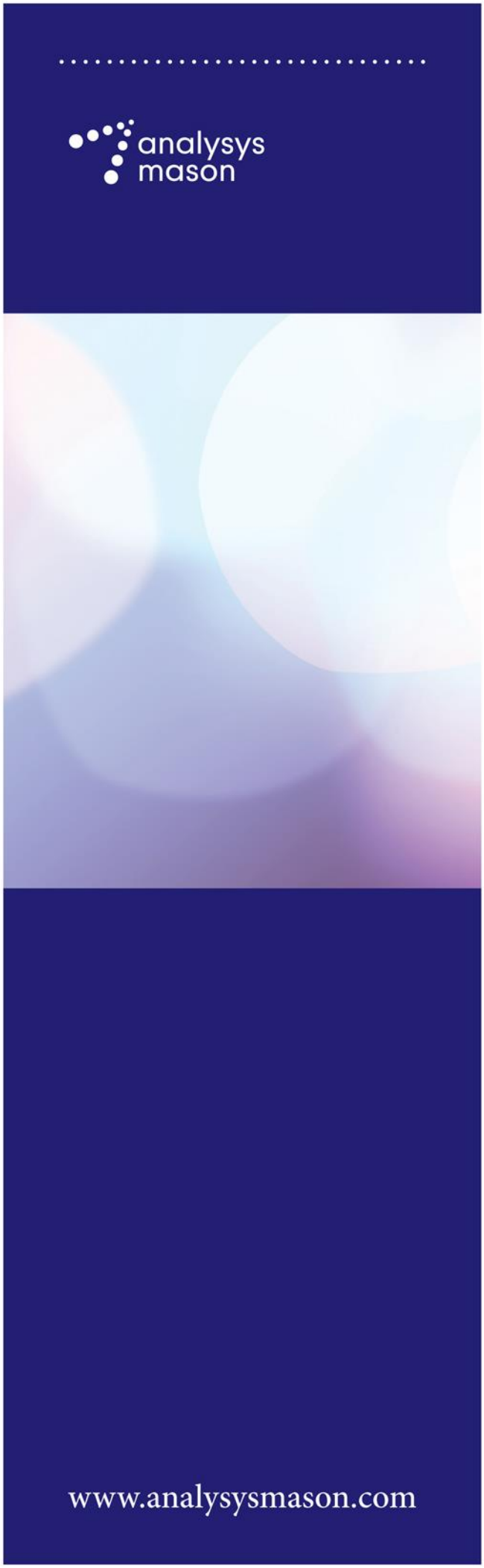

Report for Chorus

Response to TERA paper on “over-recovery”

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1 Executive Summary

1.1 Context

The New Zealand Commerce Commission (NZCC) ("the Commission") is currently engaged in designing the upfront rules, requirements and processes (also known as input methodologies or IMs) to set price quality and information disclosure regulation for regulated providers of Fibre Fixed Line Access Services (FFLAS) under part 6 of the Telecommunications Act.

This document has been written by Analysys Mason for Chorus, and is in response to the TERA paper on potential cost over-recovery written for Spark and used in Spark's "Emerging Views" cross-submission[1].

1.2 Summary

TERA suggest that the approach proposed by the Commission will lead to an over-recovery. In response to this perceived over-recovery they suggest a number of approaches:

- Setting the required revenue for FFLAS (Ultrafast Fibre Broadband (UFB) fibre) services based on a combined copper and fibre RAB, deducting the actual revenue from non-FFLAS (including copper) services.
- Seeking some form of consistency between the Building Block Model (BBM) and the Final Pricing Principle (FPP) Total Service Long Run Incremental Cost (TSLRIC) model in a number of ways:
  - by seeking reconciliation of the two approaches, which might in effect involve using the FPP TSLRIC model to calculate costs to be allocated to non-FFLAS (copper) services
  - by using the FPP model as a means of calculating technical allocation keys
  - Using the FPP TSLRIC model as a source of other relevant data including asset lifetimes and the level of asset granularity to be applied in the BBM
- Arguing that efficiency adjustments need to be applied to the Regulatory Asset Base (RAB) asset valuation

We make some general comments about the source of the perceived over-recovery, and then address each of these areas in turn:

1.2.1 Perceived over-recovery is due to two different cost standards

The legal regimes applying to copper services such as Unbundled Copper Local Loop (UCLL) and Unbundled Bitstream Access (UBA) FPP (TSLRIC) and to FFLAS fibre services (RAB/BBM) are different.

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There are many significant differences between the TSLRIC FPP model and BBM cost standards, including:

- different geographic scope as regards the network modelled (the Chorus UFB areas or national),
- different treatment of premises outside the Telecommunications Service Obligation (TSO) boundary[2],
- different technology, deploying only one technology or two,
- a totally different network is modelled e.g. in the FPP TSLRIC model there is much more aerial deployment and much less buried and ducted network
- different treatment of fully depreciated assets,
- one approach is driven directly by demand at one point in time, the other responds to actual costs (capex and opex),
- different asset unit costs (current/historic cost) and depreciation (new/depreciated),

These differences were well understood in the FPP process.

Mixing these two cost standards is at the heart of the perceived over-recovery.

Going beyond this, combining costs calculated on these different bases without correct adjustment will lead to errors due to internal inconsistencies.

Trying to calculate a BBM cost for FFLAS by subtracting an FPP revenue (set using a TSLRIC cost) from another BBM cost is not internally consistent. TERA are mixing costs calculated on two different bases. Their conclusions regarding potential over-recovery are wrong as a result.

1.2.2 Calculating fibre required revenues by deducting copper revenues from a combined BBM is misconceived

TERA propose establishing a combined RAB for copper (non-FFLAS) and fibre (FFLAS) services and using this to set a maximum revenue for both copper and fibre services; they then suggest deducting the actual copper revenues to estimate the combined BBM FFLAS revenues.

