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Chorus' expenditure allowances for the second regulatory period (2025 – 2028)

Draft decision – Reasons paper

Date of publication: 18 April 2024

Associated documents

Publication date	Reference	Title
28 February 2023	ISBN 978-1-99-101275-3	Duration of the second regulatory period for Chorus'' price quality path – Final decision – Reasons paper
28 February 2023		Notice to supply information to the Commerce Commission under section 221 of the Telecommunications Act 2001 – Requirements for base capital expenditure, connection capex baseline expenditure, and operating expenditure proposals
31 August 2023	ISBN 978-1-991085-31-3	Fibre price quality regulation – Proposed process and approach for the 2025-2028 regulatory period
16 November 2023	ISBN 978-1-991085-55-9	Chorus' price quality path for 2025-2028 regulatory period – Consultation on Chorus' proposed expenditure for PQP2
18 April 2024		Chorus Letter – RE: Notification of material change to PQP2 capex proposal – 5 February 2024

Contents

List of abbreviations

Abbreviation	Definition
Act	Telecommunications Act 2001
ABBA	Accounting-based allocation approach
BST	Base-step-trend
BBM	Building blocks methodology
Commission	Commerce Commission
CAGR	Compound annual growth rate
Capex	Capital expenditure
CIP	Crown infrastructure partners
CNO	Customer and network operations
CO	Central office
CPI	Consumer price index
CRT	Chorus regional transport
CTO	Chief technology office
DFAS	Direct fibre access service
DWDM	Dense-wave division multiplexing
FAN	Fibre access network
FFLAS	Fibre fixed line access service
FFP	Fibre flexibility point
FLA	Financial loss asset
FSA	Field service agreement
FSP	Field service provider
GPON	Gigabit passive optical network
ICP	Individual capex proposal
ID	Information disclosure
IFP	Integrated fibre plan
IM	Input methodology
Incenta	Incenta Economic Consulting
IT	Information technology
LFC	Local fibre company
Opex	Operating expenditure
ONT	Optical network terminal
NIPA	Network infrastructure project agreement
NZIER	New Zealand Institute of Economic Research
POI	Point of interconnection
PON	Passive optical network
PONFAS	PON fibre access service
PPI	Producer price index
PQ	Price quality
PQP1	Price quality path for the first regulatory period (2022-2024)
PQP2	Price quality path for the second regulatory period (2025-2028)
RAB	Regulatory asset base
Regulations	Telecommunications (Regulated Fibre Service Providers) Regulations 2019
RFI	Request for information
RPE	Real price effect
RSP	Retail service provider
Synergies	Synergies Economic Consulting
TAMRP	Tax-adjusted market risk premium
TCF	Telecommunications forum
UFB	Ultrafast broadband
VoLL	Value of lost load
WACC	Weighted average cost of capital
XGS-PON	Ten gigabit symmetrical passive optical network

Executive summary

Purpose of this paper

X1 This paper outlines our draft decisions for Chorus' expenditure allowances for the regulatory period from 1 January 2025 to 31 December 2028 (PQP2).

X2 For PQP1 we determined Chorus' expenditure allowances and PQ path at the same time. The process for PQP2 is different. We have split our decisions into two and are holding separate consultations on each of the following:

X2.1 Chorus' expenditure allowances for PQP2; and

X2.2 Chorus' PQ path for PQP2.

X3 We invite submissions in response to this paper by **5pm on 16 May 2024** and cross submissions by **5pm on 6 June 2024**.

Draft expenditure allowances for PQP2

X4 Our draft decision is to determine the following amounts for Chorus' expenditure allowance for PQP2 as set out in Table X1.

Table X1 Summary of our expenditure draft decision (constant $2022)[1]

Expenditure Category	2025 ($m)	2026 ($m)	2027 ($m)	2028 ($m)	PQP2 Total ($m)
Base capex allowance	239.7	209.8	184.1	181.3	**815.0**
Connection capex baseline allowance	52.9	46.1	41.3	30.6	**170.9**
Opex	155.1	153.3	152.4	147.1	**607.9**
Total	**447.7**	**409.2**	**377.8**	**359.0**	**1593.7**

Base capex

X5 Our draft decision is to determine a base capex allowance of $815.0m. This is 71% of the $1,154.7m Chorus proposed. This is broken down in Table X2.

[1] Unless specified, all expenditure amounts set out in this draft decision are expressed in constant terms (2022 dollars).

Table X2 Summary of base capex draft decision

Category	Sub-category	Chorus proposal ($m)	Draft decision ($m)	Difference ($m)	% of proposal included
Extending the network	Augmentation	220.6	32.5	-188.1	15%
	New property developments	32.4	32.4	0	100%
	UFB communal	0.0	0.0	0	
Installations	Complex installations	1.8	1.8	0	100%
	Standard installations	117.7	85.6	-32.1	73%
IT and Support	Business IT	72.6	72.5	-0.1	100%
	Corporate IT	12.9	12.9	0	100%
	Network and customer IT	94.9	94.9	0	100%
Network Capacity	Access	127.5	71.4	-56.1	56%
	Aggregation	79.8	79.8	0	100%
	Transport	85.0	85.0	0	100%
Network Sustain and Enhance	Field sustain	120.5	90.5	-30.0	75%
	Relocations	18.2	18.2	0	100%
	Resilience	79.7	46.5	-33.2	58%
	Site sustain	91.1	91.1	0	100%
Total		1154.7	815.0	-339.7	71%

X6 Compared to Chorus' proposal, our draft decision on the base capex allowance includes:

X6.1 $188.1m less for augmentation following the further information Chorus provided to us on its fibre frontier network extension programme;

X6.2 $32.1m less for standard installations because we have only included the first year of expenditure on customer incentives;

X6.3 $56.1m less for access because we have used an alternative hyperfibre demand forecast rather than the one Chorus proposed;

X6.4 $30.0m less for field sustain to account for calculation errors and unexplained expenditure that were not discussed in Chorus' proposal;[2] and

X6.5 $33.2m less for resilience because we have not included projects on dual fibre pathways that did not meet Chorus' architecture specification standard.

[2] Chorus "Our Fibre Assets" (31 October 2023).

X7 The most significant reduction in this category has occurred following the further information Chorus provided on 5 February 2024 on its proposed approach to its fibre frontier programme. As a result of this information the draft decision does not include $188.1m of proposed base augmentation capex. In other cases where we consider the proposed expenditure does not satisfy the capital expenditure objective as set out in the fibre IMs, our draft decision includes a lower expenditure allowance than was proposed by Chorus.

X8 Chorus may submit individual capex proposals for additional expenditure related to one or more base capex sub-categories at any time, and during the PQP2 period, provided the proposal meets the requirements of the fibre IMs. This may include expenditure it has proposed for PQP2 and which we have not included in the base capex allowance.[3]

Connection capex

X9 Our draft decision is to determine a connection capex baseline allowance of $170.9m which is 90% of the $190.0m Chorus proposed. This is broken down in Table X3 below. Chorus has forecast a lower level of connection capex compared to PQP1 reflecting a slowing of Chorus' network growth following the completion of the UFB programme.

Table X3 Summary of connection capex draft decision

Connection types (aggregated)	Chorus proposal ($m)	Draft decision ($m)	Difference ($m)	% of proposal included
1: Standard - installation – simple	50.5	47.8	-2.7	95%
2a: Standard – installation – non-civil	48.9	39.2	-9.7	80%
2b: Standard – installation – civil construction	19.9	15.7	-4.2	79%
3-6: Standard – extension (all classes)	49.8	48.4	-1.4	97%
7-9: ONTs and complex installations	20.9	19.8	-1.1	94%
10: Non-linear Hyperfibre costs	0	0	0	NA
Total	**190.0**	**170.9**	**-19.1**	**90%**

X10 Compared to Chorus' proposal, our draft decision on the connection capex baseline allowance is a reduction of $19.1m, made up of the following:

[3] *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.7.22.

X10.1 $11.9m less because we have reduced forecast connection volumes to reflect the updated information Chorus provided on the fibre frontier network extension programme; and

X10.2 $7.2m less because we have adjusted some unit costs to remove unsupported cost spikes and have adjusted forecast connection volumes to reflect a lower uptake of hyperfibre than that assumed in Chorus' proposal.

X11 The connection capex baseline allowance is washed up using actual connection volumes at the end of the PQP2 period under the connection capex variable adjustment. Connection capex unit costs are determined in our final decision on PQP2 expenditure and are not washed up at the end of the PQP2 period.

Opex

X12 Our draft decision is to determine an opex allowance of $607.9m which is 82% of the $739.8m Chorus proposed. This is broken down in Table X4.

Table X4 Summary of opex draft decision

Category	Sub-category	Chorus proposal ($m)	Draft decision ($m)	Difference ($m)	% of proposal allowed
Customer	**Customer operations**	-28.9	-22.7	6.2	79%
	Product, sales & marketing	115.4	100.9	-14.5	87%
Network	**Maintenance**	137.3	126.6	-10.7	92%
	Network operations	80.1	67.4	-12.7	84%
	Operating costs	43.7	41.3	-2.4	95%
Support	**Asset management**	95.0	78.1	-16.9	82%
	Corporate	203.7	153.4	-50.3	75%
	Technology	94.1	63.0	-31.1	67%
Total		**739.8**	**607.9**	**-131.9**	**82%**

X13 The differences between our draft decision and Chorus' proposal are largely related to our draft decisions to reject a proposed change to a cost allocator proposed by Chorus and retain the one we approved in PQP1 and to reflect the impact of the new information on fibre frontier on the allocation values. Other differences arise from not including expenditure where Chorus provided insufficient evidence to support proposed uplifts in opex and where we consider Chorus has underestimated likely PQP2 efficiency gains.

X14 Compared to Chorus' proposal, our draft decision on the opex allowance allows for approximately:[4]

X14.1 $19.2m less because we removed multiple uplifts in opex proposed by Chorus (in areas of [ ], self-insurance, advertising and general compliance costs);

X14.2 $7.7m less because we assumed greater opex savings from IT optimisation than Chorus did in its proposal; and

X14.3 $105.5m less because of the combination of:

X14.3.1 reducing the connection growth input to opex to reflect the updated information Chorus provided us on the fibre frontier network extension programme;

X14.3.2 efficiency adjustments to the trend of maintenance and non-network opex over the PQP2 period;

X14.3.3 using the totex allocator instead of the revenue allocator proposed by Chorus for some opex costs; and

X14.3.4 updating allocator values to reflect our draft decision on base capex and connection capex.

Draft decision compared to PQP1

X15 Table X5 compares our draft expenditure decision for PQP2 with our final expenditure decision for PQP1 in terms of the average annual expenditure, in constant $2022 terms. This puts the adjustments into comparative perspective across the two regulatory periods. It also illustrates the proportion of Chorus' proposal that was included in our decision for PQP1 and our draft decision for PQP2. Our draft decision results in average annual expenditure over PQP2 that is broadly consistent with our final decision in PQP1 expenditure, recognising both the slowing network growth and significant upfront investment in network capacity made by Chorus prior to PQP2.

[4] The change quoted in paragraphs X14.1 and X14.2 for our draft decision on opex (and as changes to Chorus' proposal) is based on the estimated values relative to Chorus' proposal prior to the updated allocators and the change that results from the new information provided by Chorus on its proposed fibre frontier investment. The actual impact of our draft decision compared to Chorus' proposal is lower than the amounts quoted here after the draft decisions on allocators and the fibre frontier adjustments have been accounted for.

Table X5 Comparison of PQP2 draft decision and PQP1 final decision (in constant $2022)

Expenditure allowance	PQP1 average annual expenditure ($m)	PQP1 % of proposal included	Draft decision average annual expenditure ($m)	Draft decision % of proposal included
Base capex	232.3	94%	203.7	71%
Connection capex	115.9	87%	42.7	90%
Opex	174.3	93%	152.0	82%

X16 Stakeholders are welcome to provide submissions on our draft decision. Chorus is also able to provide us with additional information relating to areas where we have reduced its expenditure allowances in its submission. This additional information may address gaps in its original proposal and enable us to determine final expenditure allowances that meet the expenditure objective and reflect good telecommunications industry practice.

Draft decisions that apply across expenditure categories

X17 The following areas apply across several expenditure categories.

Cost allocation

X18 Our draft decisions on cost allocation are to:

X18.1 use Chorus' proposed asset allocator types (which remain unchanged from PQP1);

X18.2 use Chorus' proposed operating cost (opex) allocator types where they remain unchanged from the opex allocator type used in PQP1;

X18.3 continue to use a total expenditure (totex) based allocator for certain corporate costs rather than the revenue-based allocator for certain corporate costs proposed by Chorus for PQP2;

X18.4 continue to use a totex-based allocator for certain chief technology office (CTO) costs rather than the revenue-based allocator for certain CTO costs as proposed by Chorus for PQP2;

X18.5 use Chorus' proposal to allocate co-location establishment and relinquishment operating costs using a revenue-based allocator, a change from the current direct attribution to non-FFLAS. These co-location establishment and relinquishment operating costs will be allocated in proportion to the share of revenue from the charges for co-location services of FFLAS compared to non-FFLAS;

X18.6 use Chorus' proposal to directly attribute a number of roles to FFLAS or non-FFLAS in the product, sales and marketing area of opex costs. This reduces the proportion of operating costs in this area requiring allocation; and

X18.7 use Chorus' proposal to allocate service company overhead costs, which allocates costs associated with the management of service companies and related activities, using a service company totex-based allocator. This is a change from the current allocation based on the split of FFLAS versus non-FFLAS service company opex activities.

Table X6 Unallocated opex

	2025 ($m)	2026 ($m)	2027 ($m)	2028 ($m)	Total PQP2 ($m)
Proposal	275.1	272.7	270.8	269.7	**1,088.3**
Draft decision	252.8	244.5	237.2	229.7	**964.2**
Change	-22.3	-28.2	-33.6	-40.0	**-124.1**

Table X7 FFLAS opex

	2025 ($m)	2026 ($m)	2027 ($m)	2028 ($m)	Total PQP2 ($m)
Proposal	180.5	184.9	186.7	187.8	**739.8**
Draft decision	155.1	153.3	152.4	147.1	**607.9**
Change	-25.4	-31.6	-34.3	-40.7	**-131.9**

Table X8 Unallocated capex

	2025 ($m)	2026 ($m)	2027 ($m)	2028 ($m)	Total PQP2 ($m)
Proposal	423.8	410.3	374.8	369.4	**1,578.3**
Draft decision	368.9	323.2	270.1	258.6	**1,220.8**
Change	-54.8	-87.1	-104.7	-110.8	**-357.4**

Table X9 FFLAS capex

	2025 ($m)	2026 ($m)	2027 ($m)	2028 ($m)	Total PQP2 ($m)
Proposal	348.0	343.4	330.5	323.0	**1,344.8**
Draft decision	292.6	255.9	225.4	211.9	**985.9**
Change	-55.4	-87.5	-105.1	-111.0	**-358.9**

Cost escalation

X19 Our draft decisions on cost escalation are to:

X19.1 use the set of escalation indices proposed by Chorus (which is the same set used for PQP1 (see Table X10 below));

X19.2 use the escalation index forecasts prepared by New Zealand Institute of Economic Research (NZIER), as was done in PQP1;

X19.3 use the same usage assumptions as used in PQP1, and not adopt Chorus' proposed changes for PQP2;[5] and

X19.4 update all of the escalation index forecasts, as well as the NZD/USD exchange rate forecast, for the final expenditure allowance.[6]

Table X10 Draft set of escalation indices[7]

Index	CAGR[8]
PPI civil	3.9%
CGPI	3.1%
LCI professional	2.9%
LCI all	2.7%
CPI[9]	2.7%
PPI all	2.6%
PPI rent	1.7%
PPI O E&E (PPI Outputs electrical and equipment)	1.2%
U.S. Fibre	-1.1%

5 'Usage assumptions' is the term used by Chorus in its proposal to refer to the weightings of each expenditure sub-category that are inflated by the different escalation indices.

6 This update will be made to match forecast CPI used for input cost inflation with CPI used to smooth the revenue path. In practice, we expect to do this using NZIER's Quarterly Prediction for September 2024, due in August 2024.

7 These are the same as the indices proposed by Chorus in its 2023 expenditure proposal and remain unchanged from PQP1.

8 Compound Annual Growth Rate for 2022-2028.

9 'Just CPI' in Chorus "RT02 – Cost escalation regulatory template" (7 December 2023).

X20 Table X11 below summarises our draft decision in nominal terms, which includes the application of our decisions on cost escalation. The expenditure decisions in this paper are expressed in constant dollar (2022) terms before cost escalation has been applied, unless otherwise stated. However, the amount of expenditure that we determine for setting Chorus' revenue path is expressed in nominal terms.

Table X11 Summary of our expenditure allowance draft decisions (nominal)

	Chorus Proposal ($m)	Draft Decision ($m)	Difference ($m)
Base capex allowance	1,280.4	933.7	-346.8
Baseline connection capex	214.4	191.9	-22.5
Opex	841.8	690.7	-151.1
Totex	**2,336.7**	**1,816.3**	**-520.4**

Deliverability

X21 We consider the overall risk to deliverability of Chorus' opex and capex investment plans over PQP2 is likely to be low. We note that the primary risk in relation to deliverability would be any unforeseen interruptions to the provision of services by field service providers (FSPs), which could be caused by an insolvency event. Accordingly, we have not considered it necessary to make any adjustment to Chorus' overall expenditure allowances to account for delivery risks.

Forecast demand

X22 Significant proportions of Chorus' expenditure requirements are driven by numbers of connections to the fibre networks and the bandwidth requirements of users. Accordingly, it is important that demand forecasts are based on sound forecasting methodologies. Our draft decision on demand forecasting is to rely on the following in analysing Chorus' expenditure proposal:

X22.1 connections forecasts produced by Chorus for PQP2 adjusted for the Commission's assessment of the impacts of the new information in relation to fibre frontier; and

X22.2 the bandwidth forecast produced by Chorus to forecast network capacity capex for PQP2.

X23 For our draft decision, we have used an alternative hyperfibre demand forecast to the one Chorus used in its proposal, as raised in paragraph X6.3.

X24 Stakeholders are also welcome to provide submissions on these draft decisions during the consultation period.

Process for assessing expenditure allowances

X25 In coming to our draft decisions, we have applied the fibre IMs and considered whether the proposed expenditure satisfies the capital expenditure objective and reflects good telecommunications industry practice.[10] In considering whether the expenditure meets the capital expenditure objective, we have had regard to relevant assessment factors (which includes consideration of historic capital expenditure and rates of investment).[11]

X26 In accordance with the fibre IMs, we issued a notice under s 221 of the Act to Chorus on 28 February 2023 requesting the information required under the fibre IMs and similar information for opex.[12]

X27 Chorus submitted its proposal on 31 October 2023. This included financial information in the form of regulatory templates and other documents to specify expenditure allowances it had developed.

X28 Chorus also submitted new information to us on 5 February 2024. This related to changes to its plans to extend the network during PQP2, a programme it calls 'fibre frontier'.[13]

X29 During the evaluation phase we identified additional areas we considered we needed further information from Chorus on. We sought this information via a total of 90 targeted request for information (RFIs).

X30 PQP2 is the first time that an Independent Verifier has been used within our expenditure evaluation process.[14] Use of an Independent Verifier is intended to provide assurance for our assessment of Chorus' expenditure proposal. The Independent Verifier was requested to verify Chorus' expenditure proposal against the evaluation criteria and relevant assessment factors as set out in the fibre IMs as part of its report.

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10 We have explained our draft decisions by referencing our specific obligations under the fibre IMs, and where relevant, the Act, as well as explaining why our draft decisions best give, or are likely to best give, effect to the s 166(2) purposes.

11 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.8.6, assessment factor (c).

12 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.7.8(9)(b).

13 Fibre frontier refers to Chorus' plans to extend its fibre network during PQP2.

14 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.7.10.

X31 Utilising the Independent Verifier report has helped to streamline our assessment of Chorus' expenditure proposal. For example, we have considered the report in identifying areas to prioritise for further evaluation in coming to our draft decision, as well as areas where, following a high level assessment of the proposal and report, we agreed with the Independent Verifier's findings. In some instances, we have considered categories in more detail despite the findings in the report. This has been driven by a number of factors, including assessment of the impacts these categories might have on consumers.

X32 Where we considered it necessary, we also engaged Network Strategies to provide us with targeted independent advice on issues identified in our review of the Independent Verifier report and Chorus' expenditure proposal.

X33 Network Strategies also provided independent advice for us to consider in our assessment of areas applying across expenditure categories, such as Chorus' suite of demand forecast models.

Chapter 1 Introduction

Purpose of this paper

1.1 This paper outlines our draft decisions for Chorus' expenditure allowances for the second regulatory period from 1 January 2025 to 31 December 2028 (PQP2). Consistent with the fibre IMs, for our draft decision we have determined expenditure allowances for the:[15]

1.1.1 base capex allowance; and

1.1.2 connection capex baseline allowance.

1.2 We have also made a draft decision on an opex allowance for the upcoming regulatory period.

Structure of this paper

1.3 This paper is structured as follows:

1.3.1 Chapter 1 is an introduction;

1.3.2 Chapter 2 sets out our regulatory framework;

1.3.3 Chapter 3 sets out how we evaluated Chorus' proposal;

1.3.4 Chapter 4 sets out our draft decisions on topics that apply across more than one area;

1.3.5 Chapter 5 sets out our draft decision on Chorus' base capex allowance;

1.3.6 Chapter 6 sets out our draft decision on Chorus' baseline connection capex allowance; and

1.3.7 Chapter 7 sets out our draft decision on Chorus' opex allowance.

[15] *Determination of the duration of the second regulatory period for Fibre Price-Quality Path Determination 2020* [2023] NZCC 2.

Process we are following

1.1 The timeline for our process is set out in Table 1.1.

Table 1.1 Process for PQP2

Date	Milestone	Description
28 February 2023	Chorus PQP2 information request	We issued a notice to supply information under s 221 of the Act, seeking information necessary to set Chorus' expenditure allowances.
31 August 2023	Process and approach paper	A paper setting out our proposed approach to PQ regulation for the second period, and the process for delivering it.
28 September 2023	Process and approach paper submissions	Submissions received on the process and approach paper.
31 October 2023	Chorus PQP2 expenditure proposal	Chorus submitted its expenditure proposal for PQP2.
16 November 2023	Consultation on Chorus' expenditure proposal	We published a consultation paper on Chorus' expenditure proposal.
11 January 2024	Chorus' expenditure proposal submissions	Submissions received on Chorus' expenditure proposal for the second regulatory period.
2 February 2024	Chorus' expenditure proposal cross submissions	Cross submissions received on Chorus' expenditure proposal for the second regulatory period.
5 February 2024	Chorus submitted new information	Chorus submitted new information related to its plans to extend the network during PQP2 (a programme it calls 'fibre frontier').
26 March 2024	Draft decision on TAMRP IM	Draft decision on the tax-adjusted market risk premium input methodology.
18 April 2024	Draft decision on Chorus' expenditure allowance for PQP2 (this paper)	Draft decision on Chorus' capex and opex allowances for PQP2.
16 May 2024	Draft decision on Chorus' expenditure allowance for PQP2 (this paper)	Submissions received on draft decision on Chorus' expenditure allowance for PQP2.
6 June 2024	Draft decision on Chorus' expenditure allowance for PQP2 (this paper)	Cross submissions received on draft decision on Chorus' expenditure allowance for PQP2.
26 June 2024	Final decision on TAMRP IM	Final decision on the tax-adjusted market risk premium input methodology.
Q2 2024	Draft fibre IM amendments	Draft fibre IM amendments to implement our PQ decisions or correct technical errors.[16]
Q2 2024	Determination of Chorus' PQ path for PQP2 draft decision	Draft decision (and accompanying draft determination) on Chorus' revenue path and quality standards for PQP2.
Q2 2024[17]	WACC determination for Chorus PQP2	The determination of the WACC that must be used to set Chorus' allowable revenue for PQP2.

[16] The requirements for changes to input methodologies are set out in ss 179 and 181 of the Act.

[17] We must determine a WACC by 1 June 2024 consistent with *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.5.1.

Date	Milestone	Description
Q3 2024	Decision on Chorus' expenditure allowance for PQP2	Final decision on Chorus' capex and opex allowances for PQP2.[18]
Q4 2024	Final fibre IM amendments	Final fibre IM amendments to implement our PQ decisions or correct technical errors.
Q4 2024	Determination of Chorus' PQ path for PQP2 final decision	Final decision (and accompanying determination) on Chorus' revenue path and quality standards for PQP2.
1 January 2025	Start of PQP2 regulatory period	PQP2 comes into effect.

1.4 For PQP1 we determined Chorus' expenditure allowances and PQ path at the same time. The process for PQP2 is different. We have split our decisions into two and are holding separate consultations on each of the following:

1.4.1 Chorus' expenditure allowances for PQP2; and

1.4.2 Chorus' PQ path for PQP2.

1.5 We need to determine expenditure allowances to set allowable revenues for Chorus' PQ path for PQP2. This includes capex and opex allowances. Our decisions on Chorus' expenditure allowances for PQP2 will feed into our decisions on Chorus' PQ path for PQP2 by way of the building block methodology we use to calculate Chorus' maximum allowable revenue.

1.6 Forecast allowable revenue is comprised of building blocks revenue, pass-through costs and a wash-up amount. Building blocks revenue is determined by us as part of the PQ price path setting process.

How you can provide your views

Scope of submissions

1.7 We are interested in your views on our draft decisions on Chorus' expenditure allowances for PQP2.

1.8 We ask that any submissions on other aspects of Chorus' PQ path for PQP2 wait until we have released our draft decision and accompanying determination of Chorus' PQ path for PQP2 in Q2 2024 (see Table 1.1).

[18] *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.8.2 – sets out that none of the Commission's functions or decisions are invalidated on account of our failure to meet the any timeframes applying to the Commission as set out in the determination. We sent out an email to stakeholders on 19 March 2024 setting out the new timelines that apply.

Process and timeline for making submissions

1.9 You are invited to provide your written views on this paper no later than **5pm Thursday, 16 May 2024** and cross submissions no later than **5pm on 6 June 2024**. Cross submissions should only focus on matters raised in submissions. We strongly discourage stakeholders from raising new matters via cross submissions. You should address your responses to:

1.9.1 Keston Ruxton (Manager, Fibre PQ Regulation)

1.9.2 c/o infrastructure.regulation@comcom.govt.nz

1.10 Please include "Chorus PQP2 draft expenditure decisions submission" in the subject line. We prefer responses to be provided in searchable PDF file format.

Confidentiality

1.11 Please note that we intend to publish all submissions (and cross submissions) received on this paper.

1.12 The protection of confidential information is something the Commission takes seriously. The process requires you to provide (if necessary) both a confidential and non-confidential/public version of your submission and to clearly identify the confidential and non-confidential/public versions. This also applies to cross submissions.

1.13 When including commercially sensitive or confidential information in your submission (or cross submission):

1.13.1 Please provide clearly labelled confidential and public versions. We intend to publish all public versions on our website.

1.13.2 The responsibility for ensuring that confidential information is not included in a public version of a submission rests entirely with the party making the submission. Where a confidential version of your submission is provided, please clearly identify and highlight all information you consider to be confidential. This also applies to cross submissions.

1.13.3 Please note that all submissions (and cross submissions) we receive, including any parts that we do not publish, can be requested under the Official Information Act 1982. This means we would be required to release material that we do not publish unless good reason existed under the Official Information Act 1982 to withhold it. We would normally consult with the party that provided the information before any disclosure to a requester is made.

Chapter 2 Regulatory framework

Purpose of this chapter

2.1 This chapter describes the legal and economic frameworks we have followed in reaching our draft decision on Chorus' expenditure allowances for PQP2.

Legal framework

2.2 This section sets out the legal requirements and regulatory framework which underpin our draft decisions on expenditure.

Background

2.3 We determined Chorus' PQ path for PQP1 on 16 December 2021. Before the end of the current regulatory period, the Commission must make a determination under s 170 of the Act specifying how PQ regulation applies to Chorus during the next regulatory period.

2.4 This will be the second regulatory period for Chorus. As detailed in our determination dated 28 February 2023, the second regulatory period will run for four years from 1 January 2025 until 31 December 2028.[19]

2.5 The purpose of PQ regulation is to regulate the price and quality of FFLAS provided by regulated providers.[20] Regulations made under s 226 of the Act set out that Chorus is subject to PQ regulation for all FFLAS "except to the extent that a service is provided in a geographical area where a regulated fibre service provider (other than Chorus Limited) has installed a fibre network as part of the UFB initiative."[21] Chorus is currently the only local fibre company (LFC) subject to PQ regulation under Part 6 of the Act.[22]

Purpose of Part 6 and draft expenditure decisions

2.6 We must make decisions on expenditure which best give, or are likely to best give, effect to the purposes of s 162 and, to the extent relevant, s 166(2)(b). In relation to our expenditure decisions, we must also comply with the requirements set out in the fibre IMs.

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19 *Fibre Price-Quality Determination 2024 (Determination of the duration of the second regulatory period for Fibre Price-Quality Path)* [2023] NZCC 2.

20 Telecommunications Act 2001, s 192.

21 Telecommunications (Regulated Fibre Service Providers) Regulations 2019, regulation 6.

22 Telecommunications (Regulated Fibre Service Providers) Regulations 2019, regulation 6.

2.7 In our final reasons paper for PQP1,[23] we made the following observations about the relationship between the two objectives in s 166(2) of the Act, which we consider still apply:[24]

2.7.1 We must make an assessment on what decision will best give effect to the statutory purposes and the outcomes we are required to promote by s 166. This requires an evaluative judgement.

2.7.2 Section 166(2)(a) directs us to make decisions that best give effect to the purpose in s 162. This is a mandatory consideration.

2.7.3 We are also required to make decisions that best give effect to the outcome in s 166(2)(b). This is also a mandatory consideration, but only in cases where we consider that it is 'relevant'. In assessing whether the promotion of workable competition in telecommunications markets for the long-term benefit of end-users of telecommunications services is relevant, we will consider whether a decision has the potential to affect the level of competition in one or more telecommunications markets.

2.7.4 Section 166(2) does not establish a hierarchy between the promotion of the two outcomes. Where we consider that the promotion of competition is relevant, we must strive to make the decision that best gives, or is likely to best give effect, to both the promotion of outcomes consistent with workable competition for the benefit of end-users of FFLAS under s 162, and to the promotion of competition in telecommunications markets for the benefit of end-users in those markets under s 166(2)(b).

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[23] Commerce Commission "Chorus' price-quality path from 1 January 2022 – Final decision – Reasons paper" (16 December 2021), at [2.46], see also [2.47].

[24] Chorus submitted on our process and approach paper and stated: "where the purpose statement in section 162 and objective in section 166 conflict, the Commission needs to take a position that best promotes outcomes consistent with workably competitive markets, for the long-term benefits of end-users of FFLAS (i.e. section 162 takes priority)". We consider our observations in PQP1 set out here, respond to that submission. Commerce Commission "Notice to supply information to the Commerce Commission under section 221 of the Telecommunications Act 2001 - Requirements for base capital expenditure, connection capex baseline expenditure, and operating expenditure proposals" (16 August 2023); and Chorus "PQP2 Process and Approach" (28 September 2023), at [13].

2.8 Through our evaluation of Chorus' expenditure proposal and application of the fibre IMs, we aim to ensure Chorus' expenditure reflects the efficient costs that a prudent fibre network operator would incur to deliver PQ FFLAS of appropriate quality, during the relevant regulatory period. This limits Chorus' ability to extract excessive profits while preserving incentives to improve efficiency (s 162(b) and (d)). Setting expenditure allowances that meet the expenditure objective as set out in the fibre IMs also preserve Chorus' incentive to innovate and to invest, including in replacement, upgraded, and new assets (s 162(a)).

2.9 In this draft decision paper, we have explained our draft decisions by referencing our specific obligations under the fibre IMs, and where relevant, the Act, as well as explaining why our draft decisions best give, or are likely to best give, effect to the s 166(2) purposes.

Fibre IMs

2.10 For the second regulatory period, the fibre IMs require Chorus to submit its base capex proposal 14 months before the start of the regulatory period.[25] Chorus submitted its expenditure proposal (base capex, connection capex and opex) on 31 October 2023.

2.11 The fibre IMs requires Chorus' base capex and connection baseline capex proposal to be verified by an Independent Verifier approved by the Commerce Commission.[26]

2.12 The fibre IMs requires us to determine a capex allowance, after Chorus has submitted a capex proposal that relates to each of the capital expenditure categories set out in the IM.[27] Specifically, we must specify:

2.12.1 a base capex allowance for each regulatory year of the regulatory period; and

2.12.2 a connection capex baseline allowance for each regulatory year of the regulatory period.

2.13 In respect of the connection capex baseline allowance, the fibre IMs requires us to include the following:

2.13.1 the connection capex baseline allowance by connection type for each regulatory year of the regulatory period;

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25 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.7.9(1)(b), and 3.7.16(1).

26 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.7.10.

27 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.7.1.

2.13.2 the connection capex unit costs and any non-linear connection cost functions, used to calculate the connection capex baseline allowance for each regulatory year of the regulatory period; and

2.13.3 the forecast volumes, by connection type, used to calculate the connection capex baseline allowance for each regulatory year of the regulatory period.

2.14 We must also determine a connection capex variable adjustment at the end of the regulatory period.[28] This is the difference between:

2.14.1 the connection capex baseline allowance; and

2.14.2 the capital expenditure given by applying the unit costs determined in the connection capex baseline allowance to actual connection volumes for each connection type.[29]

2.15 The fibre IMs also allow Chorus to apply for additional individual capex allowances at any time before or during the regulatory period (provided it meets the requirements set out in the fibre IMs). Individual capex allowances approved before the start of the second regulatory period will be included in the revenue path for PQP2.[30] However, as at the date of publication of this paper, Chorus has not submitted any individual capex proposals (ICPs).

Chorus' expenditure proposal

2.16 Chorus submitted its expenditure proposal for PQP2 (base capex, connection capex baseline and opex) on 31 October 2023. Chorus also submitted new information to us on 5 February 2024. This related to changes to its plans to extend the network during PQP2, a programme it calls 'fibre frontier'. This new information was not accompanied by a revised set of regulatory templates.

28 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.7.13(1)(b).
29 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.7.21(2).
30 *Fibre Input Methodologies Determination 2020,* as amended on 28 June 2023, clause 3.7.22(1).

2.17 We must evaluate Chorus' expenditure proposal (in respect of base and connection capex) by having regard to relevant assessment factors when considering whether the capex proposal has met the capital expenditure objective.[31] This includes considering whether the proposed expenditure meets the expenditure objective and reflects good telecommunications industry practice.[32] A capex proposal meets the capital expenditure objective if the expenditure reflects the efficient costs that a prudent fibre network operator would incur to deliver PQ FFLAS of appropriate quality, during the upcoming regulatory period and over the longer term.[33]

2.18 We apply the assessment factors to help us identify the different aspects of prudence and efficiency. We must have regard to as many of the assessment factors as are relevant when evaluating Chorus' expenditure proposal. The assessment factors are specified in clause 3.8.6(1)(a) -(t) of the fibre IMs and repeated for ease of reference in Table 2.1.

Table 2.1 Assessment factors in the fibre IMs

Assessment factors	
a)	Whether the proposed capex complies with all applicable legal and regulatory obligations associated with the provision of PQ FFLAS.
b)	Governance relating to proposed capex, including evidence that appropriate policies and processes have been applied.
c)	Historic capital expenditure and consideration of historic rates of investment.
d)	Quantitative or economic analysis related to the proposed capex, including sensitivity analysis and impact analysis undertaken.
e)	Approach to forecasting capital expenditure, including models used to develop the capital expenditure forecasts.
f)	Relevant financial information including evidence of efficiency improvements in proposed capex.
g)	Competition effects, including specific information for sub-categories of capital expenditure that have potential impacts on competition in PQ FFLAS and other telecommunications markets.
h)	The linkages between the proposed capex and quality, including the impact the capital expenditure would have on PQ FFLAS quality outcomes.
i)	Consideration and analysis of alternatives to the proposed capex, including the impact of the alternatives on PQ FFLAS quality outcomes.
j)	The extent and effectiveness of consultation and engagement with stakeholders and the extent that feedback received has been incorporated into the capex proposal.
k)	Procurement, resourcing, and deliverability of the proposed capex.
l)	Common costs and benefits between PQ FFLAS, ID-only FFLAS and services that are not regulated FFLAS.
m)	Fibre asset and fibre network information.
n)	Mechanisms for controlling actual capital expenditure with respect to the proposed capex and achieving the PQ FFLAS quality outcomes.
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.
p)	The extent that a risk-based approach has been applied.

