the replacement of Pulse-Code Modulation or Customer Multi-Access Radio (PCM/CMAR) routes with fibre backhaul.

Slotted core cables

269. The draft decision states:

> *"Having reviewed Chorus' proposal and its forecasting model for the replacement of fibre cables in PQP2, we have identified the following inconsistencies between the model and proposed expenditure:*
>
> *The model supplied in response to a RFI identified projects as having a priority of 1 to 6, or as having no assigned priority (i.e. Blank/Null) (assessment factor (m) and (t)).*
>
> *The model forecasts total expenditure for fibre cable replacements, irrespective of assigned priority, at $64.1m. This figure is close to the expenditure stated in Chorus' proposal. However, the model also indicates this expenditure is to replace* ***CCI [ ]****km of fibre cable, significantly more fibre cable than the 400km stated in Chorus' proposal (assessment factor (e)).*

*Further, the model indicates expenditure to replace only the priority 1 and 2 fibre cables is **CCI [ ]**. This would involve **CCI [ ]**km of cable, which is close to the 400km stated in Chorus proposal (assessment factor (e)).”*

270. Chorus plans to progressively replace slotted core fibre, which was laid 30 to 40 years ago and is reaching end of life. The individual fibres within this type of cable are retracting and delaminating, causing gradual and increasing optical loss and eventual failure.

271. We were replacing slotted core fibre cables for many years in a semi-reactive way. We started the current prioritised proactive condition-based replacement programme in 2019 and had replaced around 350km by the end of 2022. The proposed investment for PQP2 was part of this long-standing programme of replacement. If this investment is not approved, it will severely disrupt this ongoing programme.

272. Our newer fibre cables (from 1992 onwards) - including UFB fibre - use loose tube, gel-filled fibre construction, which has a non-metallic strength member and revised cladding. We are not currently experiencing any known issues with these types of cables.

273. **Assessment factor (e)** approach to forecasting capital expenditure, including models used to develop the capital expenditure forecasts;

274. In support of our proposed $64.1m investment in the replacement of slotted core cables, we provided the Commission with our Fibre Lifecycle Plan spreadsheet which identified the high priority projects where replacement was planned by 2033. In our Fibre Asset document we stated this would support 400km of cables, however this should have read 574km. We apologise for this error.

275. The prudency of this investment is clear when assessed against Chorus’ asset data. We have around 54,000 km of fibre cable across New Zealand, of which around 8,000 km, or 14%, is assessed as being in H1 condition.[115] A proposal to replace 574km of this over PQP2 is clearly not excessive.

276. **Assessment factor (m)** fibre asset and fibre network information and **Assessment factor (t)** the reasonableness of the key assumptions, methodologies, planning and technical standards relied upon.

277. All the projects in the Fibre Lifecycle plan consist of the replacement of fibre cables that have been identified as having an asset health score of H1, and are suffering from performance degradation.

278. These are high capacity DWDM transport routes. Under-investment in this area would risk supply to thousands of connections associated with Chorus connectivity to our handover sites (POIs) and would jeopardise connectivity to a number of mobile cell sites over many of these routes. Ensuring they are reliable is, and should be, a high priority for both Chorus and the Commission. Without sufficient investment, we expect there would be continued degradation of these assets and a high risk of eventual failure. This would result in poor outcomes for end-users and

[115] Chorus regulatory information disclosures, schedule 10a. The H1 rating is the inverse of that specified in the Fibre ID requirements but is consistent with engineering approaches and asset health frameworks for other regulated sectors such as EDBs. We received Commission approval for diverging from the ID requirements and using this approach.

would not be consistent with end-user and stakeholder feedback that reliability / resilience is their highest investment priority for Chorus.[116]

279. In addition to managing reliability, the proactive replacement of these assets - rather than allowing them to reach a point of degradation or failure - will allow for:

    279.1 a programme that is executable over a lengthy time window where the alternative is extremely disruptive to customer service and extremely challenging from a resourcing perspective;

    279.2 more cost-effective delivery, because work is delivered as a planned programme; and

    279.3 the facilitation of higher capacity transport systems to be deployed as well as the provision of more fibres where these are currently in short supply, resulting in planned ability to meet forecasted growth.

280. In order to effectively plan for the replacement of these assets over the next ten years, Chorus developed its own internal prioritisation framework that was not related to asset health but considered the network and customer impact of degradation and failure. The spreadsheet supplied to the Commission also included a priority indicator for identified slotted core replacement projects using a 1 – 6 scale.

