



Telecom New Zealand Limited

Submission in respect of the

**Commerce Commission's Draft Determination on
the Application for Pricing Review for Designated
Interconnection Services**

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Public Version

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A EXECUTIVE SUMMARY

- 1 Telecom welcomes the opportunity to comment on the Commission's *Draft Determination* on the Application for Pricing Review for Designated Interconnection Services dated 11 April 2005.

The Commission's objective

- 2 The Commission's objective in setting interconnection prices is to set an economically correct price signal to guide investment decision-making and competitive behaviour in the New Zealand market. In its July 2002 discussion paper¹, the Commission stated that it would endeavour to set interconnection prices to encourage parties to make efficient decisions (or as efficient decisions as possible given other constraints).² The Commission identified:³

"Interconnection is often a necessary service for entry and competition in dependent telecommunications markets. The prices of interconnection services will affect the state of competition in telecommunications markets dependent on those services. To the extent possible, interconnection prices should be set to encourage efficient entry and exit decisions and to enable more efficient providers to attract and retain customers from less efficient providers."

- 3 This objective lies at the heart of the exercise of determining the interconnection price. The decision the Commission makes here will have a profound influence on the market.
- 4 The objective of an accurate price signal is to facilitate efficient build-buy decisions is consistent with section 18 of the Telecommunications Act. Section 18 sets out the purpose of part 2 and schedules 1-3 of the Act, under which the Draft Determination has been made: *"to promote competition in telecommunications markets for the long term benefit of end-users of telecommunications services within New Zealand by regulating, and providing for the regulation of, the supply of certain telecommunications services between service providers."*

¹ Application of a TSLRIC Pricing Methodology – Discussion Paper, 2 July 2002.

² Ibid, paragraph 20.

The Draft Determination

- 5 The Draft Determination has provided a good opportunity to assess the current state of development of the Commission's model. Telecom's submission focuses on what remains to be done in order to ensure the outcome is transparent and evidence-based, and provides an accurate price signal for the real world build-buy decisions that will be made by industry participants.
- 6 Telecom acknowledges the constructive approach of the Commission and CostQuest to the development of the model. While Telecom has significant concerns about the transparency of key inputs (discussed below), the model itself is transparent, and issues have been readily acknowledged and dealt with by CostQuest. Telecom is confident that, given the constructive approach of the parties thus far, a model can be developed which addresses the issues identified below.
- 7 Telecom records in this submission specific instances where there is a lack of transparency as to how key variables in the model have been determined. For this reason, Telecom submits there is still some way to go before it can be said the parties have had a fair opportunity to respond to the key inputs and assumptions proposed by the Commission.
- 8 In some cases assumptions are made, for example about the extent of structure sharing, without any supporting justification. In response to a request by Telecom for the material underpinning these assumptions, the Commission has advised the parties that it is relying on assumptions made by its Consultants, and that the material on which these assumptions have been based is not material to the proceedings. The outcome of this approach, however, is to remove any practical opportunity to evaluate these key assumptions in the Commission's model.
- 9 In other cases, such as the operating cost mark-ups, the Commission is relying on information which the Commission has informed the parties will not be made available (and, indeed, it is not clear the Commission's

³ See paragraph 25.

consultants have made this available to the Commission). What is unavailable is not only the numbers involved, but also the description of what is included and excluded in those numbers, how they were calculated (eg what is the denominator and numerator) and where they were sourced from. Again, the outcome is that the parties have no effective opportunity to evaluate key inputs to the Commission's model.

- 10 The structure sharing and operating cost mark-ups are not a trivial part of the calculation. Together they probably account for over a third of the interconnect cost.
- 11 The lack of transparency on key inputs and assumptions means Telecom has not yet had a fair opportunity to respond to the Commission's model. There has not been the opportunity to debate and test the Commission's key assumptions, and to provide material from Telecom's experience which might have assisted the Commission. Telecom submits that remedying these process issues should be the focus of the Commission and the parties prior to the conference.
- 12 The Commission is proposing to calculate the interconnection price using only a bottom-up model. Regulatory best practice is to test the result with a top-down model. The Commission has chosen not to follow regulatory best practice in this regard, and this decision gives rise to an obligation on the Commission to take even greater care in building the model, checking and verifying the inputs, and sharing those inputs with interested and affected parties.

Background

- 13 The PSTN network modelled here is particularly susceptible to scale economies.⁴ Given this, one would expect the interconnection costs in a small country like New Zealand to be higher than the per minute costs of networks in Europe and the US - leaving aside the possible effects of higher equipment costs, lower labour costs and any differences in efficiency.

⁴ Ofcom in Ofcom: Review of BT's Network Charge Controls: March 2005, estimates that for every 10% increase in traffic volumes, costs only increase between 2 & 3%. They assumed a cost-volume elasticity of 0.25 as their central case.

Further, contrary to the expectations of CostQuest, many regulators in other countries expect interconnect costs to rise in the future, or at least to fall much less rapidly than in the past.⁵ This is mainly because the shift of call traffic to mobile and broadband networks, and away from the legacy PSTN, will leave less traffic on this network. The result will be increased unit costs.

14 These considerations suggest that the parties should not expect the Commission's modelling to reproduce the benchmarked number. In Telecom's opinion there are significant issues associated with:

- key model inputs used (like the opex mark-ups, structure sharing assumptions and WACC),
- some elements of the source code of the model itself that have a significant impact on the number, and
- the calculation of the TSO overlap

that suggest the Commission's Draft Determination materially underestimates the TSLRIC of interconnection.⁶

Fundamental issues with the Commission's model

15 Telecom considers that the Commission's model does not currently meet the requirements of the Act in three key respects:

- The model is a TELRIC model rather than the TSLRIC model specified in the Act. This matters because the approach to handling common costs differs between the two approaches.

⁵ See for example recent reports from both Ofcom (Review of BT's network charge controls: March 2005) and Japanese Ministry of Internal Affairs & Communication, presentation to the APEC Telecommunications and Information Working Group, April 2005 .

⁶ A benchmarked price would of course not take scale economies into account, and so would produce a lower cost than a modelled price.

- The Commission has an obligation to model a network that can deliver the interconnect traffic it is costing. The current model cannot as the switching component is incorrectly dimensioned.
- The Commission has put its requirement for consistency with the TSO model above its legislative requirement to produce a model that accurately costs the interconnect service.

16 These issues are discussed in Section B.

Input values in the Commission's model

(1) Operating cost mark-ups

17 The table below summarises the Commission's current operating cost mark-up assumptions and compares those to the ACCC rates, which were presented in the *Principles Paper* and used by Telecom in its Section 45 Response. The Telecom revised column shows Telecom's updated assumptions reflecting responses to CostQuest's criticisms of some of the numbers used.

Description	CostQuest/Commission	Section 45	Telecom revised	Reference
Wholesale (interconnect group)	0.05c/min (or 1.5% investment cost)	[]TCNZRIc/min	[]TCNZRIc/min	Section C1
Network Opex (operating and maintaining the network)	2.8 – 4.3% of investment cost plus an unspecified proportion of other opex	7-12% of investment cost	6-11% of investment cost (source ACCC and Principles Paper)	Section C3 and Annex 2
Other opex (includes overheads such as Legal and HR)	5% of investment cost (also includes an unspecified part of network opex)	34% network opex	34% network opex (source ACCC and Principles Paper)	Section C4
Non-network capex	included in Network Opex or Other Opex	5.67% direct network opex	1.7% of investment cost (source EU/EER and Principles Paper)	Annex 3

18 The key issues in this area are summarised in the following paragraphs.

19 **The CostQuest mark-ups are not transparent:** It is not clear what costs CostQuest and the Commission have included under what mark-up.

In particular the 5% “other opex” mark-up has been variously said to include all network opex common costs, all overhead costs, some or all non-network capex costs, and some common switching capital costs⁷. Further, the network opex costs mark-ups are said by CostQuest to not only cover network opex but service costs associated with call type services⁸. The mark-ups in the Commission’s model are unsourced and cannot be replicated or tested. In fact it is unclear whether the Commission itself has access to this data and can clarify what has and has not been included.

20 **The network opex mark-up is too low:** Telecom recommends that the Commission should follow the *Principles Paper* and use the ACCC mark-ups for network operating costs. Rarely has a regulator had access to a mark-up so fit for purpose – sourced from a new entrant (Optus) in a country with similar labour costs (Australia), and accepted by the regulator (ACCC) after considerable debate. The Commission’s *Principles Paper* stated these mark-ups were appropriate. However the Commission has now rejected these arguing:

- *The ACCC mark-ups are higher than what is found in high labour cost countries.* Telecom is not aware of any publicly available information in TSLRIC environments that supports that assertion – in Sweden, Denmark and the UK, regulators have in fact used mark-up rates higher than the ACCC.
- *Mark-ups should be lower in countries where labour costs are low.* Basic economics suggests that where labour costs are low companies will substitute labour for capital. The outcome of that would be higher mark-ups for opex rather than lower.
- *Mark-ups should be consistent with mark-ups in the TSO model.* However the Commission cannot let its desire for consistency override its legislative obligation to make a reasonable allocation of common costs. The TSO mark-ups exclude any common costs.

⁷ See Appendix G-A page 68 commentary re para A6.10 where the 5% is said to also include some common switching costs.

- 21 Telecom submits that the Commission should return to its earlier more principled and orthodox approach outlined in the *Principles Paper*.
- 22 **Allowance needs to be made for indirect capital costs:** It is not clear what allowance has been made in the model for non-network capex (for example IT assets, motor vehicles, accommodation). The Commission's preliminary papers to date clearly envisage such an allowance⁹. An allowance is made in every other TSLRIC jurisdiction Telecom is aware of. Further, no allowance is made for working capital.

(2) TSO exclusion

- 23 To date the TSO exclusion has been modelled in a number of different ways. In thinking about this issue the Commission may find the following summary table useful.

Option	A	B	C	D	E
	CostQuest		Gibson	Quai	Telecom
Model version used	TSLRIC	TSLRIC	TSO	TSO	TSO
TSO or element cost	Element	Element	Element	Element	TSO
Full or partial costs deducted	Full	Partial	Full	Partial	Partial
Cent per minute deduction from base	0.11	0.03	0.04	0.01	0.02

- 24 The key differences between the modelling approaches illustrated in the table lie around how to model the 'costs' that are contained in the requirement that forward looking common costs exclude '*... any costs incurred by the service provider in relation to the TSO*'. In particular should these costs:

⁸ Appendix G-A top of page 32.

⁹ See particularly Commerce Commission: Application of a TSLRIC Pricing Methodology – Discussion Paper, July 2002, section 10.1 page 93.

- be the TSLRIC costs of the CNVC's network elements as costed in the TSLRIC model (CostQuest), or the avoided costs as costed in the TSO model (Gibson Quai and Telecom)?
 - be the cost of the network element, or the TSO (costs minus revenues) cost?
 - be the full costs or simply the costs incurred by the other carriers?
- 25 The bottom line of the table shows the deductions that are taken off the base interconnect number to allow for the overlap. It is noticeable that the Commission's preference, Option A, is the outlier.
- 26 The main reason for this is straightforward. Option A deducts the costs of the network elements used by the CNVCs as they are costed in the TSLRIC model – in other words including all the common costs, despite the fact that the Common costs are excluded in the TSO model. Telecom and Gibson Quai's position is that the costs deducted should only be the costs that are actually in the TSO calculation. This issue is addressed in detail in Section D.

(3) Structure sharing assumptions

- 27 Telecom submits the structure sharing assumptions should, even on a forward-looking basis, reflect its own experience in building its network in the New Zealand market environment. CostQuest reject this and suggest that, in a forward looking network, there is more potential for sharing.
- 28 CostQuest start with a counterfactual, modelling the cost for a new entrant building a core and access network for the entire country over one year on a scorched node basis. This presents some challenges for the Commission, as the forward-looking scenario must be realistic if it is to send an accurate price signal to facilitate build-buy decisions in the New Zealand market. However, leaving aside the implausibility of this scenario, and the fact that there is no identified source for the sharing assumptions used, there are three key conceptual issues that have not been addressed:
- First, while CostQuest allow for the PSTN part of the core network to be optimised, they do not optimise the data part with which substantial

sharing is assumed. This leads to an overestimate of the sharing potential.

- Secondly, CostQuest implicitly assume that the optimised access network is a wired network whereas the Commission has modelled significant parts as wireless – for example over 60% of the rural network is wireless in the Commission’s optimised access model. This constrains the amount of sharing possible with the access network.
- Thirdly, CostQuest have very aggressive assumptions around sharing of network with other Utilities. In New Zealand there are few other companies for which cost sharing is possible. This does not appear to have been taken into account.

29 CostQuest’s assumptions add up to a scenario that is simply unrealistic, even on a scorched node forward-looking basis. Until the basis of the CostQuest assumptions are revealed, and all parties including the Commission have had the opportunity to test these, the Commission’s approach to the optimised access network in particular means Telecom’s actual experience provides an upper limit for a reasonable assessment of these forward looking common costs.

(4) WACC

30 Telecom’s submission on the WACC analysis focuses on three areas where the difference between Telecom and the Commission is most material:

- *Limitations of the CAPM:* the CAPM has acknowledged deficiencies, and this is referred to in the Draft Determination. In the current context, the CAPM systematically under-estimates the reasonable rate of return. Telecom submits this presents significant challenges for the Commission when estimating an accurate TSLRIC for interconnection and the Commission must do more than assert all possible solutions are arbitrary and ad hoc.
- *Estimating the asset beta:* the differences between the Commission’s range and the range identified by PwC can be explained by errors in the Commission’s analysis. Further, the decomposition analysis conducted by PwC, using a widely recognised methodology, is superior to the

Commission's attempt to analyse "pure" wireline and integrated firms (the firms analysed by the Commission operate in a range of activities).

- *Term of the risk free rate:* the Commission's position is inconsistent with standard commercial practice, and the application of the tilted annuity calculation.

(5) Other Issues

- 31 The submission also covers other issues for which the Commission has sought a response as shown below.

Question	Issue	Location of Response
1	Call Types	Section G5
2	Call volumes	Section E2
	Labour rates	Section E3
3	Charging Principles	Section G4
4	Cost of land and buildings	Section E4

- 32 Two of these – labour costs (Section E3) and cost of land and buildings (Section E4) - are commented on below.

Labour costs

- 33 The Commission and CostQuest draw strong inferences that costs in general, and opex mark-ups in particular, should be lower because of New Zealand's allegedly relatively low labour rates. Telecom disagrees for three main reasons:

- First, Telecom's labour rates are shown to be almost the same as Bell Canada, very close to Telstra, and not a long way from those for France Telecom and KPN Telecom (CostQuest Appendix G-B). The finding for Telstra is significant given Telecom's use of the ACCC mark-ups..

- Secondly, in a recent study for Ofcom, n/e/r/a has concluded that differences in labour rates are not a statistically significant driver of cost difference. Further WIK, in a more recent paper¹⁰ than that quoted by the Commission in the *Principles Paper*, has shifted away from allowing significantly different mark-ups between high and low cost countries. They suggest that at the most the differences might be 10-20% - and here they are talking about differences in unit labour costs between Western and Eastern Europe, which are far greater than between New Zealand and any other OECD country¹¹.
- Finally, there is no theoretical or empirical evidence to support the Commission's proposition that low labour cost countries have low operating cost mark-ups, or lower costs overall.