[31] *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.8.5(1)(b) and 3.8.6.

[32] As defined in clause 1.1.4(2) of the *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023.

[33] *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.8.5(2).

q)	The impact that the proposed capex has on a layer 1 service in respect of PQ FFLAS.
r)	The dependency and trade-off between the proposed capex and related operating expenditure to ensure least whole-of-life cost for managing assets and cost-efficient solutions.
s)	The accuracy and reliability of data.
t)	The reasonableness of the key assumptions, methodologies, planning and technical standards relied upon.

2.19 We consider that by applying the evaluation criteria set out in the fibre IMs, our decisions best give effect to s 166(2) of the Act (ie, the purpose in s 162 and the promotion of workable competition for the long-term benefit of end-users, where relevant).

2.20 The evaluation criteria, including the assessment factors that support the evaluation of the proposed capex against the capital expenditure objective, allow us to identify and evaluate where good asset management has been applied. We consider that good asset management is important for Chorus to ensure capex meets the expenditure objective.

Opex

2.21 The fibre IMs do not include criteria for us to make decisions on opex. However, we have adopted a similar approach to how we consider capex (as we proposed in the process and approach paper) for our draft decisions. This is the same approach we adopted for opex decisions for PQP1.[34]

2.22 Therefore, in making our draft decision on Chorus' opex allowance, we have had regard to the assessment factors in the fibre IMs that we consider are relevant to considering an opex proposal. We consider the application of the relevant assessment factors to the opex proposal best gives effect to the purposes in s 166(2) by promoting expenditure that reflects the efficient costs of a prudent fibre network operator while also reflecting good telecommunications industry practice.

2.23 The assessment factors we have had regard to for our evaluation of Chorus' opex expenditure are listed in Table 2.2.

Table 2.2 Commission opex assessment factors

	Opex assessment factors
a)	Historic operating expenditure and consideration of historic rates of expenditure.
b)	Quantitative or economic analysis related to the proposed opex, including sensitivity analysis and impact analysis undertaken.
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.

[34] Commerce Commission "Chorus' price-quality path from 1 January 2022 – Final decision – Reasons paper" (16 December 2021).

e)	Competition effects, including specific information for sub-categories of opex that have potential impacts on competition in PQ FFLAS and other telecommunications markets.
f)	Fibre asset and fibre network information.
g)	The extent of the uncertainty related to the: - need for the proposed opex; - economic case justifying the proposed opex; and - timing of the proposed opex.
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.
i)	The accuracy and reliability of data.
j)	The reasonableness of the key assumptions, methodologies, planning and technical standards relied upon.

Cost allocation

2.24 We are also required to apply the cost allocation IM to any forecast expenditure.

Promotion of s 162 and s 166(2)(b)

2.25 Our decisions on allocator types and the associated allocator values for the cost or asset allocators must best give, or be likely to best give, effect to the purpose in s162 (as set out in s 166(2(a)) and where relevant s166(2)(b)) (workable competition in telecommunications markets for the long-term benefit of end-users).

2.26 In terms of cost allocation, one of the key outcomes to be promoted is that regulated fibre service providers allow end-users to share the benefits of efficiency gains in the supply of FFLAS, including through lower prices: s 162(c).

2.27 Cost allocation must also minimise the risk that regulated providers could over-recover shared costs enabling them to extract excessive profits: s 162(d).

2.28 The promotion of workable competition under s 166(2)(b) of the Act is also relevant to the issue of how to allocate shared costs. For example, a disproportionate allocation of expenses to regulated FFLAS may distort competition, including in the supply of services that are not regulated FFLAS.

The fibre IMs and cost allocation

2.29 Regulated providers have operating costs and asset values that are shared between regulated FFLAS and services that are not regulated FFLAS. The cost allocation IM (clause 3.2.1) sets out the rules and methodologies that regulated providers must apply in order to identify the portion of operating costs and asset values that are associated with regulated FFLAS.

2.30 At a high level, the cost allocation IM requires that:[35]

[35] *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.2.1

2.30.1 Unallocated asset values that are "directly attributable" to the provision of FFLAS are allocated to FFLAS.[36] Conversely, asset values that are directly attributable to the provision of services that are not FFLAS must not be allocated to FFLAS.

2.30.2 Unallocated asset values that are not directly attributable to either FFLAS or services that are not FFLAS (ie, are shared) must undergo cost allocation. Specifically, shared costs must be allocated between those services using the accounting-based allocation approach (ABAA).

2.30.3 Within the ABAA, costs and assets must be allocated using an allocator that is based on:

2.30.3.1 a causal relationship: that is, there is a causal relationship between the asset value and the circumstance where a factor influences the employment of the asset in provision of UFB FFLAS;[37] or

2.30.3.2 a proxy asset allocator: that is, where a causal relationship cannot be established.[38]

2.30.4 Within the definitions of "causal relationship" and "proxy asset allocator" is the requirement that in each case these allocators (ie, ratios):[39]

2.30.4.1 must be consistently applied within a financial loss year, and between financial loss years; and

2.30.4.2 are objectively justifiable and demonstrably reasonable.

2.31 We have previously set out what the cost allocation IM requires, and how we will consider whether the "objectively justifiable and demonstrably reasonable" requirement has been met.[40] Chapter 4 sets out how we have approached the draft decisions for cost allocation for PQP2.

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36 "Directly attributable" is defined in the fibre IMs as "in relation to operating costs, where a cost is wholly and solely incurred in the provision of a particular service; and (b) in relation to asset values, where an asset is wholly and solely employed by a regulated provider in the provision of a particular service". See *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023.

37 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 1.1.1(4)(2) – definition of causal allocator.

38 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 1.1.1(4)(2) – definition of proxy allocator.

39 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 1.1.1(4)(2) – definition of proxy allocator and causal allocator.

40 Commerce Commission "Chorus' transitional initial price-quality regulatory asset base as at 1 January 2022 – Final Decision – Reasons paper" (16 December 2021), at [2.59]- [2.60].

Cost escalation

2.32 As set out above, subpart 7 of Part 3 of the fibre IMs requires us to determine Chorus' capex allowance.

2.33 One of the steps in this process is to determine cost escalators in order to inflate the real expenditure allowance to a nominal expenditure allowance that is suitably adjusted for price changes in future years.

2.34 Note that our expenditure decisions in this paper are expressed in constant dollar (2022) terms before cost escalation has been applied, unless otherwise stated. However, the amount of expenditure that we determine for setting Chorus' revenue path are in commissioned nominal dollars.

2.35 Chapter 4 sets out how we have approached the draft decisions for cost escalation.

Economic framework

2.36 As part of our fibre IMs decision-making process, we developed an economic framework. The economic framework relates to all aspects of our economic decision-making in regulating regulated FFLAS.[41] We applied this to our decision-making framework for PQP1. We referenced this economic framework in our PQP2 process and approach paper.[42]

2.37 The economic framework helps us make individual decisions that are consistent with each other, and that best give effect to the purposes described in s 166(2) of the Act. It has three components:

2.37.1 economic principles - real financial capital maintenance, allocation of risk, and asymmetric consequences of under- or over-investment;[43]

2.37.2 an incentive framework - to help us evaluate how the regime may interact with the incentives faced by regulated providers and assist us in identifying risks to end-users;[44] and

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41 Commerce Commission "Fibre input methodologies: Main final decisions – reasons paper" (13 October 2020), Chapter 2; and Commerce Commission "Fibre price-quality regulation – Proposed process and approach for the 2025-2028 regulatory period" (31 August 2023), Chapter 3.

42 Commerce Commission "Fibre price-quality regulation – Proposed process and approach for the 2025-2028 regulatory period" (31 August 2023), at [3.47]- [3.81].

43 Commerce Commission "Fibre input methodologies: Main final decisions – reasons paper" (13 October 2020), at [2.272]- [2.316].

44 Commerce Commission "Fibre input methodologies: Main final decisions – reasons paper" (13 October 2020), at [2.317]- [2.335].

2.37.3 approach to identifying competition issues - to help us assess whether our decisions might be relevant to competitive outcomes in telecommunications markets.[45]

2.38 In the process and approach paper, in discussing the application of the economic framework to our PQP2 decisions, we highlighted the incentive framework, and within that discussion, that the Act includes requirements that may result in prices that are not necessarily efficient and price structures that benefits some end-users and disadvantage others.

2.39 Examples highlighted in the process and approach paper were that the Act requires Chorus use geographically consistent pricing, provide an anchor product with a prescribed maximum price, and provide direct fibre access services at a prescribed maximum price.[46]

Stakeholder views

2.40 In response to our discussion of the economic framework, Chorus made two recommendations in its submission:

2.40.1 First, Chorus recommended that we apply "a more balanced discussion of the framework when introducing and assessing potential changes for PQP2".[47] In particular, it noted that we emphasised regulatory intervention at the expense of relying on actual competition faced by Chorus to achieve desired outcomes.

2.40.2 Second, Chorus recommended that where requirements of the regime, such as geographically consistent pricing, an anchor product with a prescribed maximum price, and direct fibre access services with a prescribed maximum price, result in inefficient prices, that we "consider amendments to those requirements, rather than introduce further regulations".[48]

2.41 The economic framework, set out in the main reasons paper for the fibre input IMs and referenced in our PQP2 process and approach paper, relates to all aspects of our economic decision-making in regulating regulated FFLAS.[49] While we agree with Chorus that its competitive landscape differs from that faced by other New Zealand businesses subject to PQ regulation, the incentive part of our economic framework is nonetheless relevant to help guide decisions we make.

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45 Commerce Commission "Fibre input methodologies: Main final decisions – reasons paper" (13 October 2020), at [2.385]- [2.395].

46 Commerce Commission "Fibre price-quality regulation – Proposed process and approach for the 2025-2028 regulatory period" (31 August 2023), at [3.71] - [3.73].

47 Chorus "PQP2 Process and Approach" (28 September 2023), at [7].

48 Chorus "PQP2 Process and Approach" (28 September 2023), at [10] - [11].

49 Commerce Commission "Fibre input methodologies: Main final decisions – reasons paper" (13 October 2020), Chapter 2; and Commerce Commission "Fibre price-quality regulation – Proposed process and approach for the 2025-2028 regulatory period" (31 August 2023), Chapter 3.

2.42 We consider that the requirements in the Telecommunications Act and the fibre IMs (evaluation criteria for assessing capex proposals) enable us to consider competition issues where relevant to Chorus' PQ path, including in our decisions on Chorus expenditure allowance. It is not clear to us what Chorus intends by "a more balanced discussion of the framework when introducing and assessing potential changes for PQP2" in the context of our expenditure decisions. In coming to our draft decisions, we have considered instances where Chorus and other stakeholders have raised competition issues in relation to Chorus' expenditure proposal, eg, in Chorus' incentive capex proposal.

2.43 We consider Chorus' comments may be relevant to other decisions we make to determine Chorus' price quality path and intend to consider these in our draft decision for Chorus' PQ path for PQP2.

2.44 In terms of Chorus' submission that we consider amendments to requirements prescribed in legislation (such as geographically consistent pricing), we note that this is not within our remit.

Chapter 3 Process for evaluating Chorus' proposal

Purpose and structure

3.1 This chapter explains our process for evaluating Chorus' expenditure proposal and how we arrived at our draft decisions on expenditure allowances for PQP2. This includes:

3.1.1 issuing a notice to supply information under s 221 for Chorus' expenditure proposals;

3.1.2 engaging the Independent Verifier and receiving its report on Chorus' expenditure proposal;

3.1.3 consulting with stakeholders about setting the PQP2 expenditure allowances;

3.1.4 issuing RFIs to Chorus;

3.1.5 employing a prioritisation approach to our assessment of the proposal; and

3.1.6 the engagement of Network Strategies Limited (Network Strategies).

Notice to supply information

3.2 In accordance with the fibre IMs, we issued notice under s 221 of the Act to Chorus on 28 February 2023 requesting the information required under the fibre IMs and similar information for opex.[50] The notice required Chorus to provide information relating to expenditure, cost escalators, and connection and demand forecasts.[51]

3.3 The notice outlined our priority base capex and opex sub-categories as well as the prescribed regulatory templates for quantitative information.[52, 53]

Independent Verifier process

3.4 The fibre IMs require Chorus' base capex and connection capex proposals to be verified by an Independent Verifier.[54]

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50 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.7.8(9)(b).

51 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.7.9.

52 Commerce Commission "Notice to supply information to the Commerce Commission under section 221 of the Telecommunications Act 2001 - Requirements for base capital expenditure, connection capex baseline expenditure, and operating expenditure proposals" (16 August 2023).

53 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.7.16.

54 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.7.10.

3.5 PQP2 is the first time that an Independent Verifier has been used within the expenditure process. The use of an Independent Verifier is intended to provide assurance for our assessment of Chorus' expenditure proposal. The intended Independent Verifier, scope and the terms and conditions proposed by Chorus for the Independent Verifier report were submitted for our approval prior to the start of the verification process. As part of the process to approve the Independent Verifier, the verification information submitted had to include enough information for us to be satisfied:

3.5.1 the verifier was independent and capable of undertaking verification; and

3.5.2 the terms and conditions of engagement and the scope of the Independent Verifier report would provide the appropriate assurance needed to assess the base capex proposal.

3.6 Chorus ran a tender process to select and propose an Independent Verifier. Synergies Economic Consulting (Synergies) (supported by Mott McDonald) was selected by Chorus as the preferred Independent Verifier. After a review of Chorus' proposed Independent Verifier selection, we approved both the choice of Independent Verifier and the terms of reference under which the Independent Verifier would operate.

3.7 The Independent Verifier was requested to consider the expenditure objective and the relevant assessment factors as set out in the fibre IMs as part of its report.[55] The Independent Verifier report sets out the terms of reference for the Independent Verifier report.[56]

3.8 The steps in the Independent Verifier process were:[57]

3.8.1 agreement to an engagement schedule between the Independent Verifier, Chorus and the Commission which determined the frequency of the engagement with the Independent Verifier and the focus areas and assessment factors for the Independent Verifier's review;

3.8.2 a draft Independent Verifier report was developed and shared with Chorus and the Commission prior to Chorus submitting its proposal; and

3.8.3 a final Independent Verifier report accompanied Chorus' expenditure proposal.

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55 Commerce Commission "Deed relating to PQP2 Independent Verification" (4 May 2023).

56 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), Appendix A.

57 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.7.10.

3.9 Utilising the Independent Verifier report has assisted our assessment of Chorus' expenditure proposal. For example, we have considered the report in identifying areas to prioritise for further evaluation in coming to our draft decision, as well as areas where, following a high level assessment of the proposal and report, we agreed with the Independent Verifier's findings. In some instances, we have considered categories in more detail despite the findings in the report, including assessment of the impacts these categories might have on consumers.

Chorus' proposal and consultation

3.10 Chorus submitted its proposal on 31 October 2023. This included financial information in the form of regulatory templates and other documents to specify expenditure allowances that Chorus had developed.

3.11 We published Chorus' proposal, a consultation paper on Chorus' proposed expenditure and the Independent Verifier's report on 16 November 2023.

3.12 We published the submissions received on Chorus' proposal on 11 January 2024.[58] We published the cross submission received on Chorus' proposal on 2 April 2024.[59]

3.13 Chorus also submitted new information to us on 5 February 2024. This related to changes to its plans to extend the network during PQP2, a programme it calls 'fibre frontier'. This new information was not accompanied by a revised set of regulatory templates. We discuss this further information received in Chapter 4.

Additional information requests

3.14 During the evaluation phase we also identified areas where we considered we needed further information from Chorus. We sought this information via a total of 90 targeted RFIs. A list of RFIs made to Chorus is included in Attachment A.

Prioritisation

3.15 A key focus of our assessment has been identifying expenditure that is prudent and efficient and meets the requirements set out in the fibre IMs and the Act (and adapted requirements for opex as set out above).

[58] Submissions are published here.
[59] Cross submissions are published here.

3.16 We have prioritised assessment of areas that we expect to impact end-users most. A key part of our review has been the consideration of the findings from the Independent Verifier process, along with the feedback received from stakeholders on Chorus' proposal. To assist, the fibre IMs requires Chorus to develop and publish an integrated fibre plan (IFP). The IFP helps to ensure we have visibility of and can encourage improvements in Chorus' processes and procedures relating to good asset management, as well as Chorus' oversight of its business and how it effectively engages with its end-users.

3.17 In addition to this, we identified priority areas in our s 221 notice to Chorus which identified priority base capex sub-categories and priority opex sub-categories.

Engagement of Network Strategies

3.18 Where we considered necessary, we engaged Network Strategies to provide us with targeted independent advice on issues identified in our review of the Independent Verifier report and Chorus' expenditure proposal.

3.19 Network Strategies provided independent advice for us to consider in our assessment and in coming to our draft determination of expenditure allowances for the following expenditure sub-categories:

3.19.1 IT and support – business IT;

3.19.2 IT and support – network and customer;

3.19.3 network capacity – access;

3.19.4 network capacity – transport;

3.19.5 network capacity – aggregation;

3.19.6 network sustain and enhance – field sustain;

3.19.7 network sustain and enhance – resilience;

3.19.8 network sustain and enhance – site sustain;

3.19.9 connection capex; and

3.19.10 opex.

3.20 Network Strategies also provided independent advice for us to consider in our assessment of areas applying across expenditure categories, such as Chorus' suite of demand forecast models.

Chapter 4 Draft decisions that apply across expenditure categories

Purpose and structure of this chapter

4.1 This chapter sets out our draft decisions on cross-cutting topics that impact or relate to more than one area of expenditure.

4.2 The topics covered in this chapter include:

4.2.1 new information from Chorus on network extension capex;

4.2.2 cost allocation;

4.2.3 cost escalation;

4.2.4 deliverability; and

4.2.5 demand forecasting.

4.3 We expect the new information provided by Chorus relating to the fibre frontier initiative to have impacts beyond those directly indicated to date by Chorus.[60] We have included our estimation of these flow on impacts as part of our draft decision and will consider submissions on the changes in coming to our final decision.

New information from Chorus on network extension capex

4.4 On 5 February 2024 Chorus provided us with new information regarding its network extension fibre frontier programme.

4.5 Chorus' proposal submitted in October 2023 included $201.1m of capex for the fibre frontier network extension over PQP2 (as part of the augmentation sub-category of base capex). Chorus provided new information to us on 5 February 2024 in relation to the network extension fibre frontier programme, reducing the scope of the proposed rollout resulting in a reduction to this sub-category to $32.5m (which includes infill augmentation).[61] As the fibre IMs do not provide a mechanism for Chorus to amend its proposal after it has been submitted, we have treated the information provided as further information to consider in coming to our draft decision.

4.6 Chorus did not provide further detail on any other related forecast impacts of the new information provided in the expenditure proposal submitted in October 2023.

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60 On 5 February 2024 Chorus provided us with information regarding the network extension 'fibre frontier' programme. The new information related to a significantly reduced capex proposal for fibre frontier as part of its base capex proposal.

61 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.7.3(2).

4.7 As Chorus has not provided detail on other forecast impacts of the new information, we have considered, as part of our review of the expenditure proposal and in coming to our draft decision, whether the new information provided in relation to the fibre frontier network expansion would impact any other areas of the expenditure proposal.

4.8 We have identified several other areas of expenditure that we expect will be impacted by the new information provided and we have accounted for this in our draft decision on those expenditure categories. We are interested in stakeholder submissions where we have accounted for the new information from Chorus in our draft decision (particularly in respect of the approach we have used and the value of the estimated impact on each respective area of Chorus' proposal, and how we have accounted for the information in our draft decision).

4.9 We explain the estimated impact of the new information on our draft decisions in the sections on the following expenditure sub-categories:

4.9.1 base capex – augmentation (Chapter 5);

4.9.2 connection capex (Chapter 6); and

4.9.3 opex (Chapter 7).

4.10 We consider that the new information could also impact other expenditure categories, including base capex – installations (standard) and base capex – access. We have made our draft decision on the basis of information available to us, and have not made any changes to these sub-categories. We are interested in stakeholder submissions on what (if any) impacts the new information could have on these or other expenditure sub-categories.

Cost allocation

Approach we have taken to determining cost allocation values for PQP2

4.11 We have applied the legal framework set out in Chapter 2 to our draft decisions on cost allocation.

4.12 To support our analysis and judgement as to whether the "objectively justifiable and demonstrably reasonable" requirement has been met for a given proposed cost or asset allocator, we have considered factors such as:

4.12.1 whether the proposed allocation promotes the purpose of Part 6 and, where relevant, workable competition in telecommunications markets for the long-term benefit of end-users of telecommunications services;

4.12.2 whether the allocator type meets the definition of a proxy cost allocator or proxy asset allocator;[62]

4.12.3 whether the allocation is being undertaken at a reasonable level of aggregation, ie, whether operating costs or assets that have been grouped together have sufficiently similar characteristics to be treated in common;

4.12.4 the extent to which the underlying data used is robust; and

4.12.5 whether there is a readily available alternative allocator which better meets these criteria above, such that it would be unreasonable to prefer the proposed allocator.

4.13 Cost and asset allocator types that currently apply for PQP1 have been analysed against this framework, and work undertaken to consider Chorus' proposed allocators for PQP2 has focused on:

4.13.1 whether existing allocator types that Chorus does not propose to change remain valid;

4.13.2 where Chorus has proposed a change to an allocator, whether the proposed allocator, when considered against this framework is "objectively justifiable and demonstrably reasonable"; and

4.13.3 if it is demonstrably reasonable, whether it should be preferred to the existing allocator (because it better meets our framework criteria than the one used for PQP1).

4.14 We have relied on the supporting certification and assurance opinion that accompanied Chorus' proposal in regard to the issue of whether the supplied cost allocator information is objectively justifiable.[63]

4.15 Our analysis has therefore focused on the question of whether allocator types, particularly the allocator types that are changes to PQP1 as proposed by Chorus, are demonstrably reasonable.[64]

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62 Ibid, clause 1.1.4(2).

63 Chorus "Directors Certificate of Compliance: Price-Quality Period 2 Expenditure Proposal", (30 October 2023), and KPMG "Independent Reasonable Assurance Report to the Directors of Chorus Limited" (30 October 2023).

64 We have focussed on whether the allocator type is demonstrably reasonable as we accept that the allocator values are objectively justifiable (ie, are calculated correctly and based on accurate records).

4.16 The only other alternative allocator type we have considered, when a change has been proposed, is that which was used for PQP1. We have then considered whether the proposed allocator type better meets our framework criteria than the existing. Our review has included unchanged capex and opex allocators, though we did not identify any that required further scrutiny based on our high level review.

Draft decisions on cost allocation

4.17 Our draft decisions are to:

4.17.1 accept Chorus' proposed asset allocator types (which remain unchanged from PQP1);[65]

4.17.2 accept Chorus' proposed operating cost (opex) allocator types where they remain unchanged from the opex allocator type used in PQP1;

4.17.3 continue to use a total expenditure (totex) based allocator for certain corporate costs as we did for PQP1 rather than the revenue-based allocator for certain corporate costs proposed by Chorus for PQP2;

4.17.4 continue to use a totex-based allocator for certain CTO costs rather than the revenue-based allocator for certain CTO costs as proposed by Chorus for PQP2;[66]

4.17.5 allocate co-location establishment and relinquishment operating costs using a revenue-based allocator, a change from the current direct attribution to non-FFLAS. These co-location establishment and relinquishment operating costs will be allocated in proportion to the share of revenue from the charges for co-location services of FFLAS compared to non-FFLAS;

4.17.6 directly attribute a number of roles to FFLAS or non-FFLAS in the product, sales and marketing area of opex costs. This reduces the proportion of operating costs in this area requiring allocation; and

4.17.7 allocate service company overheads costs, which allocates costs associated with the management of service companies and related activities, using a service company totex-based allocator. This is a change from the current allocation based on the split of FFLAS versus non-FFLAS service company opex activities to a split based on all service company activities (totex that is opex plus capex).

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65 The fibre IMs require that the choice of allocators must be reviewed every 18 months, fibre IMs clause 2.1.3(1)(b).

66 The totex allocator has also been applied for some other operating cost areas, and the switch to a revenue-based allocator has also impacted those areas. We expect that not adopting this change will also impact these areas, though the opex amounts allocated are much less material.

4.18 Our analysis is set out below, and steps through each of these draft decisions and the reasons for them.

Independent Verifier findings

4.19 The Independent Verifier was not required to verify the cost allocation arrangements against the assessment factors or evaluation criteria.[67] In its report, it relied on the fact that Chorus had confirmed that it had applied the same allocation methods and principles as in PQP1, the outcomes of which are reflected in the past and forecast expenditure data presented in the final Independent Verifier report.[68]

Stakeholder views

4.20 2degrees submitted on Chorus' expenditure proposal and discussed cost allocation.

4.21 In 2degrees' view, Chorus has submitted a large number of changes in respect of cost allocation and has not provided a suitable range of possible options for the allocators it is proposing to change. 2degrees also considers Chorus has not set out the impacts of those options, and that options considered in this situation would not generally be expected to all be in Chorus' favour.[69]

4.22 A further point raised by 2degrees is that due to the different approach to copper pricing, the prices of other regulated services (principally copper) cannot be changed, given those prices are a CPI-escalated version of prices originally determined according to a total service long-run incremental cost (TSLRIC) method.[70]

4.23 It pointed out that:[71]

> This highlights the care that is needed in considering changes to allocators as you will not have the normal 'see-saw' effect of a change that increases allocation to one service resulting in reduction in allocation to (and reduction in regulated price for) another service.

4.24 One NZ, while not directly referring to cost allocation, highlighted the need to avoid double recovery, which is a key consideration in relation to cost allocation.[72]

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67 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 8 and 270.

68 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 8.

69 2degrees "Chorus' proposed expenditure for PQP2: 2degrees' Response to Commerce Commission consultation" (14 December 2023), at 1.

70 We note that the copper prices can be changed, but not above the regulated ceiling. Chorus is free to set any price below the regulated ceiling.

71 2degrees "Chorus' proposed expenditure for PQP2: 2degrees' Response to Commerce Commission consultation" (14 December 2023), at 6.

72 One NZ "One NZ submission on Chorus' proposed expenditure for PQP2" (14 December 2023), at [3].

4.25 While made in the context of submitting on the fibre frontier proposal, One NZ's comment regarding copper network costs illustrates a concern that FFLAS charges are cross-subsidising the operation of the copper network, an outcome that the proper application of cost allocation should avoid:[73]

> Cost of operating the copper network remains embedded in Chorus and is highly uncertain. Access seekers and consumers are covering these costs through FFLAS charges.

Analysis

Unallocated costs shared via cost allocation

4.26 The proportion of total opex (unallocated) that is shared between FFLAS and non-FFLAS services, based on the 31 October 2023 proposal from Chorus, is set out in Table 4.1 below. This represents the proportion of overall opex costs that are not directly attributable to either FFLAS or non-FFLAS and will have an asset allocator applied to share the cost between each service.[74, 75]

Table 4.1 Proportion of total opex costs that are shared[76]

Opex categories	Opex sub-categories	Unallocated shared Opex at constant $2022						
		PQP1 (actual) 2022	PQP1 f'cast 2023	PQP1 f'cast 2024	PQP2 f'cast 2025	PQP2 f'cast 2026	PQP2 f'cast 2027	PQP2 f'cast 2028
Customer	Customer operations	(15.3)	(13.7)	(15.5)	(16.2)	(16.3)	(16.3)	(16.3)
	Product, Sales & Marketing	18.9	20.6	21.8	21.8	21.9	22.0	22.0
Network	Maintenance	46.3	50.5	47.0	48.0	48.0	48.1	48.1
	Network Operations	29.6	32.0	30.3	31.3	31.6	31.9	32.1
	Operating Costs	21.1	18.8	20.8	20.9	20.7	20.3	19.8
Support	Asset Management	23.2	21.7	23.0	24.2	24.3	24.4	24.4
	Corporate	54.0	55.2	56.6	56.8	57.1	57.3	57.3

[73] One NZ "One NZ submission on Chorus' proposed expenditure for PQP2" (14 December 2023), at [9e].

[74] When a cost is directly attributable to FFLAS or non-FFLAS, 100% of the cost is attributed to that service. When the costs are shared between the services, X% of the costs are allocated to one service and (100% - X%) are allocated to the other service, where 0 < X <100%.

[75] *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 2.1.1(5) and (6).

[76] Chorus "RT03 – Cost allocation regulatory template" (7 December 2023).

	Technology	22.7	20.4	21.3	22.3	21.7	21.1	21.2
Total shared opex ($m)		**200.6**	**205.4**	**205.3**	**209.2**	**209.1**	**208.6**	**208.6**
Total Unallocated opex ($m)		278.8	283.6	275.6	275.1	272.7	270.8	269.7
Proportion shared opex costs		**71.9%**	**72.4%**	**74.5%**	**76.1%**	**76.7%**	**77.0%**	**77.4%**

4.27 The proportion of total capex (unallocated) that is shared between FFLAS and non-FFLAS services, based on the 31 October 2023 proposal from Chorus, is set out in Table 4.2Table 4.2.

Table 4.2 Proportion of total capex costs that are shared[77]

	Unallocated Shared Capex (excl. IDC) at constant $2022						
	PQP1 (actual) 2022	PQP1 f'cast 2023	PQP1 f'cast 2024	PQP2 f'cast 2025	PQP2 f'cast 2026	PQP2 f'cast 2027	PQP2 f'cast 2028
Total shared capex ($m)	**51.5**	**155.6**	**106.7**	**121.2**	**119.7**	**101.2**	**95.6**
Total unallocated capex ($m)	402.0	443.9	431.5	423.8	410.3	374.8	369.4
Proportion shared capex costs	**12.8%**	**35.1%**	**24.7%**	**28.6%**	**29.2%**	**27.0%**	**25.9%**

4.28 The proportion of total opex (unallocated) that is shared between FFLAS and non-FFLAS services, based on our draft decision, is set out in Table 4.3 below. This represents the proportion of overall opex costs that are not directly attributable to either FFLAS or non-FFLAS and will have an asset allocator applied to share the cost between each service.

Table 4.3 Proportion of total opex costs that are shared based on draft decision

		Unallocated shared Opex at constant $2022

[77] Chorus "RT03 – Cost allocation regulatory template" (7 December 2023).

Opex categories	Opex sub-categories	2022 (RP1) ($m)	2023 (RP1) ($m)	2024 (RP1) ($m)	2025 ($m)	2026 ($m)	2027 ($m)	2028 ($m)
Customer	Customer operations	(15.3)	(13.6)	(14.7)	(14.3)	(13.9)	(13.4)	(13.0)
	Product, sales & marketing	18.9	20.3	20.4	19.9	19.4	18.9	18.5
Network	Maintenance	46.3	50.2	46.1	45.6	45.1	44.7	44.3
	Network operations	29.6	31.7	29.2	29.0	28.7	28.3	28.0
	Operating costs	21.1	18.7	20.4	20.2	19.8	19.2	18.5
Support	Asset management	23.2	21.5	22.0	21.5	20.9	20.4	19.8
	Corporate	54.0	53.7	52.1	50.7	49.6	48.6	47.4
	Technology	22.7	20.1	20.1	17.7	15.8	14.2	12.6
Total shared opex ($m)		**200.6**	**202.7**	**195.8**	**190.3**	**185.6**	**180.9**	**176.0**
Total unallocated opex ($m)		278.8	280.0	263.1	252.8	244.5	237.2	229.7
Proportion shared opex costs		**71.9%**	**72.4%**	**74.4%**	**75.3%**	**75.9%**	**76.3%**	**76.6%**

4.29 The proportion of total capex (unallocated) that is shared between FFLAS and non-FFLAS services, based on the 31 October 2023 proposal from Chorus, is set out in Table 4.4.

Table 4.4 Proportion of total capex costs that are shared based on the draft decision

	Unallocated shared capex (excl. IDC) at constant $2022						
	2022 (RP1) ($m)	2023 (RP1) ($m)	2024 (RP1) ($m)	2025 ($m)	2026 ($m)	2027 ($m)	2028 ($m)
Total shared capex	**51.5**	**157.3**	**109.0**	**129.3**	**129.1**	**108.6**	**103.6**
Total unallocated capex	402.0	443.9	431.5	368.9	323.2	270.1	258.6
Proportion shared capex costs	**12.8%**	**35.4%**	**25.3%**	**35.0%**	**40.0%**	**40.2%**	**40.1%**

Proposed asset allocator types that are unchanged from PQP1[78]

4.30 Chorus proposed that the asset allocator types for PQP2 remain unchanged from those we determined for PQP1. Our draft decision is to retain the asset allocator types, all of which are unchanged from PQP1.[79]

4.31 We consider the asset allocator types used in PQP1 that Chorus has proposed for PQP2 continue to comply with the requirements of the fibre IMs. We note that in PQP1, determination of the initial RAB and the PQP1 expenditure allowance included consideration of the asset allocators against the framework outlined above, and the IM requirements.[80]

4.32 We have also undertaken a high level review of the impact of these asset allocators on PQP2 expenditure allocated to FFLAS. This review has not identified any areas requiring further analysis.

4.33 We note that the underlying allocation process involves the direct allocation to FFLAS of between 70% to 75% of total FFLAS capex.[81]

Proposed opex allocator types that are unchanged from PQP1

4.34 A number of opex allocator types proposed by Chorus for PQP2 also remain unchanged from those we determined for PQP1. Our draft decision is to retain the opex allocator types that are unchanged from PQP1.

4.35 Given the review process undertaken as part of the determination of the initial RAB and the PQP1 expenditure allowance, which included consideration of the operating cost allocators, we consider the existing (unchanged) opex allocator types continue to comply with the IM requirements.

4.36 We have also undertaken a high level review of the impact of these opex allocators on PQP2 expenditure. This review has not identified any areas we consider require further analysis.

4.37 Chorus is required to review its allocator types for ID every 18 months and has undertaken this review.[82] That review, coupled with the director certification and the assurance work, as well as our assessment of them from PQP1 means we are satisfied that those allocators continue to meet IM requirements. We have therefore focused our review on the proposed changes to allocators.

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78 In the regulatory templates, asset allocators are applied to newly commissioned assets. These assets result from capex, and the asset allocators are applied to "capex" in the regulatory templates.

79 Chorus "Modelling and Cost Allocation report" (31 October 2023), at 12.

80 Commerce Commission "Chorus' transitional initial price-quality regulatory asset base as at 1 January 2022 – Final Decision – Reasons paper" (16 December 2021).

81 Chorus "RT03 – Cost allocation regulatory template" (7 December 2023).

82 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 2.1.3(1)(b).

Allocators that Chorus has proposed changing

4.38 Where Chorus has proposed changes to allocator types, we have considered whether the proposed allocator is "objectively justified and demonstrably reasonable", and better meets our framework criteria compared to the allocator type used in PQP1.[83] We have also, where necessary, sought further information from Chorus as part of our analysis to consider if the proposed allocator type meets the IM requirements.

4.39 As set out above, we consider that the previously approved allocator types continue to meet the IM requirements.

4.40 Stakeholder comments refer to an unexpectedly large number of changes that all increase the allocation of costs to FFLAS. While views may differ on whether the number of changes Chorus has proposed is unexpectedly large or not, its proposed allocator type changes all appear to increase the allocation of expenses to FFLAS and reduce the allocation to non-FFLAS.

