MODELLING AND COST ALLOCATION REPORT

Te Whakapaunga Pūtea

The purpose of this report is to explain how Chorus has developed our PQP2 expenditure forecasts, including modelling, cost allocation, cost escalation and any associated conventions.

Modelling approach

Summary

This report outlines our modelling and cost allocation approach to generate our PQP2 expenditure forecasts. It also outlines any general conventions used in the presentation of our financial information in the proposal.

Our capex forecasts are based on our annual 10-year planning process (10YP), net of capital contributions, and including leases. Our opex forecasts have been developed using base-step-trend (BST) methodology. We apply cost allocation and cost escalation in line with requirements in the Input Methodologies (IMs).

Our forecasts apply generally accepted accounting practices, including consideration of criteria for capitalising expenditure. The only exception is the treatment of capital contributions. For accounting purposes, these are treated as revenue, whilst the IMs require these contributions be netted off capex and capex forecasts.

For consistency and ease of comparison, all numbers in the proposal are presented in 2022 constant dollars on a price-quality fibre fixed line access services (PQ FFLAS) basis, unless otherwise stated. Please note that it is not possible to remove real price effects (RPE) from actuals and therefore historical information is on a real basis.

Our modelling is based on four main sets of models:

- Underlying business forecast models – individual models for different areas of expenditure, which outline and apply the key assumptions and judgements for expenditure requirements.
- Aggregation models – comprise two models, one for each of capex and opex, which consolidate the underlying business forecasts and apply cost allocation and cost escalation.
- Building Block Model (BBM) – used for calculating the regulated asset base (RAB) and maximum allowable revenue (MAR).
- Regulatory templates – which are primarily spreadsheets to present our forecasts in a consistent manner, however, they do also provide some calculation functions with regards cost escalation and connection capex.

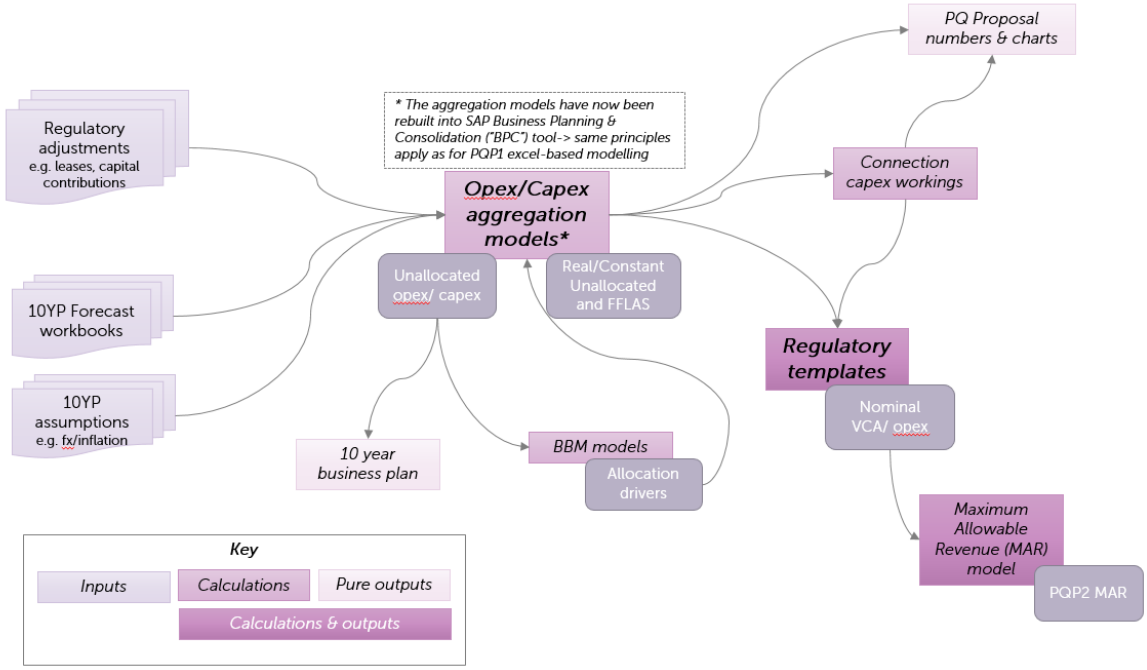
Our proposal is for FFLAS in areas where we are subject to PQ regulation. As Chorus also operates services, including copper, that fall outside of this regulation, we apply direct attribution and allocation approaches to ensure only relevant expenditure forms part of our proposal. This methodology for PQP2 is broadly consistent with the PQP1 approach, with the exception of a small number of opex allocator changes, as outlined in this report.

Our forecasts and actuals are all subject to audit as part of the proposal process. Forecasts are also subject to independent verification. In addition, we have internal quality assurance and review checks. Please also refer to our Governance report within Our Fibre Plans, which includes an explanation of governance processes around business planning and proposal development.

Modelling approach

This section of our report describes how we have developed our PQP2 capex and opex forecasts, with the key modelling steps as shown in Figure 1 below.

FIGURE 1: PQP2 EXPENDITURE FORECAST MODELLING OVERVIEW



Financial forecast aggregation overview

Our forecast costs are presented in a set of regulatory templates and throughout proposal documents. They show our forecasts in constant prices and the contribution that Consumer Price Index (CPI) and RPE have on the final nominal cost. They also provide other relevant information, such as cost allocation and geographic allocations.

The forecast inputs to the regulatory templates are sourced from separate opex and capex aggregation models in our financial Business Planning and Consolidation (BPC) system. The purpose of the aggregation models is to collate the underlying 10YP data and apply additional modelling required to convert the plan into a regulatory forecast, presented in the required way. This includes:

- summarising data into half years to allow for easy conversion between financial years[1] and regulatory (calendar) years
- adding forecast elements that do not form part of the business-as-usual 10YP process, including lease forecasts and netting capital contributions off the capex. More detail on these adjustments is shown below
- aligning and applying cost escalation, in line with the methodology outlined below

1 Chorus has a 30 June financial year.

- application of cost allocation to identify PQ FFLAS, information disclosure only FFLAS (ID-only FFLAS) and non-FFLAS components of the forecast. Our approach is explained further in this report in the section on cost allocation.

Corporate inflation assumptions (which are simplified) are removed from the 10YP capex by the aggregation model in BPC. Regulatory templates add regulatory inflation including CPI (as specified in the IMs) and RPE. Our approach is explained further in this report in the section on regulatory templates.

Capex forecasts

For capex, our regulatory forecast is based on the underlying business forecast cost models used for the annual 10YP. The business forecast cost models have a standardised interface template to feed the aggregation model in BPC.

The underlying forecast cost models use, in turn, output from several lower-level models – for example, where standardised inputs are required for connections and labour cost. A list of key models is provided in Appendix C – List of models. How we rely upon these models when forecasting base capex for our proposal is explained below.

Capex business forecasting approach

Investment managers are responsible for developing individual business forecast capex. These are grouped into decision packets (DPs), which are similar to business case groupings, i.e. grouped for expenditure with the same, or similar, outcomes. We use different approaches for modelling depending on the type of expenditure and the availability of data.

Most of our expenditure is forecast using volumetric price x quantity models. This type of model is appropriate when cost and volume data is available. It is flexible, as it can consider changes to prices and volumes over time, and the impact of assumptions can be tested. We use this approach for most of our Installations, Extending the Network, and Network Capacity expenditure.

When cost and volume data is unavailable, we estimate expenditure based on our business experience (e.g. historical cost and volumes) and international benchmarks. We use this approach for our innovation and our project-focused IT expenditure.

Assumptions are required for all our forecast models. In some cases, these are key assumptions (such as demand for connections), which are used directly as the quantity part of the model, or supplier prices. Other assumptions, such as expected changes to interest rates, are less material as they only influence part of the price. We have used the 10YP as our base and the business forecast cost models do not typically include sensitivity analysis. In a few cases, sensitivity analysis is done e.g. for different network capacity scenarios.

To understand these underlying assumptions, please refer to the expenditure chapters within Our Fibre Assets, as well as the demand chapter of Our Fibre Plans. Key judgements and assumptions are summarised in these chapters, in additional to specific documentation within each underlying model.

Review and quality control

Since our PQP1 proposal submission, we have focused our modelling development on the aggregation models, working to systemise more of our regulatory forecasting. The underlying forecast cost models are largely the same as PQP1. Due to the short first regulatory period, we have only made incremental progress on our forecasting improvements roadmap. We have made some improvements to the format, but the underlying structure remains materially unchanged for most models.

Our underlying forecast models have been the focus of the Independent Verifier as part of their review of our expenditure. They are also subject to scrutiny by KPMG as part of their assurance work.

Capex regulatory forecast development

For our PQP2 proposal, the underlying business forecast from the FY2023-24 10YP, approved by Board in May 2023, is the basis for our regulatory forecast. Some minor adjustments have been made to the forecast post the 10YP approval.

Our variances to the 10YP were scrutinised, challenged and approved by management and Board. They have also been independently verified by Synergies and reviewed by KPMG as part of their assurance. They include:

- reduction to incentive capex to address an anomaly in the 10YP forecast
- reduction in unit costs to reflect supplier price changes after finalisation of 10YP
- reduction in ONT proactive replacement to reflect IV and stakeholder feedback.

Most investment managers develop their forecasts on a 'business plan nominal' basis, which applies central CPI and labour rate indices. These cost escalators are outdated by the time of the PQP2 submission and are not as comprehensive as the full regulatory cost escalation forecast methodology. Therefore for the regulatory forecast, we back out business plan inflation, prior to applying the regulatory escalators, as explained later in this report.

Otherwise, the only variances relate to the differences in regulatory treatments highlighted above. We provide more detail on each of these differences in the following sections.

Capital contributions[2]

The definition of capital contribution is specified in the IMs.[3] In summary, capital contributions are a payment from a third-party associated with building or maintaining the fibre network. Whilst our 10YP and financial statements treat these contributions as revenue in line with NZ IFRS 15 Revenue from Contracts with Customers, forecast capital contributions are deducted from our expenditure proposal, in line with the specified treatment in the IMs.

We reviewed all forecast revenue to identify capital contributions, as specified in the IMs. In some cases, a ratio was applied as the forecast values contained both qualifying and non-qualifying revenue elements. These ratios were determined following analysis of supporting data and were subject to the assurance and compliance process required by the IMs.

Capital contributions are prepared using revenue information in an input model, and the same allocation is applied to revenue and the related expenditure. This input model was treated the same as every other input model, in that it was consolidated into the BPC aggregation model and forms part of the outputs for the proposal and regulatory templates.

2 In response to information request A14 of the Information Notice.

3 Commerce Commission, Fibre input methodologies determination, 3 November 2020 (1.1.4 (2)) capital contributions means:
(a) money or the monetary value of other considerations charged to or received in relation to the construction, acquisition or enhancement of a core fibre asset or UFB asset by a regulated provider from 1 or more of the following:
(i) an access seeker;
(ii) an end-user; or
(iii) any other party; and
(b) includes the $20 million fund established by Chorus for financial loss year 2013 in respect of non-standard installations; but
(c) does not include any Crown financing

Chorus does not have a specific capital contributions policy. Most capital contributions are received for New Property Developments, which is discussed in the Extending the Network chapter of Our Fibre Assets, or Relocations, which is discussed in the Network Sustain and Enhance chapter.

For contributions received for work that is not New Property Developments, we charge a fixed fee based on term or Price on Application (POA), depending on the type of build required.

Leases

Chorus does not forecast the cost of leases as part of the annual business planning cycle for opex and capex, only as inputs to our cashflow forecasts. However, leases do form part of capex for the RAB and therefore a capex lease forecast is included in the regulatory capex forecast.

We forecast lease capex in line with NZ IFRS 16 Leases, as detailed further in Appendix A. Leases are included within the capex narrative sub-categories 'Site Sustain' (part of Network Sustain and Enhance) and 'Corporate' (part of IT and Support).

Lease costs are only presented within capex forecasts throughout our expenditure proposal, in line with NZ IFRS 16. However, the nature of accounting under NZ IFRS 16 results in 'lumpy' capex and is not reflective of the underlying efficiency of lease arrangements. We therefore also present a cashflow view as a separate disclosure within the regulatory templates, which better reflects the ongoing expenditure.

Review and quality control

Regulatory templates and capex aggregation models have been reviewed to mitigate the risk that errors could be introduced at that level. The review included multi-stage internal quality review and review by KPMG as part of assurance work.

Additional one-off checks have also been implemented as part of the development of the BPC system. As with any new system development, user acceptance testing and regular reconciliations through the development process have ensured functionality is operating as intended.

Opex regulatory forecast development[4]

Chorus has developed a BST model to forecast opex. This approach takes an efficient base year, adjusts for any expected step changes in expenditure requirements and trends this forward using a trend consisting of three components:

- growth trend
- input prices
- productivity factor, making adjustments for steps where these are not captured in the trend.

The BST has been developed at the narrative category level, for modelling purposes it has also been applied at general ledger and cost centre level of opex to facilitate:

- the cost allocation process
- aggregating the output summaries in a number of different ways.

Cost allocation is applied to the forecast in the opex BPC aggregation models. The BST models provides a database of opex by BBM opex classes for input into the BBM opex model. Our approach to cost allocation is explained further in this report in the section on cost allocation.

4 In response to information request A34 in the Information Request.

BST is modelled on a constant basis. Regulatory templates add regulatory inflation including CPI (as specified in the IMs) and RPE.

For more information, refer to BST model documentation and the Opex Insights chapter of Our Fibre Assets. Appendix D within this document also provides more context to the development of the BST approach and alternatives we have considered.

