



INTERNATIONAL

## FINAL REPORT

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# Economic Advice on Aspects of Vodafone's Application for Interconnection with Telecom's Fixed PSTN

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## 1. INTRODUCTION

Telecom New Zealand has asked us to provide economic advice on a number of issues relevant to the current application by Vodafone for access to the designated access service of 'Interconnection with Telecom's fixed PSTN'. Specifically, we have been asked to consider the views expressed in the Commission's Draft Determination of 19 June 2006 and comment on:

- The economics and appropriate use of 'bill and keep' interconnection.
- International practice with respect to fixed to mobile interconnection.
- Whether there are plausible concerns relating to a 'price squeeze'.
- Cost recovery issues related to the proposal, given Telecom's obligations under the TSO.

The Commission's Draft Determination considers interconnection arrangements for a new service that Vodafone proposes to offer called Vodafone Local Service (VLS). The views expressed by the Commission focus narrowly on the interconnection issue without considering their broader context, particularly the context provided by the regulation of residential local access through the Telecommunications Service Obligations of Telecom (TSO) and the approach to cost recovery that is embodied in that regulation. This broader context is important because the regulation of residential local access flows in part from the definition of the market in which there is deemed to be limited competition from services other than those supplied by Telecom.

The Commission's Draft Determination suggests that VLS is in the local access market, illustrating the extent to which differentiated service technologies are converging and the impact that convergence may have on existing regulatory regimes. The requirement of the TSO to offer a free local calling option for residential customers has driven the adoption of bill and keep interconnection agreements which might be specific to the characteristics of the regulatory regime. The TSO imposes costs on Telecom and ultimately all telecommunications services providers in New Zealand that will be affected by the approach set out in the Commission's Draft Determination. The approach to the recovery of the net cost of the TSO and, more generally, the recovery of the costs of operating the fixed wire local access network, is based on a model that may be undermined by the emergence of services such as VLS.

In this report, we suggest that the Commission should consider the broader implications of the views expressed in its Draft Determination, particularly those that interact with the rationale for and the operation of the TSO.

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## 2. ECONOMICS OF BILL AND KEEP

There is no perfect system of interconnection. The main forms of interconnection used in telecoms include bill and keep, TSLRIC based approaches (normally imposed by regulation) and commercial arrangements which take into account factors including market demand. Each has its merits and issues. Identifying the appropriate solution for a particular situation depends upon applying the system that has the highest net benefits (or least detriments), given the facts of the particular situation.

Bill and keep interconnection for example can be highly efficient. However it critically relies upon the ability of the parties to bill their own customers and recover their own costs (although the interconnection arrangement will of course be important to creating the value to the consumer). Quigley and Vogelsang (2003: 12) state that a key element of the operation of a bill and keep regime is that:<sup>1</sup>

*...charges levied on customers can substitute for interconnection charges between carriers. Thus, if one network incurs higher termination costs than the other, then the first network can charge its customers for such costs, either in the form of charges for incoming calls or in the form of higher monthly fees.*

It follows that bill and keep may be problematic when one of the parties cannot bill their customer for the service provided. It may also be undesirable if recovery of costs without sharing of the costs between the parties would create significant inefficiency (i.e. the implications of ignoring network externalities and Ramsey's principle of efficient cost recovery are significant).<sup>2</sup> Quigley and Vogelsang (2003) for example concluded that there were significant advantages that supported using bill and keep in NZ in some circumstances. In doing so, they noted that this applied in their views to voice and data interconnection (not to mobile networks). Quigley and Vogelsang (2003:19) note that in response to the adoption or imposition of a bill and keep regime:

*...total network costs (i.e. resource costs) could go up or down, depending on the effects of bill and keep on the total number of subscribers and on the total amount of traffic. Assuming an absence of non-price rationing, the effects on total network costs would arise from (a) the equilibrium effects on end-user charges induced by bill and keep and (b) the cost-reducing incentives associated with bill and keep. The most likely outcome of bill and keep is that total number of subscribers will at least not go down and that total traffic is likely to increase relative to per minute access charges based on TSLRIC.*

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<sup>1</sup> Quigley and Vogelsang, *Interconnect Pricing: Bill and Keep Compared to TSLRIC*, CRA Report for Telecom New Zealand, 7 April 2003. Refer to summary points under paragraph 9 in particular.