281. We prioritised cables that:

    281.1 form our core and regional transport systems. Sometimes these replacements are shared with Spark.

    281.2 support regional DWDM systems, because these are high traffic routes and have a bigger impact if they fail.

282. The Commission used only priority 1 and 2 projects in estimating the revised capex in its draft decision, reducing capex investment in slotted core cable replacement by $24.1m.

283. In the spreadsheet sent to the Commission, not all projects were categorised. The prioritisation categories were intended to provide additional guidance in developing a prudent and efficient 10-year replacement programme. However, the absence of a rating did not imply that the replacement of these assets could be substantially delayed.

284. The draft decision to remove $24.1m of capex relating to projects rated 3 or above on our internal prioritisation framework, would mean that Chorus would no longer be able to meet its goal of replacing these assets by 2033. This increases the risk of further degradation or failure for the remaining slotted core assets, and service failures affecting large numbers of end-users.

285. The proactive replacement of these assets is both prudent and efficient. We recommend that the Commission allows the full $64m of capex in PQP2 so that we can remain on track to replace these high-risk assets by 2033. If this capex is not approved, the replacement programme to beyond 2033 will need to be deferred (i.e. we would not expect to have sufficient field resource to catch up in PQP3 without a significant cost uplift), again increasing risk of service failures to end-users.

[116] Our Fibre Plans Chapter 6: Engagement.

Replacement of legacy assets with fibre backhaul

286. Our proposal for $5.7m of field sustain capex for the replacement of PCM/CMAR equipment with fibre backhaul was intended to allow old PCM or CMAR equipment to be removed from the network and transferred to the spares system to support the remaining equipment in the network. Spares holdings were regularly reported on so that any gaps in the holdings could be harvested from the network.

287. Chorus recently updated its strategy to become a fibre only business within 10 years. This update was provided after our PQP2 submission. Under the revised strategy, equipment spares will now be sourced by transferring the PCM & CMAR customers of the Chorus Network to alternative provider technologies so the investment is no longer required.

288. We accept the Commission's removal of this expenditure.

Resilience capex

289. The draft decision proposed significant reductions in resilience capex, through the removal of 14 projects that the draft decision suggested did not meet the architectural standard for a dual pathway. The draft decision noted:

> *"Chorus stated that its architecture specification standard (CADS0046 section 4.4), which was informed by the NIPA, requires that communities greater than 3,000 premises should have dual path fibre routes. Additionally, it also proposed dual path fibre routes or partially diverse routes should be planned for all communities greater than 1,000 premises and for all regional transport routes. Communities between 100 and 1,000 premises are provided with dual path fibre if possible and may be part of other diverse activity. Chorus did not quantify the benefits from such investments or explain why investments in dual fibre paths should be made to a level that goes beyond its architectural specification standard (assessment factors (d), (e) and (t))."*

290. We accept we have not provided sufficient evidence in support of investment in dual fibre paths that go beyond the requirements of the NIPA to support communities with fewer than 3,000. However, the Commission seems to have misunderstood our architecture standard and the resilience model.

291. The draft decision is to remove 14 projects in PQP2 in the resilience model where the *current* number of connections is stated to be lower than 3,000. However, we plan these projects based on the *projected* number of future connections (e.g. with copper withdrawal, more premises will move onto fibre over time).

292. Of the 14 projects removed in the draft decisions, 7 projects support total premises over 3,000. We accept the removal of the remaining 7 projects as 4 of the projects were to address communities of over 1,000 premises which reflected Chorus's more aspirational goal and 3 were projects that supported fewer than 1,000 additional premises, but which were intended to provide additional resilience by creating shorter and more localised rings.

293. We have provided a summary of the 14 projects in Appendix 4 of this submission, confirming that 7 of these projects meet the architectural standard of supporting

more than 3,000 premises. This summary is based on the information included within the spreadsheet provided through the RFI process.[117]

294. We recommend that the Commission reinstates the 7 projects where our architectural standard is met (i.e. the projects where the premises protected exceeds 3,000). This would reinstate $16.8m from our original proposal and allow for total resilience capex in PQP2 of $54.7m.

Resilience alternatives

295. The draft decision contended that there could be less expensive alternatives for some of these resilience projects (assessment factor (d)).

296. The Commission seems to be hypothesising that satellite could be an alternative to fibre for the backhaul from an Access site in the Chorus network.

297. We disagree with this contention. We do not believe it would be prudent and efficient to devote significant resources to assessing what is a clearly inappropriate option that would not deliver services at a quality standard end-users demand. Depending on end-user needs, LEO satellite services could deliver a workable alternative broadband service at an individual connection level. However, they are not able to provide enough speed or capacity to act as a substitute provider of backhaul to entire communities.