Pass-through costs

Local authority rates, telecommunications levies and dispute resolution scheme membership fees are identified in the aggregation models, and cost allocation applied. While pass-through costs are excluded from the PQ FFLAS forecast, they are included in the calculation of the MAR.

Review and quality control

Regulatory templates and opex aggregation models have been reviewed to mitigate the risk that errors could be introduced at that level. The review included multi-stage internal quality review and review by KPMG as part of assurance work. The BST model has also been scrutinised by the Independent Verifier as part of their assessment.

Demarcation of base capex, connection capex and opex

The demarcation of capex and opex is based on NZ accounting standards, i.e. New Zealand equivalents to International Financial Reporting Standards (NZ IFRS).

Chorus forecasts capex at an 'All of Chorus' (or total) level as part of the annual business planning. We first forecast total capex, then identify which elements of that total capex meet the IM definitions of connections capex. We then deduct the connections capex numbers from total capex to derive the base capex figure.

Capex expenditure chapters within Our Fibre Assets and any references to expenditure by narrative categories within the proposal, is quoted on a total capex basis, unless otherwise stated. Connection capex is the portion of total capex driven by connection demand. The explanation for the underlying costs within connection capex are within the relevant Our Fibre Assets expenditure chapters (mainly the Installations and ONT Strategy chapters).

Proposed connection capex

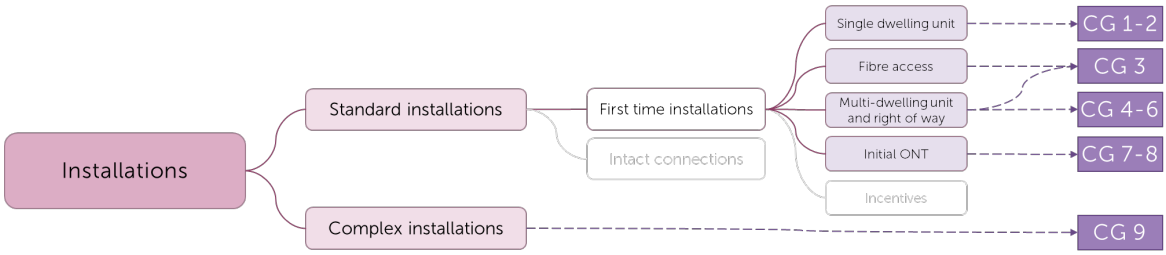
Connection capex is expenditure that is demand-driven and has a direct relationship with new installations for end-consumers onto the fibre network. The Connection Capex chapter within Our Fibre Assets describes our approach to developing our proposed connection capex.

Connection capex is defined using the cost groups agreed with the Commerce Commission (the Commission) – i.e. connection capex is equivalent to unit rate multiplied by connections volume across all cost groups. We may also include non-linear costs in cost group 10, however for PQP2 we have chosen not to do so.[5]

In the Integrated Fibre Plan, we introduce narrative categories that we use to explain how we have built up our forecasts. The diagram below shows how cost groups, connection capex, and narrative categories relate to each other.

5 In response to information request A24 in the Information Notice.

FIGURE 2: MAPPING BETWEEN EXPENDITURE CATEGORIES AND INSTALLATION COST GROUPS



Proposed base capex

Base capex is all forecast capex that is not listed as part of connection capex. Our base capex expenditure categories and sub-categories are listed in Appendix B.

Proposed opex

Opex is operating costs across all functional units that do not result in the creation of an asset.

Regulatory templates

Regulatory templates are a set of four spreadsheets, as agreed with the Commission via the s 221 Information Notice issued on 28 February 2023. They are presented in regulatory expenditure categories and in regulatory (calendar) years.

TABLE 1 REGULATORY TEMPLATES SUMMARY

TEMPLATE NAME	KEY CONTENT
RT01 Forecast expenditure	• Nominal, constant and real PQ FFLAS (2016-2029) capex split by narrative category and geography (urban, rural, national). • Nominal, constant and real PQ FFLAS (2016-2029) opex split by narrative category. • Capex split between base and connection capex. • Interest during construction (IDC) to convert capex to value of commission assets.
RT02 Cost escalation	• CPI, RPE (by category) and foreign exchange (FX). • Includes forecast rates and ex-post calculations for CPI and FX actual rates.
RT03 Cost allocation	• Unallocated actuals and forecasts (2016-2029), mapped to allocation drivers (including opex allocated service) and percentages with FFLAS values.
RT04 Connections capex and adjustment	• Connection capex volume and unit costs (2016-2029), split by cost group (cost groups are agreed/defined with the Commission). • Includes forecast and ex-post actuals.

Cost escalation

Our proposal is presented in constant price terms, while our allowances are approved on a nominal basis. We have converted forecast expenditure based on constant 2022 prices to nominal expenditure by applying CPI and RPE adjustments. Inflationary adjustments are calculated in the RT02 Cost Escalation regulatory template, using indices that can be applied to the forecast costs each year.

The CPI index represents general economy-wide price increases and is applied equally to all costs (except those costs based on fixed price contracts). The RPE adjustment represents changes in specific cost inputs (e.g. Professional and Technical Labour) that are influenced by factors other than domestic CPI and so different cost categories will have different RPE indices.

CPI adjustment

The calculation of CPI uses quarterly releases by Statistics New Zealand for actuals and a forecast of CPI supplied by NZIER.

To provide comparability of expenditure over time, historical expenditure and expenditure forecast on a nominal basis are converted to constant expenditure based on a CPI adjustment.

RPE adjustment[6]

RPE indices are calculated for each cost sub-category, based on a set of broadly-based RPE categories and the weightings applicable to those RPE categories. RPE categories are activities or costs for which we expect real-term price changes, for example labour costs, civil works, electronic equipment and fibre.

RPE category cost escalation rates were derived by NZIER, an external specialist consultancy, based on future prices, market consensus, World Bank forecasts, foreign exchange rates and econometric models. We chose NZIER to do this work because they produced the forecasts for PQP1.

For PQP2, NZIER provided a cost escalation report detailing their 10-year outlook and forecasting methodologies on 16 June 2023,[7] for the following indices, updated to the quarter ending March 2023:

- Labour cost index (LCI): professional and technical services (applicable to all labour types, except civil labour)
- LCI: all industries
- Producer price index (PPI) outputs: all industries (applicable to electricity costs and property maintenance/services)
- PPI outputs: heavy and civil engineering (applicable to civil works, such as digging up roads)
- USA producer price index: fibre optic cable manufacturing
- PPI published output commodities 'rent of commercial land and buildings' (principally leases)
- PPI outputs: electronic and electrical equipment
- PPI outputs: rent of commercial land and buildings

6 In response to information request A37.2 of the Information Notice.
7 Refer to: NZIER, Cost Escalation forecasts – outlook and forecasting methodologies, 16 June 2023 for more detail on forecast methodology and assumptions.

- No RPE – just CPI.

We apply RPE differently for capex and opex.[8]

Capex

We consulted business subject matter experts (SMEs) in conjunction with forecast cost models and accounting information to determine the nature of the different cost components for each narrative category forecast. These cost components reflected broad activity types (e.g. technical labour, equipment, fibre) corresponding to the broadly-based indices. These cost components determined the weighting of each of the cost escalators, for each narrative category.

TABLE 2: CAPEX COST ESCALATOR OVERVIEW

COST ESCALATORS	DESCRIPTION OF RATIONALE FOR USE AND HOW IT'S BEEN APPLIED
LCI: all industries	Applied to internal non-professional and non-technical labour costs
LCI: 'Professional and Technical Services'	Applied to other labour costs (both employees and contractors), excluding non-prof/ non-tech labour. Does not include any service company labour, as the service company contracts are indexed to CPI
PPI outputs: all industries	Applied to building-related expenditure, including both exchange buildings and corporate accommodation
PPI outputs: 'Heavy and Civil Engineering Manufacturing'	Applied to both civil labour costs (e.g. costs for service companies), and civil ducts (e.g. materials for ducts)
PPI outputs: 'Electronic and Electrical Equipment Manufacturing'	Applied to costs related to electrical equipment and hardware
PPI published output commodities: 'Rent of commercial land and buildings'	Applied to rent expenses including both exchange buildings and corporate accommodation
US Producer Price Index by industry: Fibre Optic Cable Manufacturing	Applied to expenses related to fibre products

Opex

We went through each general ledger (GL) category and applied the cost escalator based on the type of expenditure – for example, LCI has been applied to the majority of labour GLs.

The below table sets out our rationale for applying each of the cost escalators to opex.

8 In response to information request A37.1 of the Information Notice.

TABLE 3: OPEX COST ESCALATOR OVERVIEW

COST ESCALATORS	DESCRIPTION OF RATIONALE FOR USE AND HOW IT'S BEEN APPLIED
LCI all industries	Applied to internal labour costs (both employees and contractors)
PPI outputs all industries	Applied to building-related expenditure, including both exchange buildings and corporate accommodation
CPI	Applied to costs related to field service agreements (FSA) or contracts indexed to CPI
Weighted average LCI (60%) all and PPI outputs all (40%)	Applied to remaining opex costs which don't fall in any of the above categories

RPE indices for each of the opex and capex cost sub-categories are calculated by adding together the escalation rates for different RPE categories, while applying the weightings applicable to those RPE categories.[9] For example the Standard Installations sub-category of Installations capex can be broken down into RPE categories of 1% ducts, 22% technical labour, 3% equipment and 3% fibre. So, the RPE index for Standard Installations is calculated using 1%, 22%, 3% and 3% respectively of the RPE escalation rates applicable to those RPE categories.

For some of the larger cost categories, such as Standard Installations in the example above, there is a significant component from fixed price contracts or contracts specifying annual CPI increases. In those cases, the RPE indices apply only to the costs that are subject to market variations. For example, for Standard Installations, 71% of the cost increases just with CPI.

Foreign currency-based costs[10]

The output of the underlying forecast cost models includes a field identifying the base currency of the forecast costs. The output of the underlying forecast cost models is brought together in the aggregation models in BPC, which can be used to show the aggregate exposure to different foreign currencies.

While we do incur some costs in a number of different foreign currencies, only US dollars are used explicitly in the underlying forecast cost models. We have relied on a 10-year forecast of NZD/USD foreign exchange provided by NZIER on 16 June 2023. This is derived from a combination of growth differentials between New Zealand and the United States in the short-run and reversion to long-run averages over the longer horizon. For more information, refer to their cost escalation report[11] provided alongside this document.

Chorus uses derivative financial instruments to reduce its exposure to fluctuations in foreign currency exchange rates, interest rates and the spot price of electricity. The use of hedging instruments is governed by the Treasury Policy approved by the Board. Derivatives are held at fair value with an adjustment made for credit risk in accordance with NZ IFRS 9 Financial Instruments.

9 In response to information request A37.3 of the Information Notice.
10 Including in response to information request A39.2 of the Information Notice.
11 Refer to: NZIER, Cost Escalation forecasts – outlook and forecasting methodologies, 16 June 2023.

IDC and the related expenditure/commissioning bases

The capex forecasts are slightly different from the opex forecasts in that the IMs require them to include the capitalisation of IDC. Underlying capex cost models do not separately forecast IDC, because they do not forecast the difference between the timing of capital expenditure and the assets' commissioning. Capital expenditure is when the cost is incurred, whereas commissioning is when the asset in question is available for use or employed by the business in providing services. During the time between capital expenditure and commissioning the assets are held in Work in Progress (WIP).

We add IDC to asset values when they have been in WIP for 30 days and so we are able to approximate the effective rate of capitalised IDC by using the average time that assets spend in WIP. That average time spent in WIP is also used to calculate the difference between capital expenditure and commissioning.

We calculate the amount of time that assets spend in WIP for each cost sub-category by allocating the opening and closing WIP and annual capex spend to those categories. The average WIP balance is divided by the annual capex spend to give the average fraction of a year that assets in each category spend in WIP. The number of days spent in WIP for each of the cost sub-categories is also used as a simple time shift, to calculate the estimated value of commissioned assets.

IDC of 4%[12] is added to assets in WIP after 30 days and so we can calculate the number of days that assets in each cost sub-category attract IDC. We can then calculate an effective IDC rate for each cost sub-category by using this period, together with the average level of interest-bearing debt. No IDC is added to those cost categories where the underlying forecast modelling implicitly includes IDC in the base cost.

Cost allocation

Cost allocation refers to the process by which we apportion our costs between the regulated and unregulated parts of our business. This section outlines our approach to cost allocation for PQ FFLAS capex and opex, i.e. our approach to:

- directly attributing costs that are wholly and solely incurred in the provision of PQ FFLAS
- allocating shared costs to PQ FFLAS.[13]

Our approach to cost allocation in PQP2 is largely unchanged from PQP1. The key principles, processes, assumptions and their presentation have remained, by and large, constant. The notable changes that we have made are as a result of new information (e.g. where updated data changes values) and where our review of allocator types[14] has identified a limited number of changes.

Scope of regulated service

Our proposal covers FFLAS in areas we are subject to price-quality regulation. Section 5 of the Telecommunications Act 2001 defines FFLAS as means a telecommunications service that enables access to, and interconnection with, a regulated fibre service provider's fibre network subject to specified exclusions.

12 At a company level IDC is added at a rate of 4% per annum (see note 1 in the 2023 financial statements).
13 For simplicity we refer to costs that are not directly attributable as shared costs.
14 As required by 2.1.3(1)(b) of the Input Methodologies.