<sup>2</sup> See for example, Wright, *Bill and Keep as the Efficient Interconnection Regime?*, Review of Network Economics, March 2002.

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Whether or not bill and keep is socially optimal in this case will depend upon a number of issues, including the ability of the parties to efficiently recover their costs. In the context of local access, the most important constraint on cost recovery and thus on the efficiency of any interconnection pricing scheme, is the TSO. In particular, a key characteristic of the TSO is that it requires the price of calls falling within the regulated service to be set to zero (free local calling) even though the marginal cost of the service is above zero. Thus, Telecom has no ability to adjust the pricing of calls falling within the definition of regulated residential local access, and this might be particularly important for the ability to achieve efficient recovery of costs if VLS results over time in a substantial increase in call traffic passing through the fixed wire local access network.

### 3. INTERNATIONAL EXAMPLES OF FTM INTERCONNECTION

Tables 1 and 2 below provide data on fixed to mobile interconnection rates in selected countries.<sup>3</sup> Table 1 summarises a selection of European rates (all CPP regimes), while Table 2 compares CPP and RPP regimes. The data surveyed by the ITU shows that in the vast majority of cases termination charges are paid both for fixed to mobile and mobile to fixed calling. Bill and keep is observed in a small number of cases, and these cases are exclusively in markets where the mobile service is RPP based (receiving party pays – or more accurately subscriber pays).

The data in the ITU report is relatively old, and we therefore provide more recent OECD and EU data in the following figures.

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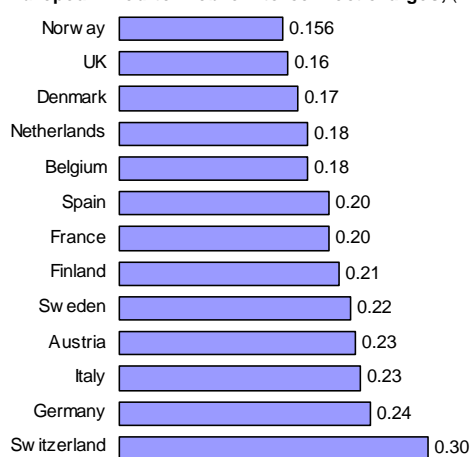
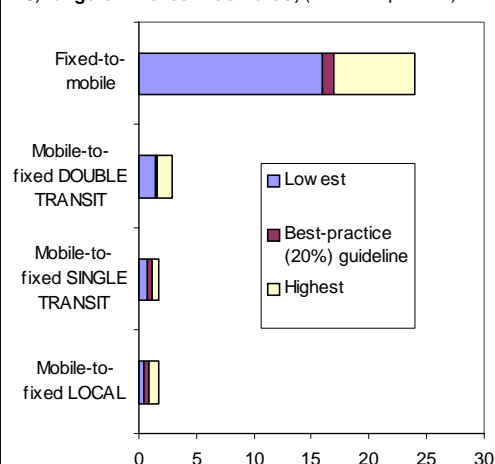
<sup>3</sup> The data in this section is extracted from an ITU Briefing Paper completed for a Fixed-Mobile Interconnection Workshop. Document WFMI/04, 14 September 2000, available at [www.itu.int](http://www.itu.int). Although the data is old, to the best of our knowledge the structure of fixed to mobile interconnect charging has not significantly altered in most jurisdictions.