This proposed approach is misconceived in the following ways

- TERA are assuming that both the "copper" (to be precise, non-FFLAS) and "fibre" (FFLAS) businesses are in and will continue to be in a regulatory regime that requires cost-recovery over time. This is simply not true for copper services, given the clear policy approach of the Ministry of Business, Innovation and Employment (MBIE) to deregulation and pricing of copper services from 2020. Non-FFLAS fibre services are also not restricted to cost-recovery (even if a single cost standard was set for some other services).
- A single BBM as a binding constraint on Chorus' copper and fibre revenues is inconsistent with the Act and the approach of MBIE

[2] Under the FPP TSLRIC UCLL model the costs of serving premises outside a particular definition of the TSO (based on a specific set of polygons on a map of New Zealand) were excluded.

- TERA suggest deducting FPP-price-based revenues from the BBM to derive fibre revenues. By working with revenues rather than consistent costs, a specific error arises due to the way in which the national pricing of regulated copper services such as UCLL has been set in the period to 2019. As UFB deployment is in general more urban than rural, the costs of those UCLL services in the UFB area are lower; this is evident from the differences between the urban and rural UCLL costs as calculated and published in the FPP process.

1.2.3 The FPP TSLRIC model could be adjusted to calculate costs to be allocated to non-FFLAS (copper) services

TERA describes many of the differences in approach between the TSLRIC model and the BBM.

By seeking reconciliation of the approaches to be used (as regards lifetimes, efficiency standards etc) and comparison of the amounts of costs recovered TERA is in effect considering the option of adjusting the TSLRIC calculated unit costs to be consistent with the BBM. To be clear, this consideration is implicit and this is not an option they present directly or recommend; indeed in many places they prefer the option of adjusting the BBM to be more like the TSLRIC approach, although this would be inconsistent with the Act.

Any such adjustment of the TSLRIC model would be complex and (ultimately) nugatory. There is a long list of adjustments that would be required, meaning the process would be costly and time consuming. Further, if we apply all the needed changes to adjust the FPP TSLRIC costs to be fully equivalent to the BBM they will be those of the BBM. Nothing is therefore gained by trying to make such complex adjustments to try to make the TSLRIC model correspond to reality and consistent with a BBM model. In the end, it is much simpler just to use the BBM model.

The TSLRIC model does not address the core issue which is that in reality there are two mass-market technologies (copper, fibre) in deployment over time with the demand migrating between them and with a certain quantity of assets and operating costs shared between those two networks. It is these shared costs which are at the core of the issue regarding the alleged “over-recovery”. But as it does not model them, the TSLRIC model has nothing to say about how large these costs are nor how they should be allocated (the FPP models in effect a single technology network and allocates these costs only to the services present in that single network).

Any future reconciliation process involving explaining any differences between the BBM results and the TSLRIC model would immediately come back to fundamental differences between the TSLRIC approach and the BBM approach. This is because many of the key differences are not modellable using a hypothetical network and would simply require direct inputs (e.g. the extent to which assets are fully depreciated, actual demand levels on each network, and the quantity of assets which are reused) and would need to be based on reality and would be the same as in the BBM itself. In any such area the TSLRIC model would have nothing useful to say. Instead we think that the causal, objective, timely and measurable (verifiable) allocators required by the Commissions proposed allocation approach can more easily be obtained (or can only be obtained) from data about reality.

1.2.4 The FPP TSLRIC model could be used to calculate technical allocation keys

It would in theory be possible to use the asset count outputs of the FPP TSLRIC model to estimate hypothetical technical allocation keys such as the average number of cables per duct in the distribution network, or the "average cross-section of ducts used by cables". TERA does consider this option, though they do not recommend it.

We have already noted that the network that the FPP model dimensions for each modelled technology does not model the actual situation and the actual shared assets. As a result the FPP TSLRIC model has as it stands nothing to say about which of the assets in a given area are shared nor as a result the relevant technical allocation key relevant to these assets such as average cross-sectional area cables used in the actual shared ducts of interest.

It would be difficult and expensive to try to make the FPP model consistent with the actual opportunities Chorus faced to reuse existing ducts and poles in certain locations. To do so would need first a database of the locations of such assets, and secondly it would need a fundamental rejigging of the way in which the FPP model addresses cable routing between the street segments and the Main Distribution Frame (MDF)/ Optical Distribution frame (ODF) site; changing the model at such a fundamental level would be challenging and in itself very time-consuming (in addition to the additional time to re-run the model).

Instead of accepting inferior proxies for the asset usage based on asset counts from the existing FPP model, or investing significant time and effort in substantially changing key parts of the FPP model, as discussed above, we think that the causal, objective and timely allocators required by the Commission can more easily be obtained from data about reality, and that the Commissions requirement for these allocators to be measurable (verifiable) can only be met by basing them on reality.

1.2.5 Using the FPP TSLRIC model as a source of other relevant data

TERA seeks to maximise the use of the TSLRIC model by the Commission in the future (e.g. as regards choices relating to appropriate levels of asset granularity). These points are overstated as consistency with the TSLRIC model should not be a primary concern within the Input Methodologies (IMs)[3]. Indeed, we believe that seeking such alignment as a principle might unnecessarily complicate the future processes.

We do agree that choices need to be made for example regarding the granularity of costs, but there are other constraints on the BBM which we believe are more important to making the right decisions here, such as seeking consistency with the available timely and objective data regarding those costs and how they can be allocated (e.g. from the Chorus accounts).

[3] In this context the Commission defines IMs as "the rules, requirements and processes that underpin regulation under Part 6 of the Telecommunications Act."

1.2.6 Arguing that efficiency adjustments need to be applied to the RAB asset valuation

The required approach to the initial RAB valuation has been defined in the amended Telecommunications Act as being (in effect) Historic Cost Accounting (HCA) net (i.e. depreciated) book value, and it does not include efficiency adjustments.

In any case, we do not accept that Chorus is or has been inefficient. Indeed at the point of deployment of UFB Chorus faced high powered incentives to build efficiently.