4.41 This is consistent with an increase in FFLAS and a decrease in non-FFLAS business. However, it may also reflect behaviour from a regulated supplier seeking to increase profits. It is the risk of harm to end-users of FFLAS that the cost allocation IM is designed to, and should, mitigate. We have considered the risk of the allocation of costs driven by non-FFLAS services to FFLAS and the potential for a resulting cross-subsidisation of non-FFLAS services by FFLAS services as part of our review.

Corporate and CTO costs

4.42 Our draft decision is that, for PQP2, we continue to use a totex-based allocator for:

4.42.1 corporate costs as we did in PQP1 rather than a revenue-based allocator as proposed by Chorus; and

4.42.2 CTO costs as we did in PQP1 rather than a revenue-based allocator as proposed by Chorus.

4.42.3 For our draft decision and for the reasons set out below, we are not convinced that a revenue-based allocator is demonstrably reasonable and better meets our framework criteria compared to the totex-based allocator used in PQP1.

[83] We have focussed on whether the allocator type is demonstrably reasonable as we accept that the allocator values are objectively justifiable (ie, are calculated correctly and based on accurate records).

Chorus' proposal for corporate and CTO cost allocation for PQP2

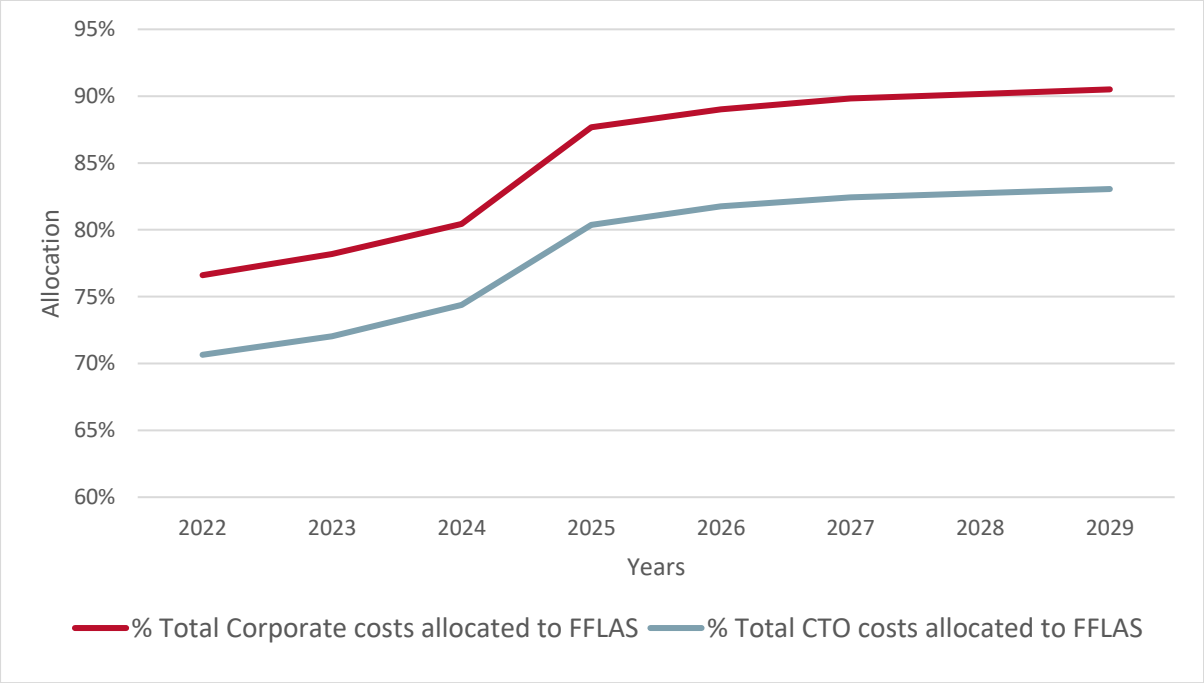
4.43 Chorus has proposed changing from a totex-based to a revenue-based allocator for certain opex costs affecting several parts of the company (key areas being corporate and CTO costs).[84]

4.44 This proposed change involves allocating underlying costs between FFLAS and non-FFLAS based on the share of Chorus' total revenue that FFLAS and non-FFLAS services generate. Given the high and increasing share of Chorus' revenue that FFLAS generates, this will mean a proportionately higher allocation of costs to FFLAS in PQP2 compared to PQP1 and the pre-implementation period.

4.45 This proposed change drives an upward step change in 2025, the start of PQP2. Our estimate of the difference between a totex allocator and revenue allocator approach for allocating CTO and corporate costs would on average be $54m: $16m FFLAS to non-FFLAS per annum under the draft decision (totex) versus $65m: $5m FFLAS to non-FFLAS per annum using the proposed change of allocator (revenue).

4.46 The impact of the proposed change on the proportion of the corporate and CTO unallocated cost by year allocated to FFLAS is shown in Figure 4.1 below.[85]

Figure 4.1 Impact of changing to revenue-based allocator on corporate and CTO FFLAS allocation



[84] We note that the following areas use a totex allocator to some degree - customer operations, product, sales & marketing, maintenance, network operations, asset management, corporate and technology. Chorus says that the revenue based allocator has been proposed "to better reflect the allocation of fixed, economic common costs in PQP2 and in some cases to reflect where cost could be driven by revenue". Chorus "Modelling and Cost Allocation report" (31 October 2023), at [25].

[85] The data in this chart is from Chorus "RT03 – Cost allocation regulatory template" (7 December 2023).

Use of a totex-based allocator

4.47 In support of its proposals on cost allocation for PQP2, Chorus provided a report from Incenta to demonstrate that the proposed change in allocator type is demonstrably reasonable, as required by the fibre IMs.[86,87] It also provided a report from Incenta ahead of PQP1. In demonstrating that the totex allocator was reasonable for use during the pre-implementation period and PQP1, Incenta argued against using a per connection allocator, stating that the fibre rollout would impact the level of shared costs:[88]

> The proposition that a per connection allocator would be neutral in relation to the avoidance of double-counting is only correct in a very limited circumstance. Specifically, a per connection allocator would only be expected to provide a recovery of cost overall in the circumstances where the "shared costs" that are to be allocated between copper and fibre are unchanged by the subsequent provision of fibre (i.e., rollout of the UFB), or what economists would call common costs.

4.48 Over the financial loss period and PQP1 Chorus' view was that totex was a reasonable proxy for the effort incurred in relation to corporate and CTO costs for providing each service. It stated that that this would likely change when the network (ie, UFB/FFLAS network) was largely constructed and in operation.[89] Chorus has now, ahead of PQP2, submitted that it is demonstrably reasonable to make this change (to a revenue-based allocator) for PQP2 given that the UFB rollout is complete.[90]

4.49 Chorus has also indicated that it has proposed this change following internal review with subject matter expert support and based on external advice from Incenta.

4.50 A key aspect of Incenta's reasoning ahead of PQP2 is a distinction between the treatment of shared costs that are likely to be incremental to the services, and those that are economic common costs.[91] The reasoning put forward in its report is that where costs are unaffected by the level of activity undertaken to provide each service, these costs are likely to be economic common costs.[92]

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86 *Fibre Input Methodologies Determination 2020* [2020], as amended on 28 June 2023, clause 1.1.4(2).

87 Incenta Economic Consulting "Cost allocation issues for RP2" (October 2023).

88 Incenta Economic Consulting "Certain cost allocation issues relevant to the IAV" (March 2021), at 7.

89 Incenta's report also proposed a totex allocator for the pre-implementation period and PQP1. Incenta Economic Consulting "Certain cost allocation issues relevant to the IAV", (March 2021).

90 Chorus "Modelling and Cost Allocation report" (31 October 2023), at 23 and 25.

91 Incenta Economic Consulting "Cost allocation issues for RP2" (October 2023), at [6].

92 Incenta Economic Consulting "Cost allocation issues for RP2" (October 2023), at [38(b)(ii)].

4.51 In PQP1, Incenta contended that a per connection allocator can only recover overall costs where shared costs to be allocated between copper and FFLAS are not changed by the provision of FFLAS (ie, where they are economic common costs). [93, 94] This, it stated, was not the case for the pre-implementation period and PQP1.[95]

4.52 Incenta now considers that the context under which cost allocation will be undertaken for PQP2 is likely to differ from that of the pre-implementation and PQP1 periods, and that shared costs are therefore now more likely to largely include common costs and a review of allocator is warranted. It has indicated that Chorus now has better ability to identify costs and the granularity of information has been improved.[96]

4.53 Incenta states in its report that this will permit a fuller review of costs to distinguish directly attributable costs from shared costs, and a better capacity to separate shared costs into those likely to be incremental to a service from those likely to be economic common costs.[97] Therefore, Incenta contends, with the change in context for PQP2 (ie, the UFB rollout is complete) and the greater capacity to separate out directly attributable costs and to divide shared costs between those that are "likely an incremental cost" and "likely an economic common cost" – a review of the use of the totex allocator is warranted.[98]

4.54 Key points raised by Incenta for the change from a totex allocator to a revenue allocator are: [99]

4.54.1 The rollout period has largely passed, the effort required to manage the rollout risk is lower, and so the resources applied to risk management have been redeployed.

4.54.2 Focus of the business has changed to optimising the use of the UFB network, and so the activities required for FFLAS are now much more similar to the activities required for the copper service.

4.54.3 As allocation is now being applied for future periods, Chorus has the capacity to use accounting records and other business information to attribute more costs directly to either FFLAS or copper, lowering the risk that shared costs in fact include costs that should be directly attributable to one service or the other.

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93 That is, an allocation of costs based on the ratio of connections to FFLAS services to total connections.
94 Incenta Economic Consulting "Certain cost allocation issues relevant to the IAV" (March 2021), at 7.
95 Incenta Economic Consulting "Certain cost allocation issues relevant to the IAV" (March 2021), at 8.
96 Incenta Economic Consulting "Cost allocation issues for RP2" (October 2023), at [9].
97 Incenta Economic Consulting "Cost allocation issues for RP2" (October 2023), at [9(a)].
98 Incenta Economic Consulting "Cost allocation issues for RP2" (October 2023), at [10].
99 Incenta Economic Consulting "Cost allocation issues for RP2" (October 2023), at [48].

4.54.4 Incenta has contended that there are now lower amounts of incremental costs likely to be included in shared costs. It has therefore suggested that shared costs are now more likely to largely include common costs.[100]

4.54.5 Incenta has therefore argued that a review is now required (for PQP2) to determine whether totex remains an appropriate allocator.

4.54.6 Key elements of Incenta's rationale for the change to a revenue-based allocator

4.55 The Incenta report considered what the best proxy allocator was to allocate common costs. It stated that the objective for the proxy allocator should be to allocate the common costs in a manner that permits them to be recovered overall.[101]

4.56 Incenta considered that "(t)he critical issue when deciding how costs should be allocated between FFLAS and non-FFLAS (principally copper) is the extent of the common costs that it is reasonable to assume can be recovered for the copper services".[102]

4.57 Incenta also observed that the amount of the cost from copper services that Chorus can recover is constrained by regulation which is not building blocks methodology (BBM) based. The cost it can recover from copper services cannot be simply observed and cannot be changed, given that those prices were not actually determined by a building block method but rather are a CPI-escalated version of prices originally determined according to a TSLRIC.[103]

4.58 Incenta's view is that the method that was applied to determine the copper prices suggests that the starting point for the common cost allocator should be a per subscriber allocation. The logic for applying this allocator was that:

4.58.1 the prices for copper services were set by calculating the cost of constructing a new network to service the entire population, and then dividing by total customers to derive the price; and

4.58.2 the share of common costs recovered through copper would be equal to the share of customers that remain on the copper network.[104]

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100 Incenta Economic Consulting "Cost allocation issues for RP2" (October 2023), at [49] and Figure 4.

101 Incenta Economic Consulting "Cost allocation issues for RP2" (October 2023), at [52].

102 Incenta Economic Consulting "Cost allocation issues for RP2" (October 2023), at [53]. We note that Incenta does not further define "reasonable" here, however the context of the discussion in other parts of the paper suggests Incenta deems a reasonable allocation would only allocate costs to copper to the extent those costs can be recovered from copper revenues.

103 Incenta Economic Consulting "Cost allocation issues for RP2" (October 2023), at [34c].

104 Incenta Economic Consulting "Cost allocation issues for RP2" (October 2023), at [53].

4.59 It then noted that there are shortcomings to using a per subscriber allocation. A particular limitation is lack of homogeneity:[105]

> A per subscriber allocation implicitly assumes that all services have an associated subscriber, and the service in question is homogeneous. However, Chorus sells a material amount of FFLAS and non-FFLAS services that do not have an associated subscriber and the non-homogeneity of services to subscribers could increase in the future if extensive bypass of Chorus' layer 2 equipment occurred and sales of PONFAS increased in tandem.

4.60 Incenta therefore proposed the use of a revenue-based allocator for PQP2, that it expected to be a close proxy to relative subscribers. This allocator, it contended, automatically includes non-subscriber services and addresses the potential for the nature of services to change over time.[106]

4.61 Incenta concluded:[107]

> Compared to totex, revenue (or subscribers) is likely to be more indicative of the amount of common cost that can be recovered from copper against fibre. The revenue from copper reflects prices that were based on a measure of cost a particular point in time (i.e., at the time the Final Pricing Principle was determined), but those prices now are fixed (save for escalation for CPI). Thus, there is no reason to expect there to be a clear relationship between the extent of common cost that Chorus is able to recover from copper services and the current expenditure level in the copper business.

4.62 Our draft decision is not to change from a totex-based allocator.

4.63 For the pre-implementation period and for PQP1 we accepted Chorus' proposal of totex as a demonstrably reasonable proxy allocator for shared corporate and CTO costs that are a mixture of variable and economic common costs. We therefore require convincing evidence that a change from the totex allocator to an alternative allocator is objectively justified and demonstrably reasonable. This is particularly important where the proposed change materially shifts the allocation of costs to FFLAS.

4.64 Incenta argues that the shared corporate and CTO costs for PQP2 comprise common costs and some incremental costs, and that it is not feasible to directly attribute to FFLAS or non-FFLAS. We accept this assertion. It is commonly accepted that incremental costs should be allocated to the service that caused them and common costs should be allocated in such a way that they are only recovered once. Incenta sets out a version of these cost allocation principles in its report. The implication of these is that at a minimum the value of the shared corporate and CTO costs allocated to each service should be at least equal to the incremental costs.

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105 Incenta Economic Consulting "Cost allocation issues for RP2" (October 2023), at [54].
106 Incenta Economic Consulting "Cost allocation issues for RP2" (October 2023), at [55].
107 Incenta Economic Consulting "Cost allocation issues for RP2" (October 2023), at [56].

4.65 We do not consider that Chorus (or Incenta's report) has demonstrated that the allocation to non-FFLAS business based on a revenue allocator is at least as great as the incremental opex in shared opex costs driven by ongoing management of the copper network, which despite the falling number of connected customers remains a substantial network. We therefore do not accept that a revenue-based allocator is demonstrably reasonable at this time. A key foundation of Incenta's report proposing the change in proxy allocator is that it is critical that the allocator determines the extent of the common costs that "it is reasonable to assume can be recovered for the copper services".[108]

4.66 We must make a decision that we consider best gives, or is likely to best give, effect to the purpose in s 162 of the Act. Section 162 sets out that the purpose of Part 6 is to promote the long-term benefit of end-users in markets for FFLAS by promoting outcomes that are consistent with outcomes produced in workably competitive markets, so that regulated fibre service providers allow end-users to share the benefits of efficiency gains, and are limited in their ability to extract excessive profits (see s 162(c) and (d)). We consider that if shared costs in the CTO and corporate areas continue to have a material level of variable (incremental) costs, including costs driven by copper withdrawal work, treatment of these costs as simply common costs may result in the allocation of non-FFLAS costs to FFLAS. We do not consider that the proposed change to a revenue-based allocator (and the potential allocation of non-FFLAS costs to FFLAS) would best give, or is likely to best give effect to ss162 (c) and (d).[109]

4.67 While copper network customer base and revenues are in decline, copper is still an important feature of Chorus' business given the remaining extent of the network. To the extent that required management of the withdrawal of the copper network is increasing shared costs in the corporate and CTO areas above 'business as usual' levels, a revenue-based allocator is likely to allocate a significant portion of the increased shared costs, which are incremental costs of copper, to FFLAS compared to a totex approach.

4.68 An over-allocation of shared costs where those costs are driven by non-FFLAS services to Chorus FFLAS, will inflate Chorus' allowable revenue for FFLAS services, even if the full allowable revenue is not recovered in PQP2, but is washed up for a future period. We consider this will have negative implications for workable competition given Chorus holds a significant portion of the wholesale market for FFLAS and its pricing will influence the general market price.

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108 Incenta Economic Consulting "Cost allocation issues for RP2" (October 2023), at [53].

109 The proposed change to a revenue-based allocator risks end users not being able to share in the benefits of efficiency gains as it could result in over allocation of non-FFLAS costs to FFLAS. Furthermore, it may not limit Chorus' ability extract excessive profits as any under-allocation of costs to non-FFLAS services may allow them to earn profits beyond those available in a workably competitive market.

4.69 We also note that the totex allocator did contribute to an overall allocation of costs to FFLAS beyond the amount of revenue FFLAS services generated during the pre-implementation period. The costs that were captured in the loss asset or the wash-up for not achieving allowable revenue were driven by shared costs that were in fact incremental to the UFB rollout. The use of the totex allocator as a proxy reflected the high degree of effort to manage the UFB rollout, which in turn raised shared costs. Allocation via a per user allocator would have over-allocated costs to non-UFB services. We now see the risk of the reverse situation, where a revenue-based allocator could over allocate costs to FFLAS.

4.70 We note that the existing totex allocator currently allocates some 80% of costs to FFLAS and that this will increase to 100% as copper is withdrawn over coming regulatory periods. We do not accept that Chorus has provided convincing evidence that the proposed allocator is demonstrably reasonable, as required by the fibre IMs. The Chorus proposal will accelerate the transfer of cost recovery from copper to FFLAS while Chorus' corporate and CTO functions continue to manage material copper totex costs as it proceeds with the withdrawal of the copper network. We are not persuaded that less than 11% of Chorus shared corporate costs (under a revenue-allocation approach) are incremental costs driven by ongoing management of the copper network.

CTO costs

4.71 Incenta states that "with greater capacity stability in Chorus's activities and capacity to attribute costs directly to services, it would be expected that the extent of the incremental cost that is contained in the shared costs for certain cost items would fall".[110]

4.72 When discussing its review of the allocation of shared costs in the CTO business unit, Incenta states that the directly attributable costs (to FFLAS and non-FFLAS combined) accounted for approximately 30% of the total CTO costs.[111] Based on the statement above, we would expect to see the amount of costs in the CTO unit that are directly attributed rise, or at the very least stay stable, now that the UFB rollout has finished and based on the forecast that the level of incremental costs within the remaining shared costs is falling, as Incenta suggests.

110 Incenta Economic Consulting "Cost allocation issues for RP2" (October 2023), at [49].

111 Incenta Economic Consulting "Cost allocation issues for RP2" (October 2023), footnote 30.

4.73 However, the regulatory templates originally submitted by Chorus suggest that the directly attributed costs in the technology area are expected to fall over the PQP2 period. While directly attributed costs represent slightly more than 30% of total (unallocated) costs during PQP1, this ratio falls to 25% in PQP2.[112, 113]

4.74 The value of shared costs in the CTO area appears to be relatively stable between PQP1 and PQP2 while the proportion of directly attributed costs declines, leading to a slight overall decline in CTO costs. Decline in total (unallocated) technology opex appears to be the result of a fall in directly allocated costs. This contrasts with Incenta's expectation that a reduction in shared costs would be the result of reduced incremental shared costs within the shared costs, as a result of the greater direct attribution of previously shared costs.

4.75 Incenta suggests that its survey of Chorus subject matter experts implies an overall proportion of fixed costs of approximately 80%, with the variable costs of 20%.[114] It then takes the view that "the dominance of common costs in the CTO shared costs justifies applying the common cost allocator (ie, a revenue-based allocator) to the whole of these costs".[115]

4.76 Incenta then says that an attempt to determine a different driver to what it estimates is 20% of CTO costs that are shared would be:

4.76.1 complex, as some of the drivers may be hard to derive; and

4.76.2 sensitive to changes in how CTO delivers its services over time.

4.77 For PQP2 Incenta bases its proposal to change from the totex allocator used in PQP1 to revenue as the allocation method based on an expectation that the extent of shared costs that are incremental costs will have fallen due to incremental costs becoming more likely to be directly attributed as cost granularity improves. However, shared costs appear to have risen as a proportion of total CTO costs. This may indicate increased shared costs relating to copper withdrawal.

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112 Chorus "RT03 – Cost allocation regulatory template" (7 December 2023).

113 We note that unallocated costs are either directly attributed to FFLAS, directly attributed to services that are not regulated FFLAS or have cost allocators applied to proportionately allocate costs between FFLAS services and services that are not regulated FFLAS. See *Fibre Input Methodologies Determination 2020* [2020], as amended on 28 June 2023, clauses 2.1.1(2) - 2.1.1(5).

114 Incenta Economic Consulting "Cost allocation issues for RP2" (October 2023), at [58]-[61]

115 Incenta Economic Consulting "Cost allocation issues for RP2" (October 2023), at [62].

4.78 We also observe, based on the originally submitted regulatory templates, that in the technology opex category some 82% of 'shared' costs' are forecast to be allocated to FFLAS in 2024, whereas, once the revenue allocator is adopted for PQP2, the allocation rises to 88% in 2025 and averages 89% across PQP2.[116]

4.79 If some 80% of shared technology costs are fixed and 20% are variable, treating all of these costs as fixed may materially impact the allocation of costs between FFLAS and non-FFLAS. For example, if we apply a 90% (based on a revenue-share for FFLAS of 90%) allocation to 80% of shared costs and then split the remaining 20% of shared costs 50/50, the total allocation would be 82%, materially lower than simply treating all costs as if they are fixed and applying an allocation of 90%.

4.80 Noting the fact that management effort will now likely be directed towards the closedown of the copper network and the resulting challenges that will pose for Chorus, we do not consider that Chorus has demonstrated that a revenue-based allocator is demonstrably reasonable for CTO costs.[117]

Corporate costs

4.81 In reviewing corporate costs, Incenta similarly recommends simply applying the revenue-based allocator to the entirety of the costs.[118] It notes that it sees revenue as an appropriate allocator for common costs, and these are likely to compose the majority of corporate costs. It also views revenue as a reasonable proxy for the true causal allocator for the majority of the remaining (variable) costs and a reasonable proxy (albeit where preferable alternatives might exist) for the remainder of the cost items.

4.82 We observe that some 80% of corporate costs are forecast to be allocated to FFLAS in 2024, whereas the change to a revenue-based allocator will raise the allocation to a forecast average of 89% in PQP2. Due to the base-step-trend (BST) forecasting approach, and the use of the 2022 year as the base, which was the last year of the UFB programme, any fall in incremental corporate costs resulting from the conclusion of the UFB programme are not included in the forecasts. In addition, we do not have visibility of incremental corporate costs being driven by the remaining provision and wind-up of the copper network. We consider this further reason to retain the totex approach.

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116 The changes in PQP2 capex due to Chorus' change to the fibre frontier allowance within base capex and Commission initiated reductions in capex and opex will impact the calculation of the totex allocator for PQP2. Therefore, the results of the overall allocation now based on totex will also be significantly impacted by these revisions.

117 We note that Chorus expects to retire its copper network in Chorus UFB areas by 2026, followed by the copper network in LFC UFB areas and then completely retired by the early 2030s. See Chorus "FY23 results" (21 August 2023), slide 27.

118 Incenta Economic Consulting "Cost allocation issues for RP2" (October 2023), at [67].

4.83 Noting the fact that management effort will now likely be directed towards the closedown of the copper network and the resulting challenges that will pose for Chorus, we do not consider that Chorus has demonstrated that a revenue-based allocator is demonstrably reasonable for corporate costs.[119]

Co-location cost allocation

4.84 Our draft decision is to adopt Chorus' proposed allocation of co-location establishment and relinquishment costs in proportion to the share of revenue from the charges for co-location services of FFLAS compared to non-FFLAS.

4.85 Chorus has proposed a change from direct attribution of co-location costs to an allocation of costs. Currently, co-location operating costs have been attributed on the assumption that the co-location services are wholly non-FFLAS, meaning costs are directly attributed to non-FFLAS services.[120] However, Chorus has determined that some of the co-location space is used for FFLAS and revenues from co-location services are included in its FFLAS total revenues.

4.86 The proposed change would mean an allocation of co-location costs, apportioned based on a split of FFLAS/non-FFLAS revenue for co-location, will now be made to FFLAS. We consider an allocation based on revenue, which also varies with the level of service provided, is appropriate, given the costs of co-location establishment and relinquishment will vary with the level of service provided.[121]

4.87 We consider for our draft decision that changing to an allocation of co-location costs, apportioned based on a split of FFLAS/non-FFLAS revenue for co-location, is demonstrably reasonable based on these factors.

Marketing and sales personnel costs allocation

4.88 Our draft decision is to adopt Chorus' proposed change to directly attribute to FFLAS or non-FFLAS of a number of roles in the product, sales and marketing area.

4.89 Chorus has proposed to change some of the marketing and sales personnel costs to directly attributable and has proposed to keep the cost allocator type for costs not directly attributable unchanged.

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119 We note that Chorus expects to retire its copper network in Chorus UFB areas by 2026, followed by the copper network in LFC UFB areas and then completely retired by the early 2030s. See Chorus "FY23 Results" (21 August 2023), slide 27.

120 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 2.1.1(3)(a).

121 Note that in contrast to the Corporate and CTO costs, the costs for co-location will vary with the level of services provided, as will the revenue generated.

4.90 The direct attribution change reflects an updated view of the number of roles that are exclusively related to either FFLAS or non-FFLAS activities. This update has the effect of reducing the amount of shared costs that need to be allocated using a cost allocator.

4.91 We consider taking steps to improve 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. We therefore conclude for our draft decision that the change to direct attribution of these roles is demonstrably reasonable.

Costs allocated by service company overhead

4.92 Our draft decision is to adopt the proposed change to base the allocation of service company overhead costs on the split of FFLAS versus non-FFLAS service company totex rather than the current split based on service company opex.

4.93 The proxy service company overhead allocator is applied to opex categories reflecting activities related to service company management. These are largely undertaken by Chorus staff, and span maintenance-related expenditure (opex) and build-related expenditure (capex).

4.94 Chorus has proposed a change to the calculation of the allocator value for the service company overhead allocator.[122] For PQP1 the value was calculated based on the ratio of maintenance-related opex related to FFLAS to total maintenance-related opex. Chorus has proposed that this calculation is based on the ratio of FFLAS to non-FFLAS service company totex (for PQP2).

4.95 Chorus expects PQP2 opex incurred for each service for the BBM opex categories in customer and network operations (net personnel costs – network) and CTO (common – schedules) to vary somewhat depending on the effort required to manage the service company expenditure. It has proposed using service company totex as a proxy for this during PQP2.

4.96 We have clarified in a request for further information to Chorus that the tasks undertaken in relation to the management of service companies do scale with cost of the service company work. We consider adopting a service company totex calculation is demonstrably reasonable, given the service company work covers both opex and capex. We are satisfied that this change is demonstrably reasonable and that it is consistent with the overall approach in PQP1 to use the ratio of the allocated spend with service companies to determine the allocation of the service company overhead.

[122] Chorus "Modelling and Cost Allocation report" (31 October 2023), at 20.

Cost escalation

Draft decision

4.97 Our draft decisions in relation to cost escalation are to:

4.97.1 use the set of escalation indices proposed by Chorus (which is the same set used for PQP1 – see Table 4.5 below);

4.97.2 use the escalation index forecasts prepared by NZIER, similar to what was done for PQP1;

4.97.3 use the same usage assumptions as used in PQP1, and not adopt Chorus' proposed changes for PQP2; and

4.97.4 update all of the escalation index forecasts, as well as the NZD/USD exchange rate forecast, for the final expenditure allowance.[123]

Table 4.5 Draft set of escalation indices[124]

Index	CAGR[125]
PPI civil	3.9%
CGPI	3.1%
LCI professional	2.9%
LCI all	2.7%
CPI[126]	2.7%
PPI all	2.6%
PPI rent	1.7%
PPI O E&E (PPI Outputs electrical and equipment)	1.2%
U.S. Fibre	-1.1%

What Chorus proposed

4.98 Chorus has proposed using the same set of escalation indices for PQP2 as those used for PQP1. As it did for PQP1, NZIER has prepared the forecasts for the escalation indices for PQP2. These indices and forecasts are summarised in Table 4.5 above.

4.99 Chorus has proposed changing the usage assumptions to those determined as part of our PQP1 final decision. These are set out in Table 4.6 and Table 4.7 below.[127]

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123 This update will be done to match the forecast CPI that is used for input cost inflation with the CPI that is used to smooth the revenue path. In practice, we expect to use NZIER Quarterly Prediction for September 2024, due in August 2024.

124 These are the same as the indices proposed by Chorus in its 2023 expenditure proposal and remain unchanged from PQP1.

125 Compound Annual Growth Rate for 2022-2028.

126 'Just CPI' in Chorus "RT02 – Cost escalation regulatory template", (31 October 2023).

127 Chorus "RT02 – Cost escalation regulatory template" (31 October 2023).

Table 4.6 Proposed usage assumption for capex

Category	Sub-category	LCI prof	PPI all	PPI civil	U.S. Fibre	PPI rent	PPI O E&E	LCI all	CGPI	Just CPI
Extending the network	Augmentation	5%	-	71%	5%	-	-	-	-	19%
	New property developments	20%	-	60%	-	-	-	-	-	20%
	UFB communal	-	-	-	-	-	-	-	-	100%
Installations	Complex installations	20%	-	61%	-	-	-	-	-	19%
	Standard installations	22%	-	1%	3%	-	3%	-	-	71%
IT and support	Business IT	90%	-	-	-	-	7%	-	3%	-
	Corporate IT	3%	17%	14%	-	65%	-	-	-	-
	Network and customer IT	90%	-	-	-	-	1%	-	9%	-
Network capacity	Access	4%	-	-	-	-	69%	-	-	27%
	Aggregation	3%	-	-	-	-	64%	-	-	33%
	Transport	13%	-	-	-	-	57%	-	-	30%
Network sustain and enhance	Field sustain	7%	1%	43%	3%	-	-	-	1%	45%
	Relocations	12%	-	48%	8%	-	-	-	-	32%
	Resilience	5%	-	80%	5%	-	-	-	-	10%
	Site sustain	9%	24%	16%	-	-	21%	-	-	30%
Leases		-	-	-	-	-	-	-	-	100%

Table 4.7 Proposed usage assumption for opex

Category	Sub-category	LCI prof	PPI all	PPI civil	U.S. Fibre	PPI rent	PPI O E&E	LCI all	CGPI	Just CPI
Customer	Customer operations	-	2%	-	-	-	-	85%	-	13%
	Product, sales & marketing	-	19%	-	-	-	-	80%	-	1%
Network	Maintenance	-	0%	-	-	-	-	1%	-	99%
	Network operations	-	30%	-	-	-	-	61%	-	9%
	Operating costs	-	36%	-	-	-	-	54%	-	10%
Support	Asset management	-	7%	-	-	-	-	92%	-	0%
	Corporate	-	20%	-	-	-	-	72%	-	8%
	Technology	-	40%	-	-	-	-	60%	-	-

Independent Verifier findings

4.100 The Independent Verifier did not provide an opinion on the suitability of the set of indices, or the reasonableness of the usage assumptions proposed by Chorus.

4.101 The Independent Verifier did review the NZIER report and considered its forecasts to be "reasonably based having regard to expected economic conditions in PQP2".[128] It verified that the "NZIER cost escalation forecasts satisfy the assessment factor regarding reasonableness of key assumptions and methodologies".[129]

Stakeholder views

4.102 Chorus was the only stakeholder to mention cost escalators in its submission on our PQP2 expenditure consultation paper. Chorus submitted its support for our intention to use the 2022 calendar year as the base year and that it may be appropriate to consider 2023 actuals, when available, and update cost escalators to reflect up-to-date values during the decision-making process in 2024.[130]

Analysis

Set of indices

4.103 The set of indices proposed in Table 4.5 (above) is the same set used in PQP1. We believe there is no material change to Chorus' business to warrant a reconsideration of this set.

NZIER Index forecasts

4.104 The index forecasts were prepared by NZIER, which is a reputable specialist consulting firm and has prepared these forecasts for Chorus and Transpower. Moreover, the Independent Verifier verified the reasonableness of these forecasts.

Change to usage assumptions

4.105 As set out above, Chorus proposed different usage assumptions to those used for PQP1.

4.106 We focused our analysis on the following questions:

4.106.1 What are the key changes from PQP1, and are they adequately justified?

4.106.2 What is the impact of using the PQP1 usage assumptions instead of the proposed values for PQP2?

4.107 A key change in Chorus' proposal compared with PQP1 is a more extensive use of CPI to inflate a portion of each expenditure sub-category. This can be seen by comparing Tables 4.6 and 4.7 to Table 4.8 and 4.9.

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128 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 219.

129 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 219.

130 Chorus "Chorus submission on PQP2 proposal" (14 December 2023), at [8].

Table 4.8 Final PQP1 usage assumptions - capex[131]

Category	Sub-category	LCI prof	PPI all	PPI civil	U.S. Fibre	PPI rent	PPI O E&E	LCI all	CGPI	Just CPI
Extending the network	Augmentation	2%	-	7%	3%	-	-	-	88%	-
	New property developments	10%	-	10%	10%	-	-	-	71%	-
	UFB communal	4%	-	11%	5%	-	-	-	80%	-
Installations	Complex installations	16%	-	4%	4%	-	4%	-	72%	-
	Standard installations	11%	-	4%	4%	-	6%	-	0%	75%
IT and support	Business IT	79%	-	-	-	-	3%	-	18%	-
	Corporate IT	-	3%	-	-	-	-	-	97%	-
	Network and customer IT	90%	-	-	-	-	3%	-	7%	-
Network capacity	Access	40%	-	-	-	-	52%	-	8%	-
	Aggregation	25%	-	-	-	-	63%	-	12%	-
	Transport	31%	-	-	-	-	69%	-	-	-
Network sustain and enhance	Field sustain	18%	2%	40%	4%	-	-	-	35%	-
	Relocations	2%	-	10%	5%	-	-	-	83%	-
	Resilience	25%	-	59%	5%	-	2%	-	10%	-
	Site sustain	-	100%	-	-	-	-	-	-	-
Leases		-	-	-	-	-	-	-	100%	-

Table 4.9 Final PQP1 usage assumptions – opex[132]

Category	Sub-category	LCI prof	PPI all	PPI civil	U.S. Fibre	PPI rent	PPI O E&E	LCI all	CGPI	Just CPI
Customer	Customer operations	43%	23%	-	-	-	-	34%	-	-
	Product, sales & marketing	48%	21%	-	-	-	-	31%	-	-
Network	Maintenance	-	1%	-	-	-	-	2%	-	97%

131 Chorus "RT02 – Cost escalation regulatory template" (10 February 2021).
132 Chorus "RT02 – Cost escalation regulatory template" (10 February 2021).

	Network operations	20%	14%	-	-	-	-	21%	-	44%
	Operating costs	-	42%	-	-	49%	-	9%	-	-
Support	**Asset management**	84%	6%	-	-	-	-	9%	-	-
	Corporate	57%	13%	-	-	7%	-	20%	-	2%
	Technology	-	40%	-	-	-	-	60%	-	-

4.108 With respect to the non-CPI indices, Chorus' proposed usage assumptions have also changed for PQP2. We appreciate changes could come from:

4.108.1 changes to Chorus' underlying cost structure (eg, the inputs to a typical type of project have changed due to a different method of undertaking that project);

4.108.2 changes to the mix of projects for a given sub-category; or

4.108.3 better understanding of the relationship between available statistical indices and movements in Chorus' input costs.

4.109 However, Chorus has not provided an explanation for its proposed changes.

4.110 Using the RT02 Cost escalation template, we ran a scenario applying the usage assumptions used in PQP1. This scenario yielded a minimal difference: an additional nominal capital expenditure allowance of $0.2m for PQP2, and a decline of $0.5m in nominal operating expenditure allowance.