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**Table 1: Interconnection Rates in Selected European Countries (US\$ Per Minute)**

**Figure 5. Interconnection rates in Europe under CPP**  
In US\$ per minute

	Fixed-to-mobile interconnect rate	Mobile-to-fixed interconnect rate LOCAL	Mobile-to-fixed interconnect rate SINGLE TRANSIT	Mobile-to-fixed interconnect rate DOUBLE TRANSIT
Austria	0.23	0.017	0.017	0.022
Belgium	0.18	0.008	0.014	0.018
Denmark	0.17	0.008	0.011	0.016
Finland	0.21	0.013	0.013	0.024
France	0.20	0.006	0.012	0.018
Germany	0.24	0.008	0.017	0.021
Greece	n.a.	0.018	0.018	0.025
Italy	0.23	0.009	0.015	0.021
Ireland	n.a.	0.010	0.015	0.021
Luxembourg	n.a.	0.015	0.015	0.015
Netherlands	0.18	0.009	0.013	0.016
Portugal	n.a.	0.009	0.015	0.024
Spain	0.20	0.009	0.015	0.028
Sweden	0.22	0.008	0.011	0.015
UK	0.16	0.005	0.007	0.016
Switzerland	0.30	n.a.	n.a.	0.020
Norway	0.156	n.a.	n.a.	0.018
Average	<b>0.21</b>	<b>0.010</b>	<b>0.014</b>	<b>0.020</b>

**European fixed-to-mobile interconnect charges, (US\$/min)****EU, range of interconnect rates, (US cents per min.)****Notes:**

Mobile to Fixed Interconnection rates are based on a 3 minute call duration and are exclusive of VAT

The Finnish rates assume a low volume of traffic.

In Finland, Austria, Greece and Luxembourg, the lowest interconnection charge covers interconnection at a local or tandem exchange. Thus the "local rate" is the same as the "single transit rate."

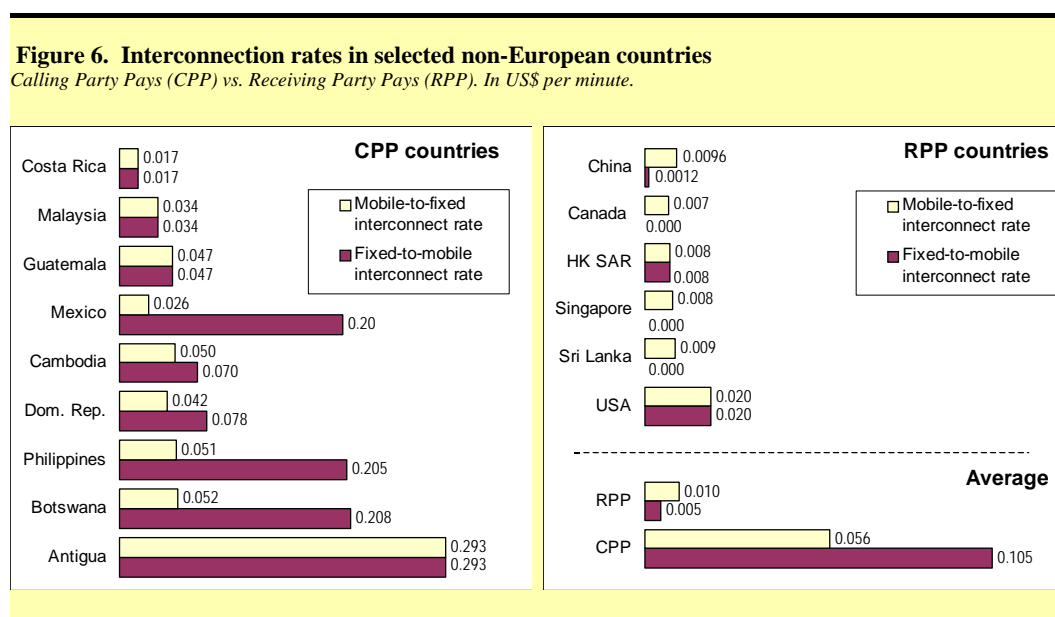
Mobile to fixed charge for Switzerland refers to national fixed termination rate. From OFCOM Website (March 2000).

Fixed to Mobile Rates for Austria, Denmark, Switzerland and Norway are based on January 1999 data from OVUM & OECD.

The "best practice" guideline for fixed-rate interconnection is defined as the upper limit of the three lowest published rates (three being 20 per cent of the 15 EU Member States).