298. Essentially, alternative technologies such as LEO satellite are not feasible as backhaul because they are not fast enough, and current regulatory and commercial settings would not allow for it:

    298.1 Current LEO speeds are generally limited to under 1Gbps. Chorus requires speeds of up to 100 times faster than that for OLT uplinks. Hence satellite services would simply not be a suitable alternative.

    298.2 All technologies have performance limitations compared to FFLAS fibre services and no performance guarantees are available from current LEO operators.

    298.3 Current price-quality standards and information disclosure settings, as well as RSP contracts, do not recognise the use of alternative technologies to maintain connectivity at reduced performance. These would all need to be amended.

    298.4 We don't consider even the most plausible LEO network to be sufficiently secure to meet our requirements.

    298.5 The implication is that Chorus would procure LEO satellite service as a backup, which would only be used occasionally. On-demand OLT uplink capability is not viable and it is not clear that a LEO satellite provider would be able to provide a concentration of high-capacity links in a single location.

[117] RFI 005.

Customer incentives

Introduction

299. The draft decision is to approve customer incentives capex for CY25 but not for subsequent years, where Chorus would need to apply for individual capex proposals for the funding to be approved.

Customer incentives are inherently uncertain but are justified

300. Customer incentives are a core and essential part of our competitive offering and a key mechanism by which we ensure fibre is promoted to end-users. While the design of incentive offers will vary with market dynamics, it is reasonable to expect incentives capex to be part of our ongoing commercial offering to 2028.

301. It is difficult to forecast customer incentives over time because, as we have previously discussed with the Commission, they need to be dynamic in order to reflect changes in market circumstances. This was the basis for our recommendation that customer incentives capex be included in the connection capex category, where unit rates could be fixed in advance but volumes are washed-up, de-risking the approval process. It is unfortunate the Commission has not considered an IM amendment in this area in advance of PQP2.

302. The draft decision suggests the Commission has concerns in relation to factors (e), (o) and (t).

303. **Assessment factor (e)** Approach to forecasting capital expenditure, including models used to develop the capital expenditure forecasts.

304. Our approach to capital expenditure was clearly set out in supporting models, which are consistent with the models provided in support of the CY23 incentives ICP.[118] As discussed with the Commission, if we had realised the Commission preferred a different modelling approach, we would have sought to provide it.

305. **Assessment factor (o)** The extent of uncertainty related to the need for the proposed capex, the economic case justifying the proposed capex and the timing of the proposed capex.

306. As noted above, we agree there is uncertainty related to the forecast spend - which is unavoidable given volume uncertainty - so we propose to include customer incentives in connection capex. The draft decision's approach to addressing uncertainty is to require ICPs for later years of PQP2, which is costly for Chorus and the Commission but is manageable.

307. **Assessment factor (t)** The reasonableness of the key assumptions, methodologies, planning and technical standards relied upon.

308. We acknowledge there are challenges in forecasting customer incentives capex. However, the sensitivity testing within our customer incentives economic model should give comfort that the key assumptions are robust, and incentives continue to meet the economic test within a broad range of scenarios.[119]

[118] RFI 007 and 087.
[119] RFI 073.

Customer incentives capex should be approved for the first 18 months of PQP2

309. We recommend the Commission approves our customer incentives capex proposal for the first 18 months of PQP2. This is a better approach because:

    309.1 It better aligns with our business planning for customer incentives, which is carried out on a financial year basis – so approving incentives to June 2026 would mean an ICP could focus on the planned incentives for FY27, which are likely to be consistent across the financial year, rather than an ICP consisting of half of two financial years between which incentives are more likely to change.

    309.2 It provides more certainty to the market about incentives, promoting competition and customer acquisition activity by broadband retailers.

    309.3 It would likely reduce the number of ICPs Chorus would be required to apply for over PQP2, reducing costs and effort for Chorus and the Commission.

    309.4 If the draft decision is confirmed in the final decision, Chorus would need to start work on the ICP for CY26 customer incentives in late 2024. Even then the decision would likely be too late to promote market certainty (for the 2023 incentives ICP, a final decision was only made in December 2022, a few weeks before the incentives started to be paid, which did not support effective planning processes). A longer initial approval period would give more time for an ICP to be approved before the new incentives take effect, which is helpful for planning and market development.