Land and buildings mark-up

- 34 There is considerable confusion over the Land and Building mark-ups. When the Commission or CostQuest quote a mark-up it is not clear what it covers and to what it is being applied. However Telecom believes that its costs for land and buildings do in fact lie within the benchmark range suggested by CostQuest - and this is despite the greater fit out cost in New Zealand due to the earthquake risk, which is a risk prevalent in the whole of the country. Telecom's costs, which are presented in Section E4, reflect a detailed appraisal of these costs undertaken by PwC two years ago.

Structure of the Submission

- 35 Telecom has structured its submission in the following way. After discussion the Commission's general approach to the model (Section B), it deals with the specific areas where the model needs to be modified, improved or fixed in order to produce the correct price payable for interconnection services, namely;

- The Commission's approach to costs (Section C)

¹⁰ WIK and Cullen International Ltd: Universal Service in the Accession Countries: Annexes to Main Report, June 2001 at page 5.

- The TSO exclusion (Section D)
- Other specific issues with the model – which are also expanded on in the annexes (Section E)
- Reasonable return on capital (Section F)

36 The final section deals with other miscellaneous issues (Section G).

Key terms

Draft Determination	Commerce Commission: "Draft Determination on the Application for Pricing Review for Designated Interconnection Services"
Discussion Paper	Commerce Commission: "Application of a TSLRIC Pricing Methodology – Discussion Paper" dated 2 July 2002
Principles Paper	Commerce Commission: "Implementation of TSLRIC Pricing Methodology for Access Determinations under the Telecommunications Act 2001" dated 20 February 2004
Section 45 Response	Telecom New Zealand's Report to the Commission on Modelling of the TSLRIC toll-bypass interconnect cost dated 31 August 2004
Telecommunications Act 2001	The Act

¹¹ Wik and Cullen *op cit* note that the accession countries have per capita income at least half and up to 20 times lower than the EU average.

B THE COMMISSION'S MODEL

Legislative Framework

- 37 The Draft Determination is made under Section 47 of the Act. It is a draft pricing review determination made in response to applications by Telecom and TelstraClear pursuant to section 42 of the Act, regarding the price payable for Interconnection with Telecom's PSTN and Interconnection with a fixed PSTN other than Telecom's (both designated access services).
- 38 The Commission must require the access provider to calculate the price payable for the designated service.¹² Telecom's calculation, together with a statement setting out how the price was calculated and all relevant information, is contained in Telecom's Section 45 Response.
- 39 Section 47 provides that the Commission must prepare a draft pricing review determination. The Commission is required to consider the calculation made under Section 45 (Section 48). Section 49 outlines the matters to be included in the Draft Determination.
- 40 The next steps for the Commission are consultation (Section 50) and the production of the pricing review determination (Sections 51 and 52).
- 41 In conducting a pricing review determination, Section 49 requires that the Commission determine the price payable for interconnection services in accordance with the applicable final pricing principle. For interconnection, the final pricing principle is TSLRIC, or one of two alternative prescribed methods. The Commission has decided to adopt TSLRIC as the final pricing principle for this pricing review.¹³
- 42 Subpart 1 of Part 1 of Schedule 1 provides the following definition of TSLRIC:

*"TSLRIC, in relation to a telecommunications service, -
(a) means the forward-looking costs over the long run of the total quantity of the facilities and functions that are directly*

¹² Section 45 and the Interconnection Service description in Schedule 1 Part 2.

¹³ *Draft Determination*, paragraph 29.

attributable to, or reasonably identifiable as incremental to, the service, taking into account the service provider's provision of other telecommunications services; and
(b) includes a reasonable allocation of forward-looking common costs.

43 Forward-looking common costs –

(a) means those costs efficiently incurred by the service provider in providing the service that are not directly attributable to providing an additional unit to that service; but
(b) does not include any costs incurred by the service provider in relation to a TSO instrument.

44 The service descriptions for the services have two additional matters that the Commission must consider regarding the application of section 18:

- Incentives to terminate dial-up internet traffic and other similar one-way traffic streams must be efficient; and
- The effect of any obligation under the TSO instrument to provide price-capped unlimited calls.

Does the Commission's model meet the requirements of the Act?

45 Telecom believes that the Commission's current model does not meet the requirements of the Act. It can be changed to do so, and it appears that most of these changes are possible and practicable. Sections C-E detail Telecom's concerns and recommendations for changes to resolve many of the problems identified in this section.

46 There are three key modelling issues that Telecom wishes to comment on before moving to specific recommendations for improvement to the Commission's model. These issues are relevant to determining whether the Commission's model meets the requirements of the Act:

- whether the model is a TSLRIC as opposed to TELRIC model;
- whether the model examines a network that can work in practice; and
- whether inconsistencies between this model and the one used in the TSO make the TSO overlap calculation unreliable.

47 It is noted that a further issue is the requirement of the Act for the model to be forward looking. Gibson Quai have identified that the model is not forward looking, because it does not take into account the use (or planned use) of Internet Protocol (I.P) technology in PSTN and other service delivery networks.¹⁴

TSLRIC vs TELRIC

48 The Act requires the price of interconnection to be modelled using one of the methods prescribed in Subpart 1, Part 2, Schedule 1 of the Act. The Commission has chosen to use the TSLRIC pricing methodology.

49 CostQuest are clear that the Commission's model is a TELRIC model based on using network elements, rather than services, as the model's building block. The Commission suggests that, based on regulatory precedent, an element approach to a TSLRIC calculation is appropriate.¹⁵ Gibson Quai agree with this (Appendix H page 9).

50 In Telecom's opinion the key issue is not whether the element approach is appropriate. Rather, the key issue is how the model must be adjusted or modified to produce a TSLRIC result. Most significantly, the TELRIC approach has coloured the CostQuest and Commission approaches to the identification and allocation of incremental and common costs. Telecom believes that the use of a TELRIC approach has led the Commission to make unreasonable allocations of forward looking common costs.

51 At a general level Telecom believes the current model is deficient as follows:

- some incremental costs in the TSLRIC context, like the cost of the interconnect group administering the interconnection service, are treated as a common cost in the Commission's TELRIC model. An important step in any TSLRIC calculation is to identify the incremental

¹⁴ *Draft Determination*, Appendix H, page 20.

¹⁵ *Principles Paper*, Paragraphs s 101 – 104.

cost associated with the service in question.¹⁶ This has not been done here;

- some common costs, like network opex common costs, are excluded under a TELRIC approach as they cannot be allocated to elements, and are (wrongly) either not picked up anywhere, or not picked up adequately in the Commission's model;
- allocations of common costs in TELRIC and TSLRIC models will be different for elements that are partly incremental and partly common.¹⁷ CostQuest get around this problem by implicitly assuming that there are no such elements. However, in reality there is at least one such element - the NEAX software file – which must be taken into account.

52 Telecom believes that these problems can be rectified. Hence this submission specifically identifies and separates out the incremental costs (including NEAX software file costs), and also deals with the issue of the network opex common costs. If these adjustments are incorporated into the final determination, then to all intents and purposes the Commission can accept that the modelled result is the same as one that would come from a TSLRIC model, as required by the Act.

Obligation to model a network that works

53 The Commission has an obligation to model a network that is capable of delivering the interconnect service. The current model cannot do that. Its switches are incorrectly dimensioned, meaning they are not capable of accepting the interconnect and other traffic the modellers input in the model (for details see Section E1).

54 CostQuest and the Commission have known about this problem for a long time. CostQuest accept that the model needs to change. However, the changes have not been made for the interconnection pricing applications. It is not good regulatory practice for the Commission to continue to use a

¹⁶ *Discussion Paper*, Paragraph 30.

¹⁷ Gans & King, *Comparing TSLRIC and TELRIC: A report on behalf of AAPT Ltd*, 2003.

model that does not represent a network that can deliver the interconnect traffic modelled.

Consistency with the TSO

55 The Commission has identified consistency with the TSO as a key concern¹⁸, yet the following are not addressed:

- There is no legislative requirement for consistency between the TSLRIC and TSO calculations. Indeed the presumption of the legislators was that the modelling would in fact be different – in the TSLRIC modelling the costs are to be forward looking while in the TSO they are to be those of an efficient provider. There is no requirement for the costs to be forward looking in the TSO context.
- There is no regulatory precedent - anywhere - for the models to be consistent, something Gibson Quai observe (page 21 Appendix H).
- In practice, the model used in the 02/03 final determination is very different from the version used in the TSLRIC calculation - for example some 15% of the model's source code is different, and numerous input values differ.¹⁹

56 Telecom sees merit in consistency where this does not override legislative requirements. However consistency cannot be used as the justification to use data that is manifestly unfit for purpose – for example the TSO opex mark-ups.

57 There remain issues with some of the source code and input values. Most of these have only a marginal impact on the modelled cost but should be corrected. One, which relates to a bracket in the wrong place, is significant

¹⁸ There are at least 10 references in the *Draft Determination*¹⁸ and there is a special one page section in the *Principles Paper*.

¹⁹ At para 67 of the Draft Determination the Commerce Commission suggest that the only difference between the versions of the CostPro model used in the TSO and TSLRIC determinations is the allocation of common costs. That is incorrect. In reality there are many other differences – essentially the version used in the 02/03 TSO determination retains all the errors which the Commission have chosen to correct for this determination – despite the fact that both models were released contemporaneously.

and needs to be addressed (see Annex 8, point (d)). Corrections are proposed in Annexes 7 and 8.

C THE COMMISSION'S APPROACH TO COSTS

Background

58 The Commission's objective in setting interconnection prices is to '... encourage parties to make efficient decisions.'²⁰ The Commission has identified some of these decisions as²¹:

- decisions of access providers to invest in the fixed PSTN;
- decisions of access providers to provide interconnect services in the most cost effective manner;
- decisions of access seekers or other investors to duplicate parts or all of an access providers fixed PSTN;
- decisions of providers to enter and exit telecommunications markets.

59 The Commission's decision here will therefore have a profound influence on the telecommunications market.

60 The first stage of any approach to a TSLRIC calculation is to distinguish the incremental and common cost components. The definitions of TSLRIC and forward-looking common costs are set out at the beginning of schedule 1 of the Act and summarised in section B of these submissions. TSLRIC, in relation to a telecommunications service means the forward-looking costs over the long run of the total quantity of the facilities and functions that are:

- directly attributable to, or
- reasonably identifiable as incremental to,

the service. The definition includes a reasonable allocation of forward-looking common costs (also defined).

²⁰ *Discussion Paper* para 21.

²¹ *Ibid* paras 22-25.

- 61 Telecom considers only two costs are '*directly attributable to*' the interconnect activity, namely the extra cost of software on the NEAX switches and the cost of the people, largely within the Wholesale Group, who administer the Interconnect Agreements. All other costs are '*shared*' costs in some way.
- 62 In theory these shared costs can be divided into those which are variable (in the words of the Act '*reasonably identifiable as incremental to*') and those which are fixed. Variable shared costs, together with the incremental costs, make up the first part of the TSLRIC calculation, while fixed shared costs are part of the allocation of forward looking common costs.
- 63 In practice a more pragmatic approach is often taken to allocating these fixed and variable shared/common costs:
- Common capital costs are allocated either on the basis of usage (eg for switching and transmission equipment) or some other measure (eg for trenching costs where costs may be allocated in proportion to cable size);
 - Common operating costs are allocated in the same way as the associated capital cost;
 - An allowance is made for overheads – both opex and capex.²² In the Commission's model this is as a mark-up on capital costs.²³
- 64 This section deals with:
- the two incremental costs - software and interconnect personnel (C1);
 - the allocation of common costs for capital (C2);
 - the allocation of operating costs (C3);

²² It is unclear whether the Commission does make an allowance for non-network capital costs – see Annex 1.

²³ Equally, as implied in the *Principles Paper*, the mark-up could be based on direct operating costs which is more common.

- the allocation of overheads (C4).

C1 INCREMENTAL COSTS (COSTS DIRECTLY ATTRIBUTABLE TO THE INTERCONNECT SERVICE)

Introduction

65 This section deals with the costs directly attributable to the Interconnection Service:

- software costs, which have been entirely excluded in the CostQuest model; and
- interconnect group costs, for which an inadequate allocation has been made.

66 Telecom makes the following recommendations:

- Part of the NEAX software is directly attributable to the Interconnection Service. This needs to be separately accounted for in the TSLRIC cost at [] **JTCNZRI** c/min for the interconnect-specific NEAX software.
- The interconnect group costs are an incremental cost directly associated with interconnect. They should not be recovered via a general mark-up. The Commission should delete the 1.5% mark-up and add in interconnect costs as an incremental cost. The cost should reflect Telecom's actual costs of [] **JTCNZRI** c/min.

Software costs

67 Part of the cost of the NEAX software is specific to interconnect activities. This was covered briefly in the Section 45 Response.²⁴ In the light of CostQuest's concerns about the allocation of the NEAX software costs in general, all these costs have been reviewed. The results of this review are summarised in Annex 1. It shows the annual cost of the interconnect-specific software is [] **JTCNZRI** c/min.

²⁴ Paragraph A1.17.

- 68 While CostQuest acknowledge this is a legitimate cost²⁵, they do not include this in their modelling. The Commission makes no separate allowance for these software costs. No reason is given for the exclusion.
- 69 The definition of TSLRIC requires the Commission to include all costs that are directly attributable to interconnect. The NEAX interconnect software is directly attributable to interconnect and should be included. Telecom recommends that this should be around []TCNZRI c/min.
- 70 This is just for the interconnect-specific piece of the NEAX software file. The Commission has not as yet included any costs associated with the rest of the NEAX software file. If this remains outside the overall model, then []TCNZRI c/min should be allocated to the toll bypass interconnect cost reflecting its share of this common cost as well. This is also shown in Annex 1.

Interconnect group costs

- 71 These costs (which the Commission refer to as wholesale or wholesale/retail costs) cover the cost for carriers of providing interconnect services. They represent costs that are directly attributable to interconnect services. In the Commission's model the interconnect group's costs are allowed for as a 1.5% mark-up on capital costs²⁶, which is equivalent to just over \$[]CCRI pa²⁷ or 0.05 cents per minute. This cost is for toll bypass interconnect services only.
- 72 Telecom's Section 45 Response suggested a much higher cost. That was based on work by PricewaterhouseCoopers. They estimated that some []TCNZRI people were directly involved in Interconnection (billing, planning, commercial) and another []TCNZRI people (Alcatel) in network management directly related to interconnect. In addition to these personnel costs they included the costs of the billing machine specifically

²⁵ Appendix G-A, page 33.

²⁶ Paragraph 133 of the *Draft Determination*.

²⁷ In the Draft Determination the Commission has estimated the cost allowed for as \$[] CCRI (email from Neville Lord (3/05/05)).

used for interconnect. The two other costs included were regulatory and legal costs. The total cost was []**JTCNZRI** c/minute.