Source: ITU, compiled from ECTA/Analysys, EU Interconnection Tariffs in Member States, ITU Regulatory Survey 2000

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**Table 2: Interconnection Rates in Selected non-European Countries**

Note: The average on the right hand side refers to the average of countries responding to the ITU survey as well as the European countries in Fig. 5.  
 Source : ITU 2000 Regulatory Survey .

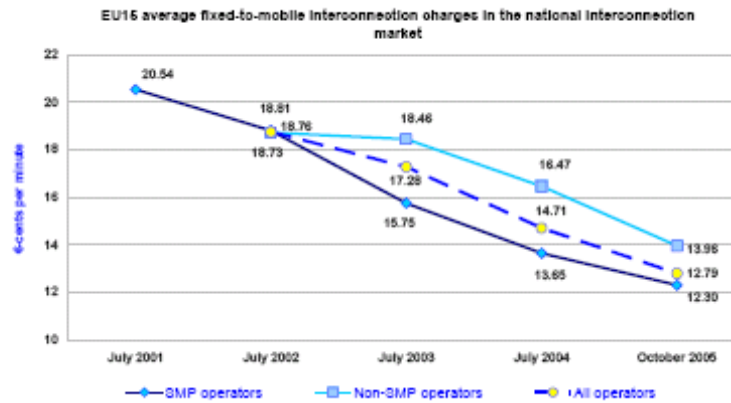
The method of calculating the interconnect charge varies considerably by jurisdiction. Commercial negotiation is common. When regulation is imposed some form of cost basis or orientation is normally required. Sometimes TSLRIC is used to implement this, but it is by no means exclusive.<sup>4</sup> In the EU 'cost orientation' is required in fixed to mobile interconnection.<sup>5</sup> This has been achieved by various means however, including benchmarking, TSLRIC and fully allocated cost modelling approaches. It is notable that in the UK cost orientation has included corrections that take into account network externalities when allocating fixed and common costs.

More recent data than that shown in the ITU study is provided below for Europe and the OECD.

<sup>4</sup> Refer to the OECD Communications Outlook 2005, table 2.13 for a detailed description of arrangements by OECD member state.

<sup>5</sup> European Electronic Communications Regulation And Markets 2005 (11th Report), 20 Feb 2006, at page 8. at: [http://europa.eu.int/information\\_society/policy/ecomms/implementation\\_enforcement/annualreports/11threport/index\\_en.htm](http://europa.eu.int/information_society/policy/ecomms/implementation_enforcement/annualreports/11threport/index_en.htm)

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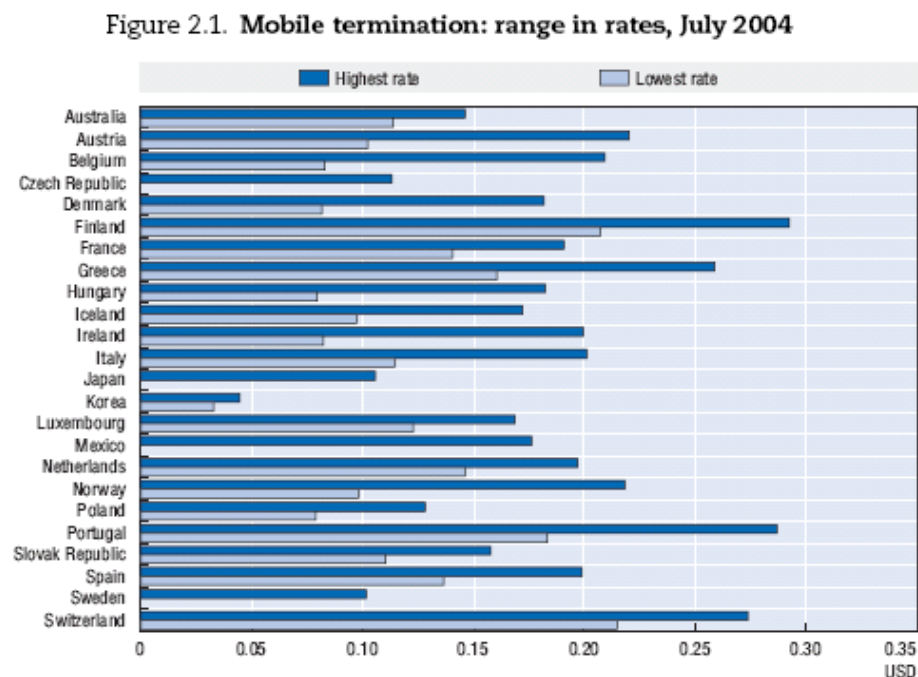
**Figure 1: Average Fixed-to-Mobile Interconnection Charges 2001 - 2005**

Source: *European Electronic Communications Regulation And Markets 2005 (11th Report)*, 20 Feb 2006.