Fibre Frontier (network extension)

Introduction

310. We support the Commission's decision to include $13.0m for augmentation - Fibre Frontier capex in our base capex allowance for PQP2. This represents the full proposed amount for this category of capex in our revised Fibre Frontier chapter of 5 February 2024. While this signals a positive outcome for Chorus and rural end-users who stand to gain access to fibre, we have some concerns about the assessment the Commission has undertaken in arriving at its draft decision.

Economic analysis

311. It appears the Commission has assessed the proposal by comparing incremental revenue from the additional connections against the incremental costs of extension (IRIC). As we noted in our proposal,[120] IRIC is excessively conservative, especially given the other features of the regulatory framework. These features (GCP and anchor service price caps) are intended to protect rural end-users. They are not meant to deprive rural end-users of access to fibre services, which would be the effect of adopting an IRIC assessment approach. This is not conjecture, but an economic certainty. We also note that IRIC is not consistent with the promotion of competition because it restricts fibre investment relative to competing technologies, which can (and typically do) charge higher prices and deliver lower quality for rural end-users.

[120] Please refer to section 15.6.1 of Our Fibre Assets (or the revised Fibre Frontier chapter)

312. We reiterate that an appropriate test for assessing the efficiency of network extension is the workably competitive market test described in our expenditure proposal.[121] This assessment approach would:

    312.1 best give effect to the Part 6 purpose since it explicitly seeks to generate network extension outcomes consistent with outcomes produced in workably competitive markets; and

    312.2 better promote workable competition because it will not artificially suppress fibre extension due to other features of the regulatory framework.

313. The Commission notes it has revised some of the economic analysis we provided in support of our proposal including revision to key assumptions. While these revisions have not impacted the outcome here, we request the revisions be made transparent so we can assess their appropriateness for inclusion in modelling for future extension proposals. It would be wasteful for us to prepare future proposals based on assumptions the Commission has previously rejected but not disclosed.

Competition effects

314. We are concerned the Commission's competition analysis doesn't acknowledge the substantial increase in retail competition that will result from the availability of open access infrastructure. End-users in areas proposed for fibre extension likely have limited choices in the retail broadband market. Their options will generally be limited to vertically integrated wireless or satellite providers, or those RSPs (if any) still prepared to offer service over the copper network, which is in the process of being retired. Open access fibre will give these end-users access to dozens of additional retail offerings, materially increasing choice and competition. The Commission should not take a narrow view of competition nor undervalue open access.

315. Of particular concern is the Commission's statement that "we recognise that other fibre providers may have advantages that need to be considered in other areas where expansion may be proposed in future."[122] In considering the section 166(2)(b) objective, it is not appropriate for the Commission to consider whether it might be preferable for Chorus to be prevented from extending its network to assist another fibre provider to deploy there, based on a view of relative efficiency. The Commission's focus should be on creating incentives for efficient competition, rather than selecting "winners" or "losers" to assist in a competitive process. The Commission should be neutral as to any outcome in the competitive process.

Consequential impacts

316. We acknowledge that the updates we provided to the Commission earlier this year did not include all the knock-on impacts of the removal of some of the Fibre Frontier investment. We acknowledge the Commission's efforts to model these impacts.[123]

317. As part of our submission, we are providing the Commission with updated information and a reconciliation of the impacts we have now modelled internally.

318. This includes impacts from the following:

[121] Please refer to the Fibre Frontier chapter of Our Fibre Assets, section 15.7 in particular (with some introduction to the methodology choices in 15.6)
[122] Draft decision, paragraph 5.36
[123] As referenced in draft decision paragraphs 4.3 to 4.10

318.1 Reduced connection volumes. The Commission has assessed this impact to be a reduction of 9,900 connections by 2028 and 19,743 by 2029,[124] based on guidance we provided in March 2024.

318.2 Reduced connections impacts:

318.2a opex trending

318.2b connection capex volumes

318.2c and certain specific capex forecasts

319. Other areas of change and consideration:

319.1 Revenue forecasts reduced in line with connection volumes. In the context of the expenditure decision, this impacts the values of the cost allocators.

319.2 Other allocators such as totex and net book value are also impacted by any changes to the underlying capital and operating expenditure forecasts.

319.3 We considered whether there was any impact on capital contributions, but the underlying proposal forecast did not include any assumptions for capital contributions relating to the Fibre Frontier programme. They apply only to new property developments, roadworks and business fibre work.

320. Please refer to Appendix A5, which provides more information on how we have approached this re-modelling and the financial impacts of it.