4.111 In the absence of further information from Chorus to satisfy us that its proposed change should be adopted, our draft decision is to use the same usage assumptions applied in PQP1 for consistency of approach.

Deliverability

4.112 We consider that the overall risk to deliverability of Chorus' opex and capex investment plans over PQP2 is likely to be low.

4.113 We have considered deliverability as a cross-cutting issue as it impacts all aspects of Chorus' expenditure proposal. It is also an assessment factor to consider under clause 3.8.6(1)(k) and as such, we have considered it in expenditure sub-categories as necessary.

4.114 We note that the primary risk in relation to deliverability of Chorus' opex and capex investment plans would be any interruptions to the provision of services by FSPs, which could be caused by an insolvency event. While this may have a short-term impact, our view is that over the PQP2 period it is unlikely to be significant. The other risk to deliverability of Chorus' opex and capex investment plans likely stems from resourcing requirements or procurement issues.

4.115 The risk associated with deliverability is that if Chorus cannot deliver on its investment plans, expenditure could be over-forecast, and therefore revenue could be set too high, which could lead to excessive profits.

What Chorus proposed

4.116 Chorus has provided an overview of its main delivery areas which comprise the bulk of the capex and opex work in its PQP2 plan. Key delivery areas (and work largely outsourced to external service providers) include:[133]

4.116.1 in field network – accounts for 37% of Chorus' planned capex and opex expenditure in PQP2;

4.116.2 site services – accounts for 6% of Chorus' planned capex expenditure in PQP2; and

4.116.3 network capacity investment – accounts for 22% of Chorus' planned capex expenditure in PQP2.

4.117 For each main delivery area, Chorus has identified key risks and mitigations to the deliverability of each main delivery area. It is confident that it can deliver the investments as described in its proposal.[134]

Independent Verifier findings

4.118 The Independent Verifier found that Chorus' deliverability satisfied the evaluation criteria. This finding was subject to Chorus confirming that technician shortage driven deliverability challenges are fully resolved and that contractors have the capacity to undertake the fibre frontier project.[135] In forming this opinion the Independent Verifier considered assessment factor (k) under clause 3.8.6 of the fibre IMs.

4.119 The Independent Verifier identified the following risks:[136]

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133 Chorus "Our Fibre Plans" (31 October 2023), at 153-164.

134 Chorus "Our Fibre Plans" (31 October 2023), at 17.

135 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 7.

136 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 109.

4.119.1 reduction in the number of FSPs from three to two;

4.119.2 technician shortage in PQP2 affected Chorus' delivery of FFLAS – although Chorus claims this is now easing; and

4.119.3 deliverability alongside its proposed fibre frontier investment (which is now largely withdrawn from its PQP2 proposal).

4.120 The Independent Verifier concluded that it did not have major concerns about Chorus' capability to deliver its PQP2 programmes given the comparative size to PQP1.[137] However, the Independent Verifier suggested that a cross-check of deliverability closer to the commencement of the PQP2 is important as new field service agreements are still bedding down.[138]

Stakeholder views

4.121 We did not receive any submissions from stakeholders on deliverability.

Analysis

4.122 We have taken a top-down approach to reviewing Chorus' deliverability risk by considering the three main delivery areas: field network, site services, and network capacity investment.

4.123 We acknowledge the risks identified for each delivery area include contractor insolvency, shortage of technicians, and supply chain issues driven by Covid-19.

4.124 We also consider that, with the reduction in the scope of the fibre frontier investment, the primary risk for deliverability is an interruption to the provision of services by FSPs, which could be caused by an insolvency event. While this may have a short-term impact our view is that it is unlikely to be significant over the PQP2 period:

4.124.1 the New Zealand based field force is likely to remain here, provided the need for the work remains, although it may end up working for a different company;

4.124.2 Chorus has a strong incentive to maintain a field force that is sized to deliver the work, and has a history of being actively engaged in this; and

4.124.3 the need to deliver quality outcomes means that Chorus will continue to be incentivised to maintain its field force whether through a contract model or via inhouse resources.

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137 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 24.

138 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 24.

4.125 Accordingly, we agree with the Independent Verifier's conclusion and do not have major concerns about Chorus' capability to deliver the PQP2 capex and opex programmes.[139]

Demand forecasting

Draft decision

4.126 Our draft decision is to rely on the following in analysing Chorus' expenditure proposal:

4.126.1 the connection forecasts produced by Chorus adjusted for our assessment of the impacts of the new information in relation to fibre frontier; and

4.126.2 the bandwidth forecast produced by Chorus to forecast network capacity capex for PQP2.

Chorus' demand forecasting suite

4.127 The Table 4.10 provides detail on the different models that make up Chorus' demand forecasting suite for its PQP2 expenditure proposal.[140]

Table 4.10 Chorus demand forecasting suite

Model	Description	Key Outputs	Other Models informed	Expenditure sub-categories informed
Market	An input into the new property development (NPD) model and connections model	Residential address forecast	NPD model[141]	The market model does not directly inform any capex sub-categories
		Chorus copper and fibre broadband connections	Connections model	
New Property Development	Forecasts the demand to lay fibre into NPDs	NPD forecast	Sales & operations planning (S&OP) model	Extending the Network: NPD capex
S&OP	Forecast fibre installations across its network	Installations forecast	Connections model[142]	Installations capex (under connections baseline capex)

139 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 24.

140 Chorus "Our Fibre Plans" (31 October 2023), at 53-54; and Network Strategies "Chorus demand projections – Working paper" (1 February 2024), at 2-3.

141 The NPD model provided links to an earlier version of the Market model.

142 The installations data within the S&OP model we received does not align with the Connections model.

Connections	Forecasts connections across its fibre network	Connections forecast	None	The output of the Connections model is used as an allocator for Customer opex. Incentives capex
Bandwidth	Forecasts regional bandwidth	Bandwidth forecast	The bandwidth model does not inform other models	None[143]

Key features of Chorus' forecasts

4.128 Two primary forecasts are derived from Chorus' modelling suite;

4.128.1 connections forecasts; and

4.128.2 bandwidth forecasts.

4.129 Several versions of each forecast are used at different points within Chorus' proposal, including a mix of national-level forecasts, and Chorus-only forecast quantities.

Connections forecasts

4.130 Within its proposal Chorus stated that:

4.130.1 The volume of NPD demand is expected to decline over PQP2 after historically high levels of NPD demand seen from 2020 to 2022.[144]

4.130.2 The volume of new fibre installations will continue to decline from the peak seen in 2018 to 2019.[145] This is mainly driven by the falling demand for NPDs.

4.130.3 The monthly growth in FFLAS connections is expected to continue to decline over PQP2, following the trajectory in PQP1.[146]

[143] Chorus on page 54 of its Our Fibre Plans document claims that the Bandwidth model is used to inform the Network Capacity capex, however in RFI #53 Chorus states that the Bandwidth model is only used as an input into the investment and capacity planning process. Furthermore, we found in our review of Network Capacity capex that Chorus did not use the output of the Bandwidth model to inform the capex.

[144] Chorus "Our Fibre Plans" (31 October 2023), at 74.

[145] Chorus "Our Fibre Plans" (31 October 2023), at 82.

[146] Chorus "Our Fibre Plans" (31 October 2023), at 90.

Bandwidth forecasts

4.131 Chorus stated that the average throughput per user (ATPU) and the total peak traffic on the network is forecast to grow by 20.6% per annum and 25% per annum respectively from 2022 to 2029.[147]

Independent Verifier findings

4.132 The Independent Verifier verified that Chorus' demand forecasts allow it to develop PQP2 expenditure forecasts that satisfy the evaluation criteria.[148] In forming this opinion the Independent Verifier considered assessment factor (t) under clause 3.8.6(1) of the fibre IMs. The Independent Verifier considered that Chorus' demand forecasts have solid foundations and can be relied upon when developing PQP2 forecasts.

4.133 The Independent Verifier also considered the forecasting methodologies that Chorus used in producing its demand forecasts:[149]

4.133.1 The Independent Verifier agreed with Chorus that the use of the exponential smoothing time series modelling for the bandwidth model is reasonable for a stable trend series where future movements are dependent on past changes observed in the data. However, the Independent Verifier recognised that if there is persistent increased volatility of ATPU and peak throughput in the data set, then this approach will become less reliable in forecasting bandwidth demand.

4.133.2 The Independent Verifier believed that Chorus should use probabilistic modelling techniques to provide a cross-check for bandwidth forecasts in the face of the increased volatility in customer data usage and peak throughput that has been experienced.[150]

4.134 It also commented that it believes Chorus should look at developing a single demand forecasting handbook during PQP2 to set out the various demand forecasting methodologies, their inter-relationships, and the details of supporting documents.[151]

Stakeholder views

4.135 We did not receive any submissions from stakeholders on demand forecasting.

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147 Chorus "Our Fibre Plans" (31 October 2023), at 98.

148 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 60 and 62.

149 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 61-62.

150 Chorus intends to look at incorporating probabilistic modelling techniques in the future.

151 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 62.

Analysis

4.136 We consider that Chorus' forecast of total connections is reasonable (assessment factors (b), (e), and (t)), and accordingly meets the evaluation criteria of the capital expenditure objective and reflects good telecommunications industry practice as set out in clause 3.8.5 of the fibre IMs.

4.137 While there are a number of issues with Chorus' forecast modelling, we consider that the errors and inconsistencies within the models used to calculate Chorus' connections forecast offset each other and the overall outcome from the models for total connections is likely to be reasonable.

4.138 There are also a number of issues with Chorus' bandwidth forecast, which appear to have a material impact. However, as we have discussed at paragraph 5.185.2, this forecast has limited to no impact on PQP2 expenditure. We therefore propose to use it for the purposes of our draft decision.

4.139 In considering whether Chorus' demand forecasting models have met the capital expenditure objective, we have had regard to the assessment factors in clauses 3.8.6(1)(b), (e), and (t) of the fibre IMs.

Our high level analysis across Chorus' demand forecasts, assessment factor (b)[152]

4.140 In Our Fibre Plans Chorus stated that it has applied layers of governance and challenge to the development of its models.[153] This includes peer reviews, ex-post forecast accuracy reviews, output challenge rounds, discussions with international peers (NBN Australia and TDC NET Denmark), and challenge rounds on the assumptions and methodologies used.

4.141 However, our evaluation of the models has found a significant number of issues and inconsistencies across the different models that we consider indicate that governance and processes applied by Chorus need improvement. Examples of these issues are highlighted in Table 4.11.

Table 4.11 Issues across Chorus' demand forecasting models

Issues across the models	Examples
The connections data used as inputs across the models does not match the output of the connections model.	National forecasts of fibre connections in the S&OP model are lower than those from the Connections model – by [ ]% or [ ] connections in 2027.

[152] Assessment factor (b) - governance relating to the proposed capex, including evidence that appropriate policies and processes have been applied.

[153] Chorus "Our Fibre Plans" (31 October 2023), at 55-56.

Overuse of hardcoded figures with no source and underlying methodology.	An input to the connections model is the set of forecasts for fibre and copper connections. These figures are hardcoded with no visibility of how the forecasts were derived.
The models have differing characteristics in terms of data frequency, latest actual data used and the forecast period.	The NPD model, S&OP model and the connections model uses monthly data. Whereas the Market model is quarterly and the bandwidth model is half-yearly.
The models do not follow a set structure and format.	Line items of the bandwidth model are not easily understood. The sheets are also not always labelled as inputs or outputs. These issues make the model hard to understand and follow.

Analysis of the connection forecasts (assessment factors (e) and (t))

4.142 We have considered the methodology and assumptions utilised in Chorus' connection forecasts and the approach Chorus has used to forecast demand (assessment factor (e) and (t)). In our view there are a considerable number of issues and inconsistencies.

4.142.1 the assumed split across Chorus UFB, other LFC UFB and outside UFB zones is not supported by evidence and appears to be inconsistent with data reported by the Crown Infrastructure Partners (CIP) connectivity reports and Chorus' financial statements; and

4.142.2 in several cases there is no explanation or evidence provided for why connections associated with specific revenue lines are changing or appear to be retired.

4.143 However, our analysis has shown that, while there are a number of identified issues with the market and connection models, the combined impact of these issues on the total (copper and fibre) connections forecast in the Chorus UFB area is immaterial.

4.144 Furthermore, on 5 February 2024 Chorus provided new information about reducing the scope of its fibre frontier network extension programme.[154] Our analysis of the change to the fibre frontier extension programme is a cumulative reduction of 9,900 connections by 2028 which increases to 19,743 in 2029.[155]

4.145 Accordingly, we consider that overall, the connection forecasts is a reasonable basis for driving expenditure for PQP2.

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154 Chorus "Stock Exchange Announcement" (5 February 2024).

155 Chorus "Price-Quality Period 2 (PQP2) Network extension – Fibre Frontier – Economic modelling" (5 February 2024).

Analysis of bandwidth forecasts (assessment factor (e) and (t))

4.146 We have considered the methodology and assumptions utilised in Chorus' bandwidth forecasts and the approach Chorus has used to forecast demand (assessment factor (e) and (t)). As we found in the connections forecast, in our view there are a considerable number of issues and inconsistencies with the bandwidth forecast. We consider these have a material impact on the forecast, but as discussed in paragraph 5.185.2, bandwidth demand increases result in negligible change to proposed capex. As discussed in paragraph 5.185.1 new investment in network capacity will result in a step-up in both capacity and capex, following which bandwidth growth can continue without further capex until the next investment (and corresponding step change in expenditure) is required.

Chapter 5 Base capex

Purpose and structure of this chapter

5.1 This chapter sets out our draft decisions on the base capex allowance for Chorus for PQP2, and covers draft decisions on the following categories of expenditure:

5.1.1 extending the network;

5.1.2 installations;

5.1.3 IT and support;

5.1.4 network capacity; and

5.1.5 network sustain and enhance.

5.2 Our draft decisions on the expenditure categories and their relevant sub-categories are discussed further in the sections below.

Summary of our base capex draft decision

5.3 Our draft decision is to determine a base capex allowance of $815.0 million. Table 5.1 shows our draft decision broken down by year. This is $339.7 million less than Chorus' proposal.

Table 5.1 Our base capex draft decision by year

	2025 ($m)	2026 ($m)	2027 ($m)	2028 ($m)	Total ($m)
Base capex draft decision	239.7	209.8	184.1	181.3	815.0

5.4 Our draft decision on the base capex allowance for each category of expenditure is summarised in Table 5.2 below.

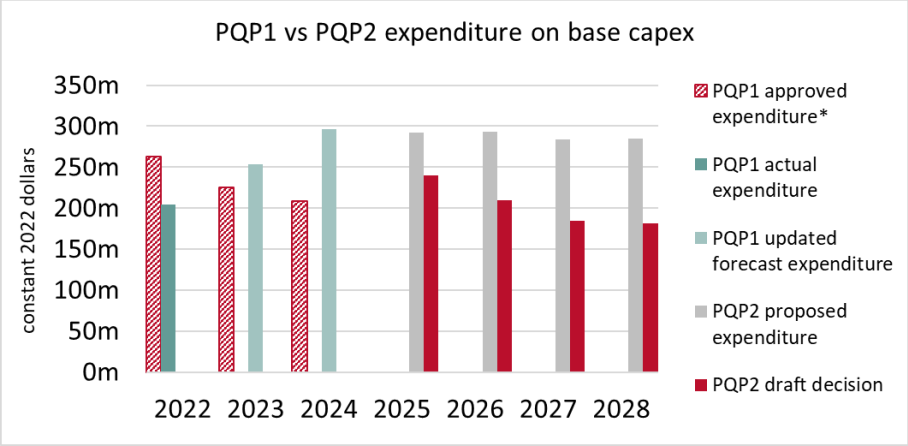
Table 5.2 Summary of draft decision for Chorus' PQP2 base capex allowance

Category	Sub-category	Chorus proposal ($m)	Draft decision ($m)	Difference ($m)	% of proposal allowed
Extending the network	Augmentation	220.6	32.5	-188.1	15%
	New property developments	32.4	32.4	0	100%
	UFB communal	0.0	0.0	0	
Installations	Complex installations	1.8	1.8	0	100%
	Standard installations	117.7	85.6	-32.2	73%

Category	Sub-category	Chorus proposal ($m)	Draft decision ($m)	Difference ($m)	% of proposal allowed
IT and support	Business IT	72.6	72.5	-0.1	100%
	Corporate IT	12.9	12.9	0	100%
	Network and customer IT	94.9	94.9	0	100%
Network capacity	Access	127.5	71.4	-56.1	56%
	Aggregation	79.8	79.8	0	100%
	Transport	85.0	85.0	0	100%
Network sustain and enhance	Field sustain	120.5	90.5	-30.0	75%
	Relocations	18.2	18.2	0	100%
	Resilience	79.7	46.5	-33.1	58%
	Site sustain	91.1	91.1	0	100%
Total		**1154.7**	**815.0**	**-339.7**	**71%**

5.5 Figure 5.1 below compares our draft decision to Chorus' proposal, our final decision for PQP1, and Chorus' actual expenditure and updated forecast expenditure for the PQP1 period.

Figure 5.1 PQP1 vs PQP2 base capex



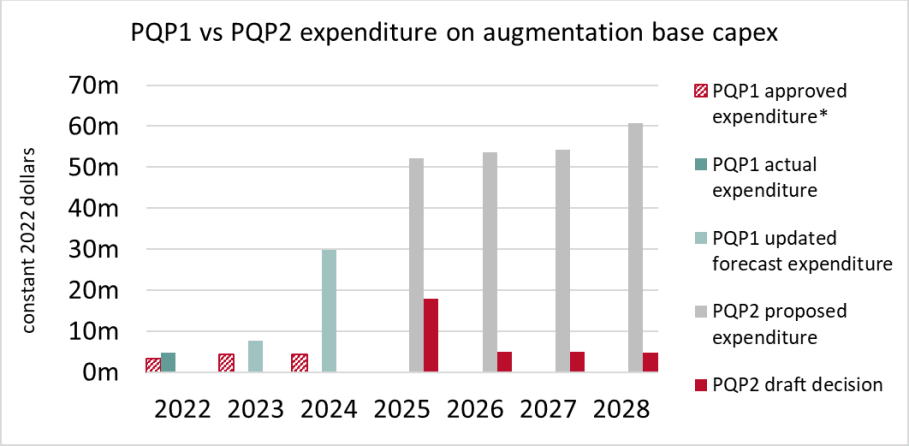
5.6 The following sections set out the reasons for our draft decision by category and sub-category.

Extending the network

Augmentation

5.7 Our draft decision is to include $32.5m in the base capex allowance for extending the network: augmentation capex in Chorus' base capex allowance for PQP2. This includes $19.5m for augmentation - infill capex, the same amount as proposed by Chorus in its PQP2 expenditure proposal, and $13.0m for augmentation – fibre frontier (using the new information provided by Chorus in February 2024 as a starting point, which is $188.1m lower than the amount proposed by Chorus in October 2023). Figure 5.2 compares our draft decision to Chorus' proposal, our final decision for PQP1, and Chorus' actual expenditure and updated forecast expenditure for the PQP1 period.

Figure 5.2 PQP1 vs PQP2 augmentation base capex



5.8 A breakdown of our draft decision for the base capex allowance for augmentation for each year of PQP2 is shown inTable 5.3.

Table 5.3 Breakdown of base capex allowance for augmentation

Sub-category	2025 ($m)	2026 ($m)	2027 ($m)	2028 ($m)	Total ($m)
Augmentation – extension (fibre frontier)	13.0	0	0	0	**13.0**
Augmentation – infill	5.0	4.9	4.8	4.8	**19.5**
Total	**18.0**	**4.9**	**4.8**	**4.8**	**32.5**

Augmentation – fibre frontier

Draft decision

5.9 Our draft decision is to include $13.0m for augmentation – fibre frontier capex in Chorus' base capex allowance for PQP2. Our draft decision uses as a starting point the new information received from Chorus in February 2024. As set out above, the fibre IMs do not allow for Chorus to amend its proposal. Instead, Chorus provided information which sets a reduced scope of the proposed rollout resulting in a reduction in the amount for its proposed investment for augmentation – fibre frontier being $13.0m rather than $201.1m which amounts to a reduction of $188.1m from the expenditure proposal it submitted in October 2023.[156]

5.10 Fibre frontier capex relates to work to extend the fibre network to areas that did not meet the threshold for the UFB 2/2+ contract.[157]

Independent Verifier findings

5.11 The Independent Verifier confirmed that Chorus' augmentation – fibre frontier capex satisfied the evaluation criteria under clause 3.8.5 of the fibre IMs. This finding was subject to:

5.11.1 the outcomes of Chorus' market testing in relation to the size of PQP2 augmentation – fibre frontier programme costs; and

5.11.2 the implications of this investment on the deliverability of Chorus' broader PQP2 expenditure programme.

5.12 In forming this opinion the Independent Verifier considered assessment factors (b), (d), (e), (j), (o) and (t) were relevant under clause 3.8.6(1) of the fibre IMs.

5.13 We note that the Independent Verifier's opinion was based on the proposal by Chorus to invest $201.1m in network extension capex (as submitted in October 2023) and didn't account for the new information provided by Chorus in February 2024. The Independent Verifier has not provided (or been asked to provide) any further comment on this sub-category following the new information provided by Chorus.

5.14 In its report the Independent Verifier noted that:[158]

5.14.1 compared to more typical fibre network investments it considered fibre frontier has higher risk for Chorus and ultimately for its existing fibre customers; but

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156 This amount accounts for the information Chorus provided us on fibre frontier in February 2024.

157 Chorus "Our Fibre Assets" (31 October 2023), at 67.

158 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 10-11.

5.14.2 given customer take-up and initial build cost represented the biggest risk factors for the investment, Chorus could mitigate these risks to a reasonable extent, such that a worst-case scenario of a heavily under-utilised sunk fibre asset and materially higher prices for existing fibre customers was a low probability.

Stakeholder views

5.15 We received stakeholder feedback relating to augmentation - fibre frontier. This feedback was based on the proposal received on 31 October 2023, and does not account for the new information Chorus provided in February 2024.

5.16 Submitters were generally aligned on a number of key points, which are summarised in the following paragraphs.[159, 160]

5.17 There was support for sensible fibre expansion and improved connectivity/ coverage. Spark suggested that the current regulatory framework should be able to provide for this to adjacent areas as proposed (particularly the peri-urban areas suggested by the proposal).[161] One NZ agreed that it is important to improve connectivity.

5.18 Many submitters agreed that fibre has a role to play in some areas, depending on population density.[162, 163] However, submitters considered fibre rollout should not be incentivised in areas where other technologies would provide a more efficient solution, because this would distort competition.[164, 165]

5.19 Submitters raised the point that there were a number of uncertainties evident in the proposal. It therefore needed assessing for prudence. Submitters felt Chorus should share specific areas targeted by the proposed extension with stakeholders and the Commission should consider whether expansion is appropriate for these areas.[166, 167]

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159 One NZ "One NZ submission on Chorus' proposed expenditure for PQP2" (14 December 2023), at 3-5.

160 2degrees "Chorus' proposed expenditure for PQP2: 2degrees' Response to Commerce Commission consultation" (14 December 2023), at 3 and 9-11.

161 Spark "Fibre price-quality regulation: process and approach for the 2025-2028 regulatory period" (14 December 2023), at [12].

162 One NZ "One NZ submission on Chorus' proposed expenditure for PQP2" (14 December 2023), at [7].

163 Spark "Fibre price-quality regulation: process and approach for the 2025-2028 regulatory period" (14 December 2023), at [14].

164 One NZ "One NZ submission on Chorus' proposed expenditure for PQP2" (14 December 2023), at [7].

165 2degrees "Chorus' proposed expenditure for PQP2: 2degrees' Response to Commerce Commission consultation" (14 December 2023), at 11.

166 2degrees "Chorus' proposed expenditure for PQP2: 2degrees' Response to Commerce Commission consultation" (14 December 2023), at 3.

167 One NZ "One NZ submission on Chorus' proposed expenditure for PQP2" (14 December 2023), at [10].

5.20 It was generally agreed that incremental revenue should exceed incremental costs in areas targeted for expansion to justify network extension (noting the requirement for geographically consistent pricing).[168] Spark's conclusion after reading Chorus' submission was that "the proposed investment is NPV positive on an incremental basis and sensitivity analysis suggests the proposal is more likely to contribute to shared costs than incur a loss".[169]

5.21 There was little support for Chorus' proposed assessment approach. It was seen as subjective and lacking transparency. Spark also did not support Chorus' proposed alternative optimised technology test, indicating these tests appeared to be inconsistent with government policy (eg, geographically consistent pricing and the balancing of higher prices for end-users and government funding).[170]

5.22 It was suggested that ICPs should be used as a way to deal with this type of investment, which is not business as usual.

5.23 Funding via CIP was also suggested as appropriate for funding extended fibre coverage.

Analysis

5.24 Chorus proposed $201.1m of capex be included in base capex for fibre frontier in the proposal it submitted on 31 October 2023. Chorus subsequently provided new information to the Commission on 5 February 2024 in relation to this aspect of its proposal.[171] This information reduced the capex to align with the reduced rollout scope for this expenditure sub-category to $13m.

5.25 The information provided in February 2024 set out that the $13m capex proposed by Chorus for fibre frontier is to fund the PQP2 capex for "phase 1 fibre frontier". Capital expenditure on phase 1 of the programme spans the end of PQP1 and the beginning of PQP2, with $13m of capex forecast to fall in 2025, the beginning of PQP2.

5.26 Our draft decision is to include $13m of network expansion expenditure - fibre frontier as part of PQP2 base capex. This takes into account the new information received from Chorus in February 2024.

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168 Spark "Fibre price-quality regulation: process and approach for the 2025-2028 regulatory period" (14 December 2023), at [14].

169 Spark "Fibre price-quality regulation: process and approach for the 2025-2028 regulatory period" (14 December 2023), at [15].

170 Spark "Fibre price-quality regulation: process and approach for the 2025-2028 regulatory period" (14 December 2023), at [17].

171 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.7.3(2).

5.27 Our draft decision considers the new information provided by Chorus for phase 1 that shows, compared to the 31 October 2024 proposal:

5.27.1 reduced costs per premises passed and a reduced payback period; and

5.27.2 a significant reduction in uncertainty, given the reduced scope of phase 1 and the improved cost information provided.

5.28 In coming to our draft decision we have had regard to assessment factors (d), (e), (g), (j) and (o) of the clause 3.8.6(1) of the fibre IMs.[172]

5.29 We consider including $13 million of expenditure in this sub-category meets the evaluation criteria under clause 3.8.5 of the fibre IMs as it reflects good telecommunications industry practice and satisfies the capital expenditure objective of being prudent and efficient.

Economic analysis (assessment factors (d) and (e))

5.30 When Chorus provided new information in February 2024, it also provided revised economic analysis for phase 1 of its fibre frontier proposal.

5.31 We assessed this updated economic model to test that the expenditure reflects costs that a prudent operator would incur, and that payback is forecast to occur within a reasonable timeframe (assessment factor (d)). As part of our assessment, we revised some assumptions. Key variations to assumptions related to starting wholesale price, CPI, additional capex for asset replacement (where asset life was shorter than the payback period) and initial capex spend timing. We concluded that with these assumptions the payback period is likely to fall within a 25 to 30-year timeframe, which we consider acceptable for the proposed level of capex and the degree of confidence in the underlying proposal forecasts.

5.32 We are satisfied that the $13m capex proposed for inclusion in base capex for PQP2 meets our assessment criteria, in particular factors (d), (e), (g) and (o). Key reasons for this are that the reduced costs per premises passed compared to the costs in the October 2024 proposal reduces the payback period when using current levels of average revenue to what we consider an acceptable timeframe. The reduced timeframe significantly lessens the degree of risk that some assets will require replacement, and for those that do, we are satisfied replacement will not lead to a payback beyond an acceptable limit.

[172] *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.8.6.

Competition effects (assessment factor (g))

5.33 In areas where fibre frontier is rolled out, any alternative providers should only face competition from a Chorus service that is provided on a commercially prudent basis. Given our assessment that an acceptable payback can be generated while meeting the legislative requirement for geographically consistent pricing (see s 201 of the Act), we would expect the fibre frontier service to provide a competitively priced service to existing alternatives while in several respects offering a superior service to them.

5.34 In terms of competition effects (assessment factor (g)), we consider that the phase 1 expansion will promote workable competition in telecommunications markets, given it tends to address areas that are adjacent to existing UFB coverage. It constitutes a logical next step in any network expansion and provides an opportunity to expand FFLAS coverage in an efficient manner.

5.35 The geographic areas chosen for phase 1 are based on the more detailed costings Chorus has now obtained. Phase 1 expansion is forecast to achieve payback on the investment within a commercially reasonable timeframe, taking into account the long-lived nature of the assets.

5.36 Our assessment is that, considering the information provided in February, the expansion of the FFLAS footprint as proposed under phase 1 will promote workable competition in telecommunications markets for the long-term benefit of end-users. This assessment is specific to phase 1 of the rollout (as set out in the information provided by Chorus), and we recognise that other fibre providers may have advantages that need to be considered in other areas where expansion may be proposed in the future. Unlike subdivision, network extensions where there is contestability to be the fibre provider (including competition from other LFCs and non-UFB fibre providers), or the contested UFB contracts, fibre frontier investment is not a contested process. Taking account of the likely limited commercial attractiveness of the areas where Chorus is expanding the network, the low level of investment in the phase 1, and the benefits to consumers of the phase 1 expansion, we consider that the phase 1 proposal is likely to reflect a more efficient outcome and incentivise Chorus to supply fibre fixed line access services of a quality that reflects end-user demands (as set out in s166(2)(b)). In providing information on its fibre frontier proposal, Chorus indicated that it would need greater policy and regulatory certainty to proceed with a wider programme. The role of contestability in further fibre network expansions would need to be considered as part of further policy development.

Consultation and engagement with stakeholders (assessment factor (j))

5.37 Chorus undertook consultation on the proposal it submitted in October 2023. It reported a favourable response from stakeholders to its augmentation - fibre frontier proposal.

5.38 While these consultation results were supportive of the fibre frontier investment, it is not clear that respondents understood the long payback period over which the original proposal would recoup the investment.

5.39 Spark's conclusion, after reading Chorus' submission, was that "the proposed investment is NPV positive on an incremental basis and sensitivity analysis suggests the proposal is more likely to contribute to shared costs than incur a loss".[173]

5.40 We note that the phase 1 proposal is forecast to achieve payback within a commercially reasonable timeframe, taking into account the long-lived nature of the assets, and has a lower risk of requiring ongoing higher charges for existing customers. We are not aware of further consultation undertaken by Chorus on the information provided to us in February 2024.

Uncertainty regarding the fibre frontier proposal (assessment factor (o))

5.41 The new information on phase 1 provides greater certainty for the first stage of the rollout and limits the capex spend to $13m for PQP2. We consider this new information means that the phase 1 capex satisfies this assessment factor, as it clearly (and with certainty) sets out the geographic areas to be served and the associated costs.

Further PQP2 fibre frontier investment beyond stage 1

5.42 If Chorus required further expenditure for network expansion during PQP2 it would be open to submit an ICP in accordance with the fibre IMs. Any ICP received would need to satisfy the relevant fibre IM requirements for a proposal and would be assessed on its merits against the relevant criteria.[174]

Augmentation – infill

Draft decision

5.43 Our draft decision is to include $19.5m for augmentation - infill capex in Chorus' base capex allowance for PQP2. This is the same amount as proposed by Chorus in its PQP2 expenditure proposal. Infill capex is a component of the base capex - augmentation expenditure sub-category and is combined with fibre frontier capex.

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173 Spark "Fibre price-quality regulation: process and approach for the 2025-2028 regulatory period" (14 December 2023), at [15].

174 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.7.22.

5.44 Chorus' infill capex will be used for work which "includes augmenting the network for unforeseen (at the time of network build) growth within the existing UFB footprint."[175]

Independent Verifier findings

5.45 The Independent Verifier, recognising the heavy reliance placed on historical data for determining the PQP2 augmentation - infill forecast, verified that Chorus' augmentation – infill capex forecast satisfies the evaluation criteria under clause 3.8.5 of the fibre IMs.[176] In forming this opinion the Independent Verifier considered assessment factors (c), (e), (o) and (t) under clause 3.8.6(1) of the fibre IMs.

Stakeholder views

5.46 We did not receive any submissions from stakeholders on augmentation - infill.

Analysis

5.47 Having reviewed Chorus' proposal and the Independent Verifier report, we agree with the reasoning and findings of the Independent Verifier.[177] In considering whether Chorus' proposal has met the capital expenditure objective, we have had regard to assessment factors (c), (e), (o) and (t) in clause 3.8.6(1)of the fibre IMs, the same assessment factors identified as relevant by the Independent Verifier.[178]

5.48 Given the need for this capex and having regard to the existing management of infill investment by Chorus, which has been reviewed by the Independent Verifier, and having regard to assessment factors (c), (e), (o) and (t) of clause 3.8.6(1) of the fibre IMs, we are satisfied that the existing processes in place to forecast and manage this capex meet the capital expenditure objective.

5.49 We consider including $19.5 million of expenditure in this sub-category meets the evaluation criteria under clause 3.8.5 of the fibre IMs as it reflects good telecommunications industry practice and satisfies the capital expenditure objective of being prudent and efficient.

New property developments

Draft decision

5.50 Our draft decision is to include $32.4m for extending the network - NPD capex in Chorus' base capex allowance for PQP2. This is the same amount as proposed by Chorus in its PQP2 expenditure proposal.

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175 Chorus "Our Fibre Assets" (31 October 2023), at 67.

176 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 10.

177 We did identify a minor anomaly in the figures presented when reviewing the infill information, which we have satisfactorily resolved. See Attachment DAttachment A.

178 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.8.6.

5.51 NPD capex relates to work that involves laying fibre into NPD near the existing fibre network.[179]

Independent Verifier findings

5.52 The Independent Verifier verified that Chorus' NPD capex forecast satisfies the evaluation criteria under clause 3.8.5 of the fibre IMs.[180] In forming this opinion it considered assessment factors (c), (e), (m) and (s) under clause 3.8.6(1) of the fibre IMs.

Stakeholder views

5.53 We did not receive any submissions from stakeholders on NPD.

Analysis

5.54 In considering whether Chorus' proposal has met the capital expenditure objective we have had regard to the assessment factors (c), (e), (m) and (s) of the fibre IMs, the same assessment factors identified as relevant by the Independent Verifier.[181]

5.55 Having reviewed Chorus' proposal and the Independent Verifier report, we agree with the reasoning and findings of the Independent Verifier.

5.56 As we noted in relation to the infill capex, given the need for this capex and having regard to the existing management of NPD capex by Chorus, which has been reviewed by the Independent Verifier, we are satisfied that the existing processes in place to forecast and manage this capex meet the assessment factors (c), (e), (m) and (s) of the fibre IMs.

5.57 We consider approving $32.4 million of expenditure in this sub-category meets the evaluation criteria under clause 3.8.5 of the fibre IMs as it reflects good telecommunications industry practice and satisfies the capital expenditure objective of being prudent and efficient.

UFB communal

Draft decision

5.58 Our draft decision is to include $0m for extending the network: UFB communal capex in Chorus' base capex allowance for PQP2. This is the same amount as proposed by Chorus in its PQP2 expenditure proposal.

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179 Chorus "Our Fibre Assets" (31 October 2023), at 63.

180 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 10.

181 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.8.6.

Independent Verifier findings

5.59 The Independent Verifier verified that Chorus' UFB communal capex forecast satisfies the evaluation criteria under clause 3.8.5 of the fibre IMs.[182] In forming this opinion the Independent Verifier considered assessment factors (c), (m) and (s) under clause 3.8.6(1) of the fibre IMs.