- 73 At paragraph 144 of the *Draft Determination* the Commission notes that there may be some double counting in Telecom's estimate, repeating a point that Telecom noted, and rejected, in its Section 45 Response²⁸. CostQuest make the point that Telecom's costs may include some one-off litigation costs which they regard as inappropriate in a forward looking model.²⁹ Telecom accepts that concern may be valid. For this reason, legal and regulatory costs have been reduced to 15% of the total – the 15% being based on the Ofcom benchmark.³⁰ The new estimate of total Interconnect group costs is now in line with the CostQuest estimate of \$[]**JCCRI**.³¹ The toll bypass proportion is now \$[]**JTCNZRI** (compared to the Commission's \$[]**JCCRI**) and the comparable per minute cost reduces to 0.09c/min³².
- 74 CostQuest also draw a comparison with total interconnection costs in Kansas, indicating that Telecom's previous cost per minute for this activity was 75% of the Kansas interconnect rate. It is difficult to see what can be drawn from that comparison. Given that Kansas overall interconnect costs are so much lower than those estimated by CostQuest here, the high proportion quoted cannot be any surprise.
- 75 In paragraph 141 of the *Draft Determination* the Commission refers to the recent study on these costs undertaken by Ofcom³³. This study found that the costs for BT were about \$120m, and the cost per minute about 0.03 cents. This is considerably lower than Telecom's actual costs of 0.09c/min. The reason why the BT number is lower is likely to be a result of the scale economies inherent in this activity. The 0.03 c/min reflects the economies of scale a large carrier like BT, with over 100 times Telecom's interconnect

²⁸ The mark-up there is for common costs not incremental costs.

²⁹ Appendix G-A page 13.

³⁰ Ofcom: Review of BT's Product Management, Policy and Planning (PPP) charge; June 2004.

³¹ Appendix G-A, page 13.

³² This is the per minute cost comparable to the Commission's per minute cost which excludes CNVC traffic.

³³ Ofcom: *op cit*.

traffic, can achieve. It is inappropriate to suggest that Telecom can achieve such a low cost based on a fraction of the traffic, for a cost that is clearly scale based.

- 76 In summary the Commission has proposed a very low cost. CostQuest have suggested a number rather higher. Telecom's revised actual costs are within the range suggested by CostQuest. If the Commission rejects Telecom's costs, it should provide clear reasons for this, evidence to support its preferred number and transparency on how its preferred cost has been derived.
- 77 Since this is an incremental cost directly associated with interconnect, it is inappropriate that it be recovered via a general mark-up. These mark-ups are appropriate for common cost allocations. This is an incremental cost specific to interconnect, not a common cost. Thus the Commission should delete the 1.5% mark-up and add in interconnect costs as an incremental cost. The cost should reflect Telecom's actual costs of []TCNZRI c/min.

C2 COMMON CAPITAL COSTS

Introduction

78 By convention, the TSLRIC modelling includes all network elements that are used to supply the service in question (in this case interconnect calls), and then does a three fold allocation:

- first, allocates these costs to the PSTN core network as opposed to the access or data networks
- secondly, allows for sharing with other Utilities
- thirdly, allocates the PSTN costs to interconnect calls

79 The Commission's model follows this convention. However, there are a number of adjustments that the Commission needs to make to correct the model.

Allocations to PSTN network as opposed to Data or Access.

Data network allocation

80 The model models the data network and allocates common costs between the PSTN and Data networks on the basis of relative demand. This is a conventional approach though Telecom has considerable reservations about how the data network has been modelled. In particular the data network is an unoptimised network, while the voice network has been optimised. This has two important impacts:

- there must be question marks as to whether a scorched voice network can share anything with a data network that has not been scorched;
- because the data network is not optimised it will be larger than it would have been had it been optimised. This means in that it takes a larger share of the costs than it would have had it been optimised.

81 To rectify this problem the Commission should either instruct CostQuest to optimise the data network or to calculate sharing on the basis of two

unoptimised networks. The latter is the approach Telecom used in its Section 45 response.

Access network allocation

- 82 A key difference between Telecom and CostQuest is in how the share attributable to the Access network is calculated. Telecom believes that an appropriate set of structure sharing assumptions can be drawn from the actual sharing that occurs in practice in Telecom's network. In most cases there is enough good data to measure the extent of sharing and to suggest ways of allocating the costs. Telecom's approach is supported by regulatory precedent elsewhere.³⁴
- 83 CostQuest reject Telecom's approach. CostQuest start with the proposition that both the access and core network are being scorched at the same time and the sharing assumptions should reflect that of a new entrant, building both networks.³⁵
- 84 Costs are then allocated between the core and access networks in two steps. First, CostQuest suggest the proportion of the core network that does not share at all with access.³⁶ CostQuest have not provided the source of these numbers. Secondly, CostQuest apportion costs based on the assertion that access cables utilise 1.25 more units of capacity than core cables. No source is given for this assumption, or for the assumption that this ratio is constant in all geographical areas. Each is discussed in turn.

³⁴ For example ACCC: *Assessment of Telstra's Undertaking for PSTN,ULLS and LCS;Final Decision*, Dec 2004, at page 76 '...the Commission believes that the scorched node methodology that is considered appropriate in determining TSLRIC prices, dictates that the level of trenching in new estates should reflect both Telstra's past ability to share trenches in new estates, and its ability to share over the regulatory period. That is because the appropriate network modelled should be Telstra's network, as it would look if it were optimised, and not a hypothetical new entrant network'

³⁵ Appendix C-A Page 19. This approach also rules out relying on TCL experience. That is appropriate. While TCL have built a core network it is not nearly as extensive as Telecom's. In particular the TCL network would involve higher sharing than a full size network going to all nodes, simply because the TCL network is in areas where sharing is more likely (urban areas) and not in far flung rural areas where sharing opportunities are less.

³⁶ Page 21 Appendix G-A.

Proportion shared with access

- 85 CostQuest suggest that '*Sharing between core and access networks in a scorched node environment clearly should occur more often in a forward looking network*'.³⁷ That might be true if the optimal forward looking network structure for both were the same. However, the Commission has decided in the TSO context that the forward looking access network would be mainly wireless – some 60% of the rural clusters are in fact wireless. In the remaining rural clusters 24% of the plant length is aerial. In other words a substantial majority of the rural clusters are likely to be served by a technology for which sharing is either not possible (wireless) or very unlikely (aerial). While clusters around every node have either aerial or direct buried plant, there are big gaps between these which are wireless.
- 86 Almost all (99%) of the remaining rural plant is direct buried. While it is possible to direct bury access and core network cable in the same trench, this is not best practice.³⁸ Further, it creates security risks and adds to costs.
- 87 In essence, the Commission's own modelling demonstrates that the assumption that the access and core networks are scorched using a forward looking technology, implies *less* sharing than in Telecom's actual network rather than more. This is because so much of the rural access network would be wireless. The Commission needs to ensure CostQuest are consistent with the Commission's own modelling in the TSO. The level of sharing that actually occurs in Telecom's network, as provided in the Section 45 Response³⁹ would be an upper limit on the amount of sharing possible in such an environment.

³⁷ Appendix G-A page 19.

³⁸ For example the ACCC in Australia assumed no sharing on ploughed routes (n/e/r/a: Estimating the Long-run Incremental cost of PSTN Access, Final report for the ACCC, Jan 1999, page 21). They also assume no trench sharing in rural areas (ACCC A Report on the assessment of Telstra's undertaking for Domestic PSTN Originating and Terminating access services, July 2000, page 117). At Page 116 the ACCC states its assumption that only ducted trench is shared.

³⁹ Section 45 Response para 33

Cables per trench

- 88 In dealing with the network that is shared with the access network, CostQuest make the further assumption that costs would be shared in the same ratio as the number of cables in that trench. They argue this on the basis of cost causation.⁴⁰ In Telecom's experience the major cost of trenching is the act of digging – the size of the trench is rather less important. This suggests that an allocation based on cost causation would still leave the majority of the costs unallocated. Telecom believes a more valid approach is to split the costs equally between the two networks on the basis that that is what would be the most likely market outcome – ie the outcome if these networks had different owners. This approach has good regulatory precedent.⁴¹ It has the advantage that it avoids the need to establish how many cables there are in each trench – the issue we turn to next.
- 89 CostQuest state that there are 2.25 cables per trench for all areas and these are shared in the ratio of 1.25 access cables to every core network cable.⁴² These numbers are crucial to the calculation and it is of great concern that they are not supported by any evidence. It is impossible to ascertain the source or basis of these numbers.
- 90 Telecom would expect the number of cables per trench to be much lower in an optimised scorched node network, where the access and core networks are being built at the same time, than in an incumbents existing network. In optimised networks cabling is done to meet a known demand and done only once. The duplication that occurs over time in real life would simply not occur here.
- 91 In summary the approach adopted by CostQuest to allocating cost requires them to make assumptions about sharing which appear arbitrary and without any basis. There are different approaches, such as sharing 50:50

⁴⁰ Appendix G-A page 19.

⁴¹ For example n/e/r/a: Estimating the Long-run Incremental cost of PSTN Access, Final report for the ACCC, Jan 1999, page 7 or 44, though in the final report ACCC shifted toward a per cable allocation based on the actual sharing in Telstra's network. Telecom understands a 50:50 basis is used in Ireland as well.

⁴² Telecom has asked for the basis of these assumptions, but they have not been provided.

between different networks, which avoid this. Given the lack of any useful data the Commission could call on to support its sharing proposition, any other cost split must be arbitrary.

Common cost allocations to other Utilities

- 92 CostQuest then make assumptions about the amount of dedicated core network and shared access/core network where costs can be shared with other utilities. Again CostQuest provide no indication of what other Utilities they have in mind, or where their assumptions come from. But their sharing assumptions are aggressive: 60% in metro areas, 50% in urban and 30% in rural.⁴³
- 93 For dedicated core network, the most likely cost sharer is another telecommunications company. For sharing to occur they must both need more capacity over the same route, and at the same time. In practice that has occurred with Telecom and TelstraClear Limited sharing on some routes where need coincided. But as a proportion of the total length sharing has been minimal (less than 5%).
- 94 Two other utility networks are possible sources of sharing – Gas pipelines and Electricity companies. Both have practical problems. First, gas pipelines do not run between many of the nodes used in the CostQuest model. In any event live pipelines would be too dangerous. Secondly, electrical cable is mainly aerial and the existing poles used are generally not high enough to accommodate telephone cable. Thirdly, no new entrant would have any core network cable as overhead cable – this is not best practice and creates real vulnerability to damage (either malicious or from weather conditions) and sharply higher maintenance costs.
- 95 The Commission must use assumptions which are realistically achievable. It is not appropriate to invent numbers, or to base them on jurisdictions that have a different potential for sharing than in New Zealand. New

⁴³ These numbers are calculated from the CostQuest data in the Table on page 21 of Appendix G-A assuming that where there is sharing with other utilities, cost are shared 50:50. CostQuest were asked by Telecom to clarify what they were assuming but they have been unable to do this.

Zealand does not have the same range of potential parties to share with as other jurisdictions. The numbers used by the Commission in this important area must be transparent and supported.

Sheath Sharing

- 96 The current model allows for sheath sharing between the voice and data networks. It does not allow for sheath sharing between the access and core networks. It is a moot point whether access and core networks should share sheaths in a forward looking network. Best practice suggests not. Telecom has done this in the past, but there is increasing recognition that this should not continue because of increased repair and maintenance costs where this occurs and increased security risk.

C3 ALLOCATION OF NETWORK OPERATING COSTS

Introduction

97 CostQuest have not made an appropriate allocation of network operating costs. There are a number of problems with CostQuest's approach, which is inconsistent with overseas regulatory practice:

- they separate avoidable from other network operating costs, rather than dealing with network operating costs as a whole;
- they have used a mixture of data sourced from Telecom and selected USA incumbents;
- they have made little or no allowance for network common operating costs.

98 As a result, CostQuest's opex cost mark ups are inadequate.

99 Telecom submits that the Commission should revert to the approach outlined in the *Principles Paper*:

- The Commission should use the ACCC-n/e/r/a mark-ups for network operating costs, which are based on figures from a new entrant (Optus) in Australia, which has similar labour costs to New Zealand, and which have been thoroughly tested in the Australian regulatory context.
- It is not appropriate to use the direct network operating cost mark-up from the TSO. Common cost allocations are specific to context and cannot simply be transferred from one service to another. The TSO mark-up is too low for interconnection services and does not allow a reasonable allocation of network common operating costs as required by the Act.

The CostQuest approach

100 Network Operating costs include all the costs associated with operating and maintaining the PSTN share of the core network. These costs can be

sourced from the incumbent, be based on benchmarks observed elsewhere, or be sourced from another regulatory jurisdiction.⁴⁴ Generally, the total network operating costs (opex) are assigned to the network elements they are associated with. The allocation of these to interconnect costs then follows exactly the allocation of the capital costs.

- 101 CostQuest's approach is different. First, they separate avoidable from other network operating costs, rather than dealing with network operating costs as a whole. This may be common in TELRIC jurisdictions, but this separation is unusual in TSLRIC jurisdictions – in fact Telecom is not aware of any other instance of this. Rather, network operating costs are treated, and allocated, as a whole – not separately. There are obvious reasons for this as the Commission notes in the *Principles Paper*.⁴⁵
- 102 Secondly, the data used is a mixture of Telecom and selected USA incumbents. The *Principles Paper* notes difficulties in using incumbent data, in particular the problems of confidentiality, transparency and the judgements involved in allocating shared and common costs between different networks.⁴⁶ These problems are of course exacerbated when one part of the cost (the avoidable network opex) is sourced from one country and another (the common network opex) from a completely different country and operating environment.
- 103 Thirdly, either no allowance, or a very limited allowance, has been made for network common operating costs. These are by far the greater proportion of these network operating costs.⁴⁷ This is a significant problem for the Commission. The definition of TSLRIC in schedule 1 of the Act requires the Commission to include “a **reasonable** allocation of forward-looking common costs.” (emphasis added). Such common costs include network common operating costs. These are not relevant in the TSO context, but should be included in the TSLRIC context. Telecom has been unable to find

⁴⁴ *Discussion Paper* pages 86 –92.

⁴⁵ *Principles Paper*, Paragraph 326.

⁴⁶ *Principles Paper*, Paragraphs 323 – 326.

⁴⁷ CostQuest have been unable to provide the Commission or the Parties with the sources of their data. Without this it is impossible for Telecom or indeed the Commission to assess whether any mark-ups have been allowed for or, if they have, whether they are adequate.

any other jurisdiction that, when dealing with TSLRIC costs, has excluded an allowance for network common operating costs.

Are the ACCC mark-ups too high?