321. In summary, the Commission's estimates are very close to the results of the full bottom-up modelling of the consequential impacts that Chorus has completed. We note a few upward and downward variances in different line items, driven primarily by connection forecasts and impacts on cost allocation. The net change we propose from the Commission's draft decision is to increase expenditure allowances by $1.6m in total.

Connection capex

322. The Commission's draft decision proposes to reduce connection capex by $19.1m for three reasons:

322.1 Reducing Chorus' Hyperfibre demand forecast.

322.2 Commission estimates of impacts from Fibre Frontier investment changes.

322.3 Reducing unit costs.

323. Please refer to the Hyperfibre demand and Fibre Frontier sections (below and above respectively) for the first two points. This section addresses the third point regarding reduced unit rates.

324. The Commission has smoothed unit costs through linear extrapolation. This is a reasonable approach for managed migration UFB2 unit costs for 2027.

[124] Draft decision paragraph 4.144

325. However, there are factors which mean the starting point for the Commission's approach is incorrect and does not take account of explanations and evidence provided in RFIs 081 and 086.

Managed migration unit cost

326. The draft decision states that the managed migration UFB2 unit cost spikes in 2027.[125] The draft decision instead proposes to apply linear interpolation of this component to derive a unit cost for that year. We note the total cost of the managed migration component of connection capex is very small and declines over time. However, we accept the Commission's draft decision to reduce the unit cost in this area.

Service desk unit cost

327. The draft decision states that the service desk component of the connection capex unit cost does not reflect a prudent or efficient operator.[126] There are fixed costs associated with running a base level of service desk operation, which do not reduce as connections decline. Our service desk unit costs trend downwards overall but do fluctuate between periods depending on the level of staffing (full-time equivalent, FTE) forecast. The forecast is prepared using the number of expected orders alongside the number of FTEs required to complete these connection orders.

328. As connection volumes decline, a proportion of orders remain which are more complex to fulfil and which require more service desk resource to complete to final connection. As a result, we need to retain service desk resource to process these complex orders. In addition to this, Chorus' service level agreements (SLAs) with RSPs require that staff are available to service customer needs at certain times of day. We therefore need to have a base level of staff available to accommodate this. As a result, even though orders are expected to decline, staffing levels are not expected to have a directly linear relationship with volumes.

Fibre access component unit cost

329. The draft decision states that the fibre access component unit cost increases in 2028, causing an increase in the unit costs.[127] Connection type 3 has declining unit costs over time due to efficiencies achieved in smart location unit rates. However, from 2027 the forecast unit cost increases due to the mix in connections for this type. Smart locations peak around 2026 and then are predicted to fall away. That means that after 2026 the average unit rate is more heavily weighted by the cost of other types of connection with a higher average unit rate.

Connection type 4 unit costs

330. The draft decision states that the unit cost for connection type 4 **CCI [**

].

331. In addition to the evidence provided to the Commission through RFI 081 and 086, the CY23 connection capex report, submitted to the Commission in March 2024,

[125] Draft decision, paragraph 6.22.
[126] Draft decision, paragraph 6.21.
[127] Draft decision, paragraph 6.23.
[128] Draft decision, paragraph 6.24.

shows the actual unit cost for **CCI [ ]**, suggesting the CY22 base year is a reasonable and conservative starting point for forecast connection capex unit costs.

Assessment factors

332. **Assessment factors (c)** Historic capital expenditure and consideration of historic rates of investment, **(e)** Approach to forecasting capital expenditure, including models used to develop the capital expenditure forecasts, **(m)** Fibre asset and fibre network information, **(s)** The accuracy and reliability of data appear to be raised in relation to demand modelling, which we address elsewhere in this submission, and **(o)** The extent of the uncertainty related to the: i) need for the proposed capex; ii) economic case justifying the proposed capex; and iii) timing of the proposed capex.

333. Historical trends and detailed explanations have been provided in the file 'Copy of RT04 – Connections capex with analysis.xlsx', and in the document 'RFI 81 – connection capex allowance.docx' (responses to RFI 081 and 086), which built on the description in Chapter 10 of Our Fibre Assets. We have provided further explanations of the step changes above, noting we accept the draft decision to change the managed migration unit cost.

334. **Assessment factors (n)** Mechanisms for controlling actual capital expenditure with respect to the proposed capex and achieving the PQ FFLAS quality outcomes and **(s)** The accuracy and reliability of data appear to be raised in relation to demand modelling, which we address below.

Conclusion

335. We recommend the Commission reinstate the service desk, managed migration and connection type 4 unit costs as proposed by Chorus in our original proposal.

Demand forecasting

336. We support the Commission's draft decision to rely on Chorus' connections forecast (after adjusting for the impact of Fibre Frontier) and bandwidth forecast as the basis for our expenditure proposal.