1.2.7 Inaccuracies

There are also a series of other inaccuracies or mis-statements in the TERA report, regarding:

- Not correctly considering the impact of substitution of fibre for copper services
- The impact of part-depreciated assets

2 Introduction

The New Zealand Commerce Commission (NZCC) ("the Commission") is currently engaged in designing the upfront rules, requirements and processes (also known as input methodologies or IMs) to set price quality and information disclosure regulation for regulated providers of FFLAS under part 6 of the Telecommunications Act.

This document has been written by Analysys Mason for Chorus and is in response to the TERA paper written for Spark and used in Spark's cross-submission.[4].

The remainder of this document is divided into a number of sections which cover the following specific issues:

- Section 3 makes some general points that would otherwise need to be repeated within the text
- Section 4 discusses the reason why the perceived over-recovery is present
- Section 5 sets out why the proposed combined BBM approach is incorrect
- Section 6 looks at the option to adjust the FPP TSLRIC model outputs to make them compatible with a BBM
- Section 7 examines whether the FPP TSLRIC model could be used as a source of technical allocation keys
- Section 8 considers whether the TSLRIC model is a potential source of other data
- Section 9 discusses efficiency adjustments
- Finally section 10 includes details relating to some inaccuracies

We group topics together. As a result, we do not address TERA's points in the order they raise them.

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3 General points

To avoid repeating ourselves when discussing TERA's statements below, we note here some general points which are relevant to the discussion.

3.1 Cost allocation of shared assets

We accept that within the BBM a method will be needed to allocate the costs of assets which are shared between non-FFLAS (mostly copper) and FFLAS services for as long as those services are offered by Chorus in a given area, and that this allocation needs to be appropriate.

The Commission in its Emerging Views[5] paper proposed an accounting-based allocation approach (ABAA) with a strong preference for causal allocators under the following proposed constraints:

> LFCs and Chorus must apply the same definition of a causal relationship used in the Part 4 regime, when determining which causal allocators to use to allocate cost and asset values to regulated FFLAS.

> Where Chorus or the LFCs propose to use a proxy allocator to allocate costs, the provider must explain why a causal relationship cannot be established and explain the rationale for the choice of proxy allocator.

> ABAA is to be applied using consistent, objective, measurable and timely cost allocators when calculating the past losses.

In the Draft decision reasons paper the Commission repeat this, stating:

5 https://comcom.govt.nz/__data/assets/pdf_file/0034/147778/Fibre-regulation-emerging-views-Summary-paper-21-May-2019.pdf Topic 2, Cost Allocation, p24.

3.423 In the Emerging Views Paper, we proposed that for the past loss period, cost allocation proxies should be consistent, objective, measurable (verifiable), and timely.

3.428 We still consider that the principles we proposed in the emerging views paper, such as consistency and objectivity, are relevant. We anticipate that we will consider these principles when reviewing PQ proposals, preparing summary and analysis reports and pricing reviews. Accordingly, we expect the regulated providers to apply these principles in applying the cost allocation IMs. For example, we expect that the regulated providers will apply ABAA consistently across reporting periods and similar types of information and take account of all available financial and operational data that is relevant to an asset or operating expense.

3.2 The FPP model

The FPP TSLRIC model did not calculate cost recovery of assets shared between copper and mass-market FTTH services, because:

- it did not deploy both copper and mass-market FTTH technologies at the same time.
- it did not try to allocate between mass-market fibre and copper distribution networks. No transition between copper and fibre is modelled. TERA recognises this explicitly saying "TSLRIC for copper does not allocate costs that are shared with fibre – because it models one technology only.".

To be clear, the FPP model did allocate a small fraction of the costs of the distribution network to leased lines services (5% as set out here[6]), and another (arbitrary) fraction of feeder duct and trench was allocated to FTTC UBA services.

As the FPP model did not model the deployment of both copper and mass-market fibre networks at the same time, it naturally did not allocate the costs between copper and mass-market fibre services. (If it had dimensioned the ducts to carry both copper and fibre cables, then it could perhaps have suggested causal allocators such as cross-sectional area of cables within those ducts: but this is conjectural)[7].

The FPP TSLRIC model resulted in a national average unit cost for a given level of demand which was used to set a national price for various copper services including UCLL. This price leads to a certain amount of revenue.

Deaveraged urban and non-urban (rural) costs can also be calculated from the model. We discuss this point in Annex A.

6 See page 3 of TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services Implemented modelling Changes, Commerce Commission Ref: 2014-20-DB-ML

7 The ducts actually dimensioned by the FPP model are a complex topic, as the duct dimensioning was one of the elements that changed in the final version of the model, and (perhaps as a result of this late change) the documentation is not wholly consistent regarding what was done. But the utilisation of the modelled ducts is high, meaning that the amount of spare capacity that would exist in the modelled network is very limited.

3.3 The "shared" assets

3.3.1 The actual shared assets are not simply related to those ducts, poles, manholes, and buildings dimensioned within the FPP model

The assets that are in practice being shared between non-FFLAS and FFLAS services in Chorus actual network are not the same assets as those costed in the Commerce Commission / TERA FPP TSLRIC model. Among many differences:

- The FPP model excluded certain assets including those outside a particular definition of the TSO area
- the FPP model uses a very different amount of aerial (poled) network (>50% aerial) to the real network (the great majority of which is buried or ducted).
- The UFB services are only provided by Chorus in a certain area (about half of New Zealand by population)
- many of the existing assets that have actually been used by the Chorus UFB fibre network were assets such as empty ducts that were installed by previous prudent Chorus policy foreseeing the possible need for future network enhancement, many (if not all) of which are excluded from the Commission/TERA model[8].

In addition to the list of assets being different, they are valued differently in a BBM compared to the TSLRIC model, as we note below.

3.3.2 The TSLRIC and BBM cost standards are materially different

Figure 3.1 below summarises some of the most pertinent differences between the FPP TSLRIC and BBM approaches.