The major change over time is that following extensive regulatory intervention in Europe, termination rates are now significantly lower in Europe. The EC states in its 11<sup>th</sup> report<sup>6</sup> that the cheapest mobile termination rates is Finland at €-cents 6,80 per minute, and the most expensive is Slovenia - €-cents 21,84. The average termination rate is 12.8 €-cents, while the average for 'SMP' (normally regulated) operators is 12.3 €-cents.

The OECD data below shows that in most cases mobile termination charges are positive and significant.

<sup>6</sup> EC 11<sup>th</sup> Report, Vol 1, pages 30-31.

**Figure 2: Mobile Termination Rates, Selected OECD Countries**

Source: OECD Communications Outlook 2005. Note that the variation in rates is often due to peak and off-peak price differences.

Interconnection arrangements in the US are complex. The FCC itself states that 'Interconnection arrangements between carriers are currently governed by a complex system of intercarrier compensation regulations'.<sup>7</sup> However for local call interconnection reciprocal compensation using forward looking economic costs is the standard approach. As noted, the FCC has looked at reforming the interconnection system, but this has not occurred.

In the United States, fixed-mobile interconnection for local calls has generally been on the basis of reciprocal forward looking cost, using fixed network costs. The Federal Communications Commission (FCC) states:<sup>8</sup>

<sup>7</sup> FCC, Docket No. 01-92, 27 April 2001, at para 5.

<sup>8</sup> FCC Notice of Proposed Rule Making, CC Docket No. 01-92, 27 April 2001 at [www.fcc.gov](http://www.fcc.gov). An LEC is a local exchange carrier, while a CMRS is a commercial radio service operator.

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92. *Under both types of LEC-CMRS interconnection, the LEC receives forward-looking economic cost- (FLEC-) based reciprocal compensation for the LEC's additional costs of terminating CMRS-originated calls. The CMRS carrier, on the other hand, is compensated at the LEC's FLEC-based rate, which is used as a presumptive proxy for the CMRS carrier's own termination costs.*

This arrangement is evident in the ITU data supplied above. Although the FCC have looked at large scale movement to a bill and keep model for interconnection in telecoms, this does not appear to have occurred. The OECD Communications Outlook 2005 reports that "reciprocal compensation" rules still apply which require that the rate a mobile operator charges the fixed operator for termination equals the rate the fixed operator charges the mobile operator.<sup>9</sup>

Canada, which is shown as having bill and keep termination for fixed to mobile calls, is also listed by the OECD as 'termination rate not imposed', implying bill and keep to mobile is still in place.

Fixed interconnect in Europe is cost-based, and most Member States now having LRIC cost accounting systems in place. The cost of interconnection depends on the point in the network where it occurs. For example at the local level the new entrant interconnects at the incumbent's local switch, that is, farthest down the network. This is the lowest cost. Single transit covers a number of local switches, for example, a region. Double transit is the highest level in the network and consequently is the most expensive as more of the incumbent's network elements are being used. The cost for fixed termination in the EU varies from 0.25 Euro cents per minute through to 2.8 Euro cents, depending upon jurisdiction and whether the call is local or double transit.

Services of the type proposed by Vodafone are relatively new, and as such there is little or no international precedent that we are aware of to rely on when considering this proposal. In particular, it is unclear whether the RPP, CPP, or some other model for the recovery of service providers costs applies under Vodafone's proposal. Some of the services being launched that provide cheaper mobile calls rely on 'hotspot' type solutions that connect into the fixed network, and may involve VoIP. If arrangements like those proposed by Vodafone do use a 'fixed local interconnect equivalence' model (that is, whatever is used for fixed to fixed interconnect is applied as if the wireless service was in fact a fixed service), then bill and keep would sometimes but not always be applied. However, the choice between options should be based on a detailed analysis of the efficient recovery of total costs.