Stakeholder views

5.60 We did not receive any submissions from stakeholders on UFB communal.

Analysis

5.61 In considering whether Chorus' proposal has met the capital expenditure objective, we have had regard to assessment factors (c), (m) and (s) as set out in clauses 3.8.6 fibre IMs. These are the same assessment factors identified as relevant by the Independent Verifier.[183]

5.62 We agree with Chorus' proposal as Chorus does not have any remaining UFB investment to make. Therefore, including $0 of expenditure in this sub-category meets the evaluation criteria under clause 3.8.5 of the fibre IMs.

Installations

Complex installations

Draft decision

5.63 Our draft decision is to include $1.8m for complex installations capex in Chorus' base capex allowance for PQP2. This is the same amount as proposed by Chorus in its PQP2 expenditure proposal.

5.64 Complex installations capex relates to connections that require additional design and planning work to install fibre and that do not meet the definition of connection capex in the fibre IMs.[184, 185] These connections are typically for businesses.

Independent Verifier findings

5.65 The Independent Verifier verified that proposed expenditure for complex installations (across both base capex and the corresponding connection capex) satisfies the evaluation criteria under section 3.8.5 of the fibre IMs. In forming this opinion, it considered assessment factors (c), (m), (o), (s) and (t) were relevant under clause 3.8.6(1) of the fibre IMs.

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182 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 127.

183 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.8.6.

184 Chorus "Our Fibre Assets" (31 October 2023), at 77.

185 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023.

5.66 The Independent Verifier considered complex installations expenditure was difficult to forecast given the bespoke business activities required.[186] It found Chorus' approach of forecasting based on historic expenditure and assuming key assumptions would remain the same, to be reasonable.

Stakeholder views

5.67 We did not receive any submissions from stakeholders on complex installations capex.

Analysis

5.68 In considering whether Chorus' proposal has met the capital expenditure objective, we have had regard to assessment factors (a), (c), (m), (o), (s) and (t).[187]

5.69 We consider that Chorus' descriptions across its document *Our Fibre Assets* are consistent with the exclusion of intact connection expenditure from the connection capex allowance required by the definition of "connection capex" in the fibre IMs (assessment factor (a)).

5.70 Chorus' expenditure proposed for complex installations is consistent with actual and forecast expenditure for PQP1 (assessment factor (c)). While there is some volatility in actual expenditure it appears to be consistent with the uncertainty and bespoke business activities expected for complex installations (assessment factors (o) and (m)). We agree with the Independent Verifier that Chorus' assumptions appear reasonable (assessment factor (t)). There are negative values for actual expenditure in 2022 and 2023 which we expect are a result of how the expenditure is calculated (eg, due to the exclusion of capital contributions).

5.71 We consider approving $1.8 million of expenditure in this sub-category meets the evaluation criteria under clause 3.8.5 of the fibre IMs as it reflects good telecommunications industry practice and satisfies the capital expenditure objective of being prudent and efficient.

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186 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 142.

187 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.8.6.

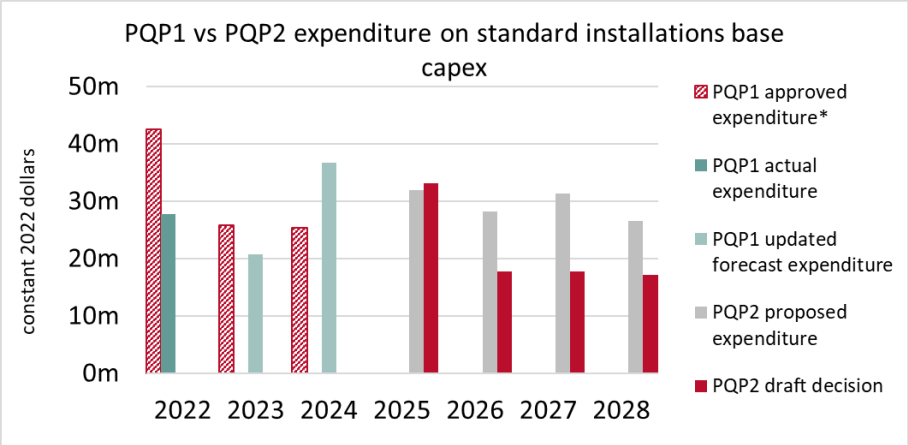
Standard installations

Draft decision

5.72 Our draft decision is to include $85.6m for standard installations capex in Chorus' base capex allowance for PQP2. As set out below, we welcome submissions from stakeholders on the implications for standard installations capex of 9,958 fewer new connections resulting from changes to Chorus' fibre frontier programme. Chorus proposed $117.7m of standard installations capex, including $47.0m for customer incentives and $70.7m of other capex.[188] Our draft decision includes $13.6m of the $47.0m proposed for customer incentives, and all of the remaining $70.7m standard installations capex proposed. We have also updated cost allocation, which slightly increases standard installations expenditure by $1.2m.

5.73 Figure 5.3 below compares our draft decision to Chorus' proposal, our final decision for PQP1, and Chorus' actual expenditure and updated forecast expenditure for the PQP1 period.

Figure 5.3 PQP1 vs PQP2 standard installations base capex



5.74 The next section discusses our assessment of Chorus' proposed customer incentives capex, and sections following discuss the remainder of standard installations capex.

Standard Installations (excluding customer incentives)

Draft decision

5.75 Our draft decision for standard installations is to include $72.0m in addition to customer incentives capex. Customer incentives capex covers costs associated with standard installations that are not included in the connection capex proposal. This includes:

5.75.1 costs that do not scale according to the number of connections such as 'back office' costs; and

[188] Chorus "Our Fibre Assets" (31 October 2023).

5.75.2 all costs associated with installations at 'intact' connections, which must not be included in the connection capex proposal under the fibre IMs.

5.76 As set out previously, Chorus provided us with new information about its fibre frontier network extension programme on 5 February 2024.[189] The new information Chorus provided set out that it now expects 9,958 fewer new connections in the PQP2 period.[190]

5.77 We consider that the reduction in connections included in the new information regarding Chorus' fibre frontier investment may have a flow on impact on standard installations base capex. However, we do not consider we have a sufficient basis for estimating any change in capex associated with the reduction in connections and have accordingly not made any reductions. We welcome further submissions on this point.

5.78 Our draft decision on this sub-category is based on the information that we have available to us, and we have not reduced expenditure to be included in our draft decision for this sub-category.

5.79 We invite Chorus to set out its view of the impacts to the wider expenditure proposal of the new information in submissions. We also welcome stakeholder views on whether they would expect standard installations capex to change due to the updated information from Chorus on the fibre frontier network extension.

Independent Verifier findings

5.80 The Independent Verifier provided an overall opinion on base capex for incentives, standard installations, and connection capex for connection groups 1-8 altogether. It did not set out a view on standard installations base capex separately. It found that overall, Chorus' proposal in these areas satisfies the evaluation criteria under clause 3.8.5 of the fibre IMs.[191] In forming this opinion, the Independent Verifier considered assessment factors (c), (e), (m), (s) and (t) under clause 3.8.6(1) of the fibre IMs.

5.81 The Independent Verifier stated that:

5.81.1 The profile of standard installations base capex was consistent with the decline in new connections over time.[192] It found Chorus' description of its approach to calculating costs appropriate but did not test the approach.

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189 Chorus "Stock Exchange Announcement" (5 February 2024).

190 Chorus response to request for information #89, 15 February 2024.

191 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 147.

192 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 144-145.

5.81.2 Some methods used to calculate these expenditure items were not transparent and it was not provided with some pieces of information it expected to be given to verify the expenditure proposal.[193] Part of the Independent Verifier's reasoning for verifying the expenditure was that calculations that primarily exist for business purposes, rather than regulatory purposes, are more likely to be reasonable estimates.[194]

Stakeholder views

5.82 We did not receive any submissions from stakeholders on standard installations.

Analysis

5.83 In considering whether Chorus' proposal has met the capital expenditure objective we have had regard to assessment factors (a), (c), (e), (f), (m), (s) and (t).[195]

5.84 We consider that Chorus' proposed capex for standard installations complies with relevant regulatory obligations (assessment factor (a)). Chorus' explanation of how physical build costs and internal provisioning costs are allocated to cost categories appears reasonable and is consistent with relevant IM requirements (assessment factor (a)).[196]

5.85 The decline in standard installations base capex compared to historic expenditure is consistent with a decline in new connections over time (assessment factors (c) and (m)). At a high level, we consider Chorus' method of forecasting standard installations base capex and its key assumptions appear reasonable (assessment factors (e) and (f)).[197]

5.86 Chorus' use of business activity reporting and demand forecasts to help inform cost estimates gives us greater comfort on the accuracy and reliability of the resulting forecast (assessment factor (s)).[198] Chorus stated that using average actual costs from only one year is appropriate because the costs are stable for standard installations.[199] In our view the assumption appears reasonable, and the resulting expenditure profile matches the trend we would expect (assessment factor (t)).

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193 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 145-146.

194 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 146.

195 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.8.6.

196 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, at 16 (definition of "connection capex").

197 Chorus "Our Fibre Assets" (31 October 2023), at 82-84.

198 Chorus "Our Fibre Assets" (31 October 2023), at 82-84.

199 Chorus "Our Fibre Assets" (31 October 2023), at 82.

5.87 We therefore consider including $72.0m of expenditure in the base capex allowance for standard installations (aside from customer incentives capex) meets the evaluation criteria under clause 3.8.5 of the fibre IMs, as it reflects good telecommunications industry practice and satisfies the capital expenditure objective of being prudent and efficient.

Customer incentives

Draft decision

5.88 Our draft decision is to include incentive payment expenditure of $13.6m (constant $2022) in the base capex allowance for 2025 only. This is the same as what Chorus proposed for 2025 but excludes the remainder of its proposed PQP2 incentive payment expenditure.[200]

5.89 Incentive payments are a component of the base capex - standard installations expenditure sub-category. Incentive payments capex relates to the incentive payments that Chorus pays to RSPs to attract new end-users to its fibre network and to upgrade end-users to faster fibre plans.[201]

Independent Verifier findings

5.90 The Independent Verifier verified that Chorus' proposal for customer incentive capex satisfies the evaluation criteria under clause 3.8.5 of the fibre IMs. In forming this opinion, it considered assessment factors (d), (e), (g) and (t) were relevant under clause 3.8.6(1) of the fibre IMs.

5.91 The Independent Verifier considered that the input assumptions Chorus has used are sound and generally conservative, forecasts of customer incentive payments are unlikely to be materially overstated and the level of customer incentive is consistent with maintaining its competitive position in the NZ broadband services market, as well as facilitating the switch from copper broadband to fibre.[202]

5.92 Regarding Chorus' two legal and regulatory requirements,[203] the Independent Verifier noted that the proposed payments will be offered to all RSPs in all locations and will not be linked to the locations of end-users.

Stakeholder views

5.93 The Commission received the following submissions from stakeholders on incentive payments:

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200 Chorus proposed $47m (constant) for customer incentive capex for PQP2.

201 Chorus "Our Fibre Assets" (31 October 2023), at 77.

202 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 149-150.

203 Specifically, section 201 of the Act requiring geographically consistent pricing; and non-discrimination and equivalence obligations.

5.93.1 One NZ submitted that allowing incentive payments as part of capex for the purpose of determining the maximum allowed revenue (MAR) would enable Chorus to earn monopoly profits by resulting in increased revenue allowance exceeding the normal rate of profit and did not meet the relevant criteria as set out in fibre IMs.[204]

5.93.2 Spark had concerns relating to the potential use of incentive payments to suppress competition, and as a tool to implement inertia pricing that inefficiently locks in high end-user prices over time.[205]

5.93.3 2degrees (in its cross submission) agreed with One NZ and Spark that the incentive payments support the distortion of competition.[206]

Analysis

5.94 In considering whether Chorus' proposal has met the capital expenditure objective, we have had regard to assessment factors (d), (e), (o), and (t).[207]

5.95 We consider that the level of capex required for the later years of PQP2 is highly uncertain (assessment factor (o)), and Chorus' proposal insufficiently justifies the extent of the amount of the proposed capex. We also consider that the role that incentive payments will play within the overall context of Chorus' marketing and promotional activities throughout the PQP2 period has not been sufficiently demonstrated.

5.96 As we have previously set out,[208] while we accept in general terms the need for the expenditure, our draft decision is that Chorus has not in our view provided reasons and explanation for the assumptions and has not demonstrated why the amount of expenditure proposed is required. We also note that in a number of instances, Chorus has not provided evidence, and has not provided sufficiently detailed information to show that the key assumptions and the approach to forecasting incentive capex are reasonable and appropriate (assessment factors (e) and (t)). Associated with this we note that there are a number of issues with the models provided, including calculation errors, and inconsistent use of formulas within the forecast calculations, and use of hardcoded numbers with no explanation of the assumptions.

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204 One NZ "One NZ submission on Chorus' proposed expenditure for PQP2" (14 December 2023), at 9.

205 Spark "Fibre price-quality regulation: process and approach for the 2025-2028 regulatory period" (14 December 2023), at 5.

206 2degrees "Chorus' proposed expenditure for PQP2: 2degrees' Cross-Submission in response to Commerce Commission consultation" (2 February 2024), at 3.

207 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.8.6.

208 Commerce Commission "Chorus' individual capex proposal for customer incentives 2023 – Draft decision – Reasons paper" (18 October 2022), at [3.11].

5.97 While the Independent Verifier concluded that Chorus' proposed incentive payments for PQP2 satisfied the evaluation criteria, we do not agree with its conclusion for the following reasons:

5.97.1 First, the Independent Verifier concluded that the input assumptions used by Chorus are sound and conservative. However, following our assessment, we consider that many of the input assumptions used by Chorus are not explained.[209]

5.97.2 Second, the Independent Verifier stated that Chorus used the same estimation methodology as used for its 2022 ICP application and regarding assessment factor (e) the Independent Verifier verified the proposal satisfied the evaluation criteria. However, although we approved Chorus' 2022 customer incentives ICP (with some reduction), we identified a number of risks associated with Chorus' forecasting methodology in our draft reasons paper.[210] Similarly, in our assessment of Chorus' methodology ahead of our draft decision we have identified some concerns with Chorus' proposed approach.

5.98 We acknowledge the submissions from One NZ and Spark in regard to the impact on the MAR and competition. As we set out in our PQP1 decision, we acknowledged that incentive payments can improve efficiency and be procompetitive although they can also reduce efficiency and be anticompetitive.[211] Accordingly, we established an economic test to determine if at a high level there was a positive net benefit to proposed incentive capex. In both our PQP1 and incentive capex ICP decisions we approved a single year of incentive capex, and the amount of incentive expenditure we approved met the economic test.[212, 213] Therefore, we considered that in the aggregate and on balance, the incentive expenditure was likely to improve efficiency and be procompetitive.

5.99 In reaching our draft decision, we have also undertaken the economic test for the first year of PQP2 incentive capex expenditure.

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209 Chorus, response to request for information #71 (8 February 2024).

210 Commerce Commission "Chorus' individual capex proposal for customer incentives 2023 – Draft decision – Reasons paper" (18 October 2022), at [3.34].

211 Commerce Commission "Chorus' price-quality path from 1 January 2022 – Final decision – Reasons paper" (16 December 2021), at [C5.2].

212 Commerce Commission "Chorus' price-quality path from 1 January 2022 – Final decision – Reasons paper" (16 December 2021), at [C3].

213 Commerce Commission "Chorus' individual capex proposal for customer incentives 2023 – Final decision – Reasons paper" (13 December 2022), at [1.4].

5.100 The test is designed to give us confidence that the proposed level of incentive payments – in the aggregate, rather than individual payments – was not excessive, overstated, or anticompetitive. The economic test we apply is therefore whether the expected incremental revenue exclusively from the incremental new connections and upgrades that the incentive payments drive, outweighs the incremental costs including the incentive expenditure itself.

5.101 Application of our test should demonstrate that the proposed allowance is less (or at most equal) to the NPV of the stream of incremental cashflow that the incentive payments generate. We approached the calculation as follows:

5.101.1 we estimated the NPV of incremental cashflow for new and intact connections and upgrades;

5.101.2 we multiplied the NPV by the forecast number of new connections, intact connections, and upgrades; and

5.101.3 we used all input assumptions within Chorus' proposal as the base case then apply low and high sensitivities (+/- 20%) to reflect uncertainty.

5.102 The following input assumptions provided by Chorus were used as the base case in our economic test:[214]

5.102.1 monthly average revenue per new user of [ ];[215]

5.102.2 monthly average revenue per new upgrade of [ ];

5.102.3 cost of a new connection (lead-in) of [ ];[216]

5.102.4 lead-in life of [ ] months;

5.102.5 proportion of incremental new connection (no lead-in) of [ ];[217]

5.102.6 proportion of incremental upgrades of [ ];

5.102.7 annual post-tax WACC of 7.77%;[218]

5.102.8 amortisation period of [ ] months;

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214 Chorus, response to request for information #73 (2 February 2024).

215 This is the sum of Fibre average revenue per user [ ] and additional new connect average revenue per user due to offers [ ].

216 This is the sum of cost per premises passed (installation cost) [ ], ONT cost [ ] and ONT truck roll cost [ ].

217 The lead-in proportion is [ ].

218 This has been updated to the most recent cost of capital determination for Chorus. See: Commerce Commission "Cost of capital determination for disclosure year 2024 for information disclosure regulation: for Chorus Limited" (7 February 2024), at [4].

5.102.9 number of new connections of [ ] in 2025; and

5.102.10 forecast number of incentives on upgrades of [ ] in 2025.

5.103 Our analysis and application of the economic test shows that:

5.103.1 The expected incremental revenue from incremental end-users outweighs the incremental costs.

5.103.2 The proposed amount of $13.6m falls within the estimated range of the economic test. This means that in aggregate the amount of incentives sought for the first year is likely to support competition, efficiency, and is unlikely to be excessive.

5.103.3 The proposed amount of $13.6m is in line with the historical observed level of spending on incentives in 2022 and 2023. This supports the view that the proposed amount is not excessive.

5.104 Our draft decision is therefore to include the incentive capex of $13.6m for the initial year of PQP2:

5.104.1 We consider that it is prudent and efficient to only include an amount of incentive capex for 2025. Including incentive expenditure for 2025 would better meet the purposes in section 166(2) and the expenditure objective in clause 3.8.5 of the fibre IMs, than not including the expenditure for PQP2. Including an amount for one year has the benefit of providing certainty to the market and avoiding disrupting the potential procompetitive benefits of incentive payments for the first year of PQP2.

5.104.2 We assessed Chorus' proposed amount for 2025 against the actual amount of incentive payments for 2022 and 2023 and found that the proposed amount of $13.6m is in line with Chorus' historical observed level of spending for 2022 and 2023.

5.104.3 The proposed amount meets our economic test.

5.105 We therefore consider that including $13.6m of expenditure in this sub-category meets the evaluation criteria under clause 3.8.5 of the fibre IMs, as it reflects good telecommunications industry practice and satisfies the capital expenditure objective of being prudent and efficient.

5.106 Chorus is able to submit ICPs to us in accordance with the fibre IMs if it wishes to seek approval of incentive payment expenditure for the remainer years of PQP2.

IT and support

Business IT and network & customer IT

Draft decision

5.107 Our draft decision is to include:

5.107.1 $72.5m for IT and Support: business IT capex in Chorus' base capex allowance for PQP2; and

5.107.2 $94.9m for IT and support: network & customer IT capex in Chorus' base capex allowance for PQP2.

5.108 These are the same amounts as proposed by Chorus in its PQP2 proposal, with a slight decrease of $0.1m to Business IT capex as a result of updating cost allocation.

5.109 Network and customer IT capex relates to the systems and platforms that help Chorus run the network.[219]

5.110 Business IT capex relates to the systems and applications that support business decision-making such as financial software and data management systems.[220]

Independent Verifier findings

5.111 The Independent Verifier verified that Chorus' proposed PQP2 network and customer IT and business IT satisfy the evaluation criteria under clause 3.8.5 of the fibre IMs.[221] In forming this opinion it considered assessment factors (c) (e), (k), (n) and (t) were relevant under clause 3.8.6(1) of the fibre IMs.

5.112 The Independent Verifier:

5.112.1 Considered that the approach Chorus used to forecast IT capex was well thought through stewarding and managed its IT investments in a way that is more fit-for purpose than would be the case for physical assets, and reflected the importance of IT assets to its business.[222]

5.112.2 Believed that Chorus' approach to managing its IT assets is robust and comprehensive which was essential for its success. Chorus' technology clearly flows out of its corporate strategy.[223]

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219 Chorus "Our Fibre Assets" (31 October 2023), at 167.

220 Chorus "Our Fibre Assets" (31 October 2023), at 167.

221 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 192-193.

222 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 191.

223 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 190.

5.112.3 Considered that Chorus employs a rigorous approach to manage IT costs. Chorus compares and tracks the actual costs for each IT initiative against forecasts to validate the investment and improve future forecasts. Chorus provided the Independent Verifier with evidence of the tracking process that shows close tracking of actual and estimated costs.[224]

Stakeholder views

5.113 We did not receive any submissions from stakeholders on business IT and network & customer IT.

Analysis

5.114 In considering whether Chorus' proposal has met the capital expenditure objective we have had regard to assessment factors (b), (c), (f), (k), (n), (r), and (t).[225]

5.115 In reviewing Chorus' proposed IT expenditure we consider:

5.115.1 Chorus has presented a good description of its IT strategy and provided evidence that it is linked to its corporate strategy (assessment factor (b)).

5.115.2 Governance and management processes around Chorus' expenditure appear to be effective. While the information provided is not comprehensive, we consider that Chorus has sufficiently demonstrated the effectiveness of its management process within its proposal along with the additional information provided in response to our RFIs (assessment factors (b) and (n)). The Independent Verifier also arrived at the same conclusion within its final report.

5.115.3 Chorus has demonstrated that historically planned IT investment has and continues to be delivered (assessment factors (c), (k), (t)). We have no reason to believe this would not continue to be the case over PQP2.

5.115.4 We consider that the sizing of the expenditure is likely to be appropriate. With the deployment of Agile methodologies, the question becomes what is the right sizing of the resources to meet the investment needs over the PQP2 period? To help inform our consideration of this we undertook a high level comparison of the relative size of Chorus' IT spend to that of Australia's NBN. We found that while there are differences, which are to be expected, Chorus' average spend as a proportion of total capex (12%) is similar to NBNs (13%) over the period from 2021 to 2026. Accordingly, we consider the level of spend is likely to be prudent (assessment factors (c), (f), (k)).

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[224] Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 192.

[225] *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.8.6.

5.115.5 In regard to the right sizing of resources to investment need, Chorus also provided evidence of downsizing the number of required squads where the need for their resources has reduced. This demonstrates that Chorus is conscious of the efficiency of its resource base and the resulting expenditure (assessment factor (f)).

5.116 Accordingly, having considered the Independent Verifier's conclusions and reviewed Chorus' proposed IT expenditure we consider approving $94.9 million of expenditure for network and customer and $72.5 million for business IT, meets the evaluation criteria under clause 3.8.5 of the fibre IMs as it reflects good telecommunications industry practice and satisfies the capital expenditure objective of being prudent and efficient.

5.117 We do however consider that Chorus has likely undervalued the benefits from its IT investment. While it has claimed that benefits are accounted for within both the capex and opex, this claim appears to be unsupported, and benefits that are explicitly proposed are lower than those accounted for in PQP1. While we have not made capex efficiency adjustments in our draft decision, we have made an additional opex adjustment (assessment factor (r)) to recognise the level of IT capex investment in optimisation of Chorus' business processes.[226]

Corporate

Draft decision

5.118 Our draft decision is to include $12.9m for IT and support: corporate capex in Chorus' base capex allowance for PQP2. This is the same amount as proposed by Chorus in its PQP2 expenditure proposal.

5.119 Corporate capex largely relates to Chorus' corporate accommodation leases and associated costs.[227]

Independent Verifier findings

5.120 The Independent Verifier verified that Chorus' IT and support: corporate capex, satisfies the evaluation criteria under clause 3.8.5 of the fibre IMs.[228] In forming this opinion it considered assessment factors (c), (m), (s) and (t) were relevant under clause 3.8.6(1) of the fibre IMs.

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226 Refer to paragraph 7.517.44 for further information.

227 Chorus "Our Fibre Assets" (31 October 2023), at 184.

228 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 194.

5.121 The Independent Verifier considered the expenditure was predictable to forecast and that the price x quantity approach (that is the forecasted price per unit multiplied by the forecast number of units) reflected the expiry and/or renewal of leases. Uplifts, such as that seen from $1.8 million in FY27 to $7.5 million in FY28 due to Auckland office lease renewal were considered by the Independent Verifier to be predictable due to the periodic nature of leases.[229] Other than the lease renewal, the Independent Verifier stated it was satisfied that the PQP2 forecast of corporate capex was flat, consistent with PQP1 and identified no other issues.

Stakeholder views

5.122 We did not receive any submissions from stakeholders on IT and support: corporate.

Analysis

5.123 In considering whether Chorus' proposal has met the capital expenditure objective, we have had regard to the assessment factors (c), (m), (s) and (t) of clause 3.8.6(1) of the fibre IMs, the same assessment factors identified as relevant by the Independent Verifier.[230]

5.124 We consider that corporate capex is consistent with PQP1 (assessment factor (c)), is necessary for Chorus to maintain its corporate offices (assessment factor (m)), the data used is accurate and reliable (assessment factor (s)) and the assumptions and methodologies used in the forecasting appear to be reasonable (assessment factor (t)).

5.125 We therefore consider including $12.9 million of expenditure in this sub-category meets the evaluation criteria under clause 3.8.5 of the fibre IMs as it reflects good telecommunications industry practice and satisfies the capital expenditure objective of being prudent and efficient.

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229 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 193.

230 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.8.6.

Network capacity

Access

Draft decision

5.126 Our draft decision is to include $71.4m for network capacity: access (access capex) in Chorus' base capex allowance for PQP2. This is $56.1m less than the $127.5m proposed by Chorus in its PQP2 expenditure proposal. As set out below, we welcome submissions from stakeholders on the implications for access capex of 9,958 fewer new connections resulting from changes to Chorus' fibre frontier programme.

5.127 Access capex relates to the replacement or upgrade of assets required to connect end-users to the fibre network. These assets include both hardware (optical network terminals (ONTs) and optical line terminals (OLTs)) and supporting software and systems, such as element management platforms (EMPs).[231]

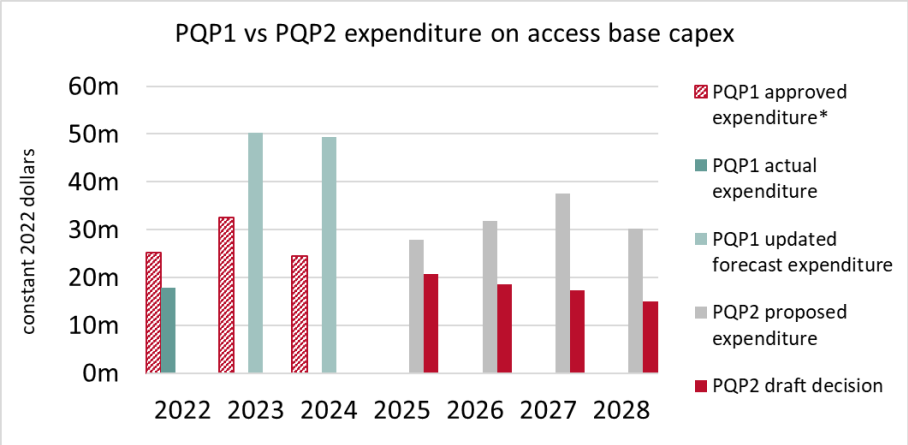
5.128 Our draft decision is based on the use of an alternative hyperfibre demand forecast (a key cost driver of Chorus' access capex for PQP2). We consider that Chorus has not sufficiently justified the basis for its proposed increase in forecast hyperfibre uptake during PQP2.

5.129 We appreciate that forecasting demand for specific services can be challenging, particularly near the start of the service lifecycle. However, we expect that where significant increases in forecast demand are proposed these are supported by evidence and clear justification. We are interested in stakeholders' views on our draft decision, and in particular, our approach to forecasting hyperfibre (and its impact on access capex) over PQP2.

5.130 Figure 5.4 compares our draft decision, Chorus' proposal, our final decision for PQP1, and Chorus' actual expenditure and updated forecast expenditure for the PQP1 period.

[231] Chorus "Our Fibre Assets" (31 October 2023), at 155.

Figure 5.4 PQP1 vs PQP2 access base capex



5.131 Table 5.4 sets out the components of our draft decision for ONTs, OLTs and EMPs.

Table 5.4 Summary of draft decision for access capex[232]

Category	Chorus proposed ($m)	Draft decision ($m)	Difference ($m)
ONTs	[ ]	[ ]	[ ]
OLTs and related activities	[ ]	[ ]	[ ]
EMPs	[ ]	[ ]	[ ]
Total Access capex	127.5	71.4	-56.1

5.132 As set out previously, Chorus provided the Commission with new information about its fibre frontier network extension programme on 5 February 2024.[233] The new information Chorus provided set out that it now expects 9,958 fewer new connections in the PQP2 period.[234]

5.133 We consider that the reduction in connections included in the new information regarding Chorus' fibre frontier investment may have a flow on impact on access capex. However, we consider that we don't have a good basis for estimating the change in capex associated with the reduction in connections.

5.134 Our draft decision on this sub-category is based on the information that we have available to us, and we have not reduced expenditure to be included in our draft decision for this sub-category.

232 Chorus response to request for information #25 (4 December 2023).
233 Chorus "Stock Exchange Announcement" (5 February 2024).
234 Chorus response to request for information #89 (15 February 2024).

5.135 We invite Chorus to set out its view of the impacts to the wider expenditure proposal of the new information in submissions. We also welcome stakeholder views on whether they would expect access capex to change due to the updated information from Chorus on the fibre frontier network extension.

5.136 Our analysis and the reasons for our draft decision are set out below.

Independent Verifier findings

5.137 The Independent Verifier verified that Chorus' access capex satisfies the evaluation criteria under clause 3.8.5 of the fibre IMs.[235] In forming this opinion, the Independent Verifier considered assessment factors (b), (d), (e), (j), (o) and (t) under clause 3.8.6(1) of the fibre IMs.

5.138 The Independent Verifier's findings largely focused on Chorus' ONT strategy, which is centred around the timing of XGS-PON ONTs being introduced to the mass market. The Independent Verifier stated:[236]

5.138.1 Chorus' ONT deployment strategy (ie, option 1 of the various options proposed by Chorus to stakeholders) proposes a reactive replace-at-failure investment option as preferred for PQP2.[237]

5.138.2 This deployment strategy recognises there is uncertainty over ONT asset lives and that ONT failure rates are currently very low. Individually, ONTs have a low asset criticality because an ONT directly affects service only for an individual end-user.

5.138.3 Chorus' preferred investment option reflects a balancing of least whole-of-life cost considerations, stakeholder feedback regarding discretionary expenditure and uncertainty regarding the capex forecast, including due to uncertainty about future new ONT technology take-up rates.

5.138.4 Compared to the amount initially proposed to the Independent Verifier, Chorus' final PQP2 proposal includes a reduction of $10.9m for ONT forecast capex.[238] This is due to Chorus' decision to proceed with option 1 instead of a more aggressive rollout strategy of next generation technology access assets (ie, referred to as option 2 in Chorus' proposal).[239]

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235 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 13.

236 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 12-13, 150-158.

237 Chorus "Our Fibre Assets" (31 October 2023), at 318.

238 Chorus "Our Fibre Assets" (31 October 2023), at 324.

239 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 13.

5.138.5 The Independent Verifier was concerned about the possible uneconomic proactive deployment of XGS-PON ONTs during PQP2. Furthermore, feedback from Chorus' stakeholders during its own consultation process indicated a strong preference for discretionary investment to be directed towards fibre extension and network resilience instead of investment in next generation technology.[240]

5.138.6 In recognition of concerns with option 2, Chorus ultimately proceeded with option 1 for PQP2.

5.139 We note the Independent Verifier did not specifically mention the change of systems and software (EMPs) required to support upgraded access hardware (ONTs and OLTs).

Stakeholder views

5.140 We did not receive any submissions from stakeholders on access capex.

Analysis

5.141 Our draft decision is to include $71.4m of access capex. This consists of:

5.141.1 [

5.141.2

5.141.3]

5.142 We consider our draft decision meets the evaluation criteria under clause 3.8.5 of the fibre IMs, as it reflects good telecommunications industry practice and satisfies the capital expenditure objective of being prudent and efficient.

5.143 Figure 5.4 shows Chorus' proposed amounts compared to our draft decision for access capex. Our draft decision is based on using an alternative hyperfibre demand forecast as we consider there was an insufficient basis for Chorus' proposed hyperfibre demand forecast for PQP2 (and subsequent proposed access capex). Our approach does not impact components of expenditure that are not driven by hyperfibre demand.

5.144 Our analysis on each component is set out below.

[240] Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 13.

ONT access draft decision and analysis

5.145 As shown in Table 5.4, our draft decision is to include [ ] of ONT access capex in Chorus' base capex allowance for PQP2. In making our draft decision on ONT access capex, we have had regard to assessment factors (b), (d), (e), (j), (o), (t). These are the same factors considered by the Independent Verifier.

5.146 We consider, based on demand forecasts Chorus provided and supporting information (eg, the model), that there is insufficient evidence to support the proposed ONT access capex for PQP2 as being prudent and efficient. In assessing ONT access capex, we had regard to the following assessment factors under clause 3.8.6 of the fibre IMs:

5.146.1 We note Chorus' approach to assessing its strategic options for the deployment (ie, roll out) of ONTs in PQP2 informed by stakeholders' feedback (assessment factor (b)).[241] We understand the feedback from Chorus' consultation supported the adoption of a reactive ONT strategy for PQP2 based on service demand (ie, option 1) (assessment factor (j)).

5.146.2 We considered Chorus' modelling of the least whole-of-life cost and note that it is sensitive to uncertainties about the future demand for hyperfibre services and the future failure rate of ONTs (assessment factor (d)).

5.146.3 We agree with the Independent Verifier that there is significant uncertainty on the timing of hyperfibre uptake, which supports Chorus's proposal based on a conservative ONT strategy (assessment factor (o)).

5.146.4 We consider the rationale for Chorus' ONT strategy to be reasonable. However, we consider its assumptions on the timing and rate at which hyperfibre demand is forecast to increase in PQP2 are not justified given the degree of forecast uncertainty (assessment factor (t)).

5.147 We do not consider Chorus' approach to forecasting hyperfibre demand is sufficiently justified given the actual data available (due to the significant uncertainty about the timing of a hyperfibre demand increase) (assessment factor (e)). As a result, we have proposed an alternative hyperfibre forecast that we consider meets the expenditure criteria. To develop an alternative, we have used a linear trend to forecast hyperfibre demand. We discuss the forecast demand we have used for our draft decision further below. Chorus's approach to forecasting ONT failure rates, various unit costs, and other components otherwise appear reasonable.

[241] Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023).

5.148 The key drivers of ONT access capex are the forecast hyperfibre upgrade volumes and the forecast ONT failure rate, as expenditure is incurred when an ONT needs to be upgraded or replaced. Chorus forecasts ONT access capex by combining these figures with relevant ONT technology (ie gigabit passive optical network (G-PON) and ten gigabit symmetrical passive optical network (XGS-PON) unit costs, including the cost of the site visit ('truck roll'). The key unit costs are relatively predictable and locked in because of contracts or ad-hoc bulk purchase arrangements.[242]

Hyperfibre forecast

5.149 Hyperfibre is a service delivered on next generation XGS-PON technologies and therefore we consider hyperfibre demand is a key driver of access capex as network capacity needs to be upgraded to enable the new service.[243] Chorus forecast a significant increase in hyperfibre demand in PQP2.[244]

5.150 We consider there is insufficient justification for Chorus' forecast demand for hyperfibre upgrades, given the degree of uncertainty and the available historic demand data (assessment factors (e) and (o)).

5.151 The information Chorus has provided does not show the quantitative methods it used to forecast this demand and does not provide reasons why Chorus expects demand to grow significantly faster than previous years. This means we do not have evidence to show that Chorus' forecast of hyperfibre demand and the resulting expenditure is prudent and efficient.