Figure 3.1: Comparison of the FPP TSLRIC and BBM costing approaches [Source: Analysys Mason, 2019]

Aspect	FPP TSLRIC model	BBM
Technology modelled	Hypothetical, one technology at a time	Actual, copper + FTTH
Style of deployment	>50% Aerial (poled)	~5% Aerial (poled)
Geographic scope	National	Chorus UFB regions
Includes premises outside TSO polygons	No	Yes
Includes pre-existing assets at depreciated valuations	No	Yes
Considers fully depreciated assets as zero annualised capital cost	No	Yes

8 Apart from building much less ducted network, there is very little in the way of spare duct in the TERA FPP model; none is explicitly provisioned, though some small amount might be available due to the effects of cable and duct modularity (i.e. ducts dimensioned may be slightly larger than needed to carry the cables dimensioned in some cases). This is however a complex area (some of the ducts may be under-dimensioned due to errors in the TSLRIC model)

Aspect	FPP TSLRIC model	BBM
Basis of asset valuation	CCA MEA	Depreciated HCA of actual pre-existing assets / actual cost for new purchases
Applies efficiency adjustments to historic asset costs	Potentially yes	No (uses book value)
Influenced by future capex	No	Yes
Asset lifetimes	Largely from the Chorus accounts	Potentially adjusted from the accounting values

Applying a series of adjustments to the Commission's TSLRIC to make its costs fully compatible with a BBM (or vice versa adjusting a BBM to make it compatible with TSLRIC) will lead to a result which is either BBM (if fully compatible with a BBM) or TSLRIC(if the BBM is modified to be fully compatible with TSLRIC) or even neither, if an incoherent set of principles is applied. It is not possible to be both at once (because, for example, there are some fully depreciated assets which one includes and the other does not).

3.4 The cumulated losses of the fibre business

In a BBM, the initial RAB sets the amount of compensation that will be given in the future for the existing capital assets through return of capital and return on capital.

Chorus' investment in FFLAS involved taking some risk. It was relying on future revenues from the fibre business to pay off the losses that building a new network will accrue in the early years when depreciation will be considerable but revenues from FFLAS will be low. Chorus therefore expected to generate future revenues which would have compensated for the early accounting losses from that fibre investment. When the legislation set the initial RAB to be in effect based on HCA Net Book Value (NBV), it limited that future revenue. This means that if by accounting measures, the fibre business had not by that date generated the required return on capital employed then Chorus needs more than the HCA NBV at that date to receive a "fair bet". This is the purpose of the additional "fibre losses" fibre asset (which we call "unrecovered loss" or UL).

In other words, the fibre business unrecovered loss is correctly included in the initial RAB to compensate for the remaining part of the initial RAB being fixed by the legislation as (in effect) the HCA NBV at the implementation date.

This way of thinking about the unrecovered loss underlines that it is about the fibre investment and the losses attributable to that fibre business. It is not related to whether or not Chorus as a whole made profits or losses in the period from FY12 to the start of the new regulation (in e.g. FY22).

3.5 MBIE policy in relation to copper pricing post 2020

MBIE's post-2020 regulatory framework for fixed line services[9] sets out the following approach to the pricing of copper services post 2020:

> As a result of these considerations a new approach is being proposed for copper services post-2020.
>
> **Outside areas where UFB or other fibre is available**, Chorus will be required to continue supplying regulated copper services[2] at prices that will be capped at 2019 levels, without ongoing adjustment for inflation. [10]
>
> **Inside areas where UFB or other fibre is available**, copper will be deregulated, removing regulatory oversight of copper services, and leaving Chorus free to continue operating it or close it down (subject to some consumer safeguards).
>
> **Inside areas where UFB or other fibre subsequently becomes available**, there will be regular reviews by the Commission into whether copper deregulation is desirable. This will be a fast-track process, which will also require the Minister for Communications to be satisfied that fibre is sufficiently widely available in that area.
>
> The overall arrangements for copper services will be reviewed in 2023[11] to determine if they remain fit for purpose.
>
> Under this approach, should Chorus lose a copper customer to a competing network (for example, 'fixed wireless' broadband and mobile networks), it will not recover any ongoing revenue for that customer through regulated prices. Chorus should therefore have an incentive to respond to the risk of copper line loss to these services by upgrading its network or lowering its prices. This approach should also provide an incentive for Chorus to expand its fibre footprint (subject to Commission efficiency tests) so that its copper network can be deregulated and replaced with fibre over time.

This is explicitly not a cost-recovery approach. It can be described as a kind of "safeguard cap" regime for the rural areas outside the specified fibre areas (SFA)[12] which maintains existing prices while a network is subject to declining demand.

9 Telecommunications Act Review: Post-2020 Regulatory Framework for Fixed Line Services

10 We note that due to a later change in policy, CPI adjustment will now be applied.

11 The date of this review has subsequently been changed to 2025

12 SFA are the areas in which copper is deregulated and can be shut down.

4 Perceived over-recovery is due to two different cost standards

4.1 TERA’s allegation of a risk of over-recovery is at its core due to mixing 2 cost standards

TERA is alleging in various parts of its report that there is a risk of over-recovery from the use of multiple costing approaches. For example, they say:

> “Thus, the use of two costing approaches structurally different from each other carries intrinsic risks of over-recovery of costs.”

Using TSLRIC and BBM methods leads to different estimates of the total cost, for various reasons set out in section 3.3.2. Many of these points were well understood and several were discussed as part of the FPP process.

If the prices resulting from the FPP model are higher than those from an alternative approach such as BBM, this is not because more of the costs in that model have been allocated to copper than to mass-market fibre (because there is no such allocation): it is simply because there are higher costs in that model (under that cost standard), all other factors being equal (such as demand).

The situation is therefore that there are 2 different cost standards required to be used by the different legislation that applies to copper services and FFLAS. Patently, if these give different total cost results, then prices calculated according to one cost standard look like over-recovery measured against the other cost standard and vice-versa (with an under-recovery).