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<sup>9</sup> There is a condition in the reciprocal compensation conditions that allow differential charges to be applied if an operator can prove that its costs are higher. This is not a new condition, and does not seem to have been used to gain higher termination charges on mobile networks.

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### *Conclusions*

We conclude that in terms of standard international practice in fixed to mobile interconnection, some form of interconnect payment remains the norm when interconnecting with standard cellular services. Bill and keep is exceptional, and does not appear to be used in CPP mobile calling systems. If a fixed 'fixed local interconnect equivalence' model is applied, cost based interconnect remains common in both CPP and RPP regimes. Bill and keep has advantages in countries such as New Zealand and Canada where free local calling prices individual calls below marginal cost, but this is in part a product of the regulatory regime and the approach to the recovery of the total cost established under that regime. This suggests the importance of an understanding of the regulatory regime and how it affects cost recovery before bill and keep is adopted.

## 4. PRICE SQUEEZE

The Commission states:<sup>10</sup>

*In the residential local calling market, having a cost-based termination charge for local calls would result in Telecom charging Vodafone for the interconnection service, while Telecom's Homeline retail customers do not pay variable call charges. For Vodafone to have an interconnect price higher than Telecom's retail price would mean that, on a per call basis, Vodafone would experience a price squeeze. This, combined with the likely high percentage of calls Vodafone's customers would make to Telecom customers, would have a detrimental effect on Vodafone's ability to compete in the residential local calling market.*

If we understand the Commission's concern correctly, it is that a TSLRIC based interconnection charge paid by Vodafone to terminate calls to Telecom would place Vodafone in a per call price squeeze for local calls from Vodafone subscribers to Telecom subscribers. There are three important assumptions in this concern that are worth further consideration, these are what we will call the:

- Equivalent pricing,
- Per call pricing, and
- Level playing field assumptions.

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<sup>10</sup> Commerce Commission, Draft Determination on the application for determination for 'Interconnection with Telecom's fixed PSTN', 19 June 2006.

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### *Equivalent pricing*

The concern seems to implicitly assume that Vodafone will have to match Telecom's free local calls, imposed by the TSO, for residential calls at least. Vodafone may choose to do this, but we note that Vodafone may well offer a premium service, that may have per minute pricing associated with it. Depending upon the level of prices that Vodafone thinks the market can stand, it may be that even on this per call basis there is not a margin squeeze. As such, the Commission is incorrect to necessarily characterise the situation of Telecom charging for fixed termination as placing the VLS in a price squeeze.

Local call charges for residential consumers are set at zero because the TSO requires a free calling option, but this does not mean that setting prices at zero is efficient. However, in taking the view that pricing should be equivalent, the Commission is also taking the view that VLS service should be covered by the TSO free local calling option. The question the Commission has to consider is whether the TSO was really designed to apply to VLS given that cellular calling was excluded from the regulatory regime.

### *Per call pricing*

The concern also assumes that each call must cover its costs. In reality subscribers to Telecom's services purchase a bundle of services, and outside of sector specific regulation, there is no general assumption that each and every transaction will be profitable at the margin (nor is each and every subscriber likely to be profitable at the margin). Examples include free calling to voicemail services, and networks 'subsidizing' the acquisition of subscribers, later paid for by the sale of services.

The idea that all services should be marginally profitable at the time of consumption also ignores consumer preferences which may favour different forms of pricing. For example, such a condition would suggest that any form of bundled pricing involving calls with marginal costs involved would imply a per call margin squeeze (for example national calling within an allowance of bundled minutes). Of course this is not the case in any commercially relevant sense. If the revenues received exceed the costs incurred in total, then the subscriber is profitable. For this reason it is unclear that marginal interconnect pricing would imply a margin squeeze in the way the Commission is suggesting, as the service will undoubtedly involve provision of a bundle of services to the subscriber, not just local calling.