- 104 In its Section 45 Response, Telecom used mark-up rates for network operating costs, including network common operating costs, as used by the ACCC in its interconnect price modelling and reported in the Commission's *Principles Paper*. CostQuest have rejected these stating that these rates are overstated.⁴⁸ They state that the ACCC-n/e/r/a mark-ups are 3 –11 times what they (CostQuest) '*... have seen throughout the industry.*'⁴⁹ Gibson Quai are however notably more circumspect, by inference supporting the ACCC-n/e/r/a mark-ups.⁵⁰
- 105 Annex 2 contains a point by point rebuttal of the numbers CostQuest use. Telecom's conclusions are summarised below.
- 106 Telecom rejects CostQuest's assertion that the ACCC-n/e/r/a rates are excessive. These were sourced from Optus and subjected to intense regulatory scrutiny. Certainly Telecom's network opex mark-ups (including network common opex) would be of this order.
- 107 It is possible that the data CostQuest might be referring to, and Gibson Quai are certainly referring to, is the incremental opex costs that are often associated with equipment suppliers. These invariably do not cover network common costs (on the basis that that cost is the network operators cost, not the vendors) and are indeed much lower. But the essential point is that the mark-up in a TSLRIC calculation needs to cover network common opex costs as well.
- 108 The Commission notes at paragraph 136 that the mark-ups used by the ACCC are higher than is typical for high labour cost countries. This conclusion is surprising. When Telecom prepared its Section 45 Response

⁴⁸ Page 32 Appendix G-A.

⁴⁹ Page 29 Appendix G-A.

⁵⁰ The Gibson Quai report at page 14 suggests appropriate opex mark-ups of at least double the 2.8 and 4.3%. Telecom has sought to clarify this but the Commission has not allowed Gibson Quai to respond (see letter dated 11 May 2005 from Neville Lord).

PricewaterhouseCoopers were asked to source all publicly available mark-ups used by regulators in TSLRIC jurisdictions. Mark-ups were obtained for Denmark, Sweden the UK as well as the ACCC. All these have higher labour costs than NZ. All these used mark-ups either at or above the ACCC levels. The Commission may have been relying on the CostQuest sourced data from selected incumbents in the US. All these are TELRIC estimates. All probably exclude some common costs relevant here.

- 109 The Commission states that, given low labour rates in New Zealand, mark-ups should be lower. However, basic economics suggest that relatively low labour costs should lead to more labour being employed and less capital. This is in fact likely to lead to a higher rather than lower mark-up. Practical experience confirms this. In particular it is for this reason that WIK have recently moved away from the conclusion, cited in the *Principles Paper*,⁵¹ of lowering mark-ups in low cost countries.⁵²
- 110 The rates used by the ACCC are based on a new entrant (Optus), in a country (Australia) with similar labour costs to New Zealand, and have been exhaustively scrutinised by all sides in the regulatory debate in that country. They are supported by mark-ups used in Europe.⁵³ Rarely has a regulator had available data that is so readily applicable to purpose.
- 111 Telecom considers that in the face of the powerful evidence from a new entrant in a similar environment (Australia), evidence that has been accepted by the ACCC, it is unacceptable for CostQuest to simply reject the Commission's *Principles Paper* recommendation and assert, without offering any other evidence, that these numbers are just too high.

Consistency with the TSO

- 112 The Commission suggests that using the direct network operating cost mark-up from the TSO model is appropriate because it '... fulfils the

⁵¹ Principles Paper Appendix 3.

⁵² WIK & Cullen International SA: *Universal Service in the Accession Countries*: Annexes to Main Report, June 2001, pages 4-5.

⁵³ *Principles Paper* Appendix B.

requirement for consistency between the two modelling exercises' (paragraph 137).

- 113 However, the Commission is aware that the number used in the TSO was specific to Telecom's TSO model. As was made clear in the documentation provided, these costs excluded opex costs associated with RLUs, they were network opex costs which were incremental to numbers of CNVCs (not interconnect services), and common costs associated in CNVCs were deliberately excluded. There should not therefore be any surprise that full network operating costs are higher. Further, the Commission is well aware that common cost allocations are specific to context.⁵⁴ These numbers, developed in the TSO context, cannot simply be transferred across to a completely different context without some adjustment.
- 114 Further, the Commission's desire for consistency cannot override its legislative obligation to include a reasonable allowance for common costs. Despite requests, neither CostQuest nor the Commission have been able to demonstrate in a transparent manner that either of their operating cost mark-ups include an allowance for network common operating costs. Even if CostQuest has attempted to make some allowance (which is not known), the experience of regulators in Australia and Europe, who operate in TSLRIC rather than TELRIC environments, would suggest this mark-up was far too low. The Commission's *Principles Paper* at Appendix A and B demonstrates that. So too do Telecom's own operating cost numbers. The Commission would be holding a unique position among regulators world wide in not allowing any, or an adequate, recovery of these common costs in a TSLRIC environment.

⁵⁴ See for example the discussion in *'The Commission's view on the 'Actual Costs Saved' and 'Avoided Costs Saved' Standards: Application of the Final Pricing Principle for Resale of Telecom Retail Services: April 2005* at paragraphs 64 –68.

C4 INDIRECT OPEX AND CAPITAL COSTS

Introduction

115 The previous sections have dealt with the allocations of direct or directly attributable costs. In addition there are two other capital (capex) and operating costs that need to be considered in the modelling:

- Business Support Costs (overheads);
- Indirect capex costs and their associated opex.

116 It is not possible to identify how CostQuest has accounted for these costs, if they have been included at all.

Business Support costs

117 In its report to the ACCC (and re-presented in the Principles Paper in Appendix A), n/e/r/a summarises what these costs typically cover – Carrier Services, Executive, Planning, Accounting and Finance, External Relations, Human Resources, Information management, Legal, Procurement, other General and Administrative activities.

118 As far as Telecom is aware, every jurisdiction that has been required to estimate an interconnect cost on a TSLRIC basis has made some allowance for these costs as part of the forward looking common cost. In the CostQuest model these costs are included in the 5% mark-up. This mark-up is applied to investment costs.

119 Telecom does not agree with the CostQuest approach.

120 First, it is not transparent. It is not possible to identify how much of the 5% covers these costs and how much covers a range of other costs. Nor is any detail provided on the source of the data. In essence, the number cannot be independently replicated or tested. This contrasts with the approach adopted by n/e/r/a for the ACCC, and accepted by the EER/RU modellers. The n/e/r/a data is sourced from BT and all the carriers submitting ARMIS accounts. It can therefore be replicated.

- 121 Secondly, while the ACCC - n/e/r/a's data share with CostQuest the potential problem of reliance on data in different labour cost environments, they mitigate this by expressing these costs as a percentage of direct opex costs, rather than as a mark-up on capital. Such a mark-up avoids many of the potential issues of non-comparability of data that arise from mark-ups on capital. In particular, the mark-up can be expected to remain the same in low and high labour cost states as labour costs affect both the numerator and denominator equally.
- 122 Thirdly, n/e/r/a adjust the mark-up to exclude costs that are not common to interconnect services, and adjust for environmental factors. They do this in an open, transparent way. CostQuest do not make any such adjustments.
- 123 Finally these costs, and their appropriateness for this part of the world, have been scrutinised and debated in the course of regulatory proceedings in Australia. In contrast, neither Telecom nor the Commission have access to the source of CostQuest numbers, nor indeed is it possible to ascertain their source.
- 124 Given all of this Telecom finds it extraordinary that the Commission prefers CostQuest's numbers to those that the Commission itself suggested in the *Principles Paper*. No reason has been given for resiling from the approach articulated in the *Principles Paper*.

Indirect capex costs

- 125 These costs include items like vehicles, accommodation and IT overheads that are assets rather than operating costs. The Commission has advised that these are covered in the operating cost mark-up, but has yet to specify which one.
- 126 These costs are covered in the *Discussion Paper* where the Commission quoted the ACCC-n/e/r/a study and its use of a 5.16% mark-up on investment costs.⁵⁵ Neither the Commission nor CostQuest provide any

⁵⁵ *Discussion Paper*, Section 10, Table 13.

reasons for omitting these costs so it must be assumed they have been excluded accidentally. These costs need to be identified and included in a transparent manner.

- 127 In Telecom's Section 45 Response the annual cost of this capex was calculated as 5.67% of direct network operating costs. This has been reviewed in the light of the way this mark-up is applied in the EER/EU model the Commission refers to in the *Principles Paper* at Appendix B. The correct mark-up is 1.7% of investment cost (Annex 3).

Working Capital

- 128 No allowance has been made for working capital. Telecom recommends that the annual cost of working capital be set at 0.75% of investment costs (Section E5).

Summary

- 129 Telecom does not believe that there is any dispute about the fact that these indirect opex and capex costs are examples of legitimate forward looking common costs for which a reasonable allocation must be made in this model (but not the TSO). If there were any transparency in the CostQuest 5% mark-up, the parties would be able to test the cost allocation and decide whether it is reasonable or not. The ACCC - n/e/r/a report provides an excellent benchmark by which to judge reasonableness. This was also the Commission's view in the *Principles Paper*, itself the outcome of extensive submissions by the parties and a conference. It is important that the Commission provides clarity as to why it has resiled from the transparent and orthodox approach it outlined in the *Principles Paper*.

D TSO EXCLUSION

Introduction

- 130 Telecom does not agree with the approach that CostQuest have taken to account for the "TSO exclusion", i.e. the exclusion from "forward looking common costs" of any costs incurred by the service provider in relation to a TSO instrument.
- 131 The TSO exclusion has been modelled in a number of different ways in this proceeding. The Commission has selected one method providing a 0.11 cent per minute deduction. All the other methods suggest a much lower deduction ranging from 0.01 to 0.04 cents per minute. Telecom recommends a 0.02 cents per minute deduction as the most appropriate.

The issues

- 132 The requirement to account for the TSO exclusion arises from the definitions in section 1 of subpart 1 of Schedule 1 of the Act. "TSLRIC" includes a reasonable allocation of forward looking common costs. The definition of "**forward-looking common costs**" excludes any costs incurred by the service provider in relation to a TSO instrument. As indicated by Telecom in its section 45 statement, the key interpretation issue is the interpretation of the proviso "*does not include any costs incurred by the service provider in relation to a TSO instrument.*"⁵⁶
- 133 The Commission records its conclusion as to the proper interpretation of this part of the definition at paragraph 353 of the Principles Paper:

"The Commission considers that a purposive approach to interpretation would therefore treat the reference to "...any costs...in relation to a TSO..." as referring to those costs that are recognised as qualifying for contribution from liable persons and the service provider because they were involved in discharging TSO obligations."

⁵⁶ Section 45 Response, paragraph A4.4.

134 Telecom continues to rely on its statements in the section 45 Response.⁵⁷ However, it notes that there appears to be a lack of clarity in relation to this issue. Whilst paragraph 353 of the Principles Paper clearly supports Telecom’s approach, it is noted that CostQuest have drawn on other parts of the Principles Paper to support their view, and Gibson Quai yet other parts.

135 In order to assist in explaining the approaches, Telecom has developed the following table. The table outlines different issues and approaches and shows the financial consequences, depending on which approach, or mix of approaches, to each issue is taken. The options in this table encompass the range of possible modelling approaches.

Option	A	B	C	D	E
	CostQuest		Gibson	Quai	Telecom
Model version used	TSLRIC	TSLRIC	TSO	TSO	TSO
TSO or element cost	Element	Element	Element	Element	TSO
Full or partial costs deducted	Full	Partial	Full	Partial	Partial
Cent per minute deduction from base*	0.11	0.03	0.04	0.01	0.02

* see Annex 4 for details of this calculation

136 In this table:

- **Model version used** distinguishes which modelled costs might be used when making the deduction for the TSO overlap – the TSO version of the model or the TSLRIC version. The key differences (which are driven by different legislative requirements) in the models are:
 - (a) The **TSO model** calculates an incremental cost and makes no allocation of forward looking common costs;

⁵⁷ Appendix 4.

- (b) Each element has a much higher cost in the **TSLRIC model** as that version includes common costs associated with the network element.
- **TSO or Element** cost distinguishes whether the appropriate cost to be deducted is the TSO cost (ie cost minus revenues that make up the TSO number), or the cost of the particular network **element** that is used by Commercially Non Viable Customers (CNVCs).
 - **Full or Partial costs** distinguishes whether what is required to be deducted is the full cost or the portion of costs (27.16%⁵⁸) that is paid by carriers other than Telecom.

Telecom's approach

- 137 Telecom's view is that the most appropriate way of allowing for the TSO overlap is Option E. The amount deducted is slightly lower than put forward in Telecom's Section 45 calculation, as the number is now based on the final 02/03 TSO determination rather than the draft.
- 138 However, CostQuest have chosen the interpretation Option A. Telecom's understanding of the Gibson Quai report is that they would argue for Option C or D⁵⁹. The Commission's *Principles Paper* can support all these options.
- 139 Options B, C, D and E, while calculated quite differently, end up with much the same cost to be deducted. Only Option A, the one used in the Commission's calculation, is very different. In effect the Commission has chosen to apply an interpretation to the legislation that results in the largest possible deduction that could be allowed for.
- 140 The most important driver of the differences between Option A and the remainder is the interpretation of the word 'costs' in the proviso "*does not*

⁵⁸ Determination for TSO Instrument for Local Residential Service for period between 1 July 2002 and 30 June 2003.

⁵⁹ After two pages of discussion they conclude on page 23 that '*Only capacity costs excluding breakage and other fixed costs should be excluded as the others are not recovered from the TSO*'.

include any costs incurred by the service provider in relation to a TSO instrument.”

141 There are three views of this:

- Telecom’s view (supported by paragraph 353 of the Principles Paper) is that ‘costs’ refers to TSO costs.
- Gibson Quai’s view that ‘costs’ refers to the costs as calculated in the TSO model of the network element that is used by CNVCs.
- CostQuest’s view that ‘costs’ refers to the costs of the network element that is used by CNVCs as calculated in the TSLRIC model.

142 The reason for the great difference between the CostQuest approach and all other approaches is that the same network element bears 3 to 4 times the cost in the TSLRIC model than the cost used in the TSO calculation. This is because that element has no common costs associated with it in the TSO calculation; in the TSLRIC calculation the element has a reasonable allocation of forward-looking common costs. Put another way, the CostQuest approach focuses not on the “*costs recognised as qualifying for contribution*” under the TSO, as required by the *Principles Paper*. Rather CostQuest focus on the higher costs, calculated under the TSLRIC assumptions, which include forward looking common costs. By so doing, CostQuest have deducted costs in respect of which Telecom has received no contribution and which it would be correct to recover through the interconnection charge.

143 Paragraph 352 of the Principles Paper helpfully sets out the legislative aim in respect of the “TSO exclusion”, namely: “*...to prevent an element of double counting that might arise if the forward-looking common costs were to include costs that have been accepted by the Commission as claimable as the costs of complying with TSO obligations, and which therefore qualify for apportioned liability between the relevant service provider and other liable persons, under the TSO regime.*” CostQuest’s approach does not reflect this legislative intent. Logically, to quantify the overlap with the TSO calculation, the TSO model should be used.