Mixing numbers from one cost standard with those of another will lead to meeting neither standard. If we adjust the BBM such that it removes a fraction of costs calculated based on the TSLRIC cost standard, we are mixing the cost standards and will get a result which is not consistent with the legislation (it could be too high or too low, depending on the nature of the inconsistent adjustment).

Applying an adjustment to the Commission’s TSLRIC to make its costs fully compatible with a BBM or vice versa will lead to a result which is either the same result as the BBM (if fully compatible with a BBM) or TSLRIC (if the BBM were modified to be fully compatible with TSLRIC) or even neither, if an incoherent set of principles were applied. It is not possible to be both at once (because, for example, there are some fully depreciated assets for which one approach includes costs and the other does not).

5 Calculating fibre required revenues by deducting copper revenues from a combined BBM is misconceived

5.1 By imposing a revenue constraint based on a fibre and copper BBM TERA's suggested approach is not consistent with the legislation

TERA's approach in its section 3.4 is to restrict Chorus revenue to that permitted by a BBM for both FFLAS and non-FFLAS services including copper services.

This is inconsistent with the Telecommunications Act. A concise short-form description of the current legislation is that given by the MBIE paper on the post-2020 regulatory framework:

> "BBM price-quality regulation will apply only to Chorus UFB fibre services. Copper services will be treated separately.[13]"

If in the interim period where both FPP and BBM methods are in operation these two methods lead to arguments as whether one was over-recovering (or under-recovering) relative to the cost standard of the other, this is intrinsic to the legislators having chosen 2 different methods which apply different cost standards (FPP TSLRIC for the copper services, and a BBM for fibre).

We note that it is also clear that the MBIE did consider the possibility of a combined BBM for copper and fibre but rejected this option. See for example the earlier MBIE paper which states:

> "We think that, if BBM price control is implemented for Chorus' UFB services, it should also be implemented for Chorus' copper services."[14]

Compare this with the later result of their deliberations:

> "The price for copper services has already been set by the Commission in a protracted and complex process. It would be destabilising to repeat this process for copper prices after 2020. There are challenges in valuing copper assets. In addition, including copper in the pricing framework for UFB services would introduce significant complications, leading to an atypical application of the 'building blocks model' which could lessen predictability."[15]

The Telecommunications Act, as revised, is consistent with this later position of MBIE.

13 Source: Telecommunications Act Review: Post-2020 Regulatory Framework for Fixed Line Services, MBIE

14 Announcements on the future of communications regulation Review of the Telecommunications Act 2001, MBIE

15 Source: Telecommunications Act Review: Post-2020 Regulatory Framework for Fixed Line Services, MBIE

Because there is not a binding legal constraint on Chorus revenues of a single BBM for copper and fibre services, TERA's approach of seeking to impose such a constraint and limiting the fibre revenues to the difference between such an approach and the actual copper revenues is misconceived and incompatible with the law.

5.2 The fibre losses calculation is for losses incurred in providing FFLAS under the UFB initiative, not for providing all services

Under the Telecommunications (New Regulatory Framework) Amendment Act 2018 s177(2)

> "Each regulated fibre service provider is treated, as at the implementation date, as owning a fibre asset with an initial value equal to the financial losses, as determined by the Commission, incurred by the provider in providing fibre fixed line access services under the UFB initiative for the period starting on 1 December 2011 and ending on the close of the day immediately before the implementation date."

We call this "financial losses" asset the "unrecovered loss" (UL). Note that this paragraph talks about losses incurred in "providing FFLAS under the UFB initiative"; it does not relate to other services such as non-UFB FFLAS services, non-FFLAS fibre or copper services.

As noted in section 3.4, the unrecovered loss is included to compensate for the initial RAB valuation of the fibre business being fixed at (in effect) HCA NBV at a given date. It is the fibre investment which must stand on its own feet to receive the "fair bet".

Within the approach of the Telecommunications Act (as amended), it is irrelevant to the unrecovered loss asset if copper services were making accounting profits or losses at any date, either in the past or in the future.

The correct approach therefore does not impose a specific total revenue constraint on the Chorus FFLAS and non-FFLAS business

5.3 The regulatory approach is not one of mandated cost recovery

TERA assumes that the approach being adopted should provide for exact cost recovery; it uses this to argue for its preferred approach.

The FPP TSLRIC model resulted in a national average unit cost for a given level of demand which was used to set a national price. However, the combination of the approach to copper pricing discussed in section 3.5 above and the Commission's FPP determination (in the UCLL Standard Terms Determination (STD)) does not provide for TSLRIC cost recovery over time, for the following reasons:

- in the FPP pricing determination the Commission has chosen to apply the resulting nationally averaged unit cost as a price for all copper loops;

- the Act allows for copper services to be withdrawn and the price of copper deregulated within "specified fibre areas" (SFA).
- As the copper services are withdrawn and the network within those SFA is shut down, this will result in the actual (regulated) copper products becoming progressively more and more rural, and a material difference between the calculated cost which would arise for such a rural network in the FPP model and the price that Chorus is allowed to charge for UCLL and Unbundled Copper Low Frequency Service (UCLFS) under the STD.
- If the Commission's approach were indeed based on exact cost recovery as hypothesised by TERA then it would need to allow the copper prices to increase as the UCLL and UCLFS services became progressively more rural on average. Using the public version of the Commissions FPP cost model the rural UCLL cost is calculated (see Annex A) as NZD 54.41 but the effect of the FPP STD and the current legislation is to allow Chorus to charge only NZD29.75.

The approach set out by MBIE and embodied in the legislation is not one of cost-recovery. Therefore, it is inconsistent with the overall framework within which TERA places their arguments regarding over-recovery.

This point on its own means that TERA's conclusions regarding over-recovery are incorrect. As there is no regulatory imposition of cost-recovery on copper services over time (to any particular standard), TERA cannot impose it as a constraint.

5.4 TERA's approach is subtracting the revenue from urban copper lines rather than the costs of urban copper lines

From the discussion above and in annex A we know that in the UCLL STD the uniform national price involves cross-subsidy from urban to rural lines. Deducting the FPP revenues from urban lines from a BBM costing based on the Chorus UFB areas is inconsistent with this choice.