Hyperfibre demand

337. The Commission's decision to reduce access capex by $56.1m is based on its use of an alternative Hyperfibre demand forecast using a linear trend. The Commission stated that it considered there was an insufficient basis for Chorus' proposed Hyperfibre demand forecast.

338. We agree with the Commission that it is difficult to accurately forecast demand for new products. It is typical to use data from the launch of similar products to inform forecasts for new products.

339. As noted in our proposal, we assumed that the uptake of Hyperfibre would match the uptake path of our Gig product, which represented the previous step change in fibre speed available to consumers.

340. While we recognise that demand for Hyperfibre is currently in the initial slow growth phase, the actual growth experienced has not been linear. The experience of the launch of our Gig product shows that its demand followed an S-curve profile.

341. Despite this, given the uncertainty of Hyperfibre demand and the challenges of identifying when a significant increase in demand may occur, we accept the draft decision's linear Hyperfibre demand forecast, and associated reductions in Access capex, in this instance.

342. However, we would be concerned if the Commission were to continue to adopt a linear approach to demand forecasting for Hyperfibre (or other new products) at future resets.

Other demand issues

343. The draft decision states there are issues and inconsistencies in our demand models (although these did not result in a change to the demand forecast).[129]

344. We spent time with the Commission during the RFI process addressing issues and concerns raised. For example, we provided responses to the Commission on its concern about the inputs in the Market Model and Connections model not matching.

345. We also consider that some of the statements describing our demand forecasting suite in table 4.10 are inaccurate:

    345.1 The draft decision states that the connections model does not inform other models in the suite. However, we have demonstrated that the connections model informs the bandwidth model. As previously noted to the Commission during the RFI process, the input connections in the bandwidth model are based on an earlier version of the connections model due to the timing of the updating of the bandwidth model. Given the statistical uncertainty in the bandwidth model, this small timing difference is immaterial.

    345.2 The draft decision also states that the bandwidth model does not inform expenditure sub-categories saying "we found in our review of Network Capacity capex that Chorus did not use the output of the Bandwidth model to inform the capex".[130] This is incorrect. We use the calculated throughput growth rate from the bandwidth model in our investment forecasts of access, aggregation and transport capex.

346. We will continue to refine and improve our models based on the Commission's feedback, and will continue to work proactively to improve the transparency and robustness of our models.

[129] For example, Draft decision Table 4.11.
[130] Draft decision, footnote 143.

Appendix A1: Response to other aspects of the draft decision

The table below provides specific responses to other elements of the draft decision.

No.	Topic/ theme	Draft decision	Chorus response
1	Nominal view of draft decision		Table X11 of the draft decision uses the wrong capital figures for the nominal numbers. It incorrectly states the value of commissioned assets rather than capex spent. We recommend this be updated in the final decision.
2	Cost escalation	Acceptance of the NZIER rates. Rejection of the updated PQP2 weightings, based on changes to cost mix in the PQP2 forecast. Agree to update to the latest rates for the final decision.	The draft decision rejects our updated PQP2 weighting for real price effects. Whilst we understand that this does not have a material impact on the outcome, this approach is not consistent with other Commission comments. Specifically, in the context of cost allocation, in paragraph 4.91, the draft decision states they "consider taking steps to improve the granularity of cost information and to in turn better identify those costs that can be directly attributed will improve the overall allocation of these costs." The same should be true for the increased granularity and accuracy in the approach we have taken in determining the PQP2 weightings based on the latest forecast cost splits. The draft decision states that "Chorus has not provided an explanation for its proposed changes."[131] In our Modelling and Cost Allocation report we stated that we consulted business subject matter experts, in conjunction with forecast cost models and accounting information to determine the cost components which determined our weightings.[132]

[131] Draft decision paragraph 4.109
[132] Modelling and Cost Allocation Report, page 10, table 2 & table 3.

No.	Topic/ theme	Draft decision	Chorus response
			We also note that we have reperformed the Commission's calculations replacing the weightings in our modelling and have calculated a slightly higher impact than the impact stated by the Commission.[133] We are keen to work with the Commission to ensure it has the full information on the rationale and methodology for our proposed weighting changes and that the correct numbers are applied in the final decision.
3	IT & Support - Corporate	Corporate capex referred to as "Corporate IT capex" repeatedly in the draft decision	We would like to remind the Commission that the Corporate capex sub-category is not related to IT expenditure. Corporate capex is capex associated with accommodation, office equipment and associated capital expenditure to support our people in their working environment – see Chapter 9 of *Our Fibre Assets*.