5.152 Further, we note that if demand was to increase later than Chorus has forecast, a significant amount of ONT expenditure it has proposed in PQP2 would not be required until later in the PQP2 period or a future regulatory period.

5.153 Chorus' proposal also states that it expects the hyperfibre ONT unit costs to follow a similar trajectory as it has seen for gigabit passive optical network (GPON) ONTs and has forecast drops in unit costs [ ].[245] Therefore, expenditure forecasts at the higher unit cost risk overstating the required level of PQP2 expenditure if actual demand is to occur much later in the regulatory period (when ONT unit costs are likely to be less).

242 Chorus "Our Fibre Assets" (31 October 2023), at 157 and 322.
243 Chorus "Our Fibre Assets" (31 October 2023), at 156.
244 Chorus "Our Fibre Plans" (31 October 2023), at figure 3.33.
245 Chorus "Our Fibre Assets" (31 October 2023), at 322.

5.154 For our draft decision, we consider prudent and efficient expenditure would have taken greater account of actual historic hyperfibre demand levels when forecasting PQP2 capex, given the lack of evidence to support the forecast demand for hyperfibre during PQP2. We consider this reduces the risk of overstating PQP2 expenditure given the uncertainties about hyperfibre when forecasting the demand and timing of the investment (assessment factor (o)).

5.155 Accordingly, for our draft decision we have modelled PQP2 expenditure by recasting the hyperfibre upgrade demand input in Chorus' ONT expenditure model. We have done this by taking the same starting point as Chorus' forecast and applying a forecast based on a linear trend of historical growth in hyperfibre demand.[246] We have applied the linear forecast trend of hyperfibre demand in the model Chorus supplied, to determine the proportional impact on ONT expenditure for our draft decision.[247]

5.156 The differences between Chorus' proposed expenditure and our draft decision are shown in Table 5.5Table 5.5.

Table 5.5 Proposed expenditure on ONTs

	2025 ($m)	2026 ($m)	2027 ($m)	2028 ($m)	PQP2 Total ($m)
Chorus Proposed Access capex on ONTs	[				[ ]
Recommended Access capex on ONTs	[				[ ]
Difference in Access capex on ONTs	[				[ ]
% difference in Access capex on ONTs	[				[ ]

5.157 Using our alternative demand forecast results in a draft decision of $[ ], a [ ] reduction in Chorus' proposed expenditure of $[ ] of ONT access capex for PQP2. This difference relates to changing the hyperfibre demand assumption used and does not impact components of expenditure, such as the cost of replacing faulty ONTs, that is not driven by hyperfibre demand.

OLT and EMP expenditure draft decisions and analysis

5.158 Our draft decision is to include the following expenditure for network capacity: access in relation to OLTs and EMP in Chorus' base capex allowance for PQP2:

5.158.1 [ ] of OLT capex. This is [ ] less than Chorus' proposed capex.

246 Chorus' ONT model contains less than one year of actual data for hyperfibre upgrades, but its connections forecast model contains six years of actual data for overall hyperfibre demand. We have used the latter to construct a trend forecast.

247 Chorus, response to request for information #2 (24 November 2023).

5.158.2 [ ][248]

5.159 In making our draft decisions for OLT and EMP access capex, we have had regard to assessment factors (b), (d), (e), (j), (o) and (t). The factors we assessed are the same as those considered by the Independent Verifier. Similar to our draft decision for the assess capex for ONTs, the primary difference between Chorus' proposed access capex for OLTs and EMPs and our draft decision is due to our use of an alternative hyperfibre demand assumption (as set out in the ONT section above).

5.160 Chorus' PQP2 proposal stated in relation to its next generation access upgrade programme:[249]

5.161 By the end of PQP1, we will have completed the proactive element of our line card upgrade programme in the local exchanges. We will continue to deploy next generation line cards in PQP2, but only where it is required by end-user demand and there is no corresponding line card in the exchange.

5.162 Chorus proposed [ ] on OLT cards, which is the reactive component of its OLT capex. Overall, we consider the key assumptions that Chorus relies upon in its OLT strategy are reasonable, apart from the hyperfibre forecast (assessment factor (t)).

5.163 The proactive aspect of Chorus' OLT deployment programme that begun during PQP1 is expected to finish by late 2024.
[
].[250] Further reactive work from 2025 will expand this base of OLTs to meet additional end-user demand.

5.164 We consider Chorus' approach to new technology reflects good telecommunications industry practice and has thorough and sound reasoning, evidenced by its *Our Fibre Assets* report. We consider Chorus' approach that accounts for timed lifecycle replacement and new product opportunities are evidence of good commercial governance (assessment factor (b)). We agree with the opinion of the Independent Verifier on this assessment factor.

248 Chorus, response to request for information #14 (4 December 2023). [ ]
249 Chorus "Our Fibre Assets" (31 October 2023), at 316.
250 Chorus "Our Fibre Assets" (31 October 2023), at 328.

5.165 However, our analysis indicates that Chorus' forecast demand for OLTs is sensitive to the forecast timing of hyperfibre demand which impacts OLT capex.[251] Chorus also suggested forecast hyperfibre demand is a key driver of this investment.[252]

5.166 While we acknowledge that upgrading of OLTs ahead of demand is generally good industry practice, we consider Chorus' proposed programme for OLT upgrades in PQP2 to be not prudent or efficient because there is a lack of evidence to support Chorus' proposed hyperfibre demand assumption.

5.167 For our draft decision, we have modified the hyperfibre demand assumption in Chorus' OLT model to align with the forecast linear trend of historical (actual) hyperfibre demand we used for our draft decision on ONT expenditure. When using the modified hyperfibre demand forecast Chorus' model produces expenditure of $[ ]m. We consider this to be a prudent and efficient amount of OLT expenditure and consistent with our draft decision on ONT expenditure.

5.168 In relation to EMPs, we have reviewed the proposed capex and consider it to be prudent and efficient.

5.169 We acknowledge the essential nature of EMP expenditure (ie, the management and control of OLTs) as Chorus moves from GPON technology to XGS-PON (assessment factor (o)).

5.170 Therefore, we consider $[ ]m for EMP base capex expenditure for PQP2 to be prudent and efficient and required for the management and control of OLTs which are being upgraded to XGS-PON.[253] This is also consistent with the amount proposed by Chorus (assessment factor (o)).

Conclusions for access capex

5.171 Based on our review of Chorus' proposal we therefore consider including $71.4m of expenditure in our draft decision on the access capex for Chorus' base capex allowance meets the evaluation criteria under clause 3.8.5 of the fibre IMs as it reflects good telecommunications industry practice and satisfies the capital expenditure objective of being prudent and efficient.

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251 Our analysis of OLT expenditure on card swaps and splitter rehomes is based on information Chorus provided in response to request for information #11 on 4 December 2023. These figures are unallocated, but our draft decision on OLT expenditure and overall Access expenditure is in allocated expenditure terms.

252 Chorus, response to request for information #11 (4 December 2023).

253 Chorus, response to request for information #11 (4 December 2023).

Aggregation

Draft decision

5.172 Our draft decision is to include $79.8m for network capacity: aggregation capex (aggregation capex) in Chorus' base capex allowance for PQP2. This is the same as the amount proposed by Chorus.

5.173 Chorus' aggregation capex relates to work to add or upgrade aggregation electronics (eg, core switch, chassis) to meet bandwidth demand.[254]

Independent Verifier findings

5.174 The Independent Verifier verified that Chorus' network capacity: aggregation capex satisfies the evaluation criteria under clause 3.8.5 of the fibre IMs.[255] In forming this opinion, the Independent Verifier considered assessment factors (a), (b), (e), (h), (o), (q) and (t) were relevant under clause 3.8.6(1) of the fibre IMs.

5.175 The Independent Verifier's key findings in relation aggregation capex were that: [256]

5.175.1 Chorus demonstrated that the key investment drivers for aggregation capex were bandwidth growth (augmentation) and lifecycle replacement (renewal).

5.175.2 Chorus noted that, on average, [ ] of total cost for this sub-category is equipment set by key supplier [ ] rate cards. Prices for given equipment components are [ ]. Chorus also noted that [ ], which are considered in developing forecasts based on planned work (and expected volumes).[257]

5.175.3 Chorus advised that the remaining costs (non-equipment) were made of up of internal labour and field service provider deployment (based on observed actual costs).[258]

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254 Chorus "Our Fibre Assets" (31 October 2023), at 159.

255 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 13.

256 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 12-13.

257 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 13.

258 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 13-14.

5.175.4 Chorus confirmed that it made no adjustments to this costing approach in developing the PQP2 forecasts. However, the Independent Verifier noted that Chorus assessed whether modification was required (eg, if the technology assumptions lead to a change in installation and commissioning costs). As the plan for PQP2 uses consistent technology, Chorus considered no such modifications were relevant or required.

5.176 The Independent Verifier noted that Chorus explained that it is part way through a generational change in aggregation equipment that started in 2020. This was due to technological obsolescence and a 'stop sell' notice from Chorus' vendor who will no longer sell the older technology equipment. [259, 260]

5.177 The Independent Verifier also stated that, based on the information it was provided, Chorus demonstrated:[261]

5.177.1 the qualitative justification of the need to invest during PQP2;

5.177.2 consideration of good telecommunication industry governance frameworks, practices and decision-making processes;

5.177.3 consideration of processes for internal challenge and reasonableness testing of the key assumptions, methodologies, planning, and technical standards relied upon, and including deliverability and procurement risks; and

5.177.4 consideration of historical service provider and internal labour cost for similar activities, procurement contract pricing.

Stakeholder views

5.178 We did not receive any submissions from stakeholders on network capacity: aggregation.

Analysis

5.179 Overall, we consider Chorus' proposed aggregation capex for PQP2 is prudent and efficient. In coming to our draft decision, we have had regard to assessment factors (a), (b), (e), (h), (o), (q) and (t). These are the same as those considered by the Independent Verifier.

5.180 We consider the key drivers of aggregation capex are bandwidth growth and lifecycle replacement. This is consistent with the Independent Verifier's view.

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259 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 164.

260 We also understand this to mean that the equipment will fall out of technical support.

261 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 161-162.

5.181 We note that some areas of Chorus' proposal suggested that although linked, quality standards are a separate driver to bandwidth growth:[262]

> Without this expenditure to increase bandwidth capacity, traffic growth would lead to network congestion, breaching the port utilisation performance quality standards and driving poorer customer experience.

5.182 We agree with Chorus that the performance quality standard provides an operational upper limit for network utilisation. We consider this limit then drives the timing of Chorus' investment in network capacity in response to increasing aggregate bandwidth demand from end-users. Therefore, for the purpose of our assessment, we have considered these together.

5.183 Chorus uses price x quantity as a basis for its network capacity expenditure forecasts. For most aggregation capex, Chorus' 'price' is the unit cost of its equipment, and 'quantity' of network electronics is derived from its optimised network plan (ie, taking account of forecast end-user demand for services).

5.184 Chorus' proposal stated that the unit cost is defined by its vendor (supplier) contract. We acknowledge the benefits of such a contractual arrangement for forecasting expenditure. Chorus noted some efficiencies, such as volume discounts and prices remaining relatively stable over time (leading to more reliable forecasts and likely more prudent decision-making).

5.185 In terms of quantities, while we agree that the key uncertainties for aggregation capex are around bandwidth demand forecasts (ie, ATPU, which includes traffic arising from hyperfibre), we consider that this uncertainty is unlikely to have any material impact on Chorus' aggregation capex for PQP2 (assessment factors (e), (h), and (t)), this is because:

5.185.1 We agree with Chorus, that the relationship between bandwidth growth and network capacity capex is not linear. New investment will result in a step-up in both capacity and capex, following which bandwidth growth can continue without further capex until the next investment (and corresponding step change in expenditure) is required.[263]

5.185.2 Our modelling of different scenarios (including testing significant and material bandwidth demand increases) resulted in a negligible impact on proposed expenditure.

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262 Chorus "Our Fibre Assets" (31 October 2023), at 151.

263 Chorus "Our Fibre Assets" (31 October 2023), at 151.

5.185.3 As such, our view is that Chorus' inconsistent bandwidth growth forecasts across its proposal will not materially impact actual aggregation capex during PQP2.[264]

5.186 We acknowledge that investment in aggregation capex is necessary to maintain sufficient quality for end-users (assessment factor (h)).

5.186.1 Investment in both aggregation and transport assets is largely driven by timing due to Chorus' intention to complete the proactive element of its OLT upgrade replacement programme with XGS-PON-capable technology to be complete by end of PQP1 (assessment factor (o)).[265]

5.186.2 As such, prior to the start of PQP2, Chorus should have upgraded its OLTs in major urban areas (where hyperfibre uptake is most likely). In turn, capacity equipment for end-users (ONTs) and upstream of OLTs (eg, aggregation equipment) should then be readily upgraded in those areas to meet demand.

5.187 Furthermore, as noted by Chorus, it is widely accepted that next generation technology (XGS-PON or its equivalent) will be adopted in the next decade. For our draft decision, we consider $79.8m of network capacity – aggregation base capex in PQP2 meets the evaluation criteria under clause 3.8.5 of the fibre IMs as it reflects good telecommunications industry practice and satisfies the capital expenditure objective of being prudent and efficient.

Transport

Draft decision

5.188 Our draft decision is to include $85.0m for network capacity: Transport capex in Chorus' base capex allowance for PQP2. This is the same amount as proposed by Chorus.

5.189 Chorus' transport capex is used to provide equipment for network capacity over longer distances.[266]

Independent Verifier findings

5.190 The Independent Verifier verified that Chorus' network capacity: transportation capex satisfies the evaluation criteria under clause 3.8.5 of the fibre IMs.[267] In forming this opinion, the Independent Verifier considered assessment factors (a), (b), (c), (e), and (t) under clause 3.8.6(1) of the fibre IMs.

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264 Growth rates are currently double-digit year-on-year.
265 Chorus "Our Fibre Assets" (31 October 2023), at 328.
266 Chorus "Our Fibre Assets" (31 October 2023), at 160.
267 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 12-13.

5.191 The Independent Verifier's key findings in relation transport capex were that:[268]

5.191.1 Chorus identified the PQ FFLAS mandatory quality standards and demand growth as the key drivers for the PQP2 transport capex forecasts; and

5.191.2 Chorus used a price x quantity forecasting methodology. The assumptions and inputs used in the methodology appear reasonable, as does the governance process associated with development of the PQP2 access forecasts.

5.192 The Independent Verifier noted that prices are based on field service provider unit rates, which are based on field service agreements.[269] Recent historical data is used to calibrate the cost per activity assumptions in Chorus' models. Transport equipment unit costs from technology partnership agreement price lists are used to inform the cost of forecast equipment costs.[270]

Stakeholder views

5.193 We did not receive any submissions from stakeholders on network capacity: transport.

Analysis

5.194 Overall, we consider Chorus' proposed transport capex for PQP is prudent and efficient. In coming to our draft decision, we have had regard to assessment factors (a), (b), (c), (e), and (t). These are the same as those considered by the Independent Verifier.

5.195 We consider the key drivers of transport capex are bandwidth growth and lifecycle replacement. This is consistent with the Independent Verifier's view.

5.196 We note that some areas of Chorus' proposal suggested that quality standards are a separate driver to bandwidth growth of aggregation and transport capex.

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268 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 12.

269 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 167.

270 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 167.

5.197 As noted in respect of Chorus' proposed PQP2 aggregation expenditure at paragraph 5.186, we agree with Chorus that the performance quality standard provides an operational upper limit for network utilisation. We consider this limit then drives the timing of Chorus' investment in network capacity in response to increasing bandwidth demand from end-users. Therefore, for the purpose of our assessment, we consider bandwidth growth (noting constraint of the performance quality standard) and lifecycle replacement as key drivers of transport capex expenditure.

5.198 Chorus uses price x quantity as a basis for its network capacity expenditure forecasts. For transport capex, Chorus' 'price' is the unit cost of its equipment, and 'quantity' of network electronics is derived from its optimised network plan (ie, taking account of forecast end-user demand for services).

5.199 We acknowledge Chorus' decision to change its primary vendor of transport equipment[271] (assessment factor(a)).

5.199.1 Chorus' reasons for choosing its new supplier appear to be reasonable. The new vendor's equipment seems more appropriate to Chorus' network than the alternative suppliers considered. Chorus stated that the equipment of alternative suppliers' was optimised for core and metro areas, which may have led to backward compatibility issues with some of Chorus' legacy technology.

5.200 We consider there are commonalities between the investment (and cost drivers) of aggregation and transport assets. As such, as indicated in our draft decision reasoning for aggregation capex:

5.200.1 We agree with Chorus that the relationship between bandwidth growth and network capacity capex is not linear. New investment will result in a step-up in capacity, following which bandwidth growth can continue without further capex until the next investment (and corresponding step change in expenditure) is required (assessment factors (e) and (t)).[272]

[271] Chorus "Our Fibre Assets" (31 October 2023), at 162.
[272] Chorus "Our Fibre Assets" (31 October 2023), at 151.

5.200.2 We also note that investment in both aggregation and transport assets is largely about timing to meet forecast traffic demand within the bounds of the performance standard. A shift to next generation PON technology (ie, XGS-PON) is expected in the next decade. We anticipate the uptake of hyperfibre (XGS-PON) will positively change Chorus' traffic demand profile. However, the timing of the uptake of the new technology along with any increase in bandwidth demand is difficult to forecast. Chorus has stated that it will deploy XGS-PON capable assets in PQP2, after it has completed the proactive element of its OLT upgrade programme (expected to be complete by the end of PQP1) (assessment factor (o)).

5.200.3 Further, we acknowledge that a certain level of investment in transport capex is necessary to maintain sufficient quality for end-users (assessment factors (a) and (h)).

5.201 We therefore consider including $85m of expenditure in the transport sub-category of base capex meets the evaluation criteria under clause 3.8.5 of the fibre IMs as it reflects good telecommunications industry practice and satisfies the capital expenditure objective of being prudent and efficient.

Network sustain and enhance

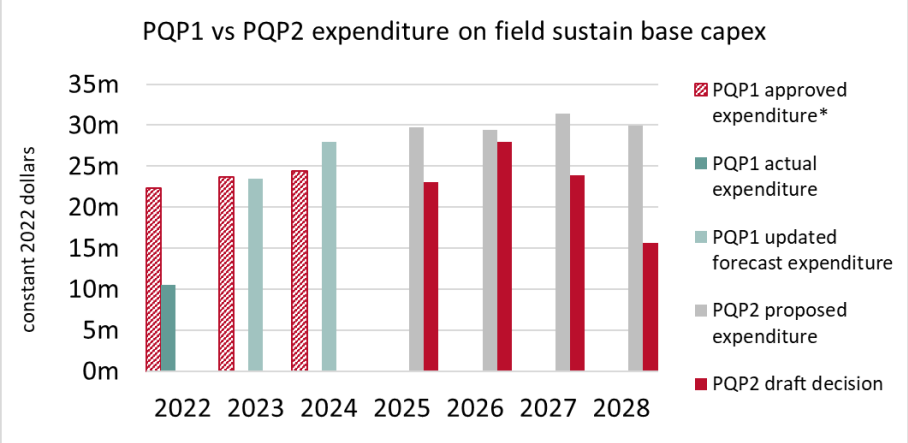
Field sustain

*Draft de*cision

5.202 Our draft decision is to include $90.5m for Network Sustain and Enhance: Field Sustain capex (field sustain capex) in Chorus' base capex allowance for PQP2. This is $30.0m less than the $120.5m Chorus proposed in total for field sustain capex.

5.203 Figure 5.5 compares our draft decision to Chorus' proposal, our final decision for PQP1, and Chorus' actual expenditure and updated forecast expenditure for the PQP1 period.

Figure 5.5 PQP1 vs PQP2 field sustain base capex



5.204 Chorus' field sustain capex relates to routine investment to replace or rehabilitate in field physical assets.[273] The objective of this investment is to optimise the lifetime cost of network physical assets, while safeguarding public and worker safety.[274]

5.205 We have assessed the component parts of Chorus' field sustain capex including its proactive and reactive replacement capex programmes.

5.206 For our draft decision we have:

5.206.1 not included $5.7m of Chorus' proposed proactive expenditure for the replacement of Pulse-Code Modulation or Customer Multi-Access Radio (PCM/CMAR) routes with fibre backhaul as we have been unable to evaluate Chorus' propose expenditure for lack of information.

5.206.2 included $39.9m for the replacement of 400km of H1 and H2 fibre cables, as we consider this figure is more consistent with Chorus' underlying models. This amount is $24.1m less than the $64.0m Chorus proposed for replacement of fibre cables.

5.207 The total field sustain expenditure also reduces slightly by $0.2m due to updates to cost allocation.

5.208 Table 5.6 sets out the components of our draft decision.

Table 5.6 Summary of draft decision for field sustain capex

Category	Chorus proposed ($m)	Draft decision ($m)	Difference ($m)
Proactive poles	23.8	23.8	0.0
Proactive fibre	64.0	39.9	-24.1
PCM/CMAR	5.7	0.0	-5.7
Pits and manholes	16.2	16.2	0.0
Fibre flexibility points	4.8	4.8	0.0
Capability	3.2	3.2	0.0
Fibre growth	2.8	2.8	0.0
Cost allocation update effect	NA	-0.2	-0.2
Total	120.5	90.5	-30.0

[273] Chorus "Our Fibre Assets" (31 October 2023), at 114.
[274] Chorus "Our Fibre Assets" (31 October 2023), at 114-115.

Independent Verifier's findings

5.209 The Independent Verifier verified that Chorus' network sustain and enhance: field sustain capex satisfies the evaluation criteria under clause 3.8.5 of the fibre IMs.[275] In forming this opinion, the Independent Verifier considered assessment factors (a), (e), (k), (o), (s) and (t) under clause 3.8.6(1) of the fibre IMs.

5.210 The Independent Verifier noted:[276]

5.210.1 Chorus explained what appears to be a rigorous asset condition-based approach to forecasting pole replacement volumes using survivor curve analysis. This analysis forecasts that 8,800 poles will need to be replaced during PQP2.

5.210.2 The need for the capex is clear and the asset management processes that lead to this sub-category of capex appear to be sound and reflect good telecommunications industry practice.

5.210.3 The forecasting methodology documentation was not transparent and lacked clear analysis of PQP2 forecast expenditure. However, given additional information and time spent with Chorus' subject matter experts the Independent Verifier gained materially more comfort on the reasonableness of the key assumptions and forecasting methodologies.

Stakeholder views

5.211 We did not receive any submissions from stakeholders on network sustain and enhance: field sustain capex.

Analysis

5.212 Our analysis of field sustain capex focused on the following areas:

5.212.1 proactive expenditure for replacement of:

5.212.1.1 legacy routes with fibre backhaul;

5.212.1.2 poles;

5.212.1.3 fibre; and

5.212.1.4 faulty assets, rehabilitation of fibre flexibility points, fibre growth, and capability.

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[275] Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 14.

[276] Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 172.

5.213 Our draft decision for each of these areas is discussed further below.

Replacement of certain legacy routes with fibre backhaul

5.214 Our draft decision is to not include the proposed $5.7m of field sustain capex for the replacement of PCM/CMAR routes with fibre backhaul. We observed that total proposed proactive capex in Chorus' proposal ($93.5m) included an unexplained $5.7m. In reaching our view we had regard to assessment factors(e), (s), (o) of clause 3.8.(6)(1) of the fibre IMs.

5.215 We asked Chorus to explain the $5.7m discrepancy identified.[277] In response, Chorus briefly stated that this expenditure was intended for the lifecycle replacement of PCM/CMAR routes with fibre backhaul.
[

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5.216 While we consider there is likely a need for the expenditure due to an ongoing issue with spares availability (assessment factors (k) and (o)) we were unable to consider Chorus' approach to forecasting the expenditure due to a lack of information from Chorus (assessment factor (e)). We were also not able to identify whether key assumptions underlying the expenditure forecasts are reasonable (assessment factor (t)) or whether data relating to the expenditure is accurate and reliable. Without sufficient evidence to explain this discrepancy, we are not satisfied the expenditure meets the capital expenditure objective.

5.217 Having considered Chorus' proposal and response, our draft decision is to not include the proposed $5.7m in the field sustain base capex allowance for PQP2.

Proactive replacement of poles

5.218 Our draft decision for field sustain capex is to include $23.8m for the proactive replacement of poles in Chorus' base capex allowance for PQP2. This is the same amount Chorus proposed for proactive pole replacement in PQP2. We have had regard to assessment factors (k), (l), (o), (p), (s) and (t) as set out in clause 3.8.5 of the fibre IMs.

5.219 We consider Chorus' approach to modelling the number of poles to be replaced has followed current wider industry best practice.

5.220 We agree with Chorus that the investment drivers for this capex are:[278]

277 Chorus, response to request for information #63 (15 January 2024).
278 Chorus "Our Fibre Assets" (31 October 2023), at 116-117.

5.220.1 Lifecycle replacement of poles that are large structures located along roadsides and in other public spaces. Chorus considers a run-to-fail strategy presents an unacceptable public (and worker) hazard, both from a legislative compliance and reputational perspective (assessment factor (a)).

5.220.2 Based on replacement volumes determined by survivor curve analysis (risk) assessment and information obtained on the health (condition) of poles through its 'test and tag' programme (assessment factor (e)).

5.221 We therefore consider including $23.8m for the proactive replacement of poles in this sub-category meets the evaluation criteria under clause 3.8.5 of the fibre IMs as it reflects good telecommunications industry practice and satisfies the capital expenditure objective of being prudent and efficient.

Fibre cable proactive replacement

5.222 Our draft decision for field sustain capex is to include $39.9m for proactive replacement of slotted core fibre cables. This is a reduction to the $64m proposed by Chorus in its proposal.[279] In reaching this view we had regard to assessment factors (e), (m), (o), (t) as set out in clause 3.8.5 of the fibre IMs.

5.223 Chorus' proposal is to proactively replace 400km of its oldest slotted core fibre cables in the PQP2 regulatory period.

5.224 The investment drivers of this capex are:[280]

5.224.1 Lifecycle replacement of 30-40 years old slotted cable fibres showing signs of deterioration consistent with approaching end-of-life.

5.224.2 Determination of replacement volumes according to the condition of the fibre cables (tagged H1 & H2) and prioritisation according to:

5.224.2.1 core and regional transport routes shared with Spark (shared cost);

5.224.2.2 regional transport (dense wavelength-division multiplexing) routes; and

5.224.2.3 history of operational problems.

5.225 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:[281]

279 Chorus "Our Fibre Assets" (31 October 2023), at 117.
280 Chorus "Our Fibre Assets" (31 October 2023), at 117-118
281 Chorus, response to request for information #18 (7 December 2023).

5.225.1 The model supplied in response to a RFI identified projects as having a priority of 1 to 6, or as having no assigned priority (ie, Blank/Null) (assessment factor (m) and (t)).

5.225.2 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 [ ]km of fibre cable, significantly more fibre cable than the 400km stated in Chorus' proposal (assessment factor (e)).

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

5.226 Based on the above findings, our draft decision is that Chorus' proposed expenditure does not meet capital expenditure objective as it is significantly higher than what Chorus modelled to replace the 400km of priority 1 and priority 2 fibre cables.

5.227 We therefore consider including $39.9m for the replacement of 400km of H1 and H2 fibre cables, meets the evaluation criteria under clause 3.8.5 of the fibre IMs as it reflects good telecommunications industry practice and satisfies the capital expenditure objective of being prudent and efficient.

Rehabilitation, reactive maintenance, capability and fibre growth expenditure

5.228 Our draft decision for field sustain capex is to include $27m for the rehabilitation of fibre flexibility points (FFPs), pits and manholes inspection programme, asset replacement, capability and for fibre growth in Chorus' base capex allowance for PQP2. This is the same as the amount proposed by Chorus. In reaching this view we had regard assessment factors (o), (p), (r) and (t) as set out in clause 3.8.5 of the fibre IMs.

5.228.1 We understand from Chorus' proposal that the key investment drivers for these capex items are:

5.228.2 **Capability:** [282]

5.228.2.1 The aim of this investment is to support the effective management of Chorus' physical assets.

5.228.2.2 Proposed PQP2 expenditure ($3.2m) is for the purposes of:

1.1.1.1.1 vehicle replacement in support of in field operations;

[282] Chorus "Our Fibre Assets" (31 October 2023), at 121.

1.1.1.1.2 digitisation of legacy asset and engineering information; and

1.1.1.1.3 investigation, development, and introduction of new technologies (eg, new jointing system).

5.228.3 **Rehabilitation of fibre flexibility points:**[283]

5.228.3.1 This investment is driven by a need to improve the reliability and avoid the cost of higher reactive fault response costs.

5.228.3.2 Proposed PQP2 expenditure of $4.8m is to remediate 4,000 FFPs that have high fault rates and at least 90% utilisation.

5.228.4 **Fibre growth**:[284]

5.228.4.1 This investment is driven by the need to add fibre to inter-exchange transport routes to support capacity (bandwidth) growth.

5.228.4.2 Proposed PQP2 expenditure level of $2.8m is informed by current fibre utilisation rates and traffic forecasts and network planning guidelines.

5.228.5 **Pits and manholes:**[285]

5.228.5.1 This investment is driven by the need to managing the public risk to pits and manholes (assets). The condition of these assets is difficult to predict and therefore a proactive approach would not necessarily be more cost-efficient.

5.228.5.2 Proposed PQP2 expenditure of $16.2m is for inspection of 102,520 pits and manholes over the period consistent with its 10-year inspection programme. The inspection programme will identify pits and manholes requiring immediate remediation or replacement and will gather condition information, which is used to manage public safety risk from slippery or loose manhole lids in footpaths or other public spaces.

5.229 We consider, based on Chorus' proposal, the proposed expenditure reflects good telecommunications industry practice and satisfies the capital expenditure objective of being prudent and efficient. We agree with the need for the investment:

283 Chorus "Our Fibre Assets" (31 October 2023), at 118.
284 Chorus "Our Fibre Assets" (31 October 2023), at 116.
285 Chorus "Our Fibre Assets" (31 October 2023), at 119.

5.229.1 as there are identified health and safety risks (eg, slippage) associated pits and manholes and delivery of the pits and manholes inspection programme with its field force (assessment factors (a) (o) and (k));

5.229.2 due to the dependency and trade-off made between capex and opex and the economic justification Chorus made in respect of proposed FFP rehabilitation expenditure (assessment factors (e), (o) and (s)); and

5.229.3 as we consider that key assumptions underlying the proposed expenditure are reasonable in respect of maintaining Chorus' capability to support its physical assets and in the provision of additional inter-exchange fibre to meet bandwidth demand and network resiliency (assessment factors (o) and (t)).

5.230 Our draft decision for field sustain is therefore to include $27m in base capex expenditure for PQP2 for the purpose of the rehabilitation of FFPs, the inspection of pits and manholes, asset replacement, capability and for fibre growth. In reaching this decision we have had regard to assessment factor: (a) (e), (k), (o), (s) and (t)) as set out in clause 3.8.5 of the fibre IMs.

Relocations

Draft decision

5.231 Our draft decision is to include $18.2m for relocations capex in Chorus' base capex allowance for PQP2. This is the same amount as proposed by Chorus in its PQP2 expenditure proposal.

5.232 Chorus' relocations capex relates to work that it is required to move network elements.[286]

Independent Verifier findings

5.233 The Independent Verifier verified that Chorus' relocations capex forecast satisfies the evaluation criteria under clause 3.8.5 of the fibre IMs.[287] In forming this opinion it considered assessment factors (c), (m) and (s) were relevant under clause 3.8.6(1) of the fibre IMs.

5.234 The Independent Verifier considered that Chorus provided a good explanation of its price x quantity forecasting methodology. It considered the relocations capex forecasts were based on historical average costs and volumes, and assumptions that included:[288]

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286 Chorus "Our Fibre Assets" (31 October 2023), at 130.

287 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 182.

288 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 181-182.

5.234.1 Costs remaining relatively stable over PQP2. This is because demand for relocations work is reactive with consistent costs and volumes, and a large portion of costs are recovered from road authorities.

5.234.2 Prices are calculated based on the historical actuals over the previous 12 months and quantities are based on historical average run rates.

5.235 The Independent Verifier also highlighted that the relocations capex forecast is flat over PQP2, consistent with PQP1 expenditure and identified no other issues.[289]

Stakeholder views

5.236 We did not receive any submissions from stakeholders on network sustain and enhance: relocations.

Analysis

5.237 In considering whether Chorus' proposal has met the capital expenditure objective, we have had regard to assessment factors (c), (m) and (s) in clauses 3.8.6(1) of the fibre IMs, the same assessment factors identified as relevant by the Independent Verifier.[290]

5.238 Specifically, we consider that the PQP2 forecast is in line with historic capital expenditure (assessment factor (c)), has regard to fibre asset and fibre network information (assessment factor (m)) as relocating assets is reactive and driven by third party requirements external to Chorus and the data used is accurate and reliable (assessment factor (s)).

5.239 We therefore consider including $18.2 million of expenditure in this sub-category meets the evaluation criteria under clause 3.8.5 of the fibre IMs as it reflects good telecommunications industry practice and satisfies the capital expenditure objective of being prudent and efficient.

Resilience

Draft decision

5.240 Our draft decision is to include $46.6m for network sustain and enhance: resilience capex in Chorus' base capex allowance for PQP2. This is $33m less than what was proposed by Chorus' in its PQP2 expenditure proposal ($79.6m) and is due to including less than Chorus' proposed investment in dual fibre paths. Figure 5.6 compares our draft decision to Chorus' proposal, our final decision for PQP1, and Chorus' actual expenditure and updated forecast expenditure for the PQP1 period.

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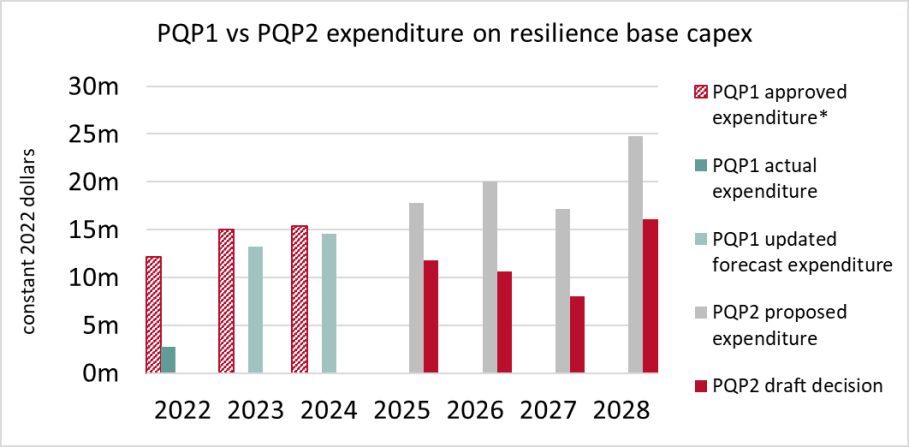
289 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 182.

290 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.8.6.

Figure 5.6 PQP1 vs PQP2 resilience base capex



5.241 Chorus' resilience capex relates to work undertaken to ensure its network is resilient and that the supply to end-users is maintained in the face of adverse events.[291]

Independent Verifier findings

5.242 The Independent Verifier verified that Chorus' resilience capex forecast satisfies the evaluation criteria under clause 3.8.5 of the fibre IMs. In forming this opinion, it considered assessment factors (e), (h), (j), (k), (t) were relevant c of the fibre IMs).[292]

5.243 The Independent Verifier considered:

5.243.1 Chorus had received strong stakeholder support revealed during Chorus' PQP2 stakeholder engagement process.

5.243.2 The proposed expenditure is well targeted in terms of maximising the benefit of the investment to end-users.

5.243.3 The price impact of the expenditure is not excessive, recognising its cost will be recovered across all FFLAS end-users given Chorus must charge the same price for a service that is "materially the same" regardless of location of the end-user.

5.244 The Independent Verifier noted that Chorus should provide the Commission with greater transparency regarding the build-up of the PQP2 forecast.

Stakeholder views

5.245 The Commission received the following submissions relating to resilience expenditure:

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291 Chorus "Our Fibre Assets" (31 October 2023), at 133.