Even if deducting this revenue were appropriate, which we say is not the case, it would have to take this effect into account and deduct not the revenue derived from those copper lines but the appropriate (consistently adjusted) cost for the area of interest. If adjusting simply for the urban/rural difference this might be argued to be similar to the "urban" TSLRIC unit cost result discussed in Annex A, as the UFB deployment for NZ as a whole is similar in extent, although the Chorus UFB area will be different to this).

However, this is just the first of the adjustments that would be needed to make the TSLRIC costs consistent with the BBM. We discuss below the extent of the changes that would be needed to the TSLRIC model to make its outputs consistent with the BBM.

As an aside we note that the same urban/rural cost difference means that an unadjusted revenue-based proxy allocator would also be unsafe as a means of allocating shared costs between the FFLAS and non-FFLAS (including copper) services within the Chorus UFB area. If a revenue-based proxy allocator were proposed, it would need to be adjusted to take this into account.

6 Adjusting the FPP TSLRIC model to calculate BBM costs to be allocated to non-FFLAS (copper) services

6.1 General

TERA describes many of the differences in approach between the TSLRIC model and the BBM.

By seeking reconciliation of the approaches to be used (as regards lifetimes, efficiency standards etc) and comparison of the amounts of costs recovered it is in effect considering the option of adjusting the TSLRIC calculated unit costs to be consistent with the BBM. But to be clear, this consideration is implicit and this is not an option TERA present directly or recommend; and indeed in many places they prefer the option of adjusting the BBM to be more like the TSLRIC approach, although this would be in our view both inconsistent with the Act and not a BBM unless it adopts a consistent set of BBM principles).

6.2 Shared costs

The TSLRIC model does not calculate the shared costs nor allocate them between copper and fibre services.

TERA claim that “a specific share of common costs is recovered from copper services”. They also claim that “Using a new costing approach for fibre based services could lead first to different estimates of the total amount of such common costs and, second, to different allocations between copper and fibre, leading to a significant risk of cost over (or under) recovery by Chorus.”

Although the TSLRIC model does calculate common costs, those common costs are not those of interest in a FTTH/copper deployment. Nor does that model allocate assets shared between copper and mass-market fibre distribution, because it does not have any concept that there is sharing between mass-market fibre and copper distribution networks.

6.3 How would the TSLRIC model need to be adjusted?

Considerable adjustments would be needed to render the TSLRIC model consistent with a BBM approach. These adjustments would include:

- the technologies to be modelled and the style of deployment (including actual levels of ducted and buried cables)
- changing the geographic scope to be the Chorus UFB area, and within that not excluding premises outside the TSO area
- using actual service demand where this affects capacity deployed in the TSLRIC model
- changing the assets included, including the ability to reuse pre-existing assets (which affects cable routing)

- using the BBM approach to unit costs / asset valuation/depreciation (HCA) and annualisation (notably as regards fully depreciated assets)
- potentially changing the asset lifetime, and remaining lifetime
- operating costs

These adjustments would be very extensive, time-consuming, and costly to undertake, and in many cases would in effect require the actual values from the Chorus network or accounts to be directly used as inputs. As examples:

- The FPP TSLRIC model does not model both copper and fibre network deployments. In reality these were not deployed at the same time. The FPP TSLRIC model cable routing algorithms do not take account of the availability of existing assets in specific locations, which in certain real locations available to reuse at a lower total cost than new assets on new routes. It would be difficult and expensive to try to make the FPP model consistent with the actual opportunities Chorus faced to reuse existing ducts and poles in certain locations. To do so would need first a database of the locations of such assets, and secondly it would need a fundamental rejigging of the way in which the FPP model addresses cable routing between the street segments and the MDF/ODF site; changing the model at such a fundamental level would then require extensive testing. Debating whether Chorus should have used more or less of its existing infrastructure to deploy the UFB network, or (say) the exact quantities of cabling needed, or their unit costs is highly theoretical especially when Chorus had at the time strong incentives to minimise the cost of deployment of UFB.
- The date of purchase and book value of existing, depreciated assets are historical facts which no amount of hypothetical consideration will be able to inform. Further, the legislation has already defined how these assets should be valued. The valuation and depreciation of the reused assets would therefore better be taken directly from Chorus' records.

One of the reasons for choosing the BBM as a process is the simplicity and lower ongoing cost compared to the FPP. Building in the expense and complexity of a modified version of the TSLRIC model for at best extremely small gains to the process would be directly counter to this.

6.4 Detailed reconciliation would not be very informative

TERA suggests a detailed reconciliation with the TSLRIC model is needed.

> "We believe that the Commission should seek to reconcile as much as possible the hypothesis behind the two approaches to avoid divergences that would be the main sources of mis-recovery of costs."
>
> "The implementation of the Input Methodology (of the BBM method) should include the reconciliation of such modelling principles between the TSLRIC approach and the BBM, because if, for example, this point is not treated carefully (during the assessment of the remaining unrecovered part of each shared asset) would generate an over-recovery."

We agree that if it were to be done reconciliation would need to be done carefully, but we do not see it as being necessary or efficient as regards the IM process. Aligning a BBM for a network that is part-way through a transition from one technology to another with the assumptions of a model that modelled a different single technology and no transition would be costly, complex, time-consuming, and we suspect ultimately nugatory.

But even if you applied suitable adjustments (probably using as inputs the same inputs as the BBM uses for critical inputs such as the depreciated valuation of the reused shared assets – in effect rebuilding the BBM) that adjusted model would not tell you how much shared asset cost to allocate to copper and how much to fibre. As a result seeking consistency with the TSLRIC model in this area is largely a mirage: there is nothing that the Commission can seek to be consistent with.

7 The FPP TSLRIC model could be a source of technical allocation keys

7.1 General

Examining whether the TSLRIC model could be a source of technical allocation keys assumes that the TSLRIC model asset outputs are useful for such a purpose.