[133] We calculate a reduction of $0.56m on opex compared to the Commission's stated $0.5m (paragraph 4.110) and an increase of $0.9m capex compared to the Commission's stated $0.2m (paragraph 4.110).

Appendix A2: Additional information on BST step changes

CCI [

]

Appendix A3: Allocation approach with conservative allocation of corporate functions

Function / sub-function	Comment on nature of costs	Conclusion on allocator for the subcomponent	PQP2 Proposal	Alternative, conservative allocation
Senior executive				
CEO **CFO** **General counsel** **CTO** **CCO**	These are all functions whose scope would be largely invariant to the size of the organisation.	Common cost allocator	Revenue	Revenue (common cost)
Executive assistant to the CEO	Effort required likely to depend on the size of the senior executive group, which was noted above to be largely invariant to the size of the organisation.	Common cost allocator	Revenue	Revenue (common cost)
Finance				
Tax **Planning and performance** **Group reporting**	These are all functions whose scope that would be largely invariant to the size of the organisation.	Common cost allocator	Revenue	Revenue (common cost)
Treasury	Likely to have some fixed component, but	Common cost allocator (part)	Revenue	Revenue

Function / sub-function	Comment on nature of costs	Conclusion on allocator for the subcomponent	PQP2 Proposal	Alternative, conservative allocation
	with the effort also depending on the size of the debt portfolio to be managed.	Proxy for relative debt levels for the different services (which cannot be measured), such as NBV or revenue, although noting that this may over-allocate to copper (i.e., because building block regulated assets are simpler for rating agencies / debt providers).		(proxy allocator for consistency with rest of cost centre)
Billing and revenue assurance	Effort likely to relate to the revenue being managed.	Revenue	Revenue	Revenue (proxy allocator to reflect variability)
Finance manager and team for the business units	Effort likely to depend on the number and size of the transactions being performed by each business unit.	Allocator for each business unit should reflect the relative transactions for that unit. As revenue would be expected to track cost overall, revenue is likely a reasonable proxy (importantly, in the context of an allocation that is not overly dependent on corporate structure).	Revenue	Revenue (proxy allocator to reflect variability)
People and culture				
Personnel functions (people experience, payroll, recruitment, learning and development)	Likely to have a fixed component, but with effort likely to increase	Common cost allocator and relative employees or a proxy for this for the effort-based component.	Revenue	Chorus personnel cost (proxy allocator to reflect variability)

Function / sub-function	Comment on nature of costs	Conclusion on allocator for the subcomponent	PQP2 Proposal	Alternative, conservative allocation
	with the number of employees.	It may be that the split of revenue overall is a reasonable proxy for relative employees (importantly, in the context of an allocation that isn't overly dependent on corporate structure).		
Internal communications **Diversity and inclusion** **Organisation change**	Likely to be largely invariant to changes to the size of the organisation.	Common cost allocator	Revenue	Chorus personnel cost (proxy allocator for consistency with rest of cost centre)
General counsel				
Legal – corporate	Effort will depend on the extent of commercial legal issues to be addressed.	Revenue should be a good proxy for the relative effort (i.e., given that the size of the risk will determine priorities).	Revenue	Totex (proxy allocator for consistency with rest of cost centre)
Legal – regulatory	Effort will depend on the extent of regulatory issues to be addressed.	Revenue may be a reasonable proxy.	Revenue	Totex (proxy allocator to reflect variability)
External relations **Sustainability** **Risk and internal audit** **Partnerships**	These are all functions whose scope would be largely invariant to the size of the organisation. Note that "partnerships" refers to the activity of entering into procurement agreements (i.e., with	Common cost allocator	Revenue	Totex (proxy allocator for consistency with rest of cost centre)

Function / sub-function	Comment on nature of costs	Conclusion on allocator for the subcomponent	PQP2 Proposal	Alternative, conservative allocation
	suppliers) – administration of the contracts (which would be variable) occurs within the business units.			
Regulatory – policy and affairs	Effort will depend on the extent of regulatory issues to be addressed.	Revenue may be a reasonable proxy, albeit one that may over-allocate to copper (i.e., given there are no price reviews for copper).	Revenue	Totex (proxy allocator to reflect variability)
Regulatory – delivery	Wholly engaged on FFLAS.	Directly attributable to FFLAS.	Directly attributable to FFLAS.	Directly attributable to FFLAS.