Services that are within the scope of FFLAS, as per the Commission's IM Reasons paper,[15] include:

- voice services – services to enable the delivery of telephony and low speed data services over a fibre network (including, but not limited to, anchor services, baseband,[16] ATA voice)
- bitstream PON services – single or multi-class point-to-multipoint fibre access services (including, but not limited to, anchor services, bitstream services, bitstream 2, 3, 3A, bitstream accelerate services, 10GPON, NGPON and multicast)
- unbundled PON services – point-to-multipoint Layer 1 fibre access services (including, but not limited to, PON fibre access services (PONFAS) and unbundled fibre services)
- point-to-point services – single, multi-class or Layer 1 point-to-point fibre access services (including, but not limited to, bitstream 4, enhanced bitstream 4, HSNS, BFAS and DFAS)
- transport services – Layer 1 or managed throughput fibre services provided over the fibre network, to transport voice and data traffic between central offices, including central offices that are also POIs (including, but not limited to ICABS, TES and inter-CO fibre services; but excluding national/inter-candidate area backhaul services such as Chorus Regional Transport)
- co-location and interconnection services – network equipment accommodation and management services including network interconnection services (including, but not limited to, Central Office and POI Co-location services, handover connections, Ethernet handover connections, tie-cables and jumpering)
- connection services – services to install and enable FFLAS between communal fibre network infrastructure and an end-user's premises, building or other access point (including, but not limited to, pre-wiring, cable and duct fit-out).

Key services excluded from FFLAS are:

- telecommunications services provided, in any part other than a part located within an end-user's premises or building, over a copper line, or a telecommunications service used exclusively in connection with such a service[17]
- transport services provided beyond the specified points of interconnection[18]
- network services and new property developments.

Chorus' FFLAS is subject to PQ regulation everywhere except where another local fibre company (LFC) has installed fibre networks under the UFB initiative. Chorus' FFLAS is only subject to ID-only requirements in these other LFC UFB areas.

Chorus network

The rationale behind Chorus' bid for the opportunity to build the UFB network was that we could draw on our existing infrastructure, such as exchange buildings, ducts, poles and manholes, in order to build the network in a timely and cost-effective manner.

15 These FFLAS services are described in the Commerce Commission, Fibre input methodologies: Main final decisions - reasons paper, 13 October 2020, pp 45-46. (https://comcom.govt.nz/__data/assets/pdf_file/0022/226507/Fibre-Input-Methodologies-Main-final-decisions-reasons-paper-13-October-2020.pdf).
16 We note that there is no additional fibre baseband service. Our fibre voice only service is the ATA voice service.
17 As set out in the exceptions in statutory definition of FFLAS under section 5 of the Telecommunications Act.
18 The Commission prescribes the specified points of interconnection under section 231 of the Telecommunications Act and publishes a determination annually. These specified POIs establish the fibre handover points and define the upstream boundary of a regulated fibre service provider's fibre network.

At that time Chorus considered that our fibre-to-the-node (FTTN) network would provide a strong basis for fibre-to-the-home (FTTH) deployment.

As a result, Chorus operates one network that includes two technologies, copper and fibre, across different areas in New Zealand. This results in significant sharing of network and non-network assets.

Cost allocation is a significant exercise and needs to be dynamic going forward – not only due to copper to fibre migration, but because the use of an asset can change over time.

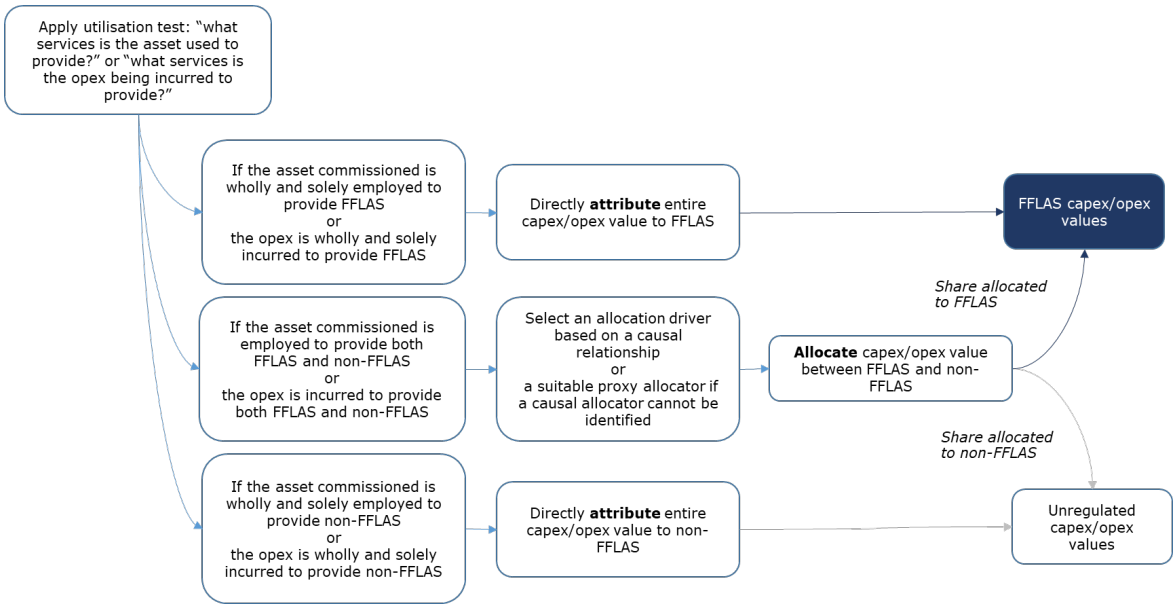
Cost allocation approach

The rules are set out in the cost allocation IM, which requires Chorus to:

- determine whether capital and operating costs are directly attributable to FFLAS or non-FFLAS,[19] or not directly attributable and therefore 'shared'
- analyse further shared costs, allocating to FFLAS or non-FFLAS using a causal allocator (where possible), or proxy allocator where not possible. This is consistent with an accounting-based allocation approach (ABAA).

Figure 3 below shows the generic attribution and allocation process applied to Chorus expenditure forecasts for both opex and capex, broadly following Commission terminology:

FIGURE 3: GENERIC ATTRIBUTION AND ALLOCATION PROCESS APPLIED TO CHORUS EXPENDITURE FORECASTS FOR BOTH OPEX AND CAPEX

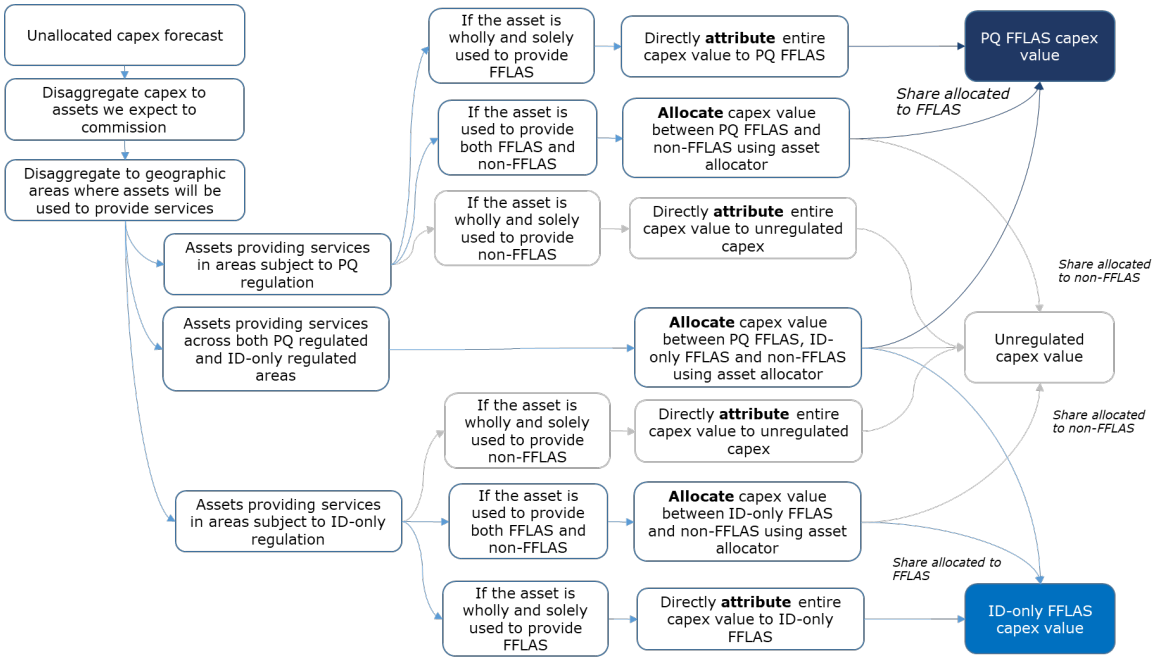


19 We use the term 'non-FFLAS' as a shorter way of referring to 'services that are not regulated FFLAS' as defined in the Input Methodologies.

Capex allocation approach overview[20]

When deciding what proportion of capex is allocated to PQ FFLAS and ID-only FFLAS, we consider how the proposed capex will be utilised in our network to provide various services (i.e. FFLAS and non-FFLAS). We therefore need to disaggregate our forecast commissioned asset values into asset classes and modelled geographies as shown in Figure 4.

FIGURE 4: CAPEX ALLOCATION APPROACH



We first break down our forecast capex into:

- asset classes – we disaggregate total forecast capex to the sets of assets we expect to commission
- modelled geographies – we then further disaggregate the capex into the areas (Won, Lost, Non and National) where we forecast the assets will be located.

We then consider how capex in each asset class in each modelled geography is employed to provide FFLAS. This is discussed in more detail below.

How we disaggregate capex to BBM asset classes

We start with capex forecasts presented as DPs from the 10YP. Then we disaggregate total forecast capex to the fixed asset register (FAR) asset classes and platforms codes that we expect the capex to settle to.[21]

To do this we worked with business SMEs to identify the typical assets (FAR asset classes and platform codes) that forecast capex will lead to commissioning.

20 In response to information request A42 of the Information Notice.
21 Platform code is a FAR term. Our FAR assigns a platform code to common identifiable assets and has a specific useful life and depreciation rate assigned to it. For example, Transport Ducts and Manholes, Blown Cable Ribbonet/Micronet Duct.

We map these FAR asset classes and platform codes to our BBM asset classes.

The BBM considers Chorus assets in terms of BBM asset classes. This allows a large degree of aggregation and simplification from the highly granular data held in the FAR.

Each asset class has similar asset lifetimes and replacement cost trends. Each asset class is also shared between different services in a similar way.

We reviewed the asset classes with business SMEs to validate the mapping of platform codes to BBM asset classes and identify areas where modification is required for future mappings.

How we allocate capex to PQ, ID-only and ID areas[22]

Within the modelling we have adopted four geographic areas where we provide FFLAS:

- Won – exchange service area (ESA) where Chorus won the contract to deliver UFB
- Lost – ESA areas where Chorus is not contracted to roll-out UFB
- Non – ESA areas where there is no UFB deployment
- National – for central and core assets which are used by all the other geographies.

There is also another definition of geography in use, which is based on the UFB network rollout:

- UFB – areas in which there is a Chorus UFB network;
- LFC – areas in which there is a non-Chorus UFB network; and
- Rest of New Zealand (RONZ) – areas with no UFB network.

We note that for the purposes of our regulatory templates, 'Urban' consists of 'UFB' areas and 'Rural' consists of 'RONZ' areas.

We distinguish geographic areas for the forecasts for two reasons:

- The Commission uses the terms 'PQ FFLAS' (services provided in UFB and RONZ areas), 'ID FFLAS' and 'ID-only FFLAS' (services provided in other LFC areas) to distinguish the different regulatory requirements.
- Shared assets have different sharing percentages based on the geographic areas that they provide services to. Shared assets in Won areas are utilised more for FFLAS services than the same type of assets in Non or Lost areas.

For our PQP2 forecasts, our approach to forecasting the amount of capex in each geography is to use relevant forecast connections as a proxy 'geographic allocator' for the asset class (e.g. fibre capex is assumed to be distributed across geographies in the same proportion to fibre connections distributed across geographies). The national geography is used for all capex that is central or core and used by all geographies, e.g. IT assets.

We tested the outcome of this approach and believe that is an appropriate forecast allocator in most instances. It is objective, free from bias and consistent with Chorus forecast connections.

22 In response to information request A45.1 in the Information Notice.

In some instances, this proxy geographic allocator resulted in outcomes inconsistent with underlying forecasts. In these cases,[23] SMEs' expertise is used to determine the appropriate allocation outcome and add additional Initial Asset Valuation (IAV) geographic allocation drivers accordingly.

The resulting list of options for spreading capex by asset class over the IAV model geographies (i.e. Won, Lost, Non, and National) is:

- proportional to Net Fibre Adds in that period in that geography
- proportional to Total Fibre Connections in that geography
- proportional to Total Copper Connections in that geography
- proportional to Total Connections in that geography
- proportional to Lines in the UFB in that geography (i.e. 100% to Won area)
- proportional to Lines in the LFC in that geography (i.e. 100% to Lost area)
- proportional to Copper Lines in the LFC + RONZ areas in that geography
- proportional to Copper Lines in the RONZ in that geography
- 100% to Won
- 100% to Lost
- 100% to Non
- 100% to National.

We believe that together these approaches produce a reasonable distribution of forecast expenditure across modelled geographies.

Once the capex has been distributed across the different geographies it becomes possible to apply the BBM model allocation factors for the asset classes in the relevant period (i.e. ABAA), resulting in a FFLAS and non-FFLAS allocated view.