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### *Level playing fields*

The level playing field assumption (which is also apparent in some of the Commission's analysis prior to the price squeeze concern) is related to the idea that Vodafone and fixed networks should be placed in a situation that is as competitively similar as possible in order to avoid distorting competition. Although we can see the intuitive appeal of this proposition, if the relevant benchmark is normal competitive markets this approach is not as appropriate as it might at first appear.

Competitive markets rarely involve level playing fields. Competitors seek advantage by any means available, and the resulting process drives innovation and the introduction of new services, cost reductions, and so on. The more differentiated the products and the more dynamic the competitive process the less the concept of a level playing field holds meaning. Indeed firms in dynamically competitive markets seek to fundamentally change the game in moving from one technology or product to another. Fields of competition are not only tilted, they entirely move at times, and in unpredictable ways.

The reality is that mobile and fixed operators are moving into much closer competition than has previously been the case. But they are still differentiated providers of communications services, with different advantages and disadvantages, and with that different costs and value propositions to the customer. The Commission cannot and should not seek to put different technologies on identical interconnection terms for the sake of maintaining comparable arrangements. Rather, it should seek to implement arrangements that optimise the combined social value of the networks given the relative characteristics of the networks involved.<sup>11</sup>

Finally, we are concerned that the Commission has not made clear its position on Vodafone's submission (reported at para 65) that:

*"..the ability for callers to ring a Vodafone number at the price of the local call is likely to be important to the success of our local service initiative"*

It is important that the Commission does not seek to ensure the commercial success of a particular proposal through the structure of interconnection arrangements. The Commission's objective should be to set the efficient price for interconnection for the service under consideration. It is for the market then to decide whether the service is a commercial success.

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<sup>11</sup> This is the approach taken in the UK for example fixed to mobile interconnection is based on TSLRIC plus an externality allowance, even though this is not normally allowed for in fixed interconnection arrangements.

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## 5. COST RECOVERY AND THE TSO

In the section of its Draft Determination relating to Retail Pricing, the Commission focuses on costs as the basis for its view that Telecom should be restrained from charging its customers for originating calls to VLS numbers. At paragraph 113 it states that:

*The Commission does not believe that Telecom will incur any additional costs for originating calls to Vodafone local numbers in a bill and keep environment in comparison with local calls to other carriers networks.*

The significance of the bill and keep environment from the perspective of the Commission's analysis is that it removes mobile termination charges as a rationale for Telecom charging for calls to Vodafone mobile phones when routed through the VLS service.

The Commission's analysis is incomplete in three important respects. First, the Commission's analysis appears to consider only the marginal cost of the call, and provides no analysis of the funding of common costs. Second, the inclusion of VLS calls within the framework of free local calling under the TSO will mean that if VLS is widely adopted Telecom will be deprived of some of the contribution to common costs that is currently provided by origination charges for fixed to mobile calls. Third, it ignores the implications of its Draft Determination for the TSO loss.

### 5.1. COMMON COSTS OF THE FIXED RESIDENTIAL NETWORK AND THE TSO

The Telecommunications Act (2001) provides a mechanism for establishing a Telecommunications Services Obligation (TSO) that is to be provided in the first instance by Telecom New Zealand, and sets out the approach that the Commission should use in assessing the cost of providing the TSO and in allocating that cost among telecommunications companies. The TSO Deed negotiated between Telecom and the Crown provides that Telecom residential customers will have a local residential telephone free calling option, and requires that Telecom offer this service to customers who are not commercially viable.

At present, origination of fixed to mobile calls falls outside the definition of the services covered by the free local calling option. This means that Telecom is free to price the origination of fixed to mobile calls to recover both the mobile termination charge and to obtain a contribution to the fixed costs of the fixed wire local access network on which the call originates. For commercially non-viable customers, it means that Telecom may sell mobile termination services and earn revenue that reduces the loss made in supplying those customers with the basic services covered by the TSO.