Appendix A4: Resilience Capex

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Appendix A5: Fibre Frontier consequential impacts

This Appendix summarises the consequential impacts of the reduction to Fibre Frontier network expansion investment. The table below shows the movement in key line items over time from change and the rationale for it. Categories not shown here are not impacted by the Fibre Frontier change.

As noted in the main submission, we were unable to complete the full consequential impacts modelling prior to the draft decision. This is because assessments for the impacts needed to be completed across all areas of the business and then each input model for each expenditure area needed to be updated accordingly, with the full modelling suite updated to include cost allocation and other impacts. We appreciate the Commission's estimates in the meantime for the draft decision and note only small variations between their estimates and the outputs from the full bottom-up modelling we have now completed.

Expenditure categories and subcategories		Adj A: 5 Feb 2024 update[134]	Adj B: Draft Decision[135]	Adj C: Further impacts identified[136]	Total calculated impact[137]	Explanation
Base Capex						
Extending the Network	Augmentation	(188.1m)			(188.1)	The update we provided via a market release and directly to the Commission on 5 February 2024 used the best estimates available at that time of the direct impact to Fibre Frontier costs.[138]
Installations	Standard Installations			(1.1m)	(1.1m)	Change in capex is driven by the revised forecast for new connections. As several areas of spend within

[134] As per the updated chapter and associated documentation provided to the Commission on 5 February 2024 (and as published alongside the draft decision)
[135] Shows additional changes identified by the Commission through their estimation of consequential impacts.
[136] Relates to impacts identified by Chorus from full bottom-up modelling, over and above those already identified by Chorus and the Commission, as noted in the Draft Decision.
[137] This is the total impact as compared to our October 2023 proposal submission. This is the impact that should be reflected in the final expenditure decision.
[138] Please refer to: https://comcom.govt.nz/__data/assets/pdf_file/0018/350118/Chorus-Notification-of-material-change-to-capex-proposal-5-February-2024.pdf and https://comcom.govt.nz/__data/assets/pdf_file/0012/350130/Chorus-revised-Fibre-Frontier-chapter-5-February-2024.pdf for more information about this change

Expenditure categories and subcategories		Adj A: 5 Feb 2024 update[134]	Adj B: Draft Decision[135]	Adj C: Further impacts identified[136]	Total calculated impact[137]	Explanation
						Installations are based on connection volumes, including service lead-ins and incentives.
IT and Support	Business IT			(0.1m)	(0.1m)	Impacted by changes to cost allocation (no change to underlying cost forecast).
IT and Support	Network & Customer IT			(0.1m)	(0.1m)	Impacted by changes to cost allocation (no change to underlying cost forecast).
Network Capacity	Transport			(0.1m)	(0.1m)	Impacted by changes to cost allocation (no change to underlying cost forecast).
Network Sustain and Enhance	Field Sustain			(0.3m)	(0.3m)	Impacted by changes to cost allocation (no change to underlying cost forecast).
Total base capex		**(188.1m)**	**-**	**(1.7m)**	**(189.8m)**	
Connection Capex						
Installations	Standard Installations		(11.9m)	0.3m	(11.6m)	This change relates to the requirement for new ONTs reducing in line with the reduced connection forecast.
Total connection capex			**(11.9m)**	**0.3m**	**(11.6m)**	
Opex						

Expenditure categories and subcategories		Adj A: 5 Feb 2024 update[134]	Adj B: Draft Decision[135]	Adj C: Further impacts identified[136]	Total calculated impact[137]	Explanation
Customer	Customer operations			(0.2m)	(0.2m)	The base-step-trend opex forecast has many line items trended by connection forecasts. Changes to connection impacts therefore impact that trending. Some cost allocators are also impacted by changes to net book value, totex and revenue, for example, and adjust the opex accordingly. We note the Fibre Frontier capex reduction has resulted in a small uplift in opex. This is because the Fibre Frontier connections were assumed to reduce copper connections. Reinstating those copper connections has a higher cost per connection with associated impacts on cost allocation.
Customer	Product, Sales & Marketing		(0.1m)	0.3m	0.2m	
Network	Maintenance		(0.2m)	0.2m	-	
Network	Network Operations		(0.1m)	(0.1m)	(0.2m)	
Network	Operating costs		(0.1m)	0.2m	0.1m	
Support	Asset Management			0.5m	0.5m	
Support	Corporate			1.4m	1.4m	
Support	Technology			0.7m	0.7m	
Total opex		**-**	**(0.5m)**	**3.0m**	**2.5m**	
Total expenditure		**(188.1m)**	**(12.4m)**	**1.6m**	**(198.9m)**	