Overview of base capex geographic breakdown

The regulatory template RT01 provides a geographic breakdown of estimated base capex – i.e. by Urban, Rural and National – for PQP2. To develop the base capex breakdown estimate we have made an approximation of connection capex (and deducted that from total capex). The overview of the base capex breakdown for PQP2 is:

- Urban – 73%
- Rural – 7%
- National – 20%.

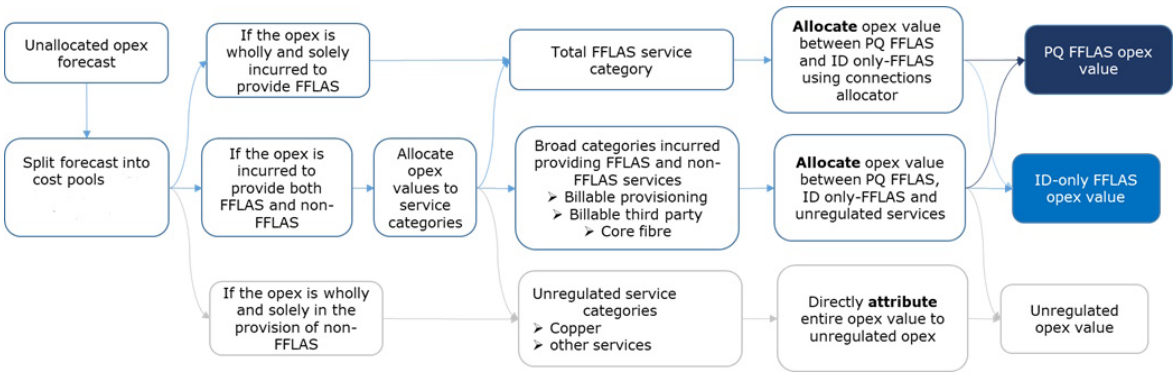
23 For example, for UFB communal build, roll out is entirely in 'Won' areas, and, where expenditure is planned for specific exchange buildings or areas, we allocate accordingly.

Opex allocation approach[24]

Our opex allocation approach is largely unchanged from PQP1. Our BBM opex categories start off with our general ledger (GL) accounts, and this is supplemented by cost centre data and other information from our systems. The categories are designed to contain costs with similar characteristics which can be allocated by the same allocator type. Our allocator types are sourced from standard business systems, with forecasts provided as part of the business planning process. We review the BBM opex categories and allocator types to ensure each opex category uses the appropriate allocator type.

We use the accounting-based allocation approach to allocate opex, consistent with the IMs, as illustrated in Figure 5 below.

FIGURE 5: CONCEPTUAL PROCESS FOR ALLOCATING OPEX



For each BBM opex category we have used the same attribution and allocation assumptions (including allocation drivers) as the opex model used to calculate our final PQ FFLAS opex for PQP1, except where mentioned in the following section.

Changes to our opex allocation since the PQP1 determination[25]

We have made five changes to our opex allocations for PQP2, which are listed in Table 4 below.[26] The IMs require us to review our allocator types at least once every 18 months for information disclosure.[27] As part of that review we tested our BBM opex categories and the allocator types applied to them to check whether they were still suitable for ID (for 2022) and whether they were suitable for PQP2. The changes relate to proxy cost allocators only – no changes to causal allocators or to the proxy allocation between PQ and ID-only areas were identified.

Three of the changes – those related to co-location, service company overhead and marketing and sales direct attribution – were implemented in our 2022 ID schedules,[28] and we are also applying these in our PQP2 proposal. One of these, the marketing and sales direct attribution, is not a change to an allocator type, but is implemented via an allocation driver and we have included it here for clarity, even though direct attribution does not need to fulfil the same criteria as allocator type changes.

24 In response to information request A42 of the Information Notice.
25 This section constitutes our response to requirement A44.6 (including A44.6.1 and A44.6.2) of the section 221 notice "Requirements for base capital expenditure, connection capex baseline expenditure, and operating expenditure proposals".
26 Note that in this section we refer to changes in opex allocations when discussing changes to allocation drivers which includes changes to allocator types and, where highlighted, changes to direct attribution. These changes exclude changes to allocator values.
27 Fibre Input Methodologies Determination 2020, 2.1.3(1)(b).
28 https://company.chorus.co.nz/about/regulatory/price-quality-information-disclosures

The remaining two changes – to CTO common costs and corporate costs – were not implemented for 2022 ID, but have been implemented in our PQP2 proposal.

TABLE 4: SUMMARY OF OPEX ALLOCATION CHANGES FOR PQP2

COSTS	PQP1 ALLOCATOR TYPE	PQP2 ALLOCATOR TYPE
Costs allocated by service company overhead	Overhead	Overhead (allocator now includes both service company opex and capex)
Co-location related costs	N/A – directly attributable to non-FFLAS	Revenue (scope is limited to co-location revenue)
Marketing and Sales – NPC	Future benefit	Future benefit (weighted to reflect direct attribution)
CTO – common costs	A range of allocator types as per PQP1 final decision: • Totex • Recipient business function • Net Book Value • Number of events • Overhead • Traffic	Revenue
Corporate cost	A range of allocator types as per PQP1 final decision: • Totex • Corporate consultants • Recipient business function • Corporate legal • Revenue • Corporate other	Same allocator types, except the totex component is replaced by revenue.

These changes, and their rationale, are discussed further below.

Our cost allocation changes are economically efficient

The allocator changes have been made to keep our allocated costs consistent with economic principles during PQP2. Economic principles suggests that the allocation of opex across services of a multi-product firm like Chorus should be such that each service should bear at least its incremental cost[29] but no more than its standalone cost,[30] with common costs[31] allocated such that they are recovered once for the firm. The ABAA in the IMs attempts to approximate this with

29 The costs that would be incurred when expanding to provide an additional service or avoided if provision of that additional service ceased.
30 The costs that would be incurred in total if a service was provided by itself.
31 Costs that would be incurred if any service was provided, and not change if an additional service was provided.

directly attributable costs and shared costs (albeit using accounting records and other information as opposed to economic costs, which are difficult to observe).

The outcome of applying these principles should reflect the outcomes expected in workably competitive markets in the long run and, as a result, meet the purpose statement in section 162 of the Telecommunications Act. We discuss this further below and have provided a report from Incenta Economic Consulting as part of our PQP2 proposal submission, which supports our approach.

Change to costs allocated by service company overhead

The service company overhead allocator has been updated to reflect the ratio of FFLAS to non-FFLAS service company totex (total expenditure, i.e. operating expenditure and capital expenditure) for PQP2. In principle, we expect PQP2 opex incurred for each service for the BBM opex categories in Table 5 to vary somewhat depending on the effort required to manage the service company expenditure and we have used service company totex as a proxy for this during PQP2.

TABLE 5: SUMMARY OF CHANGES TO COSTS ALLOCATED BY SERVICE COMPANY OVERHEAD

	PQP1	ID 2022	PQP2
Allocator type	Overhead	Overhead	Overhead
Allocation driver[32]	Service company overhead	Service company overhead (allocator now uses service company opex and capex)	Service company overhead (allocator now uses service company opex and capex)
Causal or proxy	Proxy	Proxy	Proxy
PQP2 discussion			
BBM opex categories	CNO – NPC – network CTO – Common – Schedules		
What is the cost?	The opex categories reflect activities related to service company management, largely Chorus staff, which spans maintenance-related expenditure (opex) and build-related expenditure (capex).[33]		
What is the allocation driver?	The service company overhead allocator is based on the allocation driver used during the financial loss period and PQP1, which reflected the provisioning and maintenance overhead.[34] The allocator has been updated to include the split of service company capex for FFLAS and non-FFLAS services.		
Causal relationship?	No – we have not identified a strong causal relationship. We do not have historical records that directly measure the proportion of these costs that are incurred for each service.		

32 The allocation driver is the name of the allocator in the BBM. This can be the same as the allocator type but in some cases the allocator type describes a group of allocation drivers.
33 These opex category definitions are unchanged from PQP1, refer to Documentation of opex allocation for the BBM opex workstream (including responses to notice to supply information) (7 June 2022) for more information.
34 Documentation of opex allocation for the BBM opex workstream (including responses to notice to supply information) (7 June 2022), A.1.26

	PQP1	ID 2022	PQP2
Rationale for the proxy cost allocator – why it is objectively justifiable and demonstrably reasonable[35]	The calculation for the service company overhead allocation driver is objectively justifiable as it's based on financial records. In principle, for PQP2 we continue to expect the cost will vary somewhat (across services) with effort. The allocator is demonstrably reasonable since including a capex-related component is consistent with the BBM cost categories reflecting effort across opex and capex related activities. Previously, calculation of the allocator value only included opex costs. We note that allocation by overhead and recipient business function was approved by the Commission as part of the final decision for the financial loss period and PQP1.[36] The use of this allocator is still justifiable for the same reasons as for PQP1, however we are calculating it slightly differently for PQP2.[37]		
Consistency with similar measures	By its nature, this allocation is consistent across PQP2 as the same driver is used for all forecast years. We have updated the allocator for all costs previously using the service company overhead allocator for consistency across relevant BBM opex categories.		
Factors in existence in prior 12 months	Yes – our financial records include payments to service companies for both opex and capex.		

Change to co-location related costs

The allocation of co-location-related opex has been updated to align the allocation to the scope of FFLAS. This is a change from direct attribution to allocation. Previously, co-location opex categories were attributed on the assumption that the services were wholly non-FFLAS. The new cost allocator apportions the costs using the ratio of FFLAS vs non-FFLAS co-location revenue on a consistent basis to FFLAS revenue reporting. In principle, we expect PQP2 opex incurred for each service for the BBM opex categories in Table 6 to vary somewhat by the effort expended on various co-location services and we have used co-location revenue as a proxy for this during PQP2.

TABLE 6: SUMMARY OF CHANGES TO CO-LOCATION RELATED COSTS

	PQP1	ID 2022	PQP2
Allocator type	N/A – direct attribution to non-FFLAS	Revenue	Revenue
Allocation driver	Co-location (direct attribution to non-FFLAS)	Co-location (shared cost allocated via co-location revenue)	Co-location (shared cost allocated via co-location revenue)
Causal or proxy	N/A	Proxy	Proxy

35 In response to information request A44.4.1 in the Information Notice.
36 Chorus' transitional initial price-quality regulatory asset base as at 1 January 2022 – Final Decision (16 December 2021), at 5.179
37 In response to information request A44.4.2 in the Information Notice.

	PQP1	ID 2022	PQP2
PQP2 discussion			
BBM opex categories	CNO – co-location CNO – NPC – billing agency		
What is the cost?	The BBM cost categories are associated with co-location services – creating or relinquishing different co-location services as well as billing.		
What is the allocation driver?	The co-location allocator is calculated from the split of FFLAS and non-FFLAS co-location revenue.		
Causal relationship?	No – we have not identified a strong causal relationship. We do not have historical records that directly measure the proportion of these costs that are incurred for each service.		
Rationale for the proxy cost allocator – why it is objectively justifiable and demonstrably reasonable[38]	The calculation for the co-location allocation driver is objectively justifiable as it's based on financial records. The allocator is demonstrably reasonable since the allocator type is more consistent with the scope of FFLAS compared to direct attribution. In principle, for PQP2, we continue to expect the cost will vary somewhat (across services) with effort which we are using co-location revenue as a proxy for. We note that revenue was a default allocator for the financial loss period.[39]		
Consistency with similar measures	By its nature, this allocation is consistent across PQP2 as the same driver is used for all forecast years. We have updated the allocator type for co-location related costs for consistency across BBM opex categories.		
Factors in existence in prior 12 months	There has been greater internal investigation as to the nature of the co-location space and what it is being used for, which has discovered that some of the space is used for FFLAS. We now calculate a FFLAS/non-FFLAS split for co-location revenue for reporting purposes.		

Change to Marketing and Sales – NPC

We have not changed the cost allocator type for marketing and sales personnel costs – however, direct attribution has been updated to reflect a number of roles that are exclusively related to either FFLAS or non-FFLAS activities. We have listed this change below for clarity only. This update has the effect of reducing the amount of shared costs that need to be allocated using a cost allocator.

38 In response to information request A44.4.1 in the Information Notice.
39 Fibre Input Methodologies Determination 2020, B1.1.6(1)(c)(iii).

TABLE 7: SUMMARY OF CHANGES TO MARKETING AND SALES – NPC

	PQP1	ID 2022	PQP2
Allocator type	Future benefit	Future benefit	Future benefit
Allocation driver[40]	Future benefit	PSM labour attribution plus future benefit	PSM labour attribution plus future benefit
Causal or proxy	Proxy	Direct attribution + Proxy	Direct attribution + Proxy
PQP2 discussion			
BBM opex categories	Marketing and Sales – NPC		
What is the cost?	Product, Sales and Marketing personnel cost.		
What is the allocation driver?	N/A – no change. Direct attribution updated based on personnel records.		
Causal relationship?	N/A – proxy cost allocator unchanged from PQP1.		
Rationale for the proxy cost allocator – why it is objectively justifiable and demonstrably reasonable[41]	N/A – proxy cost allocator unchanged from PQP1.		
Consistency with similar measures	N/A – proxy cost allocator unchanged from PQP1.		
Factors in existence in prior 12 months	N/A – proxy cost allocator unchanged from PQP1.		