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By including origination of calls to VLS numbers within the definition of free local calls covered by the TSO obligations to residential customers, Telecom will lose a contribution to the common costs of the fixed wire network. In a normal business environment this would require an adjustment to the pricing of Telecom products, but might not be regarded as an issue of significance for the regulator, since it is a standard proposition in industrial organisation that not all components of a business should be expected to provide the same level of contribution to common costs.

However, the Commission's Draft Determination raises important issues because a large part of the business generated on the fixed wire network is covered by the TSO obligations, and Telecom is not free to increase the contribution to the common costs of the network by a real adjustment to the price of residential local access. The Commission should demonstrate that it has considered all important implications flowing from its Draft Determination. Since those common costs have to be recovered from somewhere, this means that the Commission should as a minimum indicate how it considers the adjustment to the loss of contribution to common costs can be accommodated within a regulated business such as that operated by Telecom.

## **5.2. THE NET COST OF THE TSO**

The net revenues generated by Telecom through the sale of fixed to mobile calls to commercially non-viable residential customers are currently included in the calculation of the net cost of the TSO that is funded by industry participants. The Draft Determination would remove the ability of Telecom to levy these charges for calls to Vodafone mobile subscribers who have purchased VLS. If Vodafone's offer of the VLS is successful this will have a material impact on the net cost of the TSO.

The Draft Determination provides no indication that the Commission has recognised this implication of its views. It is important that in its final Determination the Commission outline its thinking about the implications of convergence between mobile and fixed wire local access for the funding of the TSO. Indeed, it would be appropriate for the Commission to consider the potential implications of the VLS service for the whole TSO regime and the assumptions on which it is based.

## **6. CONCLUSIONS**

In terms of standard international practice in fixed to mobile interconnection, some form of interconnect payment remains the norm when interconnecting with standard cellular services. Bill and keep is exceptional, and does not appear to be used in CPP mobile calling systems. The Commission's Draft Determination positions VLS and fixed wire local access in the same market. Bill and keep may have merit in local access regimes where regulation provides free local calling that requires pricing of local calls below marginal cost, but there are other features of the regulatory regime which should also be considered in making a Determination on interconnection for VLS.

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The Commission has cited Quigley and Vogelsang (2003) in support of several elements of its draft determination. However, we are concerned that the Commission has not considered some important elements of that paper as they relate to the draft determination. In particular, the Commission has not considered the implications of the fact that (i) Telecom's costs will rise as traffic on the network increases with the introduction of a regime that will allow Telecom subscribers free access to Vodafone local numbers and (ii) Telecom's inability to recover those increased costs because of the constraints imposed by the TSO regime on its pricing of local calls.

It is not correct to argue that a TSLRIC based interconnection charge paid by Vodafone to terminate calls to Telecom would place Vodafone in a per call price squeeze for local calls from Vodafone subscribers to Telecom subscribers. VLS will be a complex product, and interconnection charges are only one part of the cost structure of it. It is important that the Commission does not seek to ensure the commercial success of a particular proposal through the structure of inefficient interconnection arrangements. The Commission's objective should be to set the efficient price for interconnection for the service under consideration. It is for the market then to decide whether the service is a commercial success.

The Commission's analysis of retail pricing is incomplete because it considers only the marginal cost of the call, and provides no analysis of the funding of common costs. The inclusion of VLS calls within the framework of free local calling under the TSO will mean that if VLS is widely adopted Telecom will be deprived of some of the contribution to common costs that is currently provided by origination charges for fixed to mobile calls, while at the same time network costs might increase if the VLS service is successful in the marketplace. Since mobile termination net revenues earned by Telecom reduced the losses incurred in supplying commercially non-viable customers under the TSO, then it is likely that the TSO net cost will increase to the extent that VLS results in mobile termination revenues being reduced. It is important that the Commission's Final Determination indicate that it has considered these issues.

In our view it is inappropriate for the Commission to conclude that it should treat VLS in the same way as local access calling without also considering the impact that this has on the recovery of network costs. The recovery of costs for the fixed wire local access network is determined to a large extent by regulation, and by the exclusion of some services such as FTM from the regulatory net. Convergence of mobile and fixed wire services has implications for the existing business model associated with the fixed wire local access network, and the Commission should consider the implications of this in its Determination.