- 144 If the Commission does not accept Telecom's interpretation of 'costs', then the two alternatives are the Gibson Quai and CostQuest interpretations. The Gibson Quai interpretation is much closer to both a literal and purposive interpretation of the Act than CostQuest's approach.
- 145 The second major difference is whether the costs deducted should be the full costs associated with the TSO or just the other carriers' share.
- 146 Again, it is necessary to focus on the intention of the Act and take a purposive approach to the interpretation of the phrase "*does not include any costs incurred by the service provider in relation to a TSO instrument*". The Commission has accepted that a purposive approach is appropriate in paragraph 353 of the Principles Paper.
- 147 In practice, this requires the Commission to examine all the costs incurred by Telecom in providing services to CNVCs and then exclude the ones that have already been paid for by other carriers by way of the TSO contribution.
- 148 CostQuest argue that this approach results in double dipping as the rest of the industry (which includes liable persons), will incur a share of the TSO costs greater than the percentage amount liable persons are required to contribute under the TSO for those costs common to the core network and TSO.⁶⁰ The CostQuest argument confuses two separate issues. First, industry participants have only paid for their share of the TSO net costs, and the "double dipping" concern is only relevant to that aspect, as this is the only possible cost they could have "paid for twice". Secondly, just like all the other industry participants contributing to the TSO net cost, Telecom is permitted to, and expected to, pass its share of the TSO burden on through its prices, including its interconnection price. Thus, Telecom's share of the TSO net cost is just as validly included in the forward looking common costs of the TSLRIC of interconnection as any other overheads, for example corporate overheads.

⁶⁰ Appendix G-A, page 58.

149 When looking at this point, it is helpful to remember that the Commission's Draft Determination relates to two applications, one from TelstraClear Limited for a determination under section 42 of the Act regarding the price payable for interconnection with Telecom's PSTN and one from Telecom regarding the price payable for interconnection with Telecom's PSTN *and* a fixed PSTN other than Telecom's. The approach taken by CostQuest focuses only on Telecom's contribution and precludes Telecom from recovering its share of the TSO obligation through the interconnection price. In contrast, there is nothing to preclude TelstraClear from recovering its share of the TSO obligation through the interconnection price – indeed, in Telecom's view that is as it should be.

Issues in CostQuest calculation

150 Telecom has one issue with the detail of the CostQuest calculation. In areas where only part of an ESA is not viable, CostQuest (rightly) count these customers and their cost as part of the overlap calculation. In the TSO calculation, Telecom's understanding is that only these customers' variable costs are taken into account. This means for example that none of the fixed costs of the switch is included in the TSO cost calculation as the fixed costs remain to serve the remaining viable part of that ESA. However in calculating the amount that should be deducted from the interconnect price, CostQuest assume a share of the fixed costs as well as the variable costs. Telecom believes this is incorrect on two counts

- there is now an inconsistency between the way the TSO is calculated and the deduction made in the TSLRIC model;
- these fixed costs should not in any event be deducted in either the TSO or TSLRIC models for this group of customers.

E OTHER ISSUES WITH THE MODEL

E1 Switch dimensioning

- 151 Telecom has now formally informed the Commission on two occasions that the way the CostPro model dimensions the interface between the switches and associated RLUs and DLCs is incorrect. Other problems include the use of incorrect line concentration ratios⁶¹, dimensioning the numbers of PMUX's⁶², dimensioning of the number of switches required at a site⁶³. These are detailed in Annex 2 of Telecom's section 45 response. Put simply, it is not possible to carry the traffic allowed for on the network in the way it has been modelled.
- 152 CostQuest acknowledge this on page 8 of Appendix G. They suggest that to change the model would require '*...dramatic changes to the switch logic and processing of the model*'. Telecom has provided the details of what needs to be done to make these corrections and provided a fully corrected version of the switch logic workbook in its Section 45 Response. Despite knowing about this fundamental problem with the model for some seven months, and having the opportunity over that time to review Telecom's proposed corrections to the model⁶⁴, these changes have not been implemented.
- 153 CostQuest suggest (page 10 of Appendix G) that the impact on the interconnect number of implementing these changes is likely to be small (less than a 2% fall in the cost). Telecom disputes that. Had the model been corrected, and the corrected version used in the 02/03 TSO determination, the TSO loss would have been higher. This in turn would have meant that the TSO overlap deduction would have needed to be greater. Thus the impact would have been higher than the 2% fall.

⁶¹ Page 41, paragraph A2.21, Appendix G-A

⁶² Page 41, paragraph A2.23, Appendix G-A

⁶³ Page 42, paragraph A2.25, Appendix G-A

⁶⁴ These are detailed in Annex 2 of Telecom's Section 45 Response and repeated in Appendix G-A of the Commission's report.

154 Telecom considers that it falls well short of good regulatory practice for the Commission to continue to use a model for both the TSLRIC and TSO final determinations that represents a network that cannot carry the traffic being modelled.

E2 Traffic data

155 There are two issues relating to the traffic data:

- CostQuest raise issues around the base data used.⁶⁵ Telecom has already supplied a detailed explanation for this to the Commission and Telecom understands that this is no longer an issue.
- The Commission invites comments on the forecasts of traffic it has used for the 04 and 05 calendar years.

156 As it is possible to use actual data rather than forecasts for most of the period, it makes sense to revise the numbers the Commission has used to reflect actual traffic. The revised numbers are shown in the Table below. This uses actual data for the 04 calendar year, and a trend based estimate for 2005. It is possible that by the time of the conference it will be possible to update the 2005 year forecasts with actual traffic data.

⁶⁵ Appendix G-A page 10.

Call volumes (conversation minutes (000's) for calendar years)

Entire table is TCNZRI

E3 Labour costs

157 CostQuest have undertaken a comprehensive survey of unit labour costs and from this draw two main inferences:

- lower unit labour costs in New Zealand should lead to lower costs in labour intensive activities like trenching and building;
- lower labour unit costs should imply lower opex mark-ups.

158 The inferences CostQuest and the Commission⁶⁶ wish to draw about the effect of lower labour costs on operating costs or mark-ups are not supported either in theory or practice.

159 These issues are dealt with in detail in Annex 5. In summary:

- the impact of lower unit costs was canvassed during submissions on the initial interconnect benchmark. No Party doubts that unit labour costs

⁶⁶ At paragraph 136 of the *Draft Determination*.

are on average lower in New Zealand than many other developed countries. The key issue is what impact this is likely to have.

- the most comprehensive recent study of the impact of different unit labour costs on telecommunications costs came to the conclusion that its impact was not significant.⁶⁷ WIK also now agree with this⁶⁸. This conclusion is not surprising. Labour is just one cost among many. CostQuest specifically draw attention to two examples – trenching and building – where other factors such as difficult terrain (trenching) or earthquake prone conditions (buildings), do outweigh any benefits from lower labour costs.
- basic economics would suggest that if unit labour costs are lower, then firms would employ more labour relative to capital than elsewhere. This in turn suggests that *a priori* opex mark-ups are as likely to be higher as lower.

E4 Land and buildings mark-up

160 The Commission uses a mark-up of []**CCRI** applied to switching investments on the basis that that was what was used in the TSO model. This does not adequately recover land and building costs as it excludes those costs associated with transmission. In Appendix G-A at page 8, CostQuest suggest factors of less than half the levels Telecom used in the Section 45 response. The difficulty with the comparison is that CostQuest have not made available their source material. Telecom believes that this US based mark-up is applied to total core network costs, not the traffic related switching investment portion as used in this model. On the same basis the mark-up implied by the PwC forward looking estimate based on Telecom data would be []**TGNZRI**%, within the 10-15% range.

⁶⁷ n/e/r/a; BT Efficiency: Network Study 2003, A report for Ofcom; May 2004: page 33 section 4.5.3.2.

⁶⁸ WIK & Cullen International SA: *Universal Service in the Accession Countries*: Annexes to Main Report, June 2001, pages 4-5.

- 161 Telecom recommends that the mark-ups currently in the model should be revised to reflect the actual costs of building in NZ conditions as shown in Annex 6.
- 162 In Annex 6 Telecom provides more detail about its actual experience in this area and the costs allowed for in this factor. Telecom rejects CostQuest's implicit assumption that these costs can be more than halved in the New Zealand environment.
- 163 First this assumption is based on data neither Telecom, nor the Commission, has access to. It is not possible even to assess whether like is being compared with like, let alone the relevance of this data (sourced in the completely different US environment) to New Zealand.
- 164 Secondly it is probable that, if like was compared with like, the PwC estimate is within the CostQuest range.
- 165 Thirdly the CostQuest suggestions would not appear to take any account of the special factors, and in particular seismic bracing, that make building costs higher in New Zealand.

E5 Working Capital

Introduction

- 166 The Commission's model makes no allowance for working capital. Based on work done by PwC, Telecom has estimated an appropriate annual working capital estimate equivalent to 0.75% of investment costs. The Commission should allow for this in its model – working capital is a real cost for any operator.
- 167 The PwC estimate is based on a detailed analysis taking into account the nature and timing of payments and receipts of different cost and revenue streams.

Categories of working capital

- 168 The main categories of working capital are:

- **Stock:** Stock comprises engineering stores for the core network including tools and various spares stores items and miscellaneous items such as stationary and office supplies. The quantity and value of such stores is very small. The reason for this is that high value stores items are usually covered within capital contracts with equipment vendors. Stock is calculated as a percentage of gross network investment. The percentage is based on observed stock levels.
- **Income debtors:** This debtor relates to accrued revenues relating to Core Network services being modelled. Revenues relating to these services are dependent on the components of the Core Network. As a result, there is assumed to be a constant and homogenous relationship between the cost of core network components (i.e. cost including cost of capital) and the value of debtors. A slight complication arises because the price of the component must include the return on capital on the debtor which itself is dependent on the price. However this is easily resolved.
- **Prepayments:** Certain expense items may be paid in advance. Such expenses would typically include property and equipment lease payments. Prepayments are calculated based on assumptions regarding the proportion of costs which are prepaid and the average difference between payment date and date of collection.
- **Cash and short term investments:** It is apparent that a certain level of liquidity is required by all operators to finance the business. The appropriate level of liquidity for a particular company is an arbitrary assumption. Telecom has assumed a relationship between the frequency, size and unpredictability of outgoings, and the transaction costs associated with raising finance. Cash requirements are therefore estimated as a proportion of outgoings. The proportion is derived from Telecom budget numbers.
- **Provisions:** It is not clear what if any provisions would be relevant to a greenfields operator of the type envisaged by the regulator. What is clear is that if any provisions were to be included, the corresponding charge against profit would also have to be included. No provisions are included here.

- **Capital creditors:** Capital creditors are estimated with reference to the observed relationship between gross investment and the average credit settlement term.
- **Current non payroll creditors:** Current creditors are estimate with reference to the observed relationship between non-payroll opex and the average credit settlement term.
- **Payroll creditor:** Current creditors are estimated with reference to the observed relationship between pay and total opex. Telecom assumes that salaries are paid one month in arrears.

F REASONABLE RETURN ON CAPITAL

- 169 In the draft determination, the post-tax weighted average cost of capital (WACC) for the regulated interconnection line of business fixed by the Commission is 8.8%. This is significantly different from the WACC proposed by PwC⁶⁹ of 11.1%. A return of 8.8% is not reasonable compensation for the risk of investing in the assets required for the regulated interconnection line of business.
- 170 Many of the issues relating to the calculation of the WACC traversed in the draft determination have been discussed extensively during the consultations on determining the net cost of the TSO. The Commission's position on methodology and parameter values is generally consistent with its 2001-02 and 2002-03 TSO determinations. Telecom's position in these submissions is consistent with its previous cost of capital submissions on Interconnect Services and the TSO net cost calculation.
- 171 This section is restricted to three key areas, where the difference between Telecom and the Commission is most material:
- Limitations of the Capital Asset Pricing Model (CAPM)
 - Estimating the asset beta for the CAPM
 - The term of the risk free rate.

Limitations of CAPM

- 172 The Commission appears to take the view that CAPM provides for a reasonable return⁷⁰. Its justification is "*that adjusting the CAPM to compensate for unsystematic risk would be arbitrary and ad hoc*". The Commission relies on the Wright, Mason and Miles⁷¹ study on the cost of

⁶⁹ PricewaterhouseCoopers, *The Cost of Capital to be Applied in Calculating the Total Service Long Run Incremental Cost of Interconnection Services*, 27 August 2004.

⁷⁰ *Draft Determination*, para. A.10.

⁷¹ Wright, S., Mason, R. and D., Miles, *A Study into Certain Aspects of the Cost of Capital for Regulated Utilities in the UK*, Report commissioned by the UK economic regulators and the OFT, 13 February 2003, page 76.

capital for regulated utilities in the UK, which concludes that *"there is no clear successor to the CAPM for the practical cost of capital estimation."*

173 Wright *et al.* make additional notable points in their conclusion:

"The Capital Asset Pricing Model (CAPM) is (still) widely-used to estimate firm's costs of capital. There is considerable evidence of empirical shortcomings in the CAPM; but its clear theoretical foundations and simplicity contribute to its popularity."

After discussing several alternative models for estimating the cost of capital, the authors say:

"In summary: the empirical shortcomings of the CAPM are known. Alternative models to address this issue have their own shortcomings – weak theoretical foundations and empirical challenges. In [the authors'] view, there is no one clear successor to the CAPM for practical cost of capital estimation."

174 This is consistent with Telecom's position regarding CAPM, which is that as a gauge of the expected return on real world investments the CAPM has acknowledged shortcomings.

175 The fact that there is considerable evidence of empirical shortcomings means that the deficiencies in the CAPM cannot be simply ignored. There is sufficient theoretical and empirical evidence to determine, at least, whether a reasonable rate of return for interconnect services is likely to be greater than or less than that estimated using the CAPM alone. It is clear that in this case the CAPM will produce a result that is biased downward, and a reasonable rate of return is greater than the CAPM result.

176 The limitations of CAPM of particular relevance here are with respect to systematic risk. Fama and French (referred to by PwC⁷²) conclude that the traditional CAPM over estimates the slope of the capital market line. It follows that the CAPM is likely to significantly underestimate the reasonable rate of return for a company if its beta is significantly less than one.

⁷² PricewaterhouseCoopers, *The Cost of Capital to be Applied in Calculating the Total Service Long Run Incremental Cost of Interconnect Services*, 27 August 2004, Section 7.

177 As noted by the Commission, the deficiencies of the CAPM are widely acknowledged. In the current context, there is a systematic under-estimation. The Commission should remain focused on making the best estimate of the reasonable rate of return, and the Commission must do more than assert all possible fixes to the CAPM's acknowledged deficiencies and biases are ad hoc and arbitrary.

CAPM Asset Beta

178 In its conclusion on the asset beta the Commission states:

"... In the regulatory decisions surveyed, the asset betas adopted lie between 0.5 and 0.96. This range is consistent with the range derived from the analysis of asset betas based on market data. Therefore, based on available evidence and Telecom/PwC estimate of 0.8, the Commission considers that an appropriate range for Telecom's fixed PSTN beta is between 0.5 and 0.8.

*The Commission proposes to use the mid-point of this range, 0.65, as its estimate of Telecom's fixed PSTN asset beta for the purposes of this determination.*⁷³

179 While this is not easy to interpret, Telecom's understanding is that the Commission arrived at its appropriate range for Telecom's fixed PSTN beta by taking the intersection of its regulatory decision range and its market data range.