Change to CTO – common costs

We have changed the allocator type for CTO common costs to revenue to reflect the allocation of fixed, economic common costs better in PQP2. For the financial loss period and PQP1 we noted that totex was a reasonable proxy for the effort incurred providing each service but that this would likely change when the network was largely constructed and in operation[42] and therefore it is demonstrably reasonable to make this change for PQP2 given that the UFB rollout is complete. We have made this change based on internal review with SME support and external advice.

40 This change reflects that while the allocator type has not changed, the allocation driver in the BBM has been updated to provide direct attribution as well as allocation of shared cost.
41 In response to information request A44.4.1 in the Information Notice.
42 Incenta - Certain cost allocation issues relevant to the IAV (March 2021), at 4.2.3.

TABLE 8: SUMMARY OF CHANGES TO CTO – COMMON COSTS

	PQP1	ID 2022	PQP2
Allocator type	• Totex • Recipient business function • Net Book Value • Number of events • Overhead • Traffic	• Totex • Recipient business function • Net Book Value • Number of events • Overhead • Traffic	Revenue
Allocation driver	• Totex • CTO overhead • NBV of L1 assets • All non-CTO NPC costs • Orders • Service Company Overhead • Traffic	• Totex • CTO overhead • NBV of L1 assets • All non-CTO NPC costs • Orders • Service Company Overhead • Traffic	Revenue
Causal or proxy	Proxy	Proxy	Proxy
PQP2 discussion			
BBM opex categories[43]	CTO – Common Costs CTO – Common Costs (allocated using CTO overhead) CTO – Common Costs (allocated using NBV of all L1 assets) CTO – Common Costs (allocated using NPC of all Chorus staff) CTO – Common Costs (allocated using orders) CTO – Common Costs (allocated using Service company overhead) CTO – Common Costs (allocated using Traffic)		
What is the cost?	The BBM opex category contains a range of IT and systems opex which are predominantly fixed,[44] economic common costs. The costs that are included in these opex categories are largely unchanged from PQP1.[45]		
What is the allocation driver?	The revenue allocation driver is the ratio of FFLAS to non-FFLAS revenue, consistent with the revenue allocator as it was calculated for the financial loss period and PQP1.		
Causal relationship?	No – we have not identified a strong causal relationship. We do not have historical records that directly measure the proportion of these costs that are incurred for each service.		

43 Includes categories marked as 'forecast'.
44 Fixed in the sense that they do not vary significantly depending on each service.
45 See Submission on initial PQ RAB and additional IM amendments draft decisions (16 September 2021), Appendix A.

	PQP1	ID 2022	PQP2
Rationale for the proxy cost allocator – why it is objectively justifiable and demonstrably reasonable[46]	The calculation for the revenue allocator type is objectively justifiable as it's based on financial records. Alongside this proposal we have attached a report from Incenta to illustrate why revenue is a demonstrably reasonable proxy allocator for these costs. The costs are predominantly fixed, economic common costs, and therefore causal cost drivers (or proxies for them) are not relevant. Using the revenue allocator type is also suitable given uncertainty around the exact systems that the CTO – common cost category will contain in PQP2. In PQP2, Chorus is more likely to be able to identify directly attributable costs (and separate these from shared costs) when compared to the financial loss period. This reduces the need to use totex and increases the likelihood that these costs will be more reflective of economic common costs. Revenue is a suitable allocator type to use for fixed, common costs in PQP2, as per the report from Incenta. We also note that allocation by revenue was a default allocator for the financial loss period and approved by the Commission as part of the final decision for the financial loss period and PQP1.[47] The allocator calculation is unchanged from PQP1, however we are applying it to CTO common costs for PQP2.[48]		
Consistency with similar measures	By its nature, this allocation is consistent across PQP2 as the same driver is used for all forecast years. We have updated the allocator type for CTO costs that we consider are similar to economic common costs for consistency.		
Factors in existence in prior 12 months	Yes – the revenue allocator is based on our financial records and has been applied during the financial loss period and PQP1.		

Change to corporate cost

We have changed the allocator type for corporate costs to revenue 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. For the financial loss period and PQP1 we noted that totex was a reasonable proxy for the effort incurred providing each service, but that this would likely change when the network was largely constructed and in operation[49] and therefore it is demonstrably reasonable to make this change for PQP2 given that the UFB rollout is complete. We have made this change based on internal review with subject matter expert support and external advice.

TABLE 9: SUMMARY OF CHANGES TO CORPORATE COST

	PQP1	ID 2022	PQP2
Allocator type	Totex Corporate consultants Recipient business function Corporate legal Corporate other	Totex Corporate consultants Recipient business function Corporate legal Corporate other	Same allocation drivers except the totex component is replaced by revenue

46 In response to information request A44.4.2 in the Information Notice.
47 Fibre Input Methodologies Determination 2020, B1.1.6(1)(c)(iii).
48 In response to information request A44.4.2 in the Information Notice.
49 Incenta - Certain cost allocation issues relevant to the IAV (March 2021), at 4.2.3.

	PQP1	ID 2022	PQP2
Allocation driver	Totex Corporate consultants Corporate – all insurance costs Corporate legal Corporate personnel Corporate other	Totex Corporate consultants Corporate – all insurance costs Corporate legal Corporate personnel Corporate other	Same allocation drivers except the totex component is replaced by revenue
Causal or proxy	Proxy	Proxy	Proxy
PQP2 discussion			
BBM opex categories[50]	Corporate – audit fees and expenses Corporate – NPC Corporate – other costs Corporate – legal costs Corporate – insurance Corporate – consultants' costs		
What is the cost?	Corporate costs that are generally support functions. These are largely personnel costs, e.g. finance, executive and legal teams. The costs that are included in these opex categories are largely unchanged from PQP1.		
What is the allocation driver?	The revenue allocation driver is the ratio of FFLAS to non-FFLAS revenue, consistent with the allocator as it was calculated for the financial loss period and PQP1.		
Causal relationship?	No – we have not identified a strong causal relationship. We do not have historical records that directly measure the proportion of these costs that are incurred for each service.		
Rationale for the proxy cost allocator – why it is objectively justifiable and demonstrably reasonable[51]	The calculation for the revenue allocator type is objectively justifiable as it's based on financial records. Alongside this proposal we have attached a report from Incenta to illustrate why revenue is a demonstrably reasonable proxy allocator for these costs. Broadly speaking there are two categories of cost being allocated: • The costs are predominantly fixed, economic common costs and therefore causal cost drivers (or proxies for them) are not relevant. For PQP2 we expect revenue will be a suitable allocator type to use for fixed, common costs as per the report from Incenta • For some costs that aren't fixed, revenue is a reasonable proxy for a cost driver. To support this analysis, we performed a company-wide survey of Chorus people leaders to gauge how much time they spent on FFLAS and non-FFLAS. The results indicate that corporate personnel could reasonably spend more than CCI [ ] of their time on FFLAS. This is consistent with using revenue as the allocator type.		

50 Includes categories marked as 'forecast'.
51 In response to information request A44.4.2 in the Information Notice.

	PQP1	ID 2022	PQP2
	We also note that allocation by revenue was a default allocator for the financial loss period and approved by the Commission as part of the final decision for the financial loss period and PQP1.[52] The allocator calculation is unchanged from PQP1, however we are additionally applying it to corporate costs for PQP2.[53]		
Consistency with similar measures	By its nature, this allocation is consistent across PQP2 as the same driver is used for all forecast years. We have updated the allocator type for corporate costs that we consider are similar to economic common costs for consistency.		
Factors in existence in prior 12 months	Yes – the revenue allocator is based on our financial records and has been applied during the financial loss period and PQP1.		

The remaining opex allocator types remain unchanged

The remaining opex allocator types are unchanged from PQP1 (i.e. no modifications or corrections have been made since the PQP1 determination).[54] Our review did not identify changes to the nature of the remaining forecast costs being allocated or the allocator types which would justify the need to change them. As such, the unchanged allocator types remain objectively justifiable and demonstrably reasonable, consistent with the Commission's final decision for PQP1.[55]

In addition, there no material changes to the allocator values between PQP1 and PQP2.[56]

Our historical and forecast allocator values are demonstrably reasonable

The historical allocator information used for UFB FFLAS remains unchanged from the Commission's final initial PQ RAB decision and based on this we consider them demonstrably reasonable.[57] The allocation approach applied is described in the Commission's decision and in the model documentation provided for PQP1.[58]

Our forecast allocations for PQP2 are based on demonstrably reasonable assumptions, data, methods and judgements. The forecasts are sourced from the 10YP. The forecast is subject to Chorus' financial management process outlined in the Governance report. Furthermore, these forecasts have been subject to independent verification and audit for IM compliance as part of the preparation of our proposal.[59]

Assurance on cost allocation process[60]

Our cost allocation process is consistent with the determination for PQP1, except where we have proposed opex changes as outlined in this report.

52 Fibre Input Methodologies Determination 2020, B1.1.6(1)(c)(iii).
53 In response to information request A44.4.2 in the Information Notice.
54 In response to information request A44.7 in the Information Notice.
55 In response to information request A44.5 in the Information Notice.
56 In response to information request A44.8.3 in the Information Notice.
57 In response to information request A44.8.2 in the Information Notice.
58 See, for example, Documentation of opex allocation for the BBM opex workstream (including responses to notice to supply information) (7 June 2022)
59 In response to information request A44.8.1 in the Information Notice.
60 In response to information request A43 of the Information Notice.

The baseline for PQP2 is the 2022 ID modelling. Cost allocation is calculated within the IAV and opex models, where the inputs include:

- data from primary sources – Chorus' statutory accounts and corresponding financial systems as required, in addition to data taken from the 10YP. In some instances, data inputs are sourced from Chorus' operational systems
- desktop models – property space[61] and power consumption.

There is robust assurance in place to help ensure the data inputs accurately represent, in all material respects, the operations of Chorus. The three-tier internal certification process is at a standard that helps to make certain that the integrity of the data is not compromised, and is fit for purpose. Certifiers are required to turn their minds to (and document) any risks, assumptions and limitations in relation to the use of the data.

KPMG completed the external assurance on 2022 ID and PQP2 proposal, as per the audit requirements in the Information Disclosure Determination 2021, Fibre Input Methodologies Determination 2020, and the section 221 Information Notice dated 28 February 2023.

61 Property model was subject to external assurance as part of the finalisation of the initial RAB.

Appendix A – Capitalisation

Our approach to the capitalisation of costs is captured in Chorus' Asset Capitalisation Policy. The main categories of cost capitalisation are described below.

Capitalisation of labour costs

The intention of our labour rate principles/assumptions is to accurately capture costs related to the internal labour force who are directly involved in creating assets, in order to accurately reflect the cost of assets Chorus creates.

Our policy is aligned with New Zealand Accounting Standard NZ IAS 16 Property, Plant & Equipment.

A labour capitalisation rate is calculated for each business unit as an hourly rate per employee. The rate has two components – a base rate, and an on-cost rate. The base rate reflects the total remuneration package across all staff within the functional unit, and the on-cost reflects a cost of corporate property and general IT costs, which are incurred for all staff.

There are also some functional units that have an additional cost that is unique to their area (e.g. Customer and Network Operations (CNO) for Layer 2 management, where team leaders are specifically managing a full team of time-sheeting/capitalised staff labour).

Rates are then loaded into the SAP finance system. Staff use timesheets to code their hours to projects. The hourly labour rate assigned to each staff member is then used to calculate the cost of their time and effort to be capitalised to projects/assets.

Labour rates are refreshed on an annual basis in line with the business planning process.

Capitalisation of lease costs

We are a lessee and lessor of certain network assets under lease arrangements.

For reporting periods within FY2011-12 to FY2016-17 we accounted for leases under NZ IAS 17. For FY2017-18 we early adopted NZ IFRS 16, with a date of initial application of 1 July 2017.

For all leases we recognise assets and liabilities in the statement of financial position, except those determined to be short-term or low value. On inception of a new lease, the lease payable is measured at the present value of the remaining lease payments, discounted at our incremental borrowing rate at that date. Practical expedients within NZ IFRS 16 Leases have been applied to allow a single discount rate for a portfolio of leases with similar characteristics. Lease costs are recognised through interest expense over the life of the lease. The corresponding right of use asset incurs depreciation over the estimated useful life of the asset.

Prior to adoption of NZ IFRS 16 (i.e. from FY2011-12 to FY2016-17), only leases considered finance leases were recognised on the statement of financial position per the method described above. All other leases (operating leases) were disclosed as a commitment at face value, in the 'Commitments' note of the financial statements.

'Right of use assets' is a new asset category in the FAR, created for leases on adoption of NZ IFRS 16 (FY2017-18).

We have applied a single discount rate to a portfolio of leases across the two main portfolios of leases ('property' and 'poles') due to the long-term nature of the underlying assets used to service the same network. This is reflective of the longer-term nature of infrastructure assets. The nature of these assets is similar enough that borrowing rates on commercial debt would not change asset to asset. The incremental borrowing rate is reviewed annually.

Capitalisation of IT costs

We capitalise IT costs where they meet the criteria of our Capitalisation Policy. Software and other intangible assets are initially measured at cost. The direct costs associated with the development of network and business software for internal use are capitalised where project success is probable, and the capitalisation criteria is met.

Following initial recognition, software and other intangible assets are stated at cost less accumulated amortisation and impairment losses. Software and other intangible assets with a finite life are amortised from the date the asset is ready for use on a straight-line basis over its estimated useful life.

IT systems are assessed as to whether they are used in provisioning activity. Each provisioning IT system is categorised as either fibre provisioning, copper provisioning or shared, and capitalised as part of the related orders.