TERA state

> In reality, the inconsistency between the TSLRIC modelling and the network reality would make the implementation of a pure causal (and technical) allocation key not only complex, but also generates a mis recovery of costs.

This seems to agree that the TSLRIC model (unless radically adjusted to represent reality) would be a poor choice of technical allocation keys.

However, even if adjustments were applied such that the right technology and deployment style (mostly underground) were modelled (in the right area, serving the right set of premises etc) such results would be time consuming to generate and we believe would not be highly useful.

In section 6.3 above we discuss the considerable difficulties of how the FPP TSLRIC model would need to be adjusted in order for the modelled network deployment to take advantage of the presence of pre-existing assets which could be shared.

Instead, if considering how to allocate a particular shared asset such as a particular building, seeking causal, objective, consistent, and timely allocators, we say it would be appropriate to consider how that building has actually been used by Chorus non-FFLAS (including copper) and FFLAS services, rather than, for example, use output from a TSLRIC model that may not include that building, did not ever consider dimensioning a building simultaneously supporting both copper and mass-market fibre networks, and did not consider whether it had access to an existing building.

We note in passing that the FPP model doesn’t produce timely allocators because it does not model the access network over time (in effect it models one fixed deployment at a fixed date), and that any allocators it did produce would not be measurable (verifiable).

TERA seems to broadly agree with our arguments regarding the lack of suitability of the FPP TSLRIC model as a means of producing technical allocation keys when they state:

> We believe that relying on such a pure technical/causal allocation keys would not be the solution to avoid mis recovery of costs:

> • First, because of the disconnection between the reality and the TSLRIC modelling choice, making the choice of one of the other allocation key difficult and complex to objectify, and;
>
> • Second because, anyway, this would generate the same issue of cost recovery discussed in §2.3.1.

The first point is arguing against using a causal allocator based on the TSLRIC model because there is a disconnect between it and reality. We agree that this would be fraught with difficulty and that there is such a disconnect between the TSLRIC model and reality, but we disagree as to whether this is important because such a process is not required for the BBM. Instead we can make useful, objective, causal, timely and measurable (verifiable) allocators directly based on reality instead (e.g. by using Chorus records).

We read the second point as agreeing with our thesis above: it is the different basis of the costs calculated by the two models that is leading to the apparent over-recovery.

8 The FPP TSRLIC model as a source of other relevant data

8.1 General

TERA are arguing that the BBM should take account of the TSLRIC model in certain respects.

8.2 TERA seeks that the TSLRIC model granularity should be used

TERA recommends adopting the TSLRIC model granularity.

> The Commission's emerging views should be amended in order to ensuring the BBM model granularity is at least the same as the granularity of the TSLRIC model.

The BBM does needs an appropriate level of granularity. Chorus have already made suggestions regarding asset granularity in the RAB in their response to the Emerging Views paper.[16]

While the TSLRIC model may form an indicative reference point as regards certain classifications of costs, imposing the TSLRIC model granularity is not appropriate. This is because there are additional and more pertinent constraints than the TSLRIC model, notably the Chorus accounts themselves which are the primary source of data for the BBM.

Changing the accounting data for many assets and many years would be slow, costly and of limited practicality, and could in our view only be justified if that data were essential to the future operation of the BBM, and not simply to make the data more easily comparable to a model built for a different purpose (of a different technology, style of deployment, coverage, valuation method, etc).

8.3 Lifetimes in the BBM do not necessarily need to be consistent with the TSLRIC model

> "The TSLRIC model uses for each asset specific asset lives and the BBM model are not expected to rely on the same data when assessing the useful lifetime of each asset. This point would also be source of inconsistency between the TSLRIC and the BBM model and would generate a risk of under/over recovery of cost."

In the TSLRIC model many of the lifetime values used were derived from the asset lifetimes in the Chorus accounts. As regards past data therefore it is quite likely that there is some agreement between the accounts (which are the key input for the BBM) and the TSLRIC model.

16 Para 11 of https://comcom.govt.nz/__data/assets/pdf_file/0025/161917/Chorus-Fibre-emerging-views-submission-16-July-2019.pdf

However, we understand that within the BBM, the accounting lifetimes might be changed by other methodological choices such as ex-ante adjustments for stranding risk. We do not see differences from the TSLRIC lifetimes as intrinsically problematic, if there is a specific rationale being applied.

TERA state:

> “Moreover, manipulating asset lives would add an additional layer of ambiguity to a new regulatory context that is already complex and complicated to reconcile.

As regards reconciliation to the TSLRIC model, we do not see such reconciliation as useful, as described above.

TERA also state:

> “We believe that setting appropriate asset lives should be justified by operational rationales, which should have been the case in the TSLRIC model, thus any asset lives different from those used in the TSLRIC model would generate additional ambiguity and difficulties in auditing the BBM model.”

We do not see the difficulty. Using different lifetimes is entirely feasible within the BBM and might be the preferred way to implement certain methodological choices (e.g. regarding stranding risk). As regards audit of the BBM, the TSLRIC model is, as we have noted, not a useful primary source as it stands. But if it were to be adapted and modified so as to be compatible with the BBM technology and asset valuation to make it usable for this purpose, then asset lifetimes are among the least of the issues that will arise as the existing TSLRIC model can already accommodate different lifetime choices if needed. By way of contrast, aspects which the existing TSLRIC model cannot yet accommodate as inputs would require material work to make the TSLRIC FPP model compatible with the BBM.