180 PwC's estimate for the PSTN asset beta of 0.8 is the mid-point of the plausible range 0.75 to 0.85. PwC's range falls within the Commission's survey of regulators' decisions, which lends support to PwC's results. The upper bound for PwC's range of 0.85 is less than the Commission's upper bound of 0.96, whereas PwC's lower bound of 0.75 is significantly greater than the Commission's lower bound of 0.5. However, PwC's range overlaps the Commission's view of the market data. The main differences between the PwC range and the Commission range are due to:

- The marked difference between the asset betas for US and non-US telecommunications companies. The Commission suggests that the European telecommunications companies it has in its sample have

⁷³ *Draft Determination*, paragraphs A.68 and A69.

higher betas because of their greater overseas operations, and for this reason it places little or no weight on the non-US data. The Commission provides no evidence to support this. However, similar US-European asset beta differences are observed in other regulated industries where overseas operations are unlikely to be a factor at all (e.g. electricity). Telecom submits the Commission has not justified placing less weight on the European telecommunications data.

- The Commission considers the effect of differences in market-wide leverage, yet does not incorporate the effect of differences in industry weights, as between markets from which comparator company beta data is sourced. PwC has demonstrated that the industry weight effect is material when seeking to transpose US telecommunications firm asset beta data to the New Zealand context. The Lally-Swidler methodology, which corrects for this effect, was presented to the Commission but is not considered at all in the draft determination.
- The Commission continues to make use of the ACCC PSTN asset beta estimate of 0.5, despite it being made aware of the fundamental flaw underpinning this figure (as fully explained by PwC at the 2004 TSO conference and in subsequent reports). The Commission relies on ACCC reaffirming this asset beta figure in a recent regulatory decision⁷⁴. However, the ACCC did not revisit its beta analysis. PwC is available to assist the Commission in any discussion with the ACCC to determine whether the ACCC did revisit its beta analysis, and in particular whether it addressed this flaw. Until the ACCC can confirm this flaw has been addressed, the Commission should remove the ACCC figure from the Commission's regulator analysis (Table A3), which would result in a regulator asset beta range of 0.64-0.70 to 0.96.

181 A complementary approach for estimating the fixed PSTN beta is to disaggregate Telecom's overall asset beta. The Commission gives Telecom's overall asset beta only limited weight, and it does not attempt to reconcile the beta for regulated interconnection (and other regulated activities, such

⁷⁴ ACCC. *Assessment of Telstra's undertakings for PSTN, ULLS and LCS Final Decision, December 2004.*

as the TSO activities) to Telecom's overall observed beta. In its draft determination the Commission states that⁷⁵:

"... it does not seem practically possible to disaggregate a notional asset beta for interconnection services from Telecom's fixed PSTN services in an objective and robust manner."

And, in the next paragraph:

"Disaggregating an overall beta into component parts corresponding to a firm's different activities that are not directly observable, presents methodological and data availability issues. As a result, it would be difficult to achieve and would involve a degree of judgment."

- 182 Telecom agrees that there are issues with disaggregating the asset beta. However, there are widely recognised methodologies for addressing these issues. PwC demonstrates this can be done and has provided the Commission with a comprehensive "full-information" telecommunications company segmental beta analysis⁷⁶.
- 183 Nevertheless, the Commission proceeds to classify telecommunications firms as either "pure wireline" or "integrated". This is in spite of its own reservations and the fact that robust methodologies for disaggregating the asset beta are available. The outcome of this analysis is arbitrary, since there are in fact no listed pure wireline firms. Both categories of firm in the sample operate in a range of activities, as is clear from the PwC analysis.
- 184 By disaggregating Telecom's asset beta and surveying the relevant comparators, PwC have taken two approaches to estimating the asset beta, whereas the Commission has only taken one. PwC also take into consideration the limitations of CAPM identified by Fama and French, as noted above, regarding its bias to underestimate the asset beta for firms with betas significantly less than one. With this additional evidence provided, PwC has been able to narrow the range of plausible asset betas and to conclude with an asset beta of 0.8.

⁷⁵ *Draft Determination*, paragraphs A.38 and A.39.

⁷⁶ PricewaterhouseCoopers. *Comments on the "TSO Weighted Average Cost of Capital" report prepared by the Commerce Commission dated 19 May 2003, 13 June 2003, pages A26-A31 and PricewaterhouseCoopers presentation at the TSO conference, 14 August 2003.*

Term of the Risk Free Rate

- 185 The Commission takes the position that the term of the risk free rate is the same as the regulatory period. Telecom's position is that the term of the risk free rate should be the same as the expected economic life of the asset base. Telecom disagrees with the Commission position as it is inconsistent with standard commercial practice, with the economic concept of long run cost, and the application of the tilted annuity calculation.

G OTHER ISSUES

G1 Commencement and Expiry of the Pricing Review

186 Telecom does not agree with the Commission as to the commencement and expiry dates proposed in the determination and relies on previous submissions.

187 The parties to the determination have separately agreed if and how any retrospective adjustments should be made, including how interest should be calculated. It is therefore not necessary for the Commission to determine this issue. Telecom does not agree that Section 52(b) of the Act empowers the Commission to impose a condition in the final determination requiring the parties to repay any overpayments, or dealing with interest.

G2 Geographical Deaveraging

188 In its discussion paper the Commission raises the possibility of geographic de-averaging of the interconnect number. It has also required that the modelling be detailed enough to allow geographically de-averaged prices to be set.

189 Telecom endorses this approach. The Draft Determination does not provide a deaveraged set of prices and Telecom considers this should be rectified in the Final Determination. Such de-averaging better reflects the structure of Telecom's costs and thus produces a more economically efficient outcome by providing better cost signals to other carriers. Such improved cost information will also maximise long term benefits to end users.

G3 Averaging the rate over time

190 The Commission's modelled rate declines over time. The issue then is whether the Commission should stipulate an averaged rate over the three years or allow for the rate to change each year. Telecom believes the latter approach is more in keeping with the aim of the interconnect price which is to send the correct market signals to participants.

G4 Minimum Call duration

191 Telecom recommends that the present minimum call duration be retained.

G5 Call Types costs

- 192 Telecom agrees with the Commission that cost differences for toll free and premium rate calls are unlikely to be materially different from toll bypass. These calls comprise [] **JTCNZRI**% of the Decision 477 interconnect call minutes.

ANNEX 1: NEAX SOFTWARE FILE COSTS

- A1.1 The Commission's model still does not include any costs associated with NEAX Software development. In Appendix G-A at page 33 CostQuest comment that the software file costs need to be separated into lines features and traffic related as the software supports both. Telecom agrees. In addition Telecom has separated out those investments related to the development of ISDN, CENTREX, and other misc services from the previously quoted total of \$[]TCNZRI for non-Interconnect software development. The remainder (\$[]TCNZRI) should be allocated by the model across the total PSTN call volume.
- A1.2 The review of this cost revealed that a small portion of the \$62.67M was identified as being Interconnect related, and so needs be added to Telecom's previously quoted figure of \$[]TCNZRI for Interconnect-related software. The resulting \$[]TCNZRI of Interconnect-related software investment should be allocated by the model across By-pass Interconnect, Local Interconnect, and Fixed<->Mobile call volumes.
- A1.3 This is a capital cost and needs to be annualised. Telecom does not agree with CostQuest's recommendation⁷⁷ that the same annualisation factors as for the switch hardware should be used. Telecom's view is that a separate account is warranted, as typically a 5-yr life is applicable to software investment and price declines are less. Table A1.1 below shows Telecom's recommended annuity parameters and the resulting annualisation factor (0.292). Operating costs are estimated at []TCNZRI% reflecting Telecom's actual experience.
- A1.4 This is applied to the call traffic as indicated in Table A1.1 to give separate costs for both the cost of the interconnect software and the cost of the general software.

⁷⁷ Appendix G-A page 6.

Table A1.1: Calculation of NEAX software file cost and allocation to call types

ENTIRE TABLE IS TCNZRI

ANNEX 2: ALLOCATION OF NETWORK OPERATING COSTS

Introduction

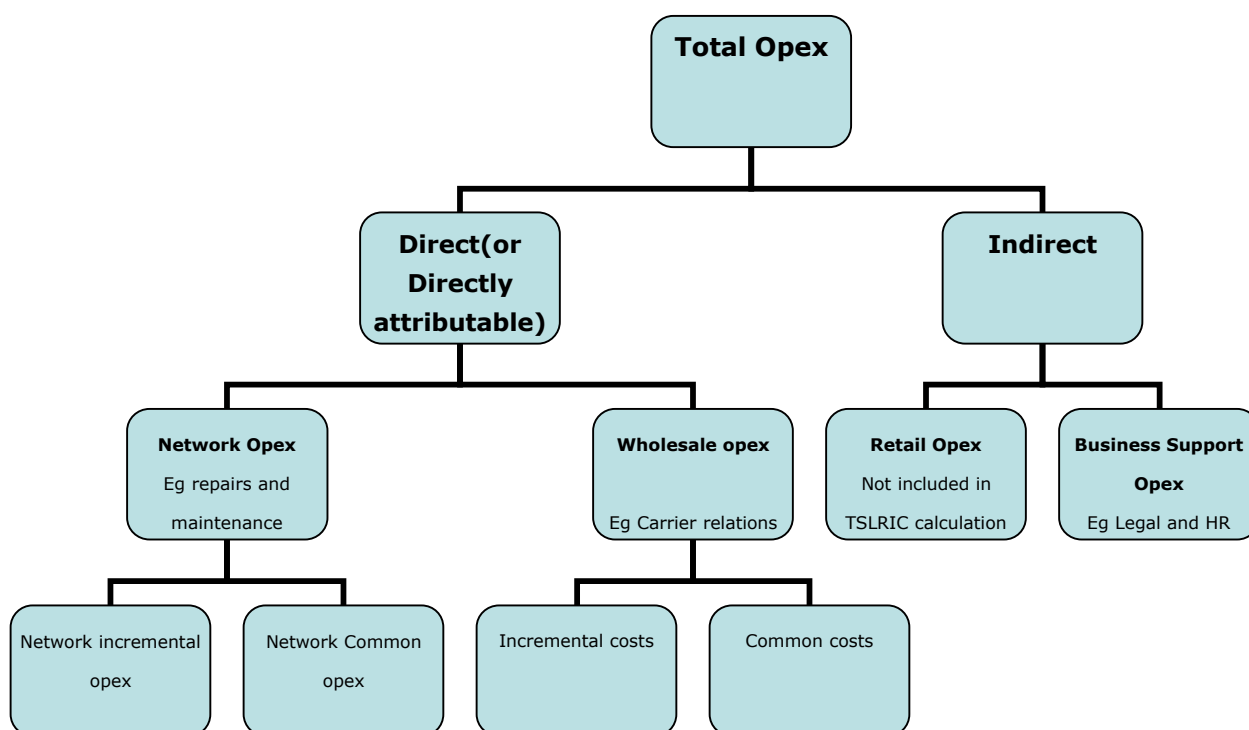
- A2.1 This annex provides a detailed explanation of the issue that is summarised in section C3 of these submissions.
- A2.2 Network Operating costs are a key area where the differences between the approach used by Telecom and that used by CostQuest lead to quite different results. In moving away from the mark-ups and principles behind those expressed in the Principles Paper, CostQuest have both relied on data from selected US incumbents in a way that is neither transparent nor replicable, and mis-used Telecom data.
- A2.3 The definition of TSLRIC in schedule 1 of the Act requires the Commission to include “a **reasonable** allocation of forward-looking common costs.” (emphasis added). Such common costs include network common operating costs. These are not relevant in the TSO context, but must be included in the TSLRIC context. CostQuest have either failed to include network common operating costs, or made an unreasonably low estimate of these.
- A2.4 The approach adopted by CostQuest:
- does not meet the requirements of the Act; it does not include a *reasonable* allocation of forward-looking costs because a major element of such costs has been entirely excluded; and
 - is different to the approach adopted in every country that uses TSLRIC as an interconnect pricing principle.
- A2.5 Telecom urges the Commission to follow well worn regulatory precedent.
- A2.6 In this section Telecom:
- defines various types of operating costs to ensure consistency in the way that these terms are used;
 - discusses regulatory precedent for modelling opex costs;

- outlines the approach adopted in Telecom’s Section 45 Response;
- criticises the CostQuest approach. Neither the Commission nor CostQuest have been entirely clear on how they have approached the allocation of common network operating costs. The argument therefore focuses on the two possible approaches adopted:
 - Zero allocation of direct network common operating costs;
 - The inadequacy of the network opex mark-up (if there has been such a mark up);
- discusses the size of the mark up;
- makes recommendations as to how the Commission should change its current model to ensure that it includes a reasonable allocation of forward-looking common costs.

A2.7 In Annex 4 Telecom looks in some detail at the issue of the transferability of opex mark-ups between countries and carriers in the light of CostQuest’s concerns over differential labour costs.

Definition of terms commonly used

A2.8 There appears to be considerable confusion over operating costs (opex) and how this should be allowed for in the modelling. There are also differences in terminology. To help clarify the debate, it is useful first to provide a definition of opex. The hierarchy of operating costs is illustrated below.



A2.9 Opex can be divided into two groups: direct (or directly attributable) and indirect (see for example the Commission's *Principles Paper* at paragraph 300). Direct costs are equivalent to the Act's definition of incremental costs – they are all costs that can be reasonably attributed to the service in question. Indirect costs are the remainder.

A2.10 Whether costs are direct or indirect will not be the same for every service. It is necessary to look at each service and determine whether, for that service, the costs are direct or indirect. By way of example:

- For interconnect services (illustrated in the diagram above) intercarrier relations are part of the direct cost and retail costs are excluded altogether;
- For TSO PSTN calling intercarrier relations are not relevant as a direct cost, but retail costs are now a direct cost.

A2.11 Due to the service specific nature of these terms, it is more useful to think of operating costs under four functional groupings: network opex, wholesale opex, retail opex, and business support costs (commonly referred to as overheads). As would be expected, some of these costs are

relevant in some contexts and not others. For example in the TSO context only two of these are considered: network opex and retail opex. In the TSLRIC context (illustrated above), retail is not relevant, but the other three are.

A2.12 Telecom understands that this is common ground, although it is noted that in paragraph 130 of the Draft Determination the Commission refers to “retail costs which includes the inter-carrier relations, product planning, and regulatory costs of providing an interconnection service”; Telecom considers intercarrier relations, wholesale product planning etc to be wholesale costs. CostQuest appear to refer to such costs as retail/wholesale.

A2.13 Each of these costs can be further divided into subgroups, with that division dependent on the context. In the TSO context, for example, the focus is on what costs are incremental (in the long term) and what costs are common. Thus each of the two opex costs included for TSO (network and retail) are divided into incremental and common costs, depending on what costs could be reasonably be attributed to a subset of customers (CNVCs). So for example, network opex costs are divided into incremental and common and only the network incremental opex costs are included in the CostPro model. In the TSLRIC context a reasonable allocation of forward-looking common costs is required by the Act so that, in this example, network common opex costs must be included.

A2.14 It is clear that the labelling of costs as incremental or common, and the inclusion or otherwise of these costs, depends entirely on the context. This point is well made in the Commission’s recent paper on the Application of the Final Pricing Principle for Resale of Telecom Retail Service. Further, what is incremental or common is carrier specific – every carrier will have a different mixture of fixed and variable costs according to its own unique cost structure.