Capitalisation of customer acquisition and customer retention costs

We adopted NZ IFRS 15 Revenue from Contracts with Customers with a date of initial application of 1 July 2017. As a result, we changed our accounting policy for customer retention costs.

Customer retention costs are incremental costs incurred in acquiring new contracts with new and existing customers that we expect are recoverable over the life of the connection and are capitalised as customer retention assets. Following initial recognition, customer retention assets are stated at cost less accumulated amortisation and impairment losses. Customer retention assets have a finite life and are amortised from the month that costs are capitalised on a straight-line basis over the average connection life.

Customer retention assets are amortised to the income statement, either as amortisation expense or operating revenue, based on the nature of the specific costs capitalised.

Examples of costs that fall under this category are internal and external IT and labour costs associated with connecting our customers on the fibre network, cost of service company truck rolls to connect end-customers to the fibre network, and incentives for customers to move onto fibre services or to move to higher-spec fibre products.

No double-counting of capitalised costs[62] [63]

The principle of our forecasts is to apply the same principles as accounting standards when it comes to capitalisation and consistency between opex and capex. Accounting standards allow for capitalisation of certain expenditure when specific criteria are met. Materially, these costs fall under the following categories:

- **Labour costs** – these are fully forecast as opex and then capitalised, as required, if they meet the requirements to do so under accounting standards. Labour costs are capitalised using timesheets and a labour cost rate, therefore there are no direct models to trace consistency between opex and capex.
- **IT costs** – IT operating costs are capitalised if they meet the criteria of NZ IFRS 15 in relation to provisioning new customers or retaining existing customers.

62 In response to information request A33 of the Information Notice.
63 In response to information request A32 of the Information Notice.

- **Customer acquisition and retention costs** – these are also referred to as provisioning costs, explicitly excluding incentives, which we forecast directly into capex. All negative amounts in our cost centres 1509 and 1559 relate to provisioning costs capitalised.

Our BST opex forecast assumes rates of capitalisation in the future are consistent with our base year actuals (see our response to A33 within our section 221 response, which demonstrates expensed costs (opex) that we capitalise).

Appendix B – Our proposed expenditure categories

For the avoidance of doubt, our expenditure (or cost) categories are as per the below lists, as agreed with the Commission via the section 221 Information Notice from 28 February 2023. Please note these categories are unchanged from PQP1. Definitions of each of these categories can be found within the expenditure chapters of Our Fibre Assets and within the Glossary.

BASE CAPEX SUB-CATEGORY GROUPS	BASE CAPEX SUB-CATEGORIES
Extending the Network	Augmentation
	New Property Developments
	UFB Communal
IT and Support	Business IT
	Corporate
	Network and Customer IT
Installations	Complex Installations
	Standard Installations
Network Capacity	Access
	Aggregation
	Transport
Network Sustain and Enhance	Field Sustain
	Relocations
	Resilience
	Site Sustain

OPEX SUB-CATEGORY GROUPS	OPEX SUB-CATEGORIES
Customer	Customer operations
	Product, Sales and Marketing
Network	Maintenance
	Network Operations
	Operating costs
Support	Asset Management
	Corporate
	Technology

Appendix C – List of models[64]

Capex

Below is a list of key models driving our regulatory forecasts, by expenditure sub-category.

Key:
- key model for this sub-category (defined as 50% or more of the forecast being derived from this model)
- 10-49% of the forecast for this sub-category is derived from this model
- minor model (less than 10% of the forecast for this sub-category is derived from this model)

		Extending the Network			Installations		IT and Support			Network Capacity			Network Sustain and Enhance			
Model	Explanation of the model	Augmentation	New Property Developments	UFB Communal	Complex Installations	Standard Installations	Business IT	Corporate	Network & Customer IT	Access	Aggregation	Transport	Field Sustain	Relocations	Resilience	Site Sustain
C001	Forecast costs investment in property, engineering services, and corporate accommodation							■								■
C002	Forecasts costs for extending the network (fibre frontier)	■														
C003	Forecast cost for sales to third parties including network relocations													■		
C010	Forecasts access electronics for Network Capacity & Installations									■						
C011	Forecasts costs for UFB2/2+ connections					■				■						
C012	Forecasts costs for Connections (including fibre access, but not UFB2/2+ which are in DP2429). Includes MDUs and ROWs					■										
C013	Forecasts all NZ IFRS 15 related expenditure, including incentives					■										
C014	Forecasts costs for business fibre connections, high cost connections, new property developments, and Roadworks	■	■		■								■	■		
C015	Forecasts costs for fibre lifecycle replacements, extension of the network to rural communities, network robustness and resilience												■			
C016	Forecast for network robustness diversity														■	
C017	Forecasts for lifecycle and other capex												■			
C021	Forecasts IT capex						■		■							
C023	Forecasts aggregation electronics for Network Capacity										■					
C024	Forecasts transport electronics for Network Capacity											■				
C028	Forecasts capex for sustaining/maintaining the network, including poles. Also Overhead to Undergrounding (OHUG)												■	■		
C051	Forecasts capital contributions and applies to expenditure categories		■		■	■							■	■		
C053	Forecasts for corporate leases							■								
C055	Forecasts for network leases															■
C056	Forecasts for poles leases															■
C057	Forecasts for Spark property leases															■

Opex

Opex forecasts are calculated using BST methodology, so does not use input models. There is a single BST model. Refer to BST model documentation for more information.

64 In response to information request A23 of the Information Notice.

Appendix D – BST evolution and alternatives

This appendix sets out in detail alternatives we considered throughout the development of the BST model. In particular:

- selection of the base year
- level of disaggregation and associated cost drivers
- trends.

We note that alternative step changes considered (and rejected as they did not meet the criteria) are set out in the Opex Insights chapter in Our Fibre Assets.

Selection of the base year

The BST method requires an initial 'base' level of expenditure which captures revealed efficiencies and establishes an efficient base from which to project.

We have selected 2022 as the base year because it is the most recent year of available and audited data we have, and because it reflects Chorus' current state of efficiency. The alternatives we considered were:

- 2021 – which is not recent enough, and includes the impact of COVID-19
- 2023 – which is uncertain, given we don't yet know the expenditure outcomes of this year and it will not have been audited in time for PQP2 determination.

When available, 2023 actuals would be useful as a cross check on the 2022 base year and adjustments thereof.

More information on adjustments made to the base year can be found in the Opex Insights chapter and individual opex chapters of Our Fibre Assets.

Trends

The growth trend factor accounts for changes over time in the scale of Chorus activities. Changes in scale affect operating expenditure due to changes in the level of service provided.

Productivity and elasticity

In calculating the growth trend, we have adopted the Commerce Commission method:

COMMERCE COMMISSION METHOD:

Opex = OpexBase + (Output Growth (%) x Elasticity) – Productivity Growth (%) + Input Price (%)

In the Commission's standard method, they first apply a cost elasticity assumption, which accounts for scale and scope, and then separately consider whether there are further factors that justify additional productivity assumptions, of which there are none in this case.

The alternative approach is to use the method adopted by the Australian Energy Regulator (AER). This does not capture economies of scale and scope through an elasticity assumption, but rather the adjustment for cost elasticity is embedded into the productivity growth term – effectively, the productivity factor does all the work.

AER METHOD:

Opex = OpexBase + Output Growth (%) – Productivity Growth (%) + Input Price (%)

We have applied the Commission's standard methodology as it is a methodology they know and understand. In the following we discuss the impact this methodology has had on our productivity and elasticity assumptions.

Elasticity

Elasticities reflect economies of scale and scope in the business, which impact the strength the driver has on opex. For example, an elasticity of 0.5 means that a 2% increase in connection volumes increases associated opex by 1%.

We engaged NERA to carry out analysis of the relationship between different opex categories and their respective drivers.[65] The analysis was inconclusive due to limitations of using a small sample of historical data during a transition phase to arrive at a reasonable estimate of future opex requirements.

While using empirical evidence is preferred, we consider that the elasticities used by other New Zealand regulated networks – i.e. electricity distribution businesses (EDBs) – provide a reasonable estimate as an interim measure, until a stable time series is available to directly estimate sensible elasticities using Chorus and other LFC data.

While we have used EDB estimates for PQP2,[66] alternatives considered by NERA are set out in the following table.

TABLE 10: SUMMARY OF ELASTICITY ALTERNATIVES

ESTIMATE	REASON NOT USED
Openreach (set by Ofcom)	• Elasticities are only for copper network • Not clear from Ofcom methodology how to distinguish between network and non-network
Chorus estimates	• Elasticities calculated were not sensible and imprecisely estimated for the majority of opex • Limitations of using a small sample of historical data • Historical data based largely on a time when Chorus was in build mode – forward looking we are going to be more focused on operations

We intend to do more work on elasticities as our data improves and expect to have empirical estimates for the PQP3 BST.

65 Refer to NERA's report, 230623 – Recommendations for Chorus' BST model for RP2, for more detail on their analysis and the results.
66 Please refer to Table 10: Opex Disaggregation and Drivers for EDB elasticity estimates.

Productivity

As mentioned above, we have separately identified and accounted for the factors the productivity adjustment is set to capture by:

- accounting for the realisation of economies of scale and scope by including a measure of elasticity as part of the growth trend
- incorporating material reductions in opex that capture expected benefits from a range of projects.

We have not identified any cause for additional productivity gains over and above those identified above. For more information on our productivity discussion please refer to the Opex Insights chapter.

The alternative economically equivalent approach is to not use a measure of elasticity (given the issues we have had in calculating suitable estimates of elasticities) to capture the impact of economies of scale and scope, but rather to apply one productivity factor to capture all productivity gains (in line with the AER's approach). NERA's analysis suggests that productivity factor should be in the range of 0%-1.25%.[67]

Level of disaggregation and associated drivers

We relied on analysis from NERA to assess the appropriateness of our drivers and the level of disaggregation to which BST should be applied.[68] Their analysis involved:

- setting out Chorus' cost categories to identify:
    - material categories (which are most important to understand the causes)
    - underlying factors that cause costs to vary
- assessing whether the underlying causes differ across material categories
- linking underlying causes to available drivers, e.g. the volume of connections.

As Chorus grows and changes, the cost of maintaining and managing our network also changes. We have accounted for this change in output by selecting the level of disaggregation and associated drivers that best reflect:

- the way available drivers affect opex categories differently
- the way our network is going to change (as fibre connections displace copper connections.

Our starting (alternative) approach was to apply the BST at an aggregate level, i.e. total (unallocated) opex using total (regulated and unregulated) connections as a driver. However, NERA's advice was that this was unlikely to account for the expected change in our network as we see an increase in the FFLAS share of costs and decrease in non-FFLAS.

In determining the level of disaggregation and associated drivers to apply the BST to, we adopted advice from NERA to:

- disaggregate opex into six cost categories to represent the extent available drivers affect opex differently

67 Refer to NERA's report, 230623 – Recommendations for Chorus' BST model for RP2, for more detail on their analysis and the results.
68 Refer to NERA's report, 230623 – Recommendations for Chorus' BST model for RP2, for more detail on their analysis and the results.

- use connection volume as an appropriate driver because it is:
    - strongly related to several underlying causes of opex
    - a strong proxy for network length (which is another likely driver of opex)
    - likely to affect categories differently (so we should split connections by copper, fibre and total volumes).

We have applied connections as a driver to four cost categories. However, we note that NERA's analysis suggests that connections is unlikely to be a driver for both non-network and insurance, therefore a driver has not been applied to these categories and are instead held constant.

Cost categories, associated drivers and related elasticities are set out in the following table. These are then applied to each opex general ledger/cost centre record based on the following six categories:

TABLE 11: OPEX DISAGGREGATION AND DRIVERS

COST CATEGORY	DRIVER	ELASTICITY
Copper Maintenance – copper maintenance, copper provisioning	Copper connections	0.45
Fibre Maintenance – fibre maintenance, fibre provisioning	Fibre connections	0.45
Other network – other network costs, electricity, property maintenance	Total Connections	0.45
Non-network – net labour, information technology, other expenses	None	0
Advertising	Fibre connections	0.65
Insurance	None	0

NERA's analysis also looked at a number of alternative opex drivers. The following table sets these out below with our reason for not adopting each.

TABLE 12: SUMMARY OF ALTERNATIVE OPEX DRIVERS

DRIVER	DESCRIPTION	ANALYSIS
Asset lives	Age of assets	Limited impact on opex because late life interventions require capex rather than opex and therefore opex remains largely constant. Asset age may become a more dominant driver as the fibre network ages, though this is not certain.

DRIVER	DESCRIPTION	ANALYSIS
Network length	Km of circuit	The length of the network is related to several causes of opex. During the build phase, this is likely to be correlated with connections. We concluded that connections are a good proxy for network length for now, and we plan to test the impact of changes in network length on other network and insurance costs when data becomes available. Significant extension of the network would need to be factored into any future assessment of this driver.
Throughput	Quantity of data supplied	Initial analysis of cost categories suggests this is not a driver of opex.
Capacity	Capacity or some measure of speed	Initial analysis of cost categories suggests this is not a driver of opex.
Maximum demand	The highest maximum demand observed	Initial analysis of cost categories suggests this is not a driver of opex.

For more information on how driver categories are applied to narrative categories please refer to the Opex Insights chapter of Our Fibre Assets.

Appendix E – Cost allocation methodology applied[69]

Key cost allocation assumptions (that may influence trends between historical capex and proposed base and connection capex) are:

- the choice of allocator type, which is applied consistently over time, using the same allocator for similar costs
- the changing mix of assets, as part of Chorus' business operations.