9 Efficiency adjustments

9.1 Not consistent with the legislation

TERA argues at various points that the Commission's approach setting the initial RAB should impose efficiency adjustments and that there may be inefficiencies "transferred in". For example, they say:

> "The implementation of the BBM approach should seek an equivalent level of efficiency compared to that used in the TSLRIC model. The RAB that is expected to be used under the BBM would include the initial value (that includes also financial losses) and might be a source of inefficiency transfer from copper to fibre."
>
> "This point is raised since possible inefficiencies could have been recorded by Chorus when deploying its shared infrastructure (and that have been dealt with, reasonably, in the TSLRIC model) and would be included in the fibre RAB, which would constitute an over-recovery of the exact cost needed to provide the service."
>
> "The efficiency principle is traditionally an important issue addressed by NRAs in defining costing principles. It appears from the technical paper that efficiency is expected to be addressed only for future fibre expenditure, and not for the past investments.
>
> We believe that this point should be thoroughly addressed in the IM, first because it seems not to be discussed in the technical paper and especially, because it appears that the legislation does not permit any ex-post assessment of Chorus' past fibre capex expenditures when determining the values of the initial fibre RAB."

The initial RAB valuation approach required is set out in section 177 of the Telecommunications Act (as amended) requires in effect that the initial RAB is set at the accounting book value of the assets, which means that there is no scope for such an adjustment.

We do not accept that there are inefficiencies transferred from copper into fibre by the choices of the legislation. Indeed, we believe that there are likely to be efficiencies transferred in (for example in the form of spare ducts built prudently in the past, whose costs are not allowed for in the TSLRIC model, and which were partly depreciated before they were used for UFB) where it appears that the legislation does not allow Chorus to allocate to fibre services the full value of those assets transferred in (e.g. in terms of the costs these assets allowed Chorus to avoid) but only the depreciated value.

Finally, at the time at which the vast majority of the Chorus UFB expenditure occurred, Chorus' UFB revenue was set based on the UFB contracts and Chorus faced strong incentives to be efficient.

10 Inaccuracies

10.1 TERA does not take account of service substitution

In stating:

> "This is a potential source of over-recovery, as some costs would go 100% to copper under TSLRIC model and then a further share of those same costs would be added to fibre under BBM."

TERA seem to be assuming that the fibre demand is additional to that of the copper, which is not the case. In areas where Chorus is the LFC there is (very broadly speaking) a large measure of substitution (losses from copper, gains on fibre, perhaps fewer gains than losses due to e.g. FWA), in other areas where Chorus is not the LFC, fibre demand causes copper demand losses without additional fibre revenues to Chorus.

10.2 Inaccuracy as regards impact on unit costs of depreciated assets

TERA states:

> "If the reuse and past depreciation were taken into account, valuation of legacy shared assets would lead to a lower value. If it is 80, this means that TSLRIC copper prices already includes 20. When dealing only with the copper bottom-up TSLRIC valuation it may be a choice, but when on the other side a top-down BBM model is introduced in order to ensure covering all costs, that contributes to over-recover Chorus's network and needs to be dealt with when assessing the fibre RAB so as to neutralize this effect. "

Aside from the repeated point about over-recovery with which we disagree for the reasons given above, the argument is not true in the general case because it depends on the remaining lifetime of the assets.

For example, imagine an asset with replacement cost of 100 has lifetime of 10 years, and a 2 year old partly depreciated asset of a similar type has NBV of 80 and remaining lifetime 8 years. Both have annual accounting (straight line) depreciation of 10 per year. For the next 8 years, in terms of the annual depreciation these assets annualised costs are identical.

There are differences between the annualised costs of the two assets within that 8 year period in terms of the return on capital employed; but we could set up an annuity or tilted annuity depreciation where both depreciation and return on capital employed would be equivalent in both cases for the

full 8 years. A similar point was discussed at the UCLL FPP conference [17](see Jason Ockerby comments on page 103).

Material differences do arise between TSLRIC and BBM, but they are not as described by TERA. For example, a notable difference exists as regards asset valuation and annualised costs in cases where there are assets that are fully depreciated but still in use.

[17] See p103 of https://comcom.govt.nz/__data/assets/pdf_file/0030/87636/UBA-and-UCLL-pricing-review-determination-conference-transcript-15-17-April-2015.PDF

Annex A The Commission's FPP calculations of UCLL costs in urban and non-urban areas

The final pricing review determination for Chorus' unbundled copper local loop (UCLL) service ('final FPP determination') undertaken by the Commission,[18] dated 15 December 2015, sets the UCLL price from 16 December 2015 for a five-year period, based on their final cost model.

Paragraph 686 of the same document also provides an indicative price per line for UCLL in urban areas (of NZD20.16 per line per month in Year 1). Paragraph X35 also indicates that 72% of lines are within these urban areas[19]. Taking these values together allows a UCLL price for non-urban areas to be estimated in Year 1 of NZD54.41 per line per month. This is calculated as:

$$54.41 = [29.75 - (20.16 \times 72\%)] \div 28\%$$

This can be compared to and is consistent with text in the "Further Draft Pricing Review Determination" released in 12 July 2015 (which used the "further draft" model), which indicated a price in urban areas of NZD18.72 per line per month and a price in non-urban areas of NZD54.85 per line per month.[20]

According to the final FPP determination, Year 1 begins on 16 December 2015, meaning that on 16 December 2019 the final year of the pricing decision commenced. The UCLL price will be NZD31.68 per line per month. Assuming the same growth in urban price over the period as the national price in that period, and the same proportion of urban lines, this implies a Year 5 (16 December 2019) UCLL price for non-urban areas to be NZD57.94 per line per month, calculated as:

$$57.94 = [31.68 - (20.16 \times (31.68 \div 29.75) \times 72\%)] \div 28\%$$

18 Available at https://comcom.govt.nz/__data/assets/pdf_file/0027/60669/2015-NZCC-37-Final-pricing-review-determination-for-Chorus-unbundled-copper-local-loop-service-15-Dec-2015.pdf, paragraph X2.

19 Each exchange area is defined as being either "urban" or "rural" (i.e. "non-urban").

20 Available at https://comcom.govt.nz/__data/assets/pdf_file/0024/60693/Further-draft-pricing-review-determination-for-Chorus-unbundled-copper-local-loop-service-2-July-2015.PDF. See paragraph 1838. Notes that these values were derived using levelized TSLRIC in this version of the model but are comparable to the values indicated in paragraph 521.