A2.15 This raises two issues relevant to CostQuest’s analysis:

- Costs that were deemed incremental or avoidable in the TSO context cannot be assumed (as CostQuest implicitly do) to be incremental or avoidable in the completely different TSLRIC context;

- It is not possible or reasonable to combine (as CostQuest implicitly do), a network incremental cost from one carrier with a network common cost from another quite different carrier, in a different country.

A2.16 These are fundamental flaws in the CostQuest analysis of opex costs, which represent a major departure from the Commission's Principles Paper. Telecom submits that the Commission should revert to its earlier principled approach.

A2.17 It may be helpful to make one more distinction – between horizontal common costs and vertical common costs. This is used in the Commission's Application of the Final Pricing Principle for Resale of Telecom Retail Service paper. In the TSLRIC context, horizontal common costs refers to the network opex common cost identified above. Vertical common costs are the business support costs (overheads).

Regulatory precedents for modelling opex costs

A2.18 There is a substantial body of regulatory precedent on how to calculate a TSLRIC interconnect cost. The convention adopted in every jurisdiction Telecom is aware of where a TSLRIC interconnect cost has been modelled is as follows:

- Estimate the total direct costs (incremental and horizontal common) including capital and opex costs associated with all the network elements which are used by the interconnect service. This estimate **excludes** costs that are associated with the access and data networks **except** where these are associated with elements that are shared with the PSTN core network.
- Capital costs associated with each element are then allocated to the interconnect service in a two stage process. First, direct capital costs are allocated to the PSTN (as opposed to the access or data networks which share the use of some elements) through structure sharing assumptions. Secondly, the resulting PSTN capital costs are allocated to every PSTN service, depending on the use that service makes of that element.

- Allocate direct operating costs to the relevant capital cost driver – in this case to the relevant network element. This allocation is invariably done (in TSLRIC jurisdictions) by expressing the network opex as a percentage of the capital investment associated with the element. This allows the total direct network opex (ie incremental and common) to be allocated to the PSTN, and then to the interconnect service, in exactly the same way as its associated network element. It is important to note that this means network common opex costs are allocated, and are allocated against network elements.
- Finally, add a mark-up for indirect opex costs.

A2.19 This calculation procedure is the method followed in every TSLRIC jurisdiction to allocate common costs. It is the procedure outlined in the Commission's *Principles Paper*. However it has not been followed in the Commission's modelling.

Approach adopted in Telecom's Section 45 Response

A2.20 In responding to the Commission's request to calculate the price payable for interconnect pursuant to Section 45 of the Act Telecom was required to follow the Commission's methodology for calculating operating costs outlined in the *Principles Paper*. This approach is well summarised by Gibson Quai:⁷⁸

"In modelling interconnection services, operational and maintenance costs and indirect costs should be calculated using percentage mark-ups applied to the capital asset base.... The use of the same rates for the TSO and TSLRIC modelling should reduce the risk of over or under recovery and is likely to offer long-term modelling benefits. However the Commission notes that some adjustments may be required, due to differences in how the Act defines costs for the TSO and interconnection services.... Should the TSO modelling not provide an appropriate mark-up, then the mark-up rate should be developed after considering the rates used by other regimes."

A2.21 The Commission's first objective is to be consistent with the relevant operating costs in the CostPro model used in the TSO. However, the Commission recognises that in the TSLRIC context it is necessary to make

⁷⁸ Appendix H, page 14, referring to the *Principles Paper* paragraphs 327-329.

a reasonable allocation of forward looking common (operating) costs because of the relevant definition in the Act. The TSO opex numbers in the CostPro model specifically exclude both direct network common operating costs, and indirect common operating costs. Accordingly, to account for the forward-looking common (operating) costs, Telecom adopted the most appropriate of the three mark-ups suggested by the Commission.

A2.22 The Commission suggested three other regimes to draw such data from:

- ACCC – n/e/r/a modelling in Australia;
- EER-EU Adaptable Interconnection model; and
- Data from the German Network provided by WIK.

A2.23 Telecom disagrees with CostQuest as to which data is most appropriate. Telecom discarded the WIK data as being specifically USO orientated and therefore excluding any common costs. As expected, the WIK mark-ups align closely with the mark-ups used in the TSO modelling, which were based on Telecom data and also exclude common costs. Gibson Quai support Telecom's interpretation (Appendix H page 14). CostQuest see the WIK data as supporting their low mark-ups (Appendix G-A page 29) which were also based on the Telecom TSO data which excluded common costs. In essence, the parties either explicitly or implicitly agree that the WIK data excludes network common opex costs. They are not suitable as a measure of a mark-up which includes common costs.

A2.24 Telecom followed the Commission's guidelines in the Principles Paper, by using the ACCC-n/e/r/a mark-up. As outlined above, Telecom considers this data appropriate, because it is current, was based on a new entrants' costs, was developed in a similar context from a jurisdiction with similar conditions and it was subjected to regulatory scrutiny and debate. This mark-up includes network common opex costs. It therefore accounts for the TSLRIC requirement to account for a "*reasonable allocation of forward looking common costs*", in this context direct network common operating costs.

Problems with the CostQuest approach

A2.25 CostQuest and Telecom agree that allowance should be made for direct wholesale costs associated with interconnect and indirect operating costs (although they differ in how to calculate these costs – this is addressed in Section C1).

A2.26 The disagreement is over the allocation of direct network common operating costs. Telecom accounted for these costs by adding the ACCC mark up. However it is not clear from the Draft Determination whether the Commission believes that:

- there should not be any allocation of these costs. If this were the case the Commission would be suggesting that a reasonable allocation of these costs is in fact no allocation – ie zero. On the basis of overwhelming regulatory precedent Telecom disagrees.
- CostQuest have made an adequate allocation implicit in either their application of the same opex mark-up as in the TSO but to a higher capital base, or in their 5% add-on, or in both. Again, on the basis of overwhelming regulatory precedent in TSLRIC jurisdictions, Telecom argues that even if an allocation has been made it is unclear and inadequate.

A2.27 The remainder of this section addresses these two issues and ends with recommendations on how the Commission could proceed from here.

Zero allocation of direct network common operating costs is not appropriate

A2.28 In the *Draft Determination*, the Commission has emphasised the need for direct operating costs to be consistent with the TSO.⁷⁹ If CostQuest have, in fact, made zero allocation of direct network common operating costs, consistency is not a good rationale.

⁷⁹ Refer, inter alia, paragraphs 7, 137, 147 of the *Draft Determination*.

A2.29 Telecom accepts that where possible the TSO and CostPro models should be consistent. However, consistency is not possible in all cases (for example in the structure sharing assumptions) because of the different definitions of costs in a TSLRIC and TSO environment. Given that it is accepted that the models must differ in some respects, consistency alone is not an adequate reason to override a legislative requirement for a reasonable allocation of common costs. Such an approach would not be consistent with the guidelines in the *Principles Paper*, outlined above. Further, the Commission would be holding a unique position among regulators world wide in not allowing such a recovery in a TSLRIC environment.

A2.30 The Commission gives no reason why these particular costs should be consistent with the TSO, while accepting other related costs can be different. The best illustration of the recognition that there must be some differences between the TSO and TSLRIC models is the structure sharing assumptions, which are completely different between the CostPro models used in the TSO and TSLRIC models. This means that the share of the network elements' cost allocated to the PSTN is much higher in the TSLRIC than in the TSO model. The explicit reason for this change is that these network elements' common costs need to be allocated in the TSLRIC model whereas they are not allocated in the TSO. It is inconsistent for the Commission to accept the need for the TSO CostPro model to change to allow common network element costs to be recovered, while at the same time not allowing a recovery of the common network opex costs that are driven by these same elements.

A2.31 For this reason, it is not appropriate to make zero allocation for common network operating costs.

The inadequacy of the network opex mark-up.

A2.32 One interpretation of CostQuest's methodology is that the network incremental opex costs are covered by the 2.8% and 4.3% mark-up (page 31 of Appendix G-A), while all common costs are included in the 5% mark-up (pages 31 and 32 of Appendix G-A). This 5% mark-up is derived from offshore incumbents' data. Nowhere does CostQuest define exactly what costs the 5% mark-up is designed to cover. While it appears to cover

business support costs (overheads), and possibly indirect capex and the NEAX software file costs,⁸⁰ it is not clear whether network opex common costs (horizontal common costs) are included or not.

A2.33 To answer this it is useful to understand just what the incremental network opex cost covers. On page 31 of Appendix G-A CostQuest note Telecom's view that the avoidable (incremental) network opex costs for the core network were \$[]TCNZRI. However, CostQuest fail to identify that these costs are avoidable in relation to Commercially Non-Viable Customers (CNVCs). In this case, the network opex common costs that would be relevant are those common costs that are not driven by CNVCs. It is inconceivable that CostQuest could estimate this number from US carrier data that:

- does not separate out network opex costs into incremental and common and
- even if it did, would not separate it on the basis of CNVCs.

A2.34 For this reason it is not credible to argue that the 5% adequately covers network opex common costs.

A2.35 Since CostQuest do not explicitly address this point, the only other available interpretation is that the network opex common costs are in fact included in the 2.8% and 4.3% numbers referred to at paragraph 131 of the Draft Determination. CostQuest raise that possibility at the top of page 32 in Appendix G-A, and also in the discussion on Page 8 of Appendix B where they say '*... what are considered shared costs in a TSO environment ...become direct costs in an Element costing environment*'. To address this requires some understanding of the numbers Telecom has given the Commission in the TSO hearings.

A2.36 Telecom has already noted that these numbers were the incremental network opex costs associated with the core network when considering costs common or incremental to changes in customer numbers. Telecom

⁸⁰ *Draft Determination*: Appendix G-A page 68 commentary re para A6.10 where the 5% is said to also include some common switching costs.

does not accept that these costs are necessarily appropriate estimates of avoidable network opex costs when the service in question is the interconnect service rather than serving CNVCs. Telecom has not asked PwC to make that estimate, nor has it made that estimate itself. CostQuest have not sought a new appropriate estimate from Telecom, nor have they provided one themselves. To the extent that CostQuest are using data on incremental opex costs from the TSO as appropriate indicators of incremental network opex costs in a TSLRIC model, this is highly misleading and a misuse of the Telecom data.

A2.37 But even if CostQuest are near enough to an appropriate estimate of incremental costs, and the WIK data in Appendix C of the Principles Paper suggests they could be, there is still a problem. CostQuest point out that if the 2.8% and 4.3% mark-ups are applied to the TSLRIC model, the cost is now \$[]CCRI rather than \$[]TCNZRI. It is then suggested that this difference provides a contribution to common costs (appendix G-A, top page 32). That is not the case. First the \$[]TCNZRI quoted by CostQuest excludes costs associated with RLUs. Part of the \$[]CCRI may⁸¹ simply be the addition of these costs. Further the \$[]CCRI is still an avoidable (incremental) cost. It is higher than the \$[]TCNZRI simply because much more of the network is being included in the TSLRIC calculation than it was in the TSO calculation. But the cost is still an avoidable cost and there can therefore be no contribution here to any common cost.

The size of the network opex mark-up

A2.38 It would be unreasonable of the Commission not to allocate any common network opex costs. Two possible estimates that could be argued to be in the CostQuest opex cost mark-ups have been shown to be theoretically and practically not possible. It is at this point CostQuest suggest on page 32 *'The bottom line is that we believe Telecom's rates are overstated.'* In this section Telecom considers whether this belief is based on reasonable grounds.

⁸¹ We say 'may' as the 2.8% and 4.3% are not Telecom numbers and they may have been derived from investment costs that excluded RLUs.

A2.39 The first point is that the mark-ups that are referred to as '*Telecom's rates*' are in fact the mark-ups used by the ACCC in Australia. They were derived from data supplied by a new entrant Optus in the regulatory hearings on interconnect price modelling. It is difficult to think of a source of data that could possibly better meet the Commission's desire for a transparent bottom up mark-up based on a new entrant.

A2.40 CostQuest on page 29 imply that n/e/r/a may have misled the ACCC on the derivation of these data. This is unlikely given the stature of this company and the fact that Optus, who was an active participant in the conference, would have soon alerted the ACCC if its data had been misused.

A2.41 CostQuest follow this by suggesting that the ACCC/Optus mark-ups are 3 – 11 times what they (CostQuest) '*... have seen throughout the industry.*' (page 29 Appendix G-A). Gibson Quai are notably more circumspect (page 14, Appendix H).

A2.42 Telecom disagrees with CostQuest's assertion that the rates used by the ACCC are excessive. Certainly one would expect Telecom's network opex mark-ups (including network common opex) to be of this order. It is possible that the data CostQuest might be referring to, and Gibson Quai are certainly referring to, is the incremental opex costs that are often associated with equipment suppliers. These invariably do not cover network common costs (on the basis that that cost is the network operators cost not the vendors) and are indeed much lower. But the essential point is that the mark-up here needs to cover network common opex costs as well.

A2.43 Telecom considers that:

- in the face of the powerful evidence from a new entrant Optus in a similar environment (Australia), and
- Telecom's own experience,

it is unacceptable simply to reject the Commission's *Principles Paper* recommendation and assert, without offering any other evidence at all, that these numbers are just too high.

Recommendations

A2.44 Telecom recommends that:

- the Commerce Commission reconsider its implicit or explicit decision to allocate no network opex common costs. This is probably the largest single item of opex costs.
- the Commerce Commission follow accepted regulatory precedent and use total direct network operating (ie including incremental and common) cost as a mark-up on investment costs. The Optus data used by the ACCC appears ready made for this.
- if the Optus data is used, the Commission will need to make an appropriate allowance for network management.

A2.45 If the Commission intends to use any opex cost data sourced from Telecom in its final determination, Telecom should be consulted beforehand on the appropriateness of that data for the purpose proposed. The Commerce Commission has, in every one of the TSO determinations, and now this determination, used Telecom's opex numbers in ways that have been either inappropriate, misleading, incorrect or all three. Some dialogue before use would be appropriate and welcomed.

ANNEX 3: INDIRECT CAPITAL COST MARK-UP

- A3.1 In its Section 45 Response, Telecom made an allowance for this cost by calculating it as 5.67% of direct operating costs. CostQuest have made no allowance for this.
- A3.2 Telecom has reviewed its estimate following a detailed review of the EER/EU model on which it was based and revised its calculation to better align with how it is calculated there. The difference is marginal, but the methodology is outlined in detail here as the CostQuest model currently excludes this cost altogether.
- A3.3 The EER/EU model makes two calculations:
- First, it calculates the annualised capex costs as a percentage of annualised total investment costs. In Telecom's case this is the total annualised cost * 5.17% (the average of the two EER/RU mark-up factors shown in the Principles Paper Appendix B). If it is assumed that the average annualised cost is 22.5% of investment cost (Appendix G-A page 30), this is equivalent to 1.16% of investment costs (5.17×0.225).
 - Secondly, it calculates the annual opex cost associated with these assets as total investment cost * 5.17% * 10% or 0.52% of investment costs
- A3.4 The total is therefore 1.16 plus 0.52 = 1.68% of investment costs which have been rounded to 1.7%.