The regulatory template RT03 shows the allocator types, cost allocators, asset allocators and allocator values used. The regulatory template allows the Commission to filter and view expenditure by allocator type across time.

Allocators applied to expenditure types are applied consistently through the forecast period. We have used the same allocator types for similar expenditure types.

Cost allocation outcomes

The regulatory template RT03 Cost Allocation shows the split between PQ FFLAS and other (ID-only FFLAS and services that are not regulated FFLAS) for every year for opex. And it shows unallocated and PQ FFLAS for every year for capex.

Applying cost allocation methodology to PQP2 the unallocated forecast results in the following percentages forecast cost allocation outcome for PQ FFLAS for each regulatory year.[70]

TABLE 13: ALLOCATION TO PQ FFLAS

	2025	2026	2027	2028
Capex				
Extending the Network	97%	98%	98%	98%
Installations	98%	98%	98%	98%
IT and Support	72%	73%	74%	69%
Network Capacity	93%	93%	95%	98%
Network Sustain and Enhance	62%	65%	77%	78%
TOTAL	**82%**	**84%**	**88%**	**87%**

69 In response to information request A44.1, A44.2.1 and A44.2.2 in the Information Notice. Noting there are no instances where different allocator types have been applied for similar expenditure types or across time for a given time period (in response to A44.3.1 and A44.3.2). There is one exception detailed in the Building Block Model IAV Model Documentation, where configured for financial loss asset calculations, PQP1, ID 2022, and PQP2) certain C1 power assets in certain geographies / asset purchase timeframes use a different cost allocator to that used for the same asset class in other asset purchase timeframes.

70 In response to information request A45.2 in the Information Notice.

	2025	2026	2027	2028
Opex				
Customer	93%	93%	94%	94%
Network	46%	49%	50%	51%
Support	84%	85%	86%	86%
TOTAL	**66%**	**68%**	**69%**	**70%**

TABLE 14: ALLOCATION TO ID-ONLY FFLAS

	2025	2026	2027	2028
Capex	0.6%	0.6%	0.5%	0.5%
Opex	0.4%	0.4%	0.4%	0.4%

TABLE 15: ALLOCATION TO NON-FFLAS

	2025	2026	2027	2028
Capex	17%	16%	11%	12%
Opex	34%	32%	31%	30%

Opex allocation

The following table summarises:

- opex by Chorus functional unit and expenditure category
- allocator types and cost allocators used for opex that is shared between FFLAS and non-FFLAS (i.e. excludes opex directly attributable to FFLAS or non-FFLAS)
- whether the used allocator is considered to be based on a causal relationship or is a proxy allocator.

TABLE 16: OPEX ALLOCATION

LINE ITEM	DESCRIPTION	EXPENDITURE CATEGORY	ALLOCATOR TYPE	RATIONALE FOR ALLOCATOR TYPE	PROXY/ CAUSAL	EXPLANATION ON PROXY ALLOCATOR
CNO Opex						
CNO – Cancellations	Cancelled provisioning events	Customer	Number of events	No causal allocator available	Proxy	Costs are allocated based on specific activity data provided by Chorus SMEs
CNO – Chargeable damages – Fibre	Damage to the fibre network that is chargeable	Customer; Network	CNO – Chargeable damages – Fibre	No causal allocator available	Proxy	Costs are allocated directly to fibre based on analysis completed by Chorus SMEs and remaining shared costs based on connections
CNO – Chorus network proactive maintenance (core fibre)	Proactive maintenance costs allocated by core fibre	Network	Connections	No causal allocator available	Proxy	Costs are shared by a large number of diverse services. The impact of a given service on the volume needed and/or costs of these services is indirect and not easily estimated
CNO – Chorus network proactive maintenance (shared)	Proactive maintenance costs	Network	Connections	No causal allocator available	Proxy	Costs are shared by a large number of diverse services. The impact of a given service on the volume needed and/or costs of these services is indirect and not easily estimated
CNO – Chorus network reactive maintenance (accommodation)	Reactive maintenance costs for accommodation	Network	Central office space	No causal allocator available	Proxy	Costs are allocated in the same way as property accommodation opex given the nature of the costs

LINE ITEM	DESCRIPTION	EXPENDITURE CATEGORY	ALLOCATOR TYPE	RATIONALE FOR ALLOCATOR TYPE	PROXY/ CAUSAL	EXPLANATION ON PROXY ALLOCATOR
CNO – Chorus reactive maintenance (fibre) split by TFC categories	Reactive maintenance costs for fibre	Network	Number of events	No causal allocator available	Proxy	Costs are allocated based on specific activity data provided by Chorus subject
CNO – Co-location	Costs related to co-location services	Customer; Network	Revenue	No causal allocator available	Proxy	Costs are allocated based on co-location revenue. This is discussed further in the cost allocation section of this report
CNO – Fibre charges (core)	Fibre charges for core network	Network	Connections	No causal allocator available	Proxy	Costs are shared by a large number of diverse services. The impact of a given service on the volume needed and/or costs of these services is indirect and not easily estimated
CNO – Fibre route survey	Surveys along the route of fibre cable	Network	CNO – Fibre route survey	No causal allocator available	Proxy	Costs are allocated based on the analysis of cost centres
CNO – Network integrity and quality – chargeable	High load escort and cable location costs that are recoverable from third parties	Network	Connections	No causal allocator available	Proxy	Costs are shared by a large number of diverse services. The impact of a given service on the volume needed and/or costs of these services is indirect and not easily estimated
CNO – Network integrity and quality – non-chargeable	Network integrity and quality costs that cannot be recovered from third parties	Network	Overhead	No causal allocator available	Proxy	Costs are allocated where the services are based on service company overheads
CNO – NPC – assure	Net personal costs in CNO for staff working on assure	Network; Support	Overhead	No causal allocator available	Proxy	Costs are allocated where the services are based on service company overheads

LINE ITEM	DESCRIPTION	EXPENDITURE CATEGORY	ALLOCATOR TYPE	RATIONALE FOR ALLOCATOR TYPE	PROXY/ CAUSAL	EXPLANATION ON PROXY ALLOCATOR
CNO – NPC – billing agency	Net personnel costs in CNO for staff working on billing agency	Support	Revenue	No causal allocator available	Proxy	Costs are allocated based on co-location revenue. This is discussed further in the cost allocation section of this report
CNO – NPC – CC Provisioning	Net personnel costs in CNO working on provisioning	Customer; Network	CC Provisioning	No causal allocator available	Proxy	Costs are allocated based on analysis completed by Chorus SMEs
CNO – NPC – network	Net personnel costs for CNO staff supervising work done by service companies	Network; Support	Overhead	No causal allocator available	Proxy	Costs are allocated to services based on service company overheads. This is discussed further in the cost allocation section of this report
CNO – NPC – property – accommodation	Net personnel costs for CNO staff who manage properties	Network; Support	Central office space	No causal allocator available	Proxy	Costs are allocated in the same way as property accommodation opex given the nature of the costs
CNO – NPC – property – overhead	Net personnel costs for CNO staff who manage property overhead	Support	Fibre and totex	No causal allocator available	Proxy	Costs are allocated directly to fibre based on analysis completed by Chorus SMEs and remaining shared costs based on totex as the nature of costs supports entire organisation
CNO – NPC – property – power	Net personnel costs for CNO staff who manage property power	Support	Power usage	No causal allocator available	Proxy	Costs are allocated in the same way as property power opex given the nature expenditure

LINE ITEM	DESCRIPTION	EXPENDITURE CATEGORY	ALLOCATOR TYPE	RATIONALE FOR ALLOCATOR TYPE	PROXY/ CAUSAL	EXPLANATION ON PROXY ALLOCATOR
CNO – Outsourcing (own-use)	Outsourcing costs	Customer	Number of events	No causal allocator available	Proxy	Costs are allocated based on specific activity data provided by Chorus subject
CNO – Overhead portion of labour capitalised	Overhead portion of labour capitalised in CNO	Customer; Network; Support	Recipient business function	No causal allocator available	Proxy	Costs are allocated where the services are based on overhead functions
CNO – Payment to service companies – maintenance	Payment to service companies for maintenance	Customer; Network; Support	Overhead	No causal allocator available	Proxy	Costs are allocated where the services are based on service company overheads
CNO – Payment to service companies – provisioning	Payment to service companies for provisioning	Customer; Network; Support	Overhead	No causal allocator available	Proxy	Costs are allocated where the services are based on service company overheads
CNO – Project opex	Project opex in CNO	Customer; Network; Support	Project opex	No causal allocator available	Proxy	Costs are allocated based on specific allocation data provided by Chorus SMEs
CNO – Property – accommodation	Property accommodation costs	Network; Support	Central office space	No causal allocator available	Proxy	Costs are allocated in the same way as property accommodation opex given the nature of the costs
CNO – Property – corporate	Corporate property costs	Customer; Network; Support	Fibre and totex	No causal allocator available	Proxy	Costs are allocated directly to fibre based on analysis completed by Chorus SMEs and remaining shared costs based on totex

LINE ITEM	DESCRIPTION	EXPENDITURE CATEGORY	ALLOCATOR TYPE	RATIONALE FOR ALLOCATOR TYPE	PROXY/ CAUSAL	EXPLANATION ON PROXY ALLOCATOR
CNO – Property – power	Network property power costs	Network; Support	Power usage	No causal allocator available	Proxy	Costs are allocated in the same way as property power opex given the nature expenditure
CNO – Provisioning (from 2017)	Provisioning costs since 2017	Customer; Network	Provisioning post-2017	No causal allocator available	Proxy	Costs are allocated based on analysis completed by Chorus SMEs
CNO – Work for third party	Work for third parties	Customer	Customers	No causal allocator available	Proxy	Costs are shared by a large number of diverse services. The impact of a given service on the volume needed and/or costs of these services is indirect and not easily estimated
Corporate Opex						
Corporate – Audit fees and expenses	Audit fees and expenses	Support	Revenue	No causal allocator available	Proxy	Costs are allocated based on revenue, as an economic common cost. This is discussed further in the cost allocation section of this report
Corporate – Consultants' costs	External consultant costs	Customer; Network; Support	Revenue	No causal allocator available	Proxy	Costs are allocated based on an analysis of consultants spend. This is discussed further in the cost allocation section of this report
Corporate – Insurance	Insurance costs	Support	Revenue	No causal allocator available	Proxy	Costs are allocated based on revenue, as an economic common cost. This is discussed further in the cost allocation section of this report

LINE ITEM	DESCRIPTION	EXPENDITURE CATEGORY	ALLOCATOR TYPE	RATIONALE FOR ALLOCATOR TYPE	PROXY/ CAUSAL	EXPLANATION ON PROXY ALLOCATOR
Corporate – Insurance - Chorus benefit of life insurance for staff	Chorus benefit of life insurance for staff	Network	Recipient business function	No causal allocator available	Proxy	Costs are allocated where the services are based on overhead functions
Corporate – Insurance - general liability errors and omission directors and officers statutory	Insurance for general liability errors and omissions for directors and officers	Network	Revenue	No causal allocator available	Proxy	Costs are allocated based on revenue, as an economic common cost. This is discussed further in the cost allocation section of this report
Corporate – Insurance – material damage and business interruption	Insurance for material damage and business interruption	Network	Net book value	No causal allocator available	Proxy	Costs are allocated based on NBV where spend is related to assets
Corporate – Legal costs	Legal costs in corporate	Customer; Network; Support	Revenue	No causal allocator available	Proxy	Costs are allocated based on revenue and an analysis of the legal department spend. This is discussed further in the cost allocation section of this report
Corporate – Non-passthrough levies – Revenue based	Levies that are excluded from pass-through costs	Support	Revenue	No causal allocator available	Proxy	Costs are allocated based on revenue as the underlying costs corresponds to Chorus revenues
Corporate – NPC	Net personnel costs in corporate	Customer; Support	Revenue	No causal allocator available	Proxy	Costs are allocated directly to fibre based on analysis completed by Chorus SMEs and remaining shared costs based on revenue. This is discussed further in the cost allocation section of this report

LINE ITEM	DESCRIPTION	EXPENDITURE CATEGORY	ALLOCATOR TYPE	RATIONALE FOR ALLOCATOR TYPE	PROXY/ CAUSAL	EXPLANATION ON PROXY ALLOCATOR
Corporate – Other costs	Other costs in corporate	Customer; Network; Support	Revenue	No causal allocator available	Proxy	Costs are allocated based on revenue and an analysis of other costs spend. This is discussed further in the cost allocation section of this report
Corporate – Overhead portion of labour capitalised	Overhead portion of labour capitalised for corporate staff	Customer; Support	Recipient business function	No causal allocator available	Proxy	Costs are allocated where the services are based on overhead functions
CTO Opex						
CTO – Common – faults/tickets	CTO common costs allocated by faults	Customer; Network; Support	Overhead	No causal allocator available	Proxy	Costs are allocated where the services are based on overhead functions
CTO – Common – orders	CTO common costs allocated by orders	Customer; Network; Support	Number of events	No causal allocator available	Proxy	Costs are allocated based on specific activity data provided by Chorus subject
CTO – Common – revenue	CTO common costs allocated by revenue	Customer; Network; Support	Revenue	No causal allocator available	Proxy	Costs are allocated based on revenue as the underlying costs corresponds to Chorus revenues
CTO – Common – S/O volumes	CTO common costs allocated by service order volumes	Customer; Network; Support	Overhead	No causal allocator available	Proxy	Costs are allocated where the services are based on overhead functions