292 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 178.

5.245.1 RSPs were supportive of Chorus' investment in resilience in principle and in particular where the benefits outweigh the costs (2degrees) and where investments increase network resilience and can be measured (2degrees and One NZ).

5.245.2 Spark and 2degrees considered Chorus should apply for ICPs as ICPs were the most appropriate mechanism for approving resilience expenditure. One NZ and Spark also proposed:

5.245.2.1 Chorus should be required to engage with access seekers on resilience initiatives before they are finalised to recognise co-investment opportunities (Spark); and

5.245.2.2 there needs to be a clear line of sight between proposed resilience expenditure and improved service quality expectations/requirements (2degrees).

Analysis

5.246 Chorus has proposed investment of $79.6 million in PQP2 which consists of:[293]

5.246.1 **Dual fibre paths ($69.1 million):** providing route diversity so connectivity is sustained if a single fibre route fails or is taken out of service (eg, for planned works). Dual fibre paths help reduce the number of outages on Chorus' network.

5.246.2 **Functional limits ($9.9 million):** building or upgrading network sites so that no site is a single point of failure for more than a set number of connections (depending on the function undertaken at that site).

5.246.3 **Critical spares ($0.7 million):** putting measures in place to support rapid recovery if connection is lost.

5.247 We have had regard to the following assessment factors when assessing Chorus' resilience expenditure allowance: (a), (c), (d), (i), (j), (k), (n), (t). In doing so, we have considered some assessment factors considered by the Independent Verifier in its final report, as well as some additional assessment factors.

5.248 We have assessed the three main components of Chorus' resilience expenditure including Chorus' investment in critical spares, functional limits on exchanges and investments in implementing dual pathways. We have focused our analysis on dual pathway investments given the materiality of this component of resilience expenditure.

[293] Chorus "Our Fibre Assets" (31 October 2023), at 139 and 141-142.

Our analysis of Chorus' functional limit and critical spares expenditure

5.249 We consider that the allowance for critical spares expenditure ($0.7m) is prudent and should be included in Chorus' allowance.

5.250 Chorus appears to have applied its technical standard for functional limits in developing its forecast (assessment factors (t) and (e)).[294]

5.251 Its proposal included limited explanation for why the standard for functional limits should be set at 25,000 connections directly connected to any access site. We do consider that functional limits are an appropriate intervention to ensure an appropriate level of network redundancy. Although we consider Chorus has provided limited information to explain the level set by the technical standard, we have limited reasons or information to challenge this standard.

5.252 As with other technical standards that drive investment decisions, we consider it would reflect good telecommunications industry practice to review these standards at regular intervals and to take into account the views of end-users when determining them.

Our analysis of Chorus' investments in fibre dual pathways

5.253 Chorus indicated multiple drivers for investing in dual fibre paths including meeting network architecture standards, contracted and regulatory availability quality standards, as well as customer and government expectations. However, from Chorus' proposal documentation, it is not clear how each driver contributes to the expenditure allowance in its forecast methodology.

5.254 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.[295]

5.255 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)). It acknowledged that this is challenging without a volume of lost load (VoLL), which we accept. However, greater effort could have been spent on understanding and explaining the benefits and costs of specific investments to stakeholders.

294 Chorus "Our Fibre Plans" (31 October 2023), at 141.
295 Chorus "Our Fibre Plans" (31 October 2023), at 137.

5.256 We accept there may be alternative reasons for why dual fibre paths could be built to communities with fewer than 3,000 premises, but this is not clear from the documentation provided by Chorus. Chorus is currently meeting the mandatory availability standard by a large margin in most instances so the need for availability related investment is unclear.

5.257 We requested and reviewed Chorus' model for forecasting resilience expenditure which is based on a price x quantity methodology and includes the list of proposed dual pathway projects Chorus intends to make during PQP2 (assessment factor (e)). The list of projects includes 14 projects that do not appear to meet its architecture specification. The proposed list includes projects with significant variability in the cost per premise covered by the resilience project, with some projects exceeding [ ].[296] We consider there could be cheaper alternatives for some of these projects, for example from low earth orbit satellite services.

5.258 We accept resilience is an important objective and some level of investment in resilience is required. However, significant investment in resilience should still consider the costs and benefits of the investment and where the costs are significantly high, better alternatives may be appropriate (assessment factor (d)).

5.259 Chorus did provide alternatives to investing in dual pathways but these alternative options only considered alternative levels of investment based on current, increased and decreased investment options.[297] No consideration appears to be given to whether opex solutions or additional critical spares may be more effective or whether alternative capex solutions or alternative technologies may offer greater or more cost-effective resilience against high impact, low probability events (assessment factor (i)).

5.260 There are real limitations in quantifying the benefits of Chorus proposed investments and given we do not have a viable alternative, we have adopted Chorus' current architecture standard as the basis of our assessment for this sub-category.

5.261 Our draft decision is therefore to not include in Chorus' expenditure allowance $33m for resilience, this accounts for 14 resilience projects that do not meet its architectural standard (assessment factor (t)).[298]

[296] Chorus, response to request for information #5 (29 November 2023).
[297] Chorus "Our Fibre Plans" (31 October 2023), at 136.
[298] Chorus, response to request for information #5 (29 November 2023).

5.262 Chorus could provide further information by way of submission as to why these projects should be funded or why the architectural standard should be lowered to invest in areas with fewer premises.[299] It is also open to Chorus at any time to apply for additional resilience expenditure using the ICP mechanism (provided the application meets the relevant fibre IM criteria).

5.263 Chorus presented evidence of strong overall stakeholder support for investment in resilience during PQP2. However, submissions from RSPs suggests that not all views were unanimous (assessment factor (j)).

5.264 In coming to our draft decision, we noted submissions from Spark, One NZ and 2degrees to exclude all of Chorus' resilience expenditure and require that Chorus seek all expenditure via the ICP mechanism. Submitters also stated that we should wait until the government had completed its consultation on related resilience legislation.[300]

5.265 We agree with submitters that the ICP mechanism may allow for greater consultation with industry, further consideration of alternative investment options and greater investigation of the benefits for end-users from investment in resilience. It is open to Chorus to apply for an ICP at any time. However, we consider it would be prudent to provide some allowance rather than wait until legislation has been completed and we consider the proposed investment does provide benefits in terms of increases in availability from fault reduction.

5.266 We therefore consider including $46.6m of expenditure in the resilience sub-category of base capex meets the evaluation criteria under clause 3.8.5 of the fibre IMs as it reflects good telecommunications industry practice and satisfies the capital expenditure objective of being prudent and efficient.

5.267 Going forward we expect Chorus to continue to assess the appropriateness of its architectural standards and to consider alternatives. We expect investments in dual fibre pathways to be invested where they meet a reasonable cost benefit test, relative to alternative options. We also expect Chorus to continue to consult with all of its stakeholders to identify high value targets for investments and to identify whether more cost-effective alternatives exist.

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299 Chorus, response to request for information #5 (29 November 2023).

300 Spark NZ "Fibre price-quality regulation: process and approach for the 2025-2028 regulatory period" (14 December 2023), at [10].

5.268 We also expect Chorus to improve its assessment of the risk its network faces from high impact, low probability events and to take a regional and holistic view of how resilience can be maximised including working with organisations in other sectors (such as the electricity sector and Councils) and other actors in the telecommunications sector.

Site sustain

Draft decision

5.269 Our draft decision is to include $91.2m for network sustain and enhance: site sustain capex in Chorus' base capex allowance for PQP2. This is the same amount of expenditure as proposed by Chorus in its PQP2 expenditure proposal.

5.270 Chorus' site sustain capex is used by Chorus to ensure it maintains a suitable operating environment for network equipment and ensure it meets safety obligations.[301]

Independent Verifier findings

5.271 The Independent Verifier verified that Chorus' site sustain capex forecast satisfies the evaluation criteria under clause 3.8.5 of the fibre IMs. In forming this opinion, it considered three assessment factors were relevant under clause 3.8.6(1) of the fibre IM.

5.272 Specifically, the Independent Verifier considered:

5.272.1 it is prudent to bring earthquake prone buildings up to a consistent standard that meets legislative requirements; and

5.272.2 the approach to forecasting costs is reasonable, given the high degree of uncertainty given its site-specific nature.[302]

Stakeholder views

5.273 We did not receive any submissions from stakeholders on network sustain and enhance: site sustain.

5.274 We have had regard to the assessment factors (a), (e), (i), (k), (n), (o), (r), (t) in assessing Chorus' resilience expenditure allowance.

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301 Chorus "Our Fibre Assets" (31 October 2023), at 122.

302 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 180.

5.275 A significant component of Chorus' proposed investment in site sustain relates to regulatory compliance and lifecycle requirements which allow some flexibility in scheduling (assessment factor (a)). There is a lack of detail on some types of spend within site sustain and inconsistencies in the costs from different Chorus sources.[303]

5.276 However, a review of the information provided shows that the total amount of work required to meet Chorus' compliance requirements appears to be greater than the amount sought by Chorus for PQP2 (ie, the proposed expenditure results from Chorus' phasing of investment, rather than the need for compliance).

5.277 Regulatory compliance is the main driver for seismic upgrade investment, and we consider there is a reasonable case for this investment (assessment factor (a)).[304] Chorus has a programme of work required to be completed within 15 years and additional investment is expected post PQP2.

5.278 In forecasting its expenditure for seismic upgrades, Chorus has used an average cost multiplied by number of buildings (price x quantity) methodology. Preliminary cost estimates are generalisations based on two projects that have been fully costed. However, we note that most projects will be unique, and although there may be some buildings with similar design features that will require similar remediation there is likely to be some variability in the cost estimates given the bespoke nature of the required work (assessment factor (t)). We also expect that Chorus has sufficient control of the timing of any work to fully utilise the proposed capex envelope – eg, it can bring forward any additional work if average costs are less than forecast (assessment factors (k), and (n)).

5.279 Therefore, based on the information we have reviewed, we consider the proposed expenditure is prudent and efficient and meets the evaluation criteria.

5.280 We have reviewed the other components of the site sustain expenditure (building sustain, services sustain, leases and exchange modifications) and considered the Independent Verifier report.

5.281 In our view the proposed expenditure is in line with historical expenditure levels (assessment factor (c)) and appears to be appropriate in light of the uncertainty inherent the forecasts (assessment factors (a), (o), and (t)).

5.282 We note that the solar upgrade investment results in a capex-opex trade-off which we have proposed to accept in our draft decision (assessment factor (r)). Therefore, based on the information we have reviewed, we agree with the Independent Verifier's conclusions and consider the remaining proposed expenditure for site sustain is also prudent and efficient and meets the evaluation criteria.

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303 Chorus, response to requestion for information #48 (26 January 2024).

304 This investment is required by the Earthquake Amendment Act 2016 and the Building Act 2004.

5.283 We therefore consider including $91.2m of expenditure in site sustain sub-category of base capex meets the evaluation criteria under clause 3.8.5 of the fibre IMs as it reflects good telecommunications industry practice and satisfies the capital expenditure objective of being prudent and efficient.

Chapter 6 Connection capex

6.1 This chapter describes our draft decision on the connection capex baseline allowance for Chorus for the PQP2 period.

6.2 Connection capex is capex that is directly incurred by Chorus in relation to connecting new end-user premises where the communal fibre network already exists or will exist at the time of connection. The fibre IMs require us to determine a connection capex baseline allowance, which must include:[305]

6.2.1 the expenditure allowance for each connection type for each year of the PQP2 period;

6.2.2 the unit costs used to calculate the allowance for each year of the PQP2 period; and

6.2.3 the forecast volumes used to calculate the allowance for each connection type for each year of the PQP2 period.[306]

6.3 We must also determine a connection capex variable adjustment at the end of the regulatory period.[307] This is the difference between:

6.3.1 the connection capex baseline allowance; and

6.3.2 the capex given by applying the unit costs determined in the connection capex baseline allowance to actual connection volumes for each connection type.[308]

6.4 In summary, we must determine the unit cost input to the connection capex allowance upfront, but the connection volume input is "washed up" using actual volumes. The draft decision must include forecast connection volumes used to determine the connection capex baseline allowance, but uncertainty about the connection volumes is managed through the connection capex variable adjustment. While this reduces the risk posed by over- or underestimating connection capex, we aim to determine the best forecast connection volumes given the information available. Material errors in the forecast connection volumes mean either Chorus or end-users must wait years to be "made whole" by the connection capex variable adjustment.

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305 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.7.13(1)(a).
306 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.7.20(2).
307 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.7.13(1)(b).
308 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.7.21(2).

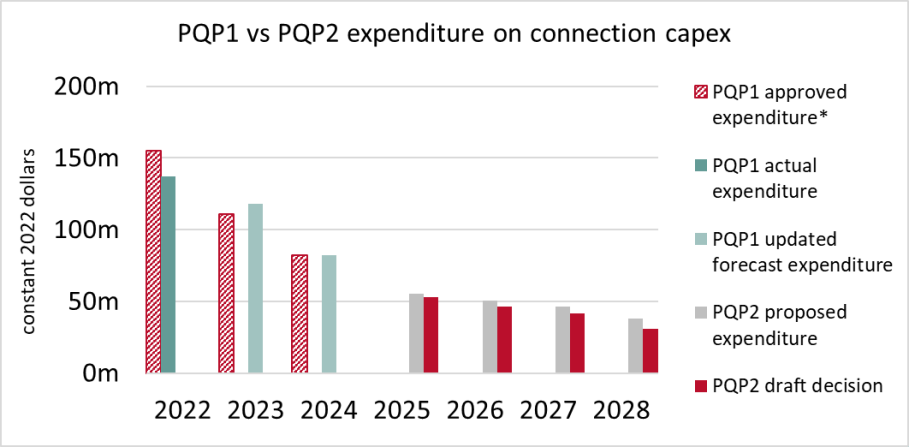
6.5 Connection capex is capex associated with new connections (not intact connections) and where the expenditure is driven by each additional new connection (ie, there is an identifiable unit cost). The base capex allowance captures other capex that may be related to demand, including capex on intact connections.[309] Other demand-related capex can be found in the base capex sub-categories of standard installations, complex installations, and network capacity (access, aggregation and transport).[310]

Draft decision

6.6 Our draft decision on connection capex is to include $170.9m for connection capex baseline allowance for PQP2. This is $19.1m less than proposed by Chorus. We consider this meets the evaluation criteria set out in clause 3.8.5 of the fibre IMs as it meets the capital expenditure objective and reflects good telecommunications industry practice.

6.7 Figure 6.1 below compares our draft decision, Chorus' proposal, our final decision for PQP1, and Chorus' actual expenditure and updated forecast expenditure for the PQP1 period.

Figure 6.1 PQP1 vs PQP2 connection capex



6.8 For our draft decision we have determined:

6.8.1 Smoothed connection capex unit costs for connection types 1, 2a, 2b, 3, and 4. We found insufficient evidence that some underlying cost increases were consistent with the efficient costs of a prudent operator, and we have adjusted these to align with our estimate of prudent and efficient costs more closely.

309 Commerce Commission "Fibre Input Methodologies: Main final decisions – reasons paper" (13 October 2020), at 628.

310 Chorus "Our Fibre Assets" (31 October 2023), at 203.

6.8.2 Adjusted forecast connection volumes for connection types 2a, 2b, 7 and 8. We adjusted volumes for types 2a, 2b and 8 to reflect the latest information provided by Chorus on its fibre frontier network extension work. We also adjusted volumes for types 7 and 8 because we found Chorus' assumption of future hyperfibre demand to be higher than prudent given historic actual demand.

6.8.3 The same connection capex unit costs and forecast connection volumes as Chorus in all other cases because we found the expenditure met the evaluation criteria set out in the fibre IMs.

6.9 Table 6.1 and Table 6.2 set out our draft decision and Chorus' proposal for each connection type. Table 6.1 is heavily redacted for publication because most of the information is confidential to Chorus. We include Table 6.2, which is aggregated to groupings of connection types, to better enable other stakeholders to engage with our draft decision on connection capex. Table 6.2 presents totals for connection volumes and capex and weighted averages for unit costs.

Table 6.1 Draft decision for the connection capex baseline allowance

Connection type			Connection capex unit cost per year				Forecast connection volume per year				PQP2 capex ($m)
			2025	2026	2027	2028	2025	2026	2027	2028	
1	**Standard - installation – simple**	Proposed	$705.85	$688.30	$641.63	$619.09	21312	18497	19815	16167	**50.5**
		Draft decision	$641.53	$634.05	$626.57	$619.09	21312	18497	19815	16167	**47.8**
2a	**Standard – installation – non-civil**	Proposed	$1,141.25	$1,116.76	$1,058.03	$1,036.84	11492	11427	11577	10395	**48.9**
		Draft decision	$1,056.88	$1,050.20	$1,043.52	$1,036.84	11759	10230	9001	6373	**39.2**
2b	**Standard – installation – civil construction**	Proposed	$1,427.74	$1,402.65	$1,316.00	$1,289.59	5066	3979	2879	2566	**19.9**
		Draft decision	$1,311.87	$1,304.45	$1,297.02	$1,289.59	5152	3592	2047	1268	**15.7**
3	**Standard – extension – class 1**	Proposed	[ ]	[ ]	[ ]	[ ]	4565	4942	4029	2261	**[ ]**
		Draft decision	[ ]	[ ]	[ ]	[ ]	4565	4942	4029	2261	**[ ]**
4	**Standard – extension – class 2**	Proposed	[ ]	[ ]	[ ]	[ ]	142	118	107	100	**[ ]**
		Draft decision	[ ]	[ ]	[ ]	[ ]	142	118	107	100	**[ ]**
5	**Standard – extension – class 3**	Proposed	[ ]	[ ]	[ ]	[ ]	23	19	17	15	**[ ]**
		Draft decision	[ ]	[ ]	[ ]	[ ]	23	19	17	15	**[ ]**
6	**Standard – extension – class 4**	Proposed	[ ]	[ ]	[ ]	[ ]	2	1	1	1	**[ ]**
		Draft decision	[ ]	[ ]	[ ]	[ ]	2	1	1	1	**[ ]**
7	**Standard – ONTs – hyperfibre**	Proposed	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	**[ ]**
		Draft decision	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	**[ ]**
8	**Standard – ONTs – all others**	Proposed	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	**[ ]**
		Draft decision	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	**[ ]**
9	**Complex**	Proposed	[ ]	[ ]	[ ]	[ ]	1128	1128	1128	1128	**[ ]**
		Draft decision	[ ]	[ ]	[ ]	[ ]	1128	1128	1128	1128	**[ ]**
10	**Non-linear hyperfibre costs**	Proposed	NA								**0**
		Draft decision	NA								**0**
	Proposed connection capex										**190.0**
	Draft decision connection capex										**170.9**

Table 6.2 Aggregated summary of our draft decision for the connection capex baseline allowance

Connection type			Weighted average unit cost				Total forecast connection volume				Total PQP2 capex				
			2025	2026	2027	2028	2025	2026	2027	2028	2025	2026	2027	2028	Total
1	Standard - installation – simple	Proposed	$705.85	$688.30	$641.63	$619.09	21,312	18,497	19,815	16,167	$15.0m	$12.7m	$12.7m	$10.0m	$50.5m
		Draft decision	$641.53	$634.05	$626.57	$619.09	21,312	18,497	19,815	16,167	$13.7m	$11.7m	$12.4m	$10.0m	$47.8m
2a	Standard – installation – non-civil	Proposed	$1,141.25	$1,116.76	$1,058.03	$1,036.84	11,492	11,427	11,577	10,395	$13.1m	$12.8m	$12.2m	$10.8m	$48.9m
		Draft decision	$1,056.88	$1,050.20	$1,043.52	$1,036.84	11,759	10,230	9,001	6,373	$12.4m	$10.7m	$9.4m	$6.6m	$39.2m
2b	Standard – installation – civil construction	Proposed	$1,427.74	$1,402.65	$1,316.00	$1,289.59	5,066	3,979	2,879	2,566	$7.2m	$5.6m	$3.8m	$3.3m	$19.9m
		Draft decision	$1,311.87	$1,304.45	$1,297.02	$1,289.59	5,152	3,592	2,047	1,268	$6.8m	$4.7m	$2.7m	$1.6m	$15.7m
3-6	Standard – extension (all classes)	Proposed	$3,081.82	$2,738.22	$2,953.57	$3,803.88	4,731	5,080	4,153	2,377	$14.6m	$13.9m	$12.3m	$9.0m	$49.8m
		Draft decision	$3,081.82	$2,738.22	$2,869.66	$3,368.68	4,731	5,080	4,153	2,377	$14.6m	$13.9m	$11.9m	$8.0m	$48.4m
7 8 9	ONTs (standard and hyperfibre) and complex	Proposed	$142.40	$150.65	$151.88	$156.28	38,999	35,030	35,400	30,256	$5.6m	$5.3m	$5.4m	$4.7m	$20.9m
		Draft decision	$138.89	$150.43	$153.89	$174.47	39,352	33,447	31,992	24,935	$5.5m	$5.0m	$4.9m	$4.4m	$19.8m
10	Non-linear hyperfibre costs	Proposed	NA												$0.0m
		Draft decision	NA												$0.0m
	All	Proposed									$55.5m	$50.3m	$46.4m	$37.9m	$190.0m
		Draft decision									$52.9m	$46.1m	$41.3m	$30.6m	$170.9m

Independent Verifier findings

6.10 The Independent Verifier verified that Chorus' proposed connection capex satisfies the evaluation criteria. It considered assessment factors (a), (c), (e), (s) and (t) were relevant under clause 3.8.6(1) of the fibre IMs.

6.11 The Independent Verifier noted:

6.11.1 the inherent challenges of accurately forecasting costs where there are new technologies or small connection volumes.[311]

6.11.2 that Chorus calculates the unit costs for each connection group by dividing the total cost by the total volume. The resulting unit costs may change significantly over time due to changes in the expected business activities required for that connection group.[312]

Stakeholder views

6.12 We did not receive any submissions from stakeholders on connection capex. Stakeholders did submit on the fibre frontier network extension project,[313] which has an impact on the volume of new connections forecast during PQP2. This is discussed in the augmentation section of Chapter 5 of this paper.

Analysis

6.13 In our assessment of Chorus' proposal, we have evaluated Chorus' connection capex baseline proposal by considering whether the proposed capex meets the capital expenditure objective and reflects good telecommunications industry practice, and having regard to the assessment factors relevant to whether the proposal meets the capital expenditure objective.

6.14 In evaluating Chorus' connection capex baseline proposal, we have also reviewed and considered:

6.14.1 Chorus' proposed unit costs and how they compare to historic unit costs, including during PQP1;

6.14.2 Chorus' reasoning for its proposal as laid out in their *Our Fibre Assets* report, including investment drivers and underlying assumptions;[314]

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311 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 200-201.

312 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 200.

313 These submissions related to the fibre frontier network extension project contained in Chorus' proposal submitted in October 2023 and did not account for the information received from Chorus in February 2024.

314 Chorus "Our Fibre Assets" (31 October 2023).

6.14.3 relevant information that we requested from Chorus, including supporting forecast models;

6.14.4 the Independent Verifier's findings and reasoning; and

6.14.5 our final decision for PQP1, our reasoning and the information we considered.

6.15 We have had regard to assessment factors (a), (c), (d), (e), (f), (m), (n), (o), (s) and (t).

Conclusion of our analysis

6.16 We consider that Chorus' proposed connection capex does not meet the capital expenditure objective because its proposal did not provide sufficient evidence that the expenditure reflects the efficient costs that a prudent fibre network operator would incur to deliver the service at appropriate quality.[315]

6.17 Specifically, our assessment identified the following issues:

6.17.1 For connection types 1, 2a, 2b, 3, and 4, the explanation provided for the rate of change of unit cost components either does not address spikes in cost components or does not explain why these spikes are necessary (assessment factors (c) and (e)).

6.17.2 The forecast connection volumes for connection type 7 assume a significant increase in hyperfibre demand for which there is insufficient evidence. The forecast connection volumes for connection types 7 and 8 do not reflect the decrease in new connections expected as a result of Chorus' change to its fibre frontier network extension programme.

6.17.3 Forecast connection volumes do not reconcile with Chorus' demand forecasting models.[316] We have based our draft decision on Chorus' proposed forecast connection volumes, except for where we have adjusted them as described above. We expect this reconciliation issue to be resolved in our final decision. In making this assessment we have regard to assessment factors (n) and (s).

6.18 The impact of these issues on our draft decision are described below.

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315 *Fibre Input Methodologies Determination 2020*, as amended on 28 June 2023, clause 3.8.5(2).

316 We discuss our assessment of Chorus' demand forecasting models in Chapter 4 of this paper.

Analysis of connection capex unit costs

6.19 Our draft decision is that the information provided by Chorus on the connection capex unit costs for connection types 1, 2a, 2b, 3 and 4 did not demonstrate that the increases in some cost components were efficient or prudent.[317]

6.20 For the connection types where we found the proposed changes in unit costs to be inconsistent with the efficient costs of a prudent operator, we have determined alternative unit costs by smoothing the costs through linear interpolation or extrapolation at the underlying cost component level.

6.21 For connection types 1, 2a and 2b, Chorus' forecast service desk costs are significantly higher in 2024-2027 than in 2023 or 2028. Chorus noted that service desk costs do not decrease immediately as connection volumes decline because there is a delay in adjusting staffing levels.[318] Having considered the forecast connection volumes and their underlying components, the timing and scale of the cost increase and Chorus' explanation (assessment factors (e) and (m)), we found that the service desk component of Chorus' proposed unit costs for connection types 1 and 2 do not reflect the efficient costs of a prudent operator. Our draft decision uses linear interpolation to adjust this component in 2024-2027 to produce unit costs that better reflect what we consider are efficient costs of a prudent operator.

6.22 For connection types 1, 2a and 2b, we found an unexplained spike in managed migration costs for UFB2 connections in 2027. The information Chorus has provided us does not explain why this cost component should increase by over [ ]% in 2027. With regard to assessment factors (e), (m) and (s), we consider this increase is inconsistent with the efficient costs of a prudent operator. Our draft decision uses linear interpolation of this component to produce unit costs that better reflect what we consider are efficient costs of a prudent operator.

6.23 For connection type 3, Chorus' proposed unit cost is based on underlying costs for UFB1, UFB2 and fibre access connections. The fibre access cost component increases in 2028, causing a significant increase to the unit cost. Chorus did not provide evidence that this cost component increase is prudent or efficient. With regard to assessment factors (e) and (s), our draft decision uses linear extrapolation of this component to produce unit costs that better reflect what we consider are efficient costs of a prudent operator.

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317 Our analysis of connection capex unit costs is based on constant costs and did not cover cost escalation. Where we describe increases in proposed unit costs, these are increases in real terms exclusive of inflation. Our draft decision on cost escalation is discussed in Chapter 4 of this paper.

318 Chorus, response to request for Information #81 and #86 (16 February 2024).

6.24 For connection type 4, Chorus' proposed unit cost is stable over [ ] and then [ ]. The information Chorus provided did not explain [ ] is efficient or prudent. With regard to assessment factors (e) and (s), we used linear interpolation to produce unit costs for connection type 4 that better reflect what we consider are efficient costs of a prudent operator.

6.25 For connection types 5, 6 and 9, we agree that Chorus' proposed unit costs are prudent and efficient with regard to assessment factors (e) and (m). This is because the very low connection volume and bespoke installation activities are consistent with significant fluctuations in unit cost.

6.26 For connection types 7 and 8, we agree that Chorus' proposed unit costs are prudent and efficient with regard to assessment factors (e) and (m). These unit costs are driven by the cost of ONT equipment from an international supplier, where Chorus has limited control over cost.

6.27 In coming to our draft decision, we considered alternative methods to our that which we used in our draft decision. These included top-down approaches that directly adjust the unit cost for a given connection type, rather than adjusting the underlying cost components and considering using an average flat unit cost over PQP2. Our draft decision uses the approach we consider most likely to be accurate to underlying cost drivers, which is to smooth the costs through linear interpolation or extrapolation at the underlying cost component level.

Analysis of forecast connection volumes

6.28 As set out previously, on 5 February 2024, Chorus provided us information relating to reducing the scope of its fibre frontier network extension programme, which we expect will have an impact on other areas of its PQP2 expenditure. Chorus provided us with additional information which shows that it now expects approximately 9,958 fewer new connections in the PQP2 period.[319]

6.29 We have accounted for the new information on fibre frontier within our draft decision by estimating a reduction in the connection volumes for connection types 2a and 2b, and an equivalent reduction in types 7 and 8. In its proposal, Chorus did not specify the connection types to which its planned new connections from fibre frontier related. We have assumed that the fibre frontier related new connections are in types 2a and 2b because these are common connection types for standard installations, as we do not have more precise information to rely on. We welcome submissions on our proposed approach to account for the new information on fibre frontier. Chorus may also want to provide more specific information on which connection types are affected as part of its submission.

[319] Chorus, response to request for information #89 (15 February 2024).

6.30 Having regard to assessment factors (e) and (o), we consider there is insufficient justification for Chorus' forecast connection volumes for connection type 7, which relates to hyperfibre ONTs. This is because of the degree of uncertainty and limited historic data regarding future hyperfibre demand.

6.31 Our draft decision adjusts forecast connection volumes for connection type 7 using the linear trend of actual hyperfibre connections, based on data provided by Chorus within its demand forecasting models. Our draft decision also adjusts forecast connection volumes for connection type 8, which covers non-hyperfibre ONTs, to capture the new connections moved from connection type 7. This means that the total number of ONTs given by the forecast connection volumes across connection types 7 and 8 does not change as a result of this hyperfibre adjustment.

6.32 Chorus' proposed forecast connection volumes do not reconcile with Chorus' demand forecasting models which it provided to us in response to a RFI.[320] We have made our draft decision using Chorus' proposed forecast connection volumes (adjusted for the new information on the fibre frontier and hyperfibre demand as described above) instead of the figures found in its demand forecasting models. We welcome submissions on our approach to determining forecast connection volumes. This issue is also mitigated by the connection capex variable adjustment, which washes up connection capex at the end of the period using actual connection volumes. In making this assessment we have had regard to assessment factors (n) and (s).

Analysis of connection types and non-linear cost functions

6.33 Our draft decision includes the same connection types as in PQP1, shown in Table 6.1. Our draft decision does not include any non-linear cost functions as Chorus no longer faces costs within connection capex that increase non-linearly. Connection type 10 used a non-linear cost function in PQP1 but has nil value in Chorus' proposal for PQP2.

6.34 In its proposal, Chorus suggested that we amend the fibre IMs in future to include expenditure on customer incentives (incentives capex) in connection capex rather than base capex. This would result in us determining unit costs for incentives capex upfront as part of the connection capex baseline allowance and washing up incentives capex against actual connection volumes at the end of the regulatory period.[321] As part of setting Chorus' price path for the second regulatory period, we may consider whether any amendments to the fibre IMs are necessary and/or desirable to implement our PQ decisions. Any such amendments will be dealt with via a separate process and are not part of our draft decision on expenditure.

320 We discuss our assessment of Chorus' demand forecasting models in Chapter 4 of this paper.
321 Chorus "Our Fibre Assets" (31 October 2023), at 203.

6.35 Based on the analysis above, we consider approving a connection capex baseline allowance of $170.9m for PQP2 meets the evaluation criteria set out in clause 3.8.5 of the fibre IMs, because it meets the capital expenditure objective and reflects good telecommunications industry practice.

Chapter 7 Opex

Purpose and structure of this chapter

7.1 This chapter sets out our draft decision on the opex allowance for Chorus for the PQP2 period.

Our draft decision

7.2 Our draft decision is to include an opex allowance of $607.9m for PQP2. This is $131.9m less than Chorus' original proposal ($739.8m). The breakdown of the opex allowance for PQP2 is summarised in Table 7.1.

7.3 The difference quoted for each expenditure category in Table 7.1 is a combination of the specific changes we have applied to the opex expenditure and the change in allocators set out in Chapter 4.

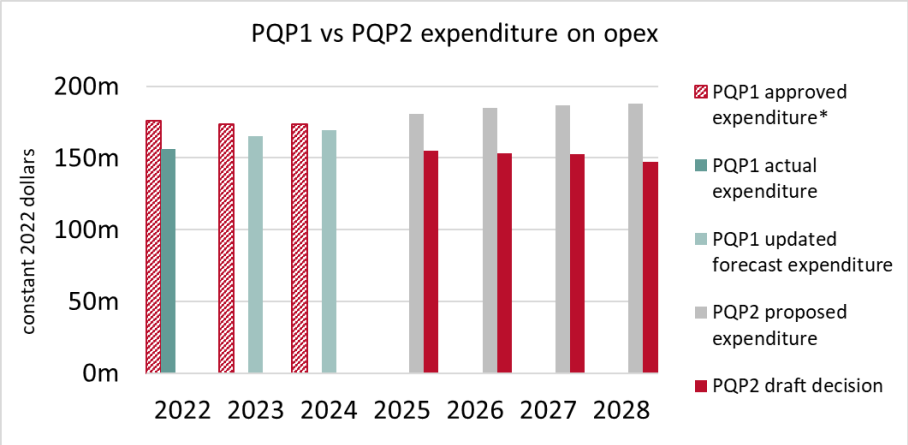
Table 7.1 Summary of draft decision for Chorus' PQP2 opex allowance

Category	Proposed PQP2 expenditure ($m)	Sub-category	Proposed PQP2 expenditure ($m)	Draft decision for PQP2 ($m)	Difference ($m)
Customer opex	86.4	**Customer operations**[322]	-28.9	-22.7	6.2
		Product, sales and marketing	115.3	100.8	-14.5
Network opex	261.0	**Maintenance**	137.3	126.6	-10.7
		Network operations	80.0	67.4	-12.7
		Operating costs	43.7	41.3	-2.3
Support opex	392.4	**Asset management**	94.8	78.1	-16.7
		Corporate	203.5	153.4	-50.1
		Technology	94.1	63.0	-31.1
Total	**739.8**		**739.8**	**607.9**	**-131.9**

7.4 Figure 7.1 compares our draft decision, Chorus' proposal, our final decision for PQP1, and Chorus' actual expenditure and updated forecast expenditure for the PQP1 period.

322 Chorus have proposed a negative balance for the customer operations subcategory. The negative balance is associated with how Chorus undertake capitalisation of labour costs which have otherwise been included in other opex expenditure categories. For our draft decision we have retained the negative balance, which offsets the total opex. For further discussion on this refer to paragraph 7.607.59.

Figure 7.1 PQP1 vs PQP2 opex



7.5 Our draft decision is based on:[323]

7.5.1 including a 1% per annum efficiency adjustment for fibre maintenance and other network maintenance, and a 3% per annum efficiency adjustment for non-network opex;

7.5.2 not including the proposed uplift for [ ] over PQP2;

7.5.3 not including the proposed uplift for self-insurance costs of [ ] over PQP2;

7.5.4 not including the step change in general compliance costs of [ ]; proposed by Chorus;

7.5.5 not including the scaling of advertising costs by connections ($7.6m);

7.5.6 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;

7.5.7 including an amendment to the number of connections used for trending the base year forecast forward to account for the new information provided by Chorus on its reduction in the scope of the fibre frontier network extension; and

[323] Where we quote specific dollar amounts for our draft decision on opex (and as changes to Chorus' proposal) these are based on the estimated values relative to Chorus' proposal prior to the updated allocators and the change that results from the new information provided by Chorus on its proposed fibre frontier investment. The actual impact of our draft decision compared to Chorus' proposal is lower than the amounts quoted here after the draft decisions on allocators and the fibre frontier adjustments have been accounted for.

7.5.8 a change to Chorus' proposed allocators as we have set out in the cost allocation section in Chapter 4. A significant component of our draft decision for opex is for our draft decision to continue to use a totex-based allocator for certain corporate costs as we did for PQP1 rather than the revenue-based allocator for certain corporate costs proposed by Chorus for PQP2.

7.6 The combined impact of the new information provided by Chorus on the reduction in scope of the fibre frontier investment and the change in allocator is estimated to result in a reduction in opex of between $53m to $56m over PQP2.