ANNEX 4: TSO OVERLAP – CALCULATING THE CENTS PER MINUTE

- A4.1 To calculate the amount of the TSO overlap in the various options (A, B, C, D or E in Section D), Telecom starts by determining a base case of the interconnect cost if there were no TSO, ie, no CNVCs. This is done by setting ResLines and BusLines to 0 in tblCNVC for all ESAs.
- A4.2 To calculate the amount of the TSO overlap in the various options (A, B, C, D or E in Table x), Telecom starts by determining a base case of the interconnect cost if there were no TSO, ie, no CNVCs. This is done by setting ResLines and BusLines to 0 in tblCNVC for all ESAs.
- A4.3 The CostPro SimpleCallType report was also enhanced to show the Total Working Cost and the Total MOU, as well as the Working Cost Per MOU. Then by processing the CostPro model Telecom determines the base case cost per minute for Bypass Interconnect calls, as 1.14 c/min, and the base case Total Working Cost as **[\$]CCRI**.
- A4.4 Option A corresponds to the CostPro model as presented by the Commission in its Draft Determination, ie, as compared to the base case above it has CNVCs as recorded in tblCNVC. The cost per minute for this option is 1.03 c/min. So the difference is 0.11 c/min.
- A4.5 The difference between Option A and Option B is that in Option B only the portion of the TSO cost paid by liable persons is used, whereas in Option A it is the total TSO cost, including Telecom's share. The liable persons' share is 27.16%, so the difference for Option B is $0.11 * 27.16\%$ or 0.03 c/min.
- A4.6 Option C is the same as Option A except that the costs used are from the TSO model rather than from the TSLRIC model. To calculate the costs for this option two Scenarios were prepared, one with CNVCs and one with no CNVCs, and both with all input costs taken from the TSO final version of CostPro. These costs were used by copying from the TSO scenario all the input tables containing costs and cost-related data (eg, manhole spacing), and pasting them into the Scenarios derived from the TSLRIC model.

A4.7 In this case the cost per minute determined by the model is not relevant, and we have to work with the Total Working Cost from the two scenarios. The difference is due to the CNVCs, and is thus the cost of the TSO

A4.8 The two new Scenarios gave these Total Working Costs for Bypass Interconnect calls:

- No CNVCs (ie all customers viable) **\$[]CCRI**
- With CNVCs (ie, as in the Commission's TSLRIC model) **\$ []CCRI**

A4.9 Thus the cost of the TSO on this basis (TSO costs) is the difference of **\$[]CCRI**. Subtracting this from the base case cost we get a Total Working Cost of **\$[]CCRI**. Dividing by the minutes of the viable customers (**[]CCRI**) gives 1.10 c/min, or a change from the base case of 0.04 c/min.

A4.10 The difference between Option C and Option D is that in Option D only the portion of the TSO cost paid by liable persons is used, whereas in Option C it is the total TSO cost, including Telecom's share. The liable persons' share is 27.16%, so the difference for Option B is $0.04 * 27.16\%$ or 0.01 c/min.

ANNEX 5: LABOUR COSTS

A5.1 In Appendix G-B CostQuest review various indices of labour costs and conclude that New Zealand labour costs are lower than a number of other countries. This leads to their three propositions:

- Costs which have a high proportion of capitalised labour should be cheaper in New Zealand. Trenching, splicing and buildings are specifically identified.
- Labour intensive costs such as operating costs should be significantly lower.
- Because it is highly unlikely that Telecom obtains telecommunications equipment cheaper than elsewhere, these lower labour costs must translate into lower opex mark-ups.

Each is covered in turn

Are Telecom's labour costs significantly lower than elsewhere?

A5.2 The fact that New Zealand has cheaper labour costs was discussed extensively during the consultation prior to Decision 477. It was concluded that Telecom had, on average, lower labour costs. If this were an issue one would expect the Commission to select mark-ups from countries with similar labour costs, rather than costs significantly higher or lower.

A5.3 In the most comparable data CostQuest could find, labour rates in Telecom were almost exactly the same as those in Bell Canada, and not much different to Telstra, France Telecom and KPN. They were noticeably lower than BT, and SwissComm and probably the US. The conclusion one might draw from this, all else being equal, is to prefer mark-ups based on Australian, Canadian or French data and avoid mark-ups based on BT or SwissComm or, for that matter, the US. The Commission instead relies exclusively on BT and US mark-ups – which CostQuest's arguments would suggest are the least appropriate.

Trenching and Building costs should be cheaper

- A5.4 All else being equal, one would expect cheaper labour costs to mean lower overall costs. However, all else is not equal. Trenching is a classic example where costs are much more sensitive to geology and topology than labour. The Commission made this very point in the 02/03 TSO determination when suggesting the use of aerial plant in New Zealand when it had been explicitly rejected in Australia was because trenching costs in Australia were likely to be rather lower because of topography and geology. Given that trenching is one of the most significant costs in a fixed Telecommunications network, the assertion that lower capitalised labour costs automatically mean lower costs must be carefully examined and scrutinised.

Labour intensive costs should be significantly lower

- A5.5 Telecom accepts that labour intensive costs should be lower in New Zealand, all else being equal. Again the difficulty is that all else is not equal. There are two issues here.
- A5.6 First, if opex costs are impacted by scale economies, small scale operators may well have higher labour costs for a given number of minutes than larger scale players. It is well accepted that the core network has significant economies of scale. Opex mark-ups that are based on capital costs implicitly allow for that same scale effect to be felt in the labour costs as well. In essence labour costs might well be expected to be higher because of the small scale, this outweighing the effect of lower unit costs.
- A5.7 Secondly, economic theory would suggest that in countries where operators face lower labour costs they would respond by increasing labour inputs at the expense of capital. Hence one would in fact expect labour mark-ups to be higher in lower cost countries. It is for this reason that WIK have resiled from their earlier approach of making significant adjustments in mark-ups for lower cost countries.
- A5.8 Finally, the most exhaustive study that Telecom is aware of on this is work n/e/r/a did for Ofcom looking at the relative efficiency of BT to other

Telcos.⁸² At page 33 of this publicly available report they outline the problem of different labour costs (staff costs per employee). However, the regression analysis that they did across all the Telcos in the study showed that the impact on total costs was insignificant.

- A5.9 CostQuest's third proposition is that the mark-up ratio in New Zealand should be lower than elsewhere because equipment costs are higher and labour costs lower. This rests on the assertion that '*... it is highly unlikely that Telecom obtains telecommunications equipment (eg a switch) more cheaply, on average, than telecommunications providers in other countries*'.⁸³ That assertion is debatable. Although the cost of equipment is a commercially sensitive issue, Telecom has regularly benchmarked costs and understands NEAX switches, which the CostPro model uses, are at the low end of costs compared with European or North American sourced equivalents. We accept though that transmission related costs may be at the higher end of the scale because of our lower purchasing power and small size. However we doubt the net difference in asset costs is significant enough to make a noticeable impact on the mark-up comparison.
- A5.10 If one were to use mark-up rates based on incumbent data in the US, one must appreciate that this has a downward bias. The operating costs are being applied to an asset base that has not been optimised. Had the same rates been applied to an optimised asset base, as is the case here, the mark-up would be higher.
- A5.11 In conclusion, while labour costs are somewhat lower in New Zealand than a number of other countries, that does not have any particular implications for opex cost mark-ups and certainly not the implications CostQuest and the Commission draw. These are contrary to theory and empirical evidence.

⁸² n/e/r/a: BT Efficiency: Network Study 2003, A report for Ofcom, May 2004.

⁸³ *Draft Determination*: Appendix G-B second para.

ANNEX 6: LAND AND BUILDINGS MARK-UP

- A6.1 Telecom's forward looking Land and Buildings costs were estimated by PwC (Wellington) for Telecom's original TSO call cost model. This Annex is drawn from their report.
- A6.2 The process used to develop the asset costs and economic useful lives for each asset class was as follows.
- A6.3 PwC determined the number of property asset sites using the sites in the Transmission dimensioning module, cross-checked to network site data obtained from 2 separate TCNZ sources - the asset register/accounting records, and property manager records.
- A6.4 For each site, land costs were obtained from a list prepared by Quotable Value (independent valuers). Valuations included in the analysis were generally performed in the period 1997 to 1999. The QV land costs differ to those in the TCNZ fixed asset register, but are considered more accurate as the fixed asset register holds data calculated in 1987 for the privatisation of TCNZ.
- A6.5 For each building on each site, functional areas were obtained from the TCNZ Property Utilisation Manager. These existing areas were reviewed by TCNZ to determine how much they would be reduced by if they were only required to house modern equipment for operating the PSTN. The area reductions were necessary due to a significant amount of redundant space in the existing buildings. Most of the existing sites were originally built for mechanical switches, high personnel requirements and, in some cases, were somewhat "over-engineered". The 7 key Metro sites were reviewed individually, due to their size and value. Other sites were considered under the general categories of Urban, Suburban and Rural.
- A6.6 The adjusted functional areas were used as inputs for TCNZ's Property Costing Template model. This calculates building and fittings costs based on floor area and other parameters relating to the general categories noted above. The model was originally developed to cost the new Riccarton exchange site but has been adjusted to reflect the following specific features:

- Metro, Rural and Suburban sites use 100% of the model base cost, but Urban sites are assumed to be valued at 80% of the base cost.
- A raised floor, suspended ceiling and standby generator are included in all sites except Rural.
- If property areas measure below 30 square meters then a total cost for buildings and fitting of \$[]TCNZRI / m² is applied.
- Each site has a designated number of floors. The Metro sites are modelled individually: the 10 largest urban sites have 3 floors, the next 40 largest have 2 floors and the remainder have 1 floor. All Suburban and Rural sites are considered to be single story.

A6.7 The building costs from the Property Costing Template model were reviewed, and accepted as being a reasonable calculation of the asset cost.

A6.8 The Property Costing Template model is designed to accept the gross floor plate area as the key input for the calculations. The areas supplied by TCNZ were treated as (a) gross floor-plate areas for Rural and Suburban properties, and (b) net tenantable floor areas for Metro and Urban properties. This difference in treatment between the property categories was to account for the differences in average space required for common areas.

A6.9 Total property costs were then allocated to switching, transmission and MDF/access functions using percentages supplied by TCNZ. This allocation process was based on study of space within each building and the consumption of that space by the assets described above. Common areas (stairwells, etc) were allocated in proportion to the consumption of space by asset types.

A6.10 The resulting costs are shown below:

	Land	Buildings	Fittings	Total
Total	[
Allocated to switches				
<i>As % Switching investment</i> (\$[] CCRI)*				
Allocated to transmission equipment				
<i>As % Transmission investment</i> (\$[] CCRI)*				
Total costs as % Total core network investment (\$[] CCRI)**]TCNZRI

* EXCLUDES lines related investment costs (source CostPro v3)

** INCLUDES lines related investment costs (source CostPro v3)

A6.11 Telecom believes that these costs form a reasonable basis for a forward looking cost study. As noted above PwC have optimised these to reflect excess space etc.

A6.12 The confusion is in the calculation of the mark-up.

- CostQuest have made a provision for the CostPro model to calculate mark-ups separately for switching and transmission. The mark-ups in the TSLRIC model are []**CCRI**% for switching and []**CCRI**% for transmission. Those mark-ups were supplied by Telecom but were based on asset values in Telecom's modelling which were rather higher than the optimised values here. Hence these mark-ups, which are based on the optimised asset values in the CostPro model, are higher.
- Though the transmission mark-up is in the model, it not in fact used. Even if it was used the total allocation of costs for Land and Buildings would have been \$[]**CCRI**, still well short of the \$[]**TCNZRI** estimate. Because it is not used, the mark-up in the model provides for only \$[]**CCRI** of costs (excluding lines related) over \$[]**TCNZRI** short of a reasonable forward looking estimate.

- CostQuest suggest mark-ups in the US are typically 10-15%. They do not state however what this 10-15% mark-up is applied to. Telecom believes that it is to total core network investment – in other words the last row of the table above. If this is the case then Telecom’s mark-up of [] **JTCNZRI**% is within that range and indeed lower than expectations given the extra costs of seismic bracing required here.

A6.13 Telecom recommends that the Commissions model be fixed so as to apply the mark-ups in the above table to the relevant investment quantities in the CostPro model, and that the transmission allowance be revised so that the mark-up is picked up by the model. With reference to CostQuest’s comments at Appendix G-A page 52 (paragraph A2.37), it is noted that the cost of land and buildings here is just for exchange sites – not cabinets.

ANNEX 7: DETAILED COMMENTS ON INPUTS

A7.1 Remote Fibre Terminal, 1440 size (see `tbITRRmtFiberTerm`):

Telecom had updated the investment for this to twice that of a 720 system, but CostQuest have argued that they would expect that a discount would exist for the larger size (i.e., a price less than double the 720 system should apply). The largest size used in practice by Telecom is 360 lines, which is why it had set the investment for larger sizes in the CostPro model to multiples of the 360.

A7.2 Remote Fibre Terminal, 120 size (see `tbITRRmtFiberTerm`):

CostQuest has changed the unit price for this without any mention in their report, dropping the price down to twice that of a 60-line system. This would appear at first glance to be reasonable. However, the prices that Telecom had had for the two systems were correct. The price for the 60-line system is relatively low compared to the 120-line system because the 60-line system is designed especially for low density rural areas, whereas the 120-line system (and above) is a completely different system. Hence there is quite a jump in price between the two systems. The price for the 120-line system should therefore be restored to what Telecom had originally. Note that because this is a Line-investment item, this will affect the TSO calculation, and only indirectly the TSLRIC calling cost calculation.

A7.3 Installation cost per m for 100 mm duct (see `tbITRManhole`):

Telecom had updated the investment parameter for this to \$[]`TCNZRI`/m (02/03 price), as it had been missing from the original input. CostQuest felt this new value was high and set a 02/03 price of \$1.30/m based on the mid-point of a range of US costs from US\$.50 to US\$1.30/m, using a 0.686 currency conversion rate. Telecom's stated price was based on contract returns, and therefore rejects CostQuest's revised price at \$1.30/m as too low in NZ conditions set by the market (Telecom outsources this activity)

A7.4 Installation cost per m for 100 mm Duct with innerduct (see `tbITRManhole`): Telecom had updated the investment parameter for this to \$[]`TCNZRI`/m (02/03 price), as it had been missing from the original input. CostQuest considered this new value was high and set a 02/03

price of \$2.50/m based on the mid-point of a range of US costs from US\$1.15 to US\$2.30/m, using a 0.686 currency conversion rate. Telecom's estimate was based on \$[]TCNZRI/m for the 100mm duct (see (b) above), plus \$[]TCNZRI/m for installing the three subducts. Telecom now accepts that this estimate for hauling subducts was too high – it was incorrectly based on hauling in Fibre rather than subducts and pulling in fibre is more labour intensive, It has been revised to \$[]TCNZRI/m, making the total \$[]TCNZRI/m. Consequently, Telecom still rejects CostQuest's price of \$2.50 as being too low and recommends a value of \$[]TCNZRI/m.

ANNEX 8: MODELLING ISSUES

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