LINE ITEM	DESCRIPTION	EXPENDITURE CATEGORY	ALLOCATOR TYPE	RATIONALE FOR ALLOCATOR TYPE	PROXY/ CAUSAL	EXPLANATION ON PROXY ALLOCATOR
CTO – Common – schedules	CTO common costs allocated by schedules	Customer; Network; Support	Overhead	No causal allocator available	Proxy	Costs are allocated where the services are based on overhead functions This is discussed further in the cost allocation section of this report
CTO – Common costs	CTO common costs that are allocated using revenue	Customer; Network; Support	Revenue	No causal allocator available	Proxy	Costs are allocated based on revenue, as an economic common cost. This is discussed further in the cost allocation section of this report
CTO – Common costs (allocated using CTO overhead)	CTO common costs that are allocated using revenue	Customer; Network; Support	Revenue	No causal allocator available	Proxy	Costs are allocated based on revenue, as an economic common cost. This is discussed further in the cost allocation section of this report
CTO – Common costs (allocated using NBV of all L1 assets)	CTO common costs that are allocated using revenue	Customer; Network; Support	Revenue	No causal allocator available	Proxy	Costs are allocated based on revenue, as an economic common cost. This is discussed further in the cost allocation section of this report
CTO – Common costs (allocated using NPC of all Chorus staff)	CTO common costs that are allocated using revenue	Customer; Network; Support	Revenue	No causal allocator available	Proxy	Costs are allocated based on revenue, as an economic common cost. This is discussed further in the cost allocation section of this report

LINE ITEM	DESCRIPTION	EXPENDITURE CATEGORY	ALLOCATOR TYPE	RATIONALE FOR ALLOCATOR TYPE	PROXY/ CAUSAL	EXPLANATION ON PROXY ALLOCATOR
CTO – Common costs (allocated using orders)	CTO common costs that are allocated using revenue	Customer; Network; Support	Revenue	No causal allocator available	Proxy	Costs are allocated based on revenue, as an economic common cost. This is discussed further in the cost allocation section of this report
CTO – Common costs (allocated using service company overhead)	CTO common costs that are allocated using revenue	Customer; Network; Support	Revenue	No causal allocator available	Proxy	Costs are allocated based on revenue, as an economic common cost. This is discussed further in the cost allocation section of this report
CTO – Common costs (allocated using traffic)	CTO common costs that are allocated using revenue	Customer; Network; Support	Revenue	No causal allocator available	Proxy	Costs are allocated based on revenue, as an economic common cost. This is discussed further in the cost allocation section of this report
CTO – NPC	Net personal costs in CTO	Support	Recipient business function	No causal allocator available	Proxy	Costs are allocated where the services are based on overhead functions
CTO – project opex	CTO project opex	Customer; Network; Support	Project opex	No causal allocator available	Proxy	Costs are allocated based on specific allocation data provided by Chorus SMEs
Marketing and Sales Opex						
Marketing and Sales – Bad debts	Bad debts	Customer; Network; Support	Revenue	No causal allocator available	Proxy	Costs are allocated based on revenue as the underlying costs corresponds to Chorus revenues

LINE ITEM	DESCRIPTION	EXPENDITURE CATEGORY	ALLOCATOR TYPE	RATIONALE FOR ALLOCATOR TYPE	PROXY/ CAUSAL	EXPLANATION ON PROXY ALLOCATOR
Marketing and Sales – Marketing and communications	Communications	Customer; Network; Support	Future benefit	No causal allocator available	Proxy	Costs are allocated based on future benefit as it captures the nature of marketing which is oriented towards future revenue
Marketing and Sales – NPC	Net personal costs in Marketing and Sales	Customer	Future benefit	No causal allocator available	Proxy	Costs are allocated based on future benefit as it captures the nature of marketing which is oriented towards future revenue
Marketing and Sales – Overhead portion of labour capitalised	The overhead portion of Marketing and Sales labour that is capitalised	Customer	Recipient business function	No causal allocator available	Proxy	Costs are allocated where the services are based on overhead functions
Pass-through Costs						
CNO – Property – Rates – Buildings	Local body rates for buildings	Pass-through costs	Central office space	No causal allocator available	Proxy	Costs are allocated in the same way as property accommodation opex given the nature of the costs
CNO – Property – Rates – Infrastructure	Local body rates for infrastructure assets	Pass-through costs	Net book value	No causal allocator available	Proxy	Costs are allocated based on NBV where shared spend is related to assets
Corporate – Regulatory levies – Revenue based	Regulatory levies	Pass-through costs	Revenue	Costs are allocated based on revenue as levies are calculated based on Chorus' revenue	Causal	N/A

Capex allocation[71]

The following table outlines the capex allocator types used in expenditure forecasts. This excludes assets that are directly attributable to FFLAS or non-FFLAS. Noting we are using allocator types consistently across each year in PQP2. Refer to RT03 for allocator values.

TABLE 17: CAPEX ALLOCATION

LINE ITEM	DESCRIPTION	EXPENDITURE CATEGORY	ALLOCATOR TYPE	RATIONALE FOR ALLOCATOR TYPE	PROXY/ CAUSAL	EXPLANATION ON PROXY ALLOCATOR
Network Assets – Layer 1						
Ducts	Ducts shared with the copper network	Extending the Network; Installations; Network Sustain and Enhance	Fraction of duct length in area overlapped by UFB network, weighted by connections. Plus non-overlap duct length weighted by relevant voluntary FFLAS connections	Network overlap identifies which ducts can be shared with contracted UFB services. Connections contribute to utilisation of the asset	Causal	N/A
Manholes	Manholes shared with the copper network	Extending the Network; Network Sustain and Enhance	Fraction of manholes in area overlapped by UFB network, weighted by connections	Network overlap identifies which manholes can be shared with contracted UFB services. Connections contribute to utilisation of the asset	Causal	N/A
Core Network - Ducts and Manholes	Ducts and manholes shared with the core network	Network Capacity	Connections	No causal allocator available	Proxy	Assets are shared by a large number of diverse services. The impact of a given service on the volume needed and/or costs of these assets is indirect and not easily estimated.

71 In response to information request A44.1 in the Information Notice.

LINE ITEM	DESCRIPTION	EXPENDITURE CATEGORY	ALLOCATOR TYPE	RATIONALE FOR ALLOCATOR TYPE	PROXY/ CAUSAL	EXPLANATION ON PROXY ALLOCATOR
						Connections results in allocations that are dynamic and proportional to market penetration (i.e. fibre uptake)
Shared Fibre Cable – Access	Fibre cable shared with the copper network	Extending the Network; Installations; IT and Support; Network Sustain and Enhance	Based on an input fibre cable allocation profile. The allocation factor is calculated based on a recent measured value for shared fibres times the ratio of the in-year national duct length used for UFB to the 2023 national duct length used for UFB	Used length of fibres is measured (recent) fibres. Duct length ratio reflects network rollout over time	Causal	N/A
Fibre Cable – Core	Fibre cable shared with the core network	Network Capacity	Connections	No causal allocator available	Proxy	Assets are shared by a large number of diverse services. The impact of a given service on the volume needed and/or costs of these assets is indirect and not easily estimated. Connections results in allocations that are dynamic and proportional to market penetration (i.e. fibre uptake)

LINE ITEM	DESCRIPTION	EXPENDITURE CATEGORY	ALLOCATOR TYPE	RATIONALE FOR ALLOCATOR TYPE	PROXY/ CAUSAL	EXPLANATION ON PROXY ALLOCATOR
Leases	Fibre cable leases shared with the core network	Network Sustain and Enhance	National connections	No causal allocator available	Proxy	Assets are shared by a large number of diverse services. The impact of a given service on the volume needed and/or costs of these assets is indirect and not easily estimated. Connections results in allocations that are dynamic and proportional to market penetration (i.e. fibre uptake)
Shared OFDF	OFDF shared with the copper network	Extending the Network; IT and Support; Network Capacity; Network Sustain and Enhance	Same as shared fibre cable	Shared OFDF assets are likely to be used similarly to the shared cables because the cables terminate on OFDF	Causal	N/A
Shared Poles	Poles shared with the copper network	Extending the Network; Network Capacity; Network Sustain and Enhance	Poles used or planned to be used for contracted UFB weighted by contracted FFLAS connections, plus those not planned weighted by relevant voluntary FFLAS connections	Contracted FFLAS used assets are considered separately to those not used by contracted FFLAS. Connections contribute to utilisation of the asset	Causal	N/A
Shared Cabinets	Cabinets shared with the copper network	Extending the Network; IT and Support; Network Capacity; Network Sustain and Enhance	As shared duct, see above	As shared duct, see above	Causal	N/A
Property	Property space shared with the copper network	Network Sustain and Enhance	Building space	Capacity based allocator used to allocate network costs	Causal	N/A

LINE ITEM	DESCRIPTION	EXPENDITURE CATEGORY	ALLOCATOR TYPE	RATIONALE FOR ALLOCATOR TYPE	PROXY/ CAUSAL	EXPLANATION ON PROXY ALLOCATOR
Network Assets – Layer 2						
Shared xWDM equipment	Electronics shared with the copper network	Extending the Network; Network Capacity; Network Sustain and Enhance	Traffic	Capacity based allocator used to allocate network costs	Causal	N/A
Shared aggregation switch equipment	Electronics shared with the copper network	Extending the Network; Network Capacity; Network Sustain and Enhance	Traffic	Capacity based allocator used to allocate network costs	Causal	N/A
Shared ISAM equipment	ISAM assets shared with the copper network	Extending the Network; Network Capacity; Network Sustain and Enhance	Number of line cards	Functionally equivalent to number of ports	Causal	N/A
Shared IT systems	IT systems shared with the copper network	Extending the Network; IT and Support; Network Capacity; Network Sustain and Enhance	Connections	No causal allocator available	Proxy	Assets are shared by a large number of diverse services. The impact of a given service on the volume needed and/or costs of these assets is indirect and not easily estimated. Connections results in allocations that are dynamic and proportional to market penetration (i.e. fibre uptake)
Other Network Assets						
Shared Property	Property shared with the copper network	Network Sustain and Enhance	Building space	A capacity based approach which allocates based on the share of capacity required by each service	Causal	N/A

LINE ITEM	DESCRIPTION	EXPENDITURE CATEGORY	ALLOCATOR TYPE	RATIONALE FOR ALLOCATOR TYPE	PROXY/ CAUSAL	EXPLANATION ON PROXY ALLOCATOR
Shared Building Lease	Leased buildings shared with the copper network	IT and Support; Network Sustain and Enhance	Building space	A capacity based approach which allocates based on the share of capacity required by each service	Causal	N/A
Easements	Easements shared with the copper network	Network Sustain and Enhance	Building space	A capacity based approach which allocates based on the share of capacity required by each service	Causal	N/A
Other Shared Corporate	Other corporate miscellaneous tools and plant assets	Network Sustain and Enhance	Connections	No causal allocator available	Proxy	Assets are shared by a large number of diverse services. The impact of a given service on the volume needed and/or costs of these assets is indirect and not easily estimated. Connections results in allocations that are dynamic and proportional to market penetration (i.e. fibre uptake)
Other Shared Access	Other shared access assets are testing instruments	IT and Support; Network Capacity	Connections	No causal allocator available	Proxy	Assets are shared by a large number of diverse services. The impact of a given service on the volume needed and/or costs of these assets is indirect and not easily estimated. Connections results in allocations that are dynamic and proportional to market penetration (i.e. fibre uptake)

LINE ITEM	DESCRIPTION	EXPENDITURE CATEGORY	ALLOCATOR TYPE	RATIONALE FOR ALLOCATOR TYPE	PROXY/ CAUSAL	EXPLANATION ON PROXY ALLOCATOR
Shared Power	Power assets shared with the copper network	Extending the Network; IT and Support; Network Capacity; Network Sustain and Enhance	Power usage	Usage based allocator used to allocate network costs	Causal	N/A
Non-network Assets						
Shared IT Hardware	IT hardware assets shared with the copper network	IT and Support; Network Capacity	Connections	No causal allocator available	Proxy	Assets are shared by a large number of diverse services. The impact of a given service on the volume needed and/or costs of these assets is indirect and not easily estimated. Connections results in allocations that are dynamic and proportional to market penetration (i.e. fibre uptake)
Shared IT Software	IT software assets shared with the copper network	Extending the Network; IT and Support; Network Capacity; Network Sustain and Enhance	Connections	No causal allocator available	Proxy	Assets are shared by a large number of diverse services. The impact of a given service on the volume needed and/or costs of these assets is indirect and not easily estimated. Connections results in allocations that are dynamic and proportional to market penetration (i.e. fibre uptake)

LINE ITEM	DESCRIPTION	EXPENDITURE CATEGORY	ALLOCATOR TYPE	RATIONALE FOR ALLOCATOR TYPE	PROXY/ CAUSAL	EXPLANATION ON PROXY ALLOCATOR
Other Shared Corporate	Motor vehicles	Network Sustain and Enhance	Connections	No causal allocator available	Proxy	Assets are shared by a large number of diverse services. The impact of a given service on the volume needed and/or costs of these assets is indirect and not easily estimated. Connections results in allocations that are dynamic and proportional to market penetration (i.e. fibre uptake)
Other Shared Property	Corporate assets including office furniture, office equipment	IT and Support; Network Sustain and Enhance	Building space	A capacity based approach which allocates based on the share of capacity required by each service	Causal	N/A
Shared Other IFRS	Capitalised provisioning costs	Installations; Network Sustain and Enhance	Revenue	Capitalised costs for provision new co-location services, so revenue is an appropriate driver	Causal	N/A