7.7 Chorus used a BST methodology to forecast opex over PQP2. It is the first time that Chorus has used such an approach. While we accept the use of a BST approach to forecasting in other sectors, we consider that the maturity and transitional nature of Chorus' business creates issues for the application of a BST approach for forecasting opex at this phase in Chorus' development. For BST to be effective it generally requires a relatively stable operating environment with detailed records of the historical expenditure composition.

7.8 However, for the purposes of our assessment and draft decision we have retained the BST approach rather than attempting to re-forecast Chorus' proposed opex using a bottom-up method. We have 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.

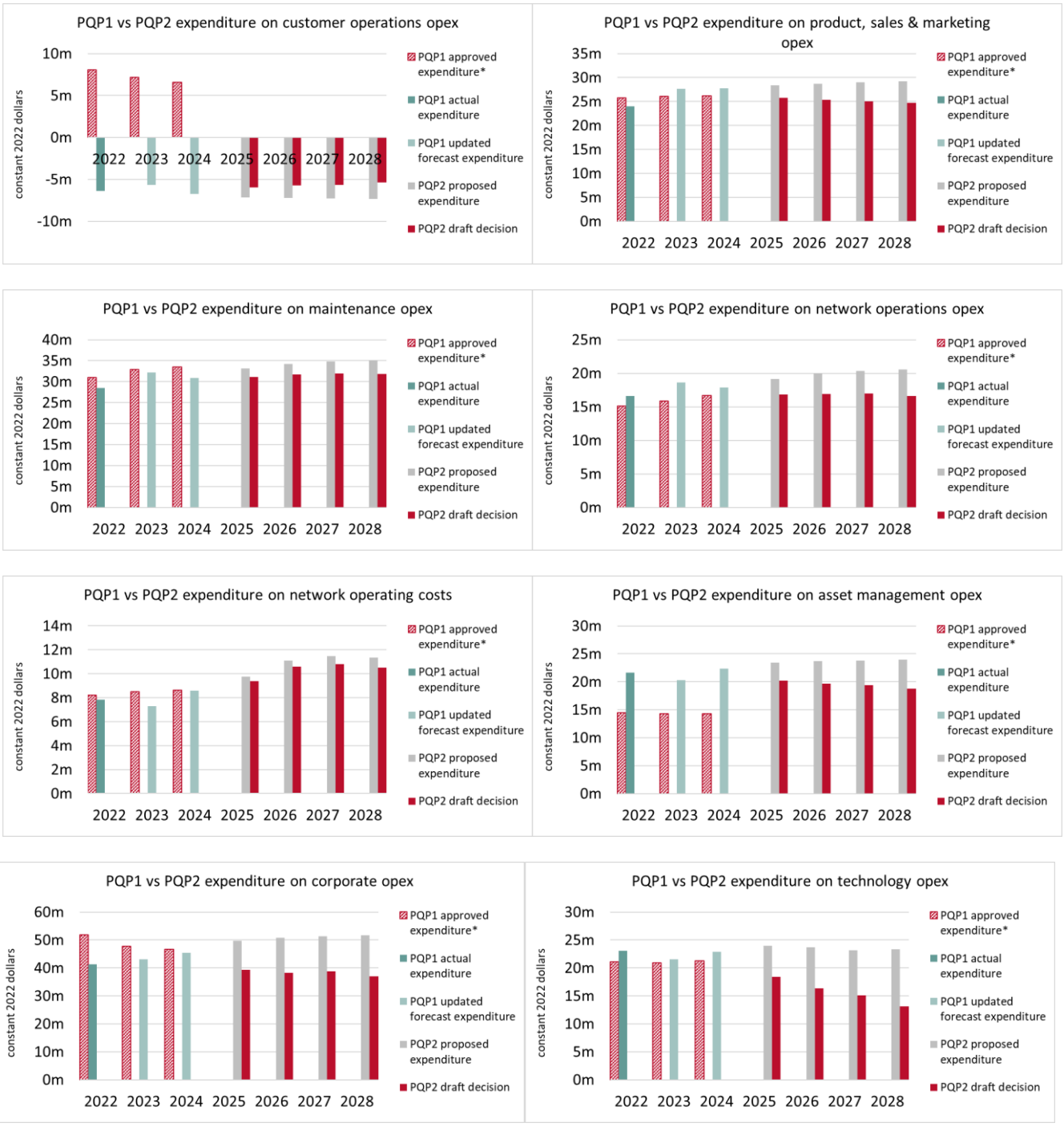
7.9 Our assessment has focused on how Chorus has developed and presented the BST components of its opex proposal. This has involved assessing Chorus' choice of base year for modelling opex, the adjustments Chorus has proposed to present an efficient base year to forecast opex from, any step changes Chorus considers appropriate to add to its forecast during the regulatory period and any trend adjustments to account for any productivity gains and to scale opex to meet any growth or expected reduction in its fibre network. We have taken into account individual opex sub-categories ie, product, sales and marketing, where it is appropriate to consider whether the base year reflects efficient costs and the relevant step changes and trends for a specific sub-category are appropriate.

7.10 We also note that in forecasting the opex Chorus did not use an expenditure breakdown based on the expenditure categories included in the regulatory templates. Instead, for the purposes of the BST Chorus has categorised expenditure according to what it considers are the underlying drivers for the expenditure from a business line perspective.[324]

[324] While we consider this approach is appropriate for the BST, we do not consider that the cost breakdown selected by Chorus is sufficiently detailed for a BST analysis. However, we have accepted the information provided by Chorus and worked through the analysis on this basis.

7.11 Figure 7.2 below compares our draft decision to Chorus' proposal, our final decision for PQP1, and Chorus' actual expenditure and updated forecast expenditure for the PQP1 period.

Figure 7.2 PQP1 vs PQP2 opex by sub-category



Independent Verifier findings

7.12 The Independent Verifier verified that Chorus' proposed PQP2 support: asset management opex, and support: corporate opex satisfied the evaluation criteria under clause 3.8.5 of the fibre IMs.[325] In reaching this finding, it considered assessment factors assessment factors the, the, (m) and (t) were relevant under clause 3.8.6(1) of the fibre IMs.[326]

7.13 However, the Independent Verifier considered that the following opex sub-categories did not satisfy assessment factor (s), relating to the accuracy and reliability of data under clause 3.8.6(1) of the fibre IMs:[327]

7.13.1 customer: product sales and marketing opex;

7.13.2 customer: customer operations opex;

7.13.3 network: maintenance opex;

7.13.4 network: operating costs opex;

7.13.5 network: network operations opex; and

7.13.6 support: technology opex.

7.14 The Independent Verifier noted that its assessment of opex was complicated by Chorus' decision to present the forecasts for the first time using a BST methodology, and that it made adjustments to the methodology including switching the categorisation of expenditure during its review.[328]

7.15 At a high level the Independent Verifier found:

7.15.1 The calendar year 2022 (CY22) is an appropriate base year given it is the most recently reported data Chorus has.[329]

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325 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 252-253 and 259.

326 Specifically, the independent verifier considered assessment factors (c), (e), (m) and (t).

327 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 228, 234, 245, 247, 249 and 261-262.

328 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 206.

329 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 20.

7.15.2 The BST methodology relies on historical and reliable data, which is limited in Chorus' case.[330] This weakens the ability of Chorus to rely on its BST methodology alone to demonstrate the efficiency of the forecasts that it produces.

7.15.3 The short period over which Chorus has been subject to price quality regulation and the limited availability of historical data post-UFB rollout means there has been limited opportunity to demonstrate the efficiency of the base year.[331]

7.15.4 Aspects of Chorus' delivery systems indicate efficiency of service delivery. An example is the competitive tendering across various opex sub-categories. As Chorus is a publicly listed entity and experiences wholesale telecommunications competition at the margins there is an external cost and funding discipline imposed.[332]

7.15.5 It is difficult to confirm whether Chorus' CY22 opex base year costs are efficient or that CY22 revealed costs are inefficient. This is because there is absence of third party benchmark comparisons, or a well-established history of revealed cost outcomes.[333]

7.15.6 Concerns with the simplistic use of fibre and copper connections as drivers for future network and non-network costs.[334]

7.15.7 Difficultly with accepting the suitability of using electricity-based elasticities without more supporting analysis.[335] NERA's analysis that supported Chorus' proposal was undertaken at a reasonably high level and is not compelling for Chorus' FFLAS opex in PQP2.

7.15.8 Based on the information provided and the difficulty with assessing how well electricity-based elasticities predict future FFLAS opex using historic data, the proposed elasticities could be verified, conditional on the Commission reviewing the suitability of using Electricity Distribution Businesses (EDB) elasticities.[336]

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330 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 216.

331 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 216.

332 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 216.

333 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 216.

334 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 217.

335 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 218.

336 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 21.

7.15.9 That Chorus may be underestimating its ability to make efficiency gains across PQP2.[337] The Independent Verifier did not agree that projects referred to by Chorus fully capture its ability to make productivity improvements in PQP2 given these are targeted investments.

7.15.10 That the comparative rates of productivity improvement reported by NERA suggest a zero productivity assumption may be reasonable, Chorus' proposed opex savings arising from the proposed IT projects and solar investment in PQP2 were pertinent considerations, in this statement provided Chorus is committed to proceeding with Solar and IT optimisation capex / opex trade-off projects.[338]

7.15.11 [

].[339]

7.15.12 Advertising and self-insurance adjustments to the base year have been reasonably substantiated by Chorus.[340]

7.15.13 Audit, and compliance and sustainability step changes have been reasonably substantiated as externally driven new regulatory obligations.[341]

7.15.14 Product, sales and marketing opex needs to be underpinned by economic analysis illustrating that the incremental revenue from the marketing activity surpasses the incurred expenditure.[342]

Stakeholder views

7.16 We received five submissions from stakeholders on opex, two from Chorus, one from One NZ and two from 2degrees (which cross submitted on submissions to Chorus' expenditure proposal consultation).

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337 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 219.

338 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 220.

339 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 212, confidential version

340 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 20.

341 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 20.

342 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 234.

7.17 Chorus recommended that the Commission use 2022 as a base year.[343] Chorus also considered that when assessing its opex methodology, the Commission should not consider in isolation the expected benefits of Chorus' proposed capex/ opex trade-offs regarding selected IT projects and solar panel installations.[344]

7.18 One NZ agreed with the Independent Verifier that it is necessary for product, sales and marketing opex to be underpinned by economic analysis that shows the expenditure incurred is offset by increased revenue that results from the marketing activity.[345]

7.19 One NZ considered and 2degrees agreed that:[346]

7.19.1 The Commission must address the disparity between Chorus and RSPs around marketing rules and apply conditions on the use of marketing expenditure for Chorus that replicates the rules RSPs are operating under. 2degrees does not believe the information Chorus has provided is fair or gives an accurate representation of other technologies.[347] 2degrees also indicated that just because Chorus is a wholesaler and not a retailer, this did not mean that the Telecommunications forum (TCF) Broadband marketing Code's requirements were less relevant or applicable.

7.19.2 The allowance for advertising and marketing should be limited to marketing to improve the general awareness of fibre but not direct-to-consumer activity that recommends suitability of fibre over other access types, or that induces or rewards end-users' decisions.

7.19.3 The Commission should ensure that economic analysis is completed before making a determination on this expenditure proposal.

7.19.4 The Commission cannot on one hand allow Chorus to offset marketing spend against the MAR while allowing it to continue to conduct its direct-to-consumer marketing activity without being subject to the broadband marketing regulatory framework like RSPs.

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343 Chorus "PQP2 Process and Approach" (28 September 2023), at 11-12.

344 Chorus "Chorus submission on PQP2 proposal" (14 December 2023), at 2.

345 One NZ "One NZ submission on Chorus' proposed expenditure for PQP2" (14 December 2023), at 6-7.

346 One NZ "One NZ submission on Chorus' proposed expenditure for PQP2" (14 December 2023), at 7-9; 2degrees "Chorus' proposed expenditure for PQP2: 2degrees' Cross-Submission in response to Commerce Commission consultation" (2 February 2024), at 2-3.

347 2degrees "Chorus proposed expenditure for PQP2: 2degrees' Response to Commerce Commission consultation" (14 December 2023), at 7.

7.20 2degrees was concerned about the ability of Chorus to use regulated revenue from providing monopoly services in order to compete with RSPs using alternative technologies.[348]

7.21 2degrees also disagreed with various arguments that Chorus had made for its marketing, including:[349]

7.21.1 "Large RSPs have an incentive to promote alternatives to fibre."

7.21.2 Chorus' having a role as a de facto regulator that needs to use marketing to educate end-users on "a sometimes-confusing range of technology and product alternatives available to end-users."

7.21.3 There is a "strong interest in ensuring end-users in Aotearoa understand the relative merits of fibre."

7.21.4 Chorus is able to use regulated revenue to freely target marketing at end-users to discourage them from considering alternative technologies. This blurs the line between Chorus as a wholesaler and engaging in retail activity.

Analysis

7.22 Having reviewed Chorus' proposal on opex and having regard to the opex assessment factors set out above in Table 2.2, we consider that a significant proportion of the opex is justified and meets our assessment criteria. However, we also consider that there are components of Chorus' proposal that do not promote expenditure that reflects the efficient costs of a prudent fibre network operator and do not reflect good telecommunications industry practice.

7.23 A summary of the key reasons for our draft decision are set out below:

7.23.1 We agree with Chorus and the Independent Verifier that 2022 is an appropriate base year to adopt for the BST methodology. However, we consider that Chorus has not demonstrated that the base year is efficient (opex assessment factors (a), (b), (d) and (j)).

[348] 2degrees "Chorus proposed expenditure for PQP2: 2degrees' Response to Commerce Commission consultation" (14 December 2023), at 7.

[349] 2degrees "Chorus proposed expenditure for PQP2: 2degrees' Response to Commerce Commission consultation" (14 December 2023), at 7.

7.23.2 We do not consider the [ ] are sufficiently evidenced. The explanation for the [ ] would need to be made within the context of providing an explanation for the efficiency in the base year and the demonstration of the appropriateness of using EDB elasticities as a method for forecasting network related opex costs (opex assessment factors (a), (b), (d) and (j)).

7.23.3 We do not consider that the proposed uplift in self-insurance costs have been evidenced. For example, 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 (opex assessment factors (a), (b), (d) and (j)).

7.23.4 We do not consider that all of the proposed increase in compliance costs have been explained. In particular, the explanation for the uplift in the additional general compliance costs would need to be made within the context of providing justification for efficiency in the base year and the rationale for the proposed increases (opex assessment factors (a), (b), (d) and (j)).

7.23.5 We consider there are issues with using EDB elasticities as a basis for trending the base year forward (opex assessment factors (a), (c) and (j)). However, with the application of efficiency factors we consider the outcome of the forecast is reasonable.

7.23.6 We do not agree with Chorus that a 0% productivity factor over PQP2 is appropriate (opex assessment factors (c), (d) and (j)). The evidence supporting this assumption would need to be set out within the context of providing explanation for the efficiency in the base year and the demonstration of the appropriateness of using EDB elasticities as a method for forecasting opex costs.

7.23.7 We do not consider that advertising expenditure should be trended in accordance with connection growth. We consider this is unlikely to be required by a wholesale provider. The justification for the escalation has not been provided (opex assessment factors (c), and (j)).

7.23.8 We consider that Chorus has underestimated the efficiencies to be gained from its proposed IT capex investment (opex assessment factors (c), (h) and (j)).

7.24 Our draft decision is discussed in more detail below.

Base year efficiency (opex assessment factors (a), (b), (d) and (j))

7.25 We agree with Chorus and the Independent Verifier that, given the alternatives, 2022 is the most suitable base year for the BST forecast.[350] It is the last year of actual data, and relative to previous Covid 19 years, it is more likely to be less affected than the previous two years.

7.26 Chorus claims that the nature of the operating environment means that the expenditure for 2022 is efficient and therefore no reductions are warranted to recognise any identified inefficiencies. However, 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.

7.27 We consider there is scope for efficiencies to be recognised, if not in the base year itself, then over the regulatory period. Accordingly, for our draft decision, we have applied efficiency adjustments across the period as part of establishing a prudent and efficient expenditure level for PQP2. This is discussed further below.

Proposed adjustments to the base year (opex assessment factors (a), (b), (c), (d), and (h))

7.28 Chorus has proposed uplifts in four expenditure items that increase costs included within the 2022 base year in order to reflect recurring expenditure. The proposed uplift increase total opex by $4.6 million in constant $2022, and are as follows:[351]

7.28.1 self-insurance costs ($1.2m in 2022);

7.28.2 increase to reflect constrained advertising spend caused by labour shortages ($2.2m in 2022);

7.28.3 increase in property maintenance due to the transition to a new supplier ($0.5m in 2022); and

7.28.4 [ ].

7.29 This additional expenditure reflects expenditure which Chorus has indicated did not occur in 2022 but should be added to ensure the base year reflects an efficient level of recurring expenditure.

350 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 20.

351 Chorus "Our Fibre Assets" (31 October 2023), at 212.

7.30 The Independent Verifier assessed the additional expenditure items and verified the appropriateness of them, while recognising there is some uncertainty in some items.[352]

7.31 Based on our review and in alignment with the Independent Verifier's conclusions we have included all but one of these base year adjustments within our draft decision on Chorus' opex allowance for PQP2. The exception to this is the claimed uplift in self-insurance. 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)).

Proposed step changes to the base year (opex assessment factors (a), (b), (c), (d), and (g))

7.32 In addition to the base year adjustments, Chorus has proposed two step change increases for [ ] and meeting new compliance requirements ($5.5 million).[353]

7.33 In its review of the proposed step change for [
]

7.34 [
]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 [ ] within the opex for PQP2 (opex assessment factors (a), (b), (c), and (d)).

352 Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 212-214.

353 Chorus "Our Fibre Assets" (31 October 2023), at 213.

7.35 The step change for meeting new compliance requirements ($5.5m) relates to three areas, two of which we consider are justified. These two relate to asset management improvements, which we consider are required, and climate change auditing. 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.

Proposed use of EDB elasticities to trend opex (opex assessment factors (a), (c) and (j))

7.36 To forecast opex for each year during PQP2, Chorus have proposed to apply scale factors (trends) to the base year (2022) opex. The scaling is undertaken at a detailed expenditure category level. Not all opex costs are scaled when they are trended forward. For cost categories which Chorus consider require a scale trend to be applied, Chorus has used an elasticity based on the number of connections. Due to Chorus not having data that is sufficiently long or stable enough to determine the historical elasticities inherent in Chorus' business, it has proposed to use elasticity estimates that we applied to EDBs for their third default price quality path determination.[354]

7.37 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.[355] We have two fundamental concerns:

7.37.1 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)).

7.37.2 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.

[354] Chorus "Our Fibre Assets" (31 October 2023), at 216

[355] Synergies Economic Consulting "Independent verification report – Chorus' PQP2 expenditure proposal (CY2025-2028)" (31 October 2023), at 217.

7.38 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.

7.39 In reaching our draft decision we have also accounted for the impact on opex of the new information Chorus provided on the fibre frontier network expansion. We have done this by reducing the forecast number of connections within the opex model, on which the elasticities are based and consequently the forecast expenditure. In the absence of further information from Chorus, we consider this is an appropriate approach to accounting for the new information within the opex forecast.

Chorus' assumption of a 0% productivity factor (opex assessment factors (a), (b), (c), (d) and (j))

7.40 Chorus considers that efficiency gains are included in the elasticities used to project forward the opex.

7.41 As noted above, we consider there are issues with using EDB elasticities, and we do not consider Chorus has provided information which supports a zero productivity factor as being appropriate (opex assessment factors (a), (c) and (j)). We consider there are efficiency gains to be made as Chorus improves its processes and business operations over time (opex assessment factors (b) and (d)).
[ ]

7.42 We have considered evidence on how efficiency is accounted for in other jurisdictions such as Australia and the UK. In particular, Ofcom, a UK regulator, considered efficiency targets as part of its Wholesale Fixed Telecoms Market Review for the period 2021 to 2026.[356] Ofcom used the following efficiency factors in its base case for fibre services:[357]

7.42.1 opex cost elements (service level guarantees, systems and processing costs) – 3.0% per year; and

7.42.2 opex costs modelled as a percentage of gross replacement costs – no explicit efficiency target, but the assumed opex cost trend results in these costs reducing by 1.0% per year.

356 Ofcom "Promoting investment and competition in fibre networks: Wholesale Fixed Telecoms Market Review 2021-26" (18 March 2021).

357 Ofcom "Promoting investment and competition in fibre networks: Wholesale Fixed Telecoms Market Review 2021-26" (18 March 2021), at annex 15 [A15.68].

7.43 In our view the Ofcom benchmarks are appropriate as reference points for Chorus' forecast opex because they are forward-looking and relate to a directly comparable network operator providing similar services. The process adopted by Ofcom consisted of a careful review of Open Reach's historical opex trends including consideration of the impact of Covid-19, coupled with scrutiny of its business plan.

7.44 From our review of Chorus' expenditure, we consider Chorus has not incorporated efficiency gains for fibre maintenance and there is no evidence to suggest that Chorus' 2022 other network opex and non-network opex are efficient. However, from the Ofcom analysis it is reasonable to expect efficiency gains over time with respect to these opex categories.

7.45 As such, for our draft decision we have applied efficiency factors to components of Chorus' expenditure. In applying the efficiency factors to Chorus' expenditure we have adopted the same approach used by Ofcom by applying the same level of efficiency to each of the equivalent expenditure types. This has resulted in a:

7.45.1 1% efficiency compounding per annum being applied to per-fibre line fibre maintenance and per-fibre line other network maintenance; and

7.45.2 3% efficiency compounding per annum being applied to non-network opex, with the exception of the IT proportion of non-network opex (which is addressed separately via the capex / opex trade-off we describe below).

Calculation of capex / opex trade-offs – savings from IT optimisation and solar investments (opex assessment factors (c), (h) and (j))

7.46 We consider that Chorus has undervalued the opex savings that are likely to result from IT capex investment. As such, in a similar manner to that undertaken for PQP1, we have assessed the likely opex savings from Chorus' proposed IT investment for PQP2.[358]

7.47 In undertaking our evaluation of Chorus' proposed capex / opex trade-off for its IT investment, we have developed an NPV model to determine the likely savings from the proposed capex. The model uses the following parameters:

7.47.1 IT capex related to the improvement of processes of [ ]. This is the same proportion of IT capex Chorus indicated is focused on optimisation.

7.47.2 An asset life of five years and a corresponding depreciation rate of 20%.

7.47.3 All benefits and costs are calculated over a five-year period, starting from mid-year in year 1 to mid-year in year 6.

[358] Commerce Commission "Chorus' price-quality path from 1 January 2022 – Final decision – Reasons paper" (16 December 2021), at 168.

7.47.4 A WACC of [ ]. This is the same WACC as proposed by Chorus within its IT benefits model.

7.47.5 Opex costs of 10% of the capex of the IT systems.

7.48 These parameters result in a minimum benefit ratio for the proposed IT optimisation capex of [ ] in order to break even. That is to say the annual operating benefits from the optimisation capex need to be greater than or equal to [ ] of the capex costs. We consider that the recovery of IT investment should at least be NPV neutral. In its proposal, Chorus utilised a lower value benefits ratio [ ] which resulted in a lower opex savings over PQP2.

7.49 We also assume that opex savings from IT optimisation investments will continue beyond the five-year life of the original investment as a result of ongoing lifecycle investments.

7.50 The application of our model to Chorus' IT capex for our draft decision results in opex savings of $20.4m. This is an additional $7.7m opex savings over PQP2 compared to those proposed by Chorus (opex assessment factors (c), (h), and (j)).

7.51 In regard to Chorus' proposed savings from solar investments ($1.2 m) we have no reason to believe at this point that the proposed opex reductions will not be achieved, and as such we have included them within the estimated PQP2 opex.

Application of elasticities to advertising expenditure in the product, sales and marketing sub-category (opex assessment factors (c), and (j))

7.52 The base year of Chorus' proposal includes advertising expenditure which is then trended forward using the proposed EDB elasticities. We do not accept the scaling of that the advertising with the size of the network is likely to be prudent and efficient but rather is more likely to be a constant expense in real terms over the period.

7.53 As such our draft decision is to not apply the elasticities to the proposed advertising expenditure. This results in reduction of the PQP2 opex by $7.6 million relative to Chorus' proposal. The reduction represents less than 4% of the advertising spend in total.

Consideration of Chorus' marketing spend (opex assessment factors (b), (c), and (j))

7.54 In its submission, One NZ considered that Chorus' marketing opex should be underpinned by economic analysis demonstrating net benefit from the expenditure and that the Commission should ensure this analysis is undertaken prior to making a determination on the expenditure. Together One NZ and 2degrees also raised concerns about the nature of the marketing Chorus undertakes and the degree to which Chorus is able to use regulated revenue to freely target marketing at end-users to discourage them from considering alternative technologies, blurring the line between Chorus as a wholesaler and engaging in retail activity.[359]

7.55 We agree with One NZ that Chorus' marketing expenditure should be supported by economic and market analysis that demonstrates that the proposed level of expenditure proposed is appropriate and yields net benefits. In our view Chorus should be looking to improve the economic analysis that supports the proposal. We expect Chorus to consider developing approaches in the lead up to PQP3 to illustrate the economic benefit from expenditure such as marketing including incorporating aspects such as the expected return on investment.

7.56 While we were not able to undertake a full review of Chorus' marketing spend within the PQP2 evaluation process we have tested at a high level the level of advertising spend proposed by Chorus and compared it to Spark's advertising on a per connection basis. We found that Spark's advertising spend was greater, suggesting that the Chorus proposal was not obviously excessive (opex assessment factors (b) and (j)).

7.57 We have also considered the proposed expenditure in the context of Chorus' historical expenditure and the proposal appears not to be materially different (assessment factor (c)) and not materially excessive.

7.58 As such, our draft decision adopts the base year amount Chorus proposed. However, we have not applied any trend increase in the advertising component of the expenditure as discussed in paragraph 7.53.

Treatment of the negative opex category (opex assessment factors (a), (c) and (j))

7.59 Within its proposal Chorus proposed customer operations expenditure with negative opex amounts. The reason for the negative balance is associated with how Chorus undertakes capitalisation of labour costs which have otherwise been included in other opex expenditure categories.

[359] One NZ "One NZ submission on Chorus' proposed expenditure for PQP2" (14 December 2023); and 2degrees "Chorus proposed expenditure for PQP2: 2degrees Response to Commerce Commission consultation" (14 December 2023).

7.60 We are satisfied that the costs have been capitalised and accounted for in base capex. While we consider that it would be more appropriate to incorporate the capitalisation into the specific expenditure categories to which they relate, for the draft decision we do not have the information required from Chorus to do so and nor does it impact on our draft decision for total opex. Therefore, we have incorporated the negative opex for the customer operations expenditure category proposed by Chorus into our draft decision.

Attachment A List of RFIs

A1 We have issued Chorus a number of RFIs to get the information required to make a draft decision on Chorus' expenditure allowance for PQP2. Table A1 below contains a list of all the RFIs sent to Chorus.

Table A1 List of Chorus RFIs

No	Topic/Theme	Final subject
1	Chorus MAR model	Draft of Initial building blocks revenue model and supporting information
2	Demand forecasting	Demand models
3	Deliverability	Scope and outcomes from the market testing for Network extension
4	Deliverability	FSP performance v KPIs over the last 12 months
5	Resilience	Resilience expenditure forecast models
6	Resilience	Economic and impact analysis for the benefit of end-users
7	Standard Installations	RSP incentive capex model
8	Opex	Opex models and additional evidence for trends, steps and base year adjustments
9	Cost allocation	Clarification on cost allocators
10	Augmentation - fibre frontier	Financial model for fibre frontier
11	Access	ONT, OLT models
12	Access	ONT, OLT vendor roadmaps
13	Aggregation and transport	Technology roadmaps and asset management plans
14	Aggregation and transport	Aggregation and Transport models
15	Aggregation and transport	The Optimised network plan
16	Business IT and network & customer IT	ICT Strategy document
17	Field sustain	Pole model(s) and asset management plans
18	Field sustain	Field Sustain models
19	Stakeholder engagement	Kantar terms of reference
20	Port utilisation	Benchmark forecasts source
21	Port utilisation	Base traffic assumed
22	Port utilisation	Time period for the time series methodology
23	Port utilisation	Observations input into the time series methodology
24	Port utilisation	Time series methodology weighting
25	Port utilisation	Clarification regarding whether Chorus has fit data with an exponential curve
26	Availability	Customer service areas and relevant points of interconnection
27	Augmentation - fibre frontier	List of areas where Fibre frontier is planned to be rolled out
28	Stakeholder engagement	Information supporting stakeholder engagement
29	Stakeholder engagement	Information supporting stakeholder engagement
30	Capex	IT capex model
31	Chorus MAR model	Nelson-Siegal spreadsheet
32	Cost escalators	Capex - RPE indices calc of hardcoded weightings
33	Cost escalators	Opex - RPE indices calc of hardcoded weightings
34	Cost escalators	Tables for other indices - LCI all, PPI outputs all, PPI outputs and CGPI
35	Business plan	Chorus' 10 year business plan
36	Availability	Clarification re POI CSA mapping
37	Port utilisation	Clarification re downtime data between overlapping time periods
38	Demand forecasting	Adjustments applied to the market model
39	Demand forecasting	Updated actuals data for the connections model
40	Revenue allocator	Change to revenue allocator over time

41	Revenue allocator	Fibre Frontier forecast impact
42	Revenue allocator	GCP and building block impacts on allocations by revenue
43	Revenue allocator	Copper withdrawal plans
44	Fibre frontier	Calculations on wholesale revenue
45	Fibre frontier	Fibre replacement in fibre frontier
46	Fibre frontier	Uptake rates
47	Opex	Business case information for solar panel investments
48	Site sustain	Models and forecast information relating to Chorus' proposed earthquake strengthening work
49	Demand forecasting	Driver used for costings purposes
50	Access	ONT strategy modelling
51	Opex	Negative opex amounts
52	Resilience	More information relating to resilience expenditure forecast models
53	Demand forecasting	Clarification of model interactions
54	Demand forecasting	Forecasts of consumer services
55	Demand forecasting	Forecasts of business services
56	Demand forecasting	Forecasts of networks and hyperfibre
57	Demand forecasting	7(b) summary monthly (1.13a)
58	Demand forecasting	Growth rate
59	Demand forecasting	Connection forecast input
60	Field sustain	Additional documentation for pole and fibre replacement
61	Field sustain	Information on PQP1 delivery
62	Field sustain	Unallocated expenditure
63	Field sustain	Clarification on proactive replacement
64	Opex	Opex models
65	IT capex	IT optimisation capex
66	Resilience	More information on resilience expenditure forecast models
67	Cost escalators	Application of cost escalator weightings to proposed expenditure sub-categories
68	Demand forecasting	Sales and operations planning model
69	Incentive capex	Clawback models
70	Incentive capex	Clarification on calculations
71	Incentive capex	Clarification on growth rate
72	Cost allocator	Service company overhead
73	Incentive capex	Sensitivity analysis
74	Demand forecasting	Market Model clarifications
75	Demand forecasting	Connections Model clarifications
76	Demand forecasting	Bandwidth model - model scope
77	Demand forecasting	Bandwidth model – clarifications re consistency with connections model
78	Demand forecasting	Bandwidth model - assumed traffic growth
79	New quality standard	Provisioning data for 2023
80	Infill	Clarification on infill capex
81	Connection capex allowance	Forecasting method for connection capex unit costs
82	Pricing	Pricing 300/100 plan
83	Pricing	Migration from 300/100 plan
84	Wash-up balance	Wash-up balance in relation to allocators
85	Aggregation and transport	Additional supporting models
86	Connection capex allowance	Clarification on connection capex model
87	Incentive capex	Actual incentive capex paid 2022 - 2023
88	Fibre frontier	Communal fibre rollout in stage 1
89	Fibre frontier	Fibre frontier financial model clarifications
90	Incentive capex	Additional information on incentive payment design

Attachment B Draft determination base capex (constant $2022)

Category	Sub-category	2025 ($m)	2026 ($m)	2027 ($m)	2028 ($m)	Total PQP2 ($m)	Difference to Chorus' proposal
Extending the network	Augmentation	18.0	4.9	4.8	4.8	**32.5**	-188.1
	New property developments	8.0	9.0	6.9	8.5	**32.4**	0.0
	UFB communal	0.0	0.0	0.0	0.0	**0.0**	0.0
Installations	Complex installations	0.5	0.4	0.4	0.4	**1.8**	0.0
	Standard installations	33.0	17.7	17.6	17.2	**85.6**	-32.2
IT and support	Business IT	17.7	19.6	19.0	16.2	**72.5**	-0.1
	Corporate IT	1.4	2.2	1.8	7.5	**12.9**	0.0
	Network and customer IT	25.2	24.5	23.1	22.0	**94.9**	0.0
Network capacity	Access	20.7	18.5	17.3	14.9	**71.4**	-56.1
	Aggregation	21.8	21.6	16.9	19.5	**79.8**	0.0
	Transport	26.7	26.1	18.3	13.9	**85.0**	0.0
Network sustain and enhance	Field sustain	23.1	27.9	23.9	15.6	**90.5**	-30.0
	Relocations	4.6	4.5	4.5	4.5	**18.2**	0.0
	Resilience	11.8	10.6	8.1	16.1	**46.5**	-33.1
	Site sustain	27.2	22.3	21.4	20.2	**91.1**	0.0
Total	**All**	**239.7**	**209.8**	**184.1**	**181.3**	**815.0**	**-339.7**

Attachment C Draft determination opex (constant $2022)

Expenditure Category	Sub-category	2025 ($m)	2026 ($m)	2027 ($m)	2028 ($m)	Total PQP2 ($m)	Difference to Chorus' proposal
Customer	**Customer operations**	-5.9m	-5.7m	-5.6m	-5.4m	**-22.7m**	6.2m
	Product, sales & marketing	25.7m	25.4m	25.1m	24.7m	**100.9m**	-14.5m
Network	**Maintenance**	31.1m	31.7m	31.9m	31.9m	**126.6m**	-10.7m
	Network operations	16.9m	16.9m	17.0m	16.6m	**67.4m**	-12.7m
	Operating costs	9.4m	10.6m	10.8m	10.5m	**41.3m**	-2.3m
Support	**Asset management**	20.2m	19.7m	19.4m	18.7m	**78.1m**	-16.7m
	Corporate	39.4m	38.3m	38.7m	37.0m	**153.4m**	-50.1m
	Technology	18.4m	16.4m	15.1m	13.1m	**63.0m**	-31.1m
Total	**All**	**155.1m**	**153.3m**	**152.4m**	**147.1m**	**607.9m**	**-131.9m**

Attachment D Infill information anomalies

D1 When reviewing the Chorus infill information presented in the *Our Fibre Assets* document against the Independent Verifier report, we noted that the figures presented did not agree.

D2 In *Our Fibre Assets* at 5.6.4 the infill capex amount is stated (correctly, when rounded) as $20 million. However, the Independent Verifier report at para 9.3.5 says infill capex is around $23m for PQP2. Chorus says this is due to the Independent Verifier amount being stated in nominal terms, whereas the proposal is presented in constant $2022. [360]

D3 There are also inconsistencies between the two documents in relation to average spend per minor work to build racks/rows. The *Our Fibre Assets* document says the average cost is around $14,000 while the Independent Verifier report says it is $20,000 per project.

D4 It is unclear why this discrepancy occurred, but it is likely that figures from an earlier draft of workings shared with the Independent Verifier have been used by the Independent Verifier. Chorus confirms that around $14,000 is the correct figure.

D5 We also identified that the percentages provided in *Our Fibre Assets* in relation to the three categories of infill work are incorrect. Chorus confirms that the corrected figures are:

D5.1 named works projects make up roughly 53% of infill capex forecast;

D5.2 minor works projects (average cost $7,000 each) make up roughly 36% of infill capex forecast; and

D5.3 minor works projects (average cost $14,000 each) make up roughly 11% of infill capex forecast.

[360] Chorus, response to request for information #80 (2 February 2024).