

COMPETITIVE NEUTRALITY IN ACCESS PRICING

A Report for Optus

Prepared by NERA

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EXECUTIVE SUMMARY

This report examines in general terms the role of access pricing in limiting the capacity and incentives for a vertically integrated monopolist to leverage market power into downstream markets. The general analysis is then applied specifically to Telstra's incentives for such conduct (and Telstra's actual conduct) in markets downstream to the PSTN.

It is argued that the current access pricing methodology for LCS gives Telstra substantial opportunity and incentive to leverage market power from the ownership of the PSTN into the downstream markets for local call resale and preselect services (primarily long distance and fixed to mobile). In particular, application of the retail minus methodology to a single starting price based on Telstra's HomeLine Part access price effectively gives Telstra the power to levy a 'tax on competition' in the market for preselect services (see Appendix A). In the extreme, this taxation power would allow Telstra to protect all its existing rents in preselect services and to extract all rents earned by rivals in that market. Use of such taxation powers by Telstra to appropriate monopoly rents would, by definition, prevent competition from forcing those rents to be distributed to consumers in the form of lower prices and better quality service. Consequently, the potential negative consequences for the competitive process are highly material.

More generally, it is argued that wherever marginal access prices are set above a monopolist's marginal production cost the monopolist has the capacity, and may have the incentive, to leverage its market power from the bottleneck into downstream markets. This is achieved by price discriminating internal sales of the bottleneck while charging a flat (regulated) usage rate to its downstream rivals – generally based on average cost plus a mark up. Equally efficient downstream rivals (who pay the regulated rate per unit of bottleneck used) are unable to compete for customers who are the beneficiaries of price discrimination and their addressable market is reduced accordingly.

In section 2 we show that a non-vertically integrated monopolist would still practise price discrimination but would tend to treat all downstream firms symmetrically. For example, if it made commercial sense to sell access to the bottleneck in the form of a two-part tariff per customer (as is will often be the case) then the monopolist will sell access under this price structure to *all* downstream firms.

In section 3 we examine the incentives for a vertically integrated monopolist to practise asymmetric price discrimination – eg, to sell access to itself on the basis of a two-part tariff but to sell access to all other firms on the basis of a flat unit rate based on the regulators estimate of average cost. We provide a stylised, but highly relevant, example showing that this sort of asymmetric price discrimination can allow the bottleneck owner to monopolise the downstream market without any sacrifice of profits. In fact, it is shown that this conduct can force the exit of equally efficient rivals and simultaneously increase the monopolist's profitability. While this form of access pricing can damage equally efficient rivals it can also increase consumer welfare – at least in the short run.

It is not unreasonable to conclude that giving vertically integrated monopolists the capacity to set external marginal access prices above internal marginal access prices has created a material barrier to the success of competition. It is argued that the first best regulatory solution is for external marginal access prices to better reflect marginal production cost of the bottleneck. A second best regulatory solution is for downstream rivals to be able to choose between an access price based on the regulator's estimate of average cost and the access price structure that is implicit in the incumbent's downstream price structure. That is, for the access seekers to be able to *choose* between average cost access prices (say, TSLRIC++/output) and a form of the efficient component pricing rule (ECPR) based on the incumbent's downstream prices.

In the case of PSTN O/T marginal access prices can be moved closer to marginal production cost, without sacrificing cost recovery, via the introduction of a fixed monthly access charge per customer (see Appendix B). Revenue from the fixed charge can then be used to finance a commensurate lowering of usage charges (ie, lower per call/minute access charges). A move towards this structure of access prices would likely result in a considerable 'evening of the playing field' between Telstra and downstream rivals in the provision of preselect services. It would also directly improve efficient utilisation of the PSTN and, consequently, end-users welfare as a result of more efficient signalling of the true (marginal) cost of using the PSTN.

1. INTRODUCTION AND OVERVIEW

Optus has asked NERA to examine the ACCC's current pricing principles for access to Telstra's PSTN infrastructure for the following services:

- Local Carriage Service (LCS).
- Domestic PSTN Originating and Terminating Access (PSTN O/T); and
- Unconditioned Local Loop Service (ULLS).

In particular, Optus has requested NERA advise on whether these pricing principles leave significant scope and incentive for Telstra to leverage market power from ownership of the PSTN into competition for downstream services. The downstream services associated with each access service being:

- long distance, fixed to mobile and mobile to fixed telephony (collectively described as 'preselect services') are downstream to the PSTN O/T service;
- retailing of local calls and line rental are downstream to LCS (as are potentially preselect services); and
- the full set of services provided over the ULL (voice and data services) are downstream to ULLS.

The ACCC uses two different methodologies to set prices for the above three PSTN access services. In particular, unit access prices are regulated on the following basis:

- Average unit cost (TSLRIC/output¹) is used to regulate prices for PSTN O/T and ULLS); while
- Retail Price Minus Retail Costs is used to regulate prices for LCS.

The conclusion of this report is that the ACCC's implementation of each of these access-pricing methodologies may provide Telstra with the ability to profitably leverage its market power over the PSTN into downstream markets. We recommend changes to the detailed

¹ Unit access prices for PSTN O/T is based on TSLRIC++ - being an estimate of average forward looking costs of providing the total service plus a mark up for recovery of common costs plus a markup for recovery of an deficit in the recovery of CAN costs. TSLRIC stands for total service long run incremental costs. Unit access prices for ULLS are based on TSLRIC+. TSLRIC++ is not used, as no additional mark up is necessary for recovery of CAN related costs as all CAN costs are reflected in TSLRIC.

implementation of access pricing methodologies to reduce or remove the potential scope for such conduct by Telstra. The remainder of this report is structured in the following manner:

- section 2 provides a generic discussion of the likely pricing conduct of a stand-alone (not vertically integrated) bottleneck owner. In particular, the incentives for such a monopolist to offer efficient price discrimination of the bottleneck *to all* downstream firms is examined;
- section 3 shows that, unlike a stand-alone monopolist, a vertically integrated monopolist (VIM) may have an incentive to only offer price discrimination of the bottleneck to its affiliated downstream arm. The effect of this can be to significantly reduce the addressable market for unaffiliated downstream rivals;
- section 4 describes alternative generic regulatory approaches to prevent such leverage into downstream markets and the potential costs and benefits of these; and
- the appendices to the report examine the specific implications and recommendations for pricing of LCS, PSTN O/T, and ULLS access services.

2. ACCESS PRICING BY A STAND ALONE MONOPOLIST

This section establishes the incentives for a stand-alone bottleneck owner (eg, a pure wholesaler of PSTN services) in pricing the PSTN under TSLRIC style regulation. This will be a useful benchmark for us to compare the incentives of a vertically integrated monopolist (VIM) such as Telstra in the next section - and Telstra's actual conduct in the appendices to this report.

Let there be a stand-alone bottleneck owner who is supplying access to number of competing firms in the downstream market. For the purpose of this section it may be useful for the reader to think of this bottleneck owner as supplying PSTN O/T to firms in the long distance downstream market where the unit of supply is usage (call minutes and/or calls), however, the same analyses applies to other PSTN services – and, indeed, other industries. Because the bottleneck owner is 'stand-alone' ownership issues, by definition, provide it with no incentive to treat downstream firms differently.

Let the regulator set a maximum unit access price (W) that a stand-alone bottleneck owner can charge for access to its bottleneck. The regulated access price of W is in turn based on the regulator's estimate of average cost (say TSLRIC₊₊). This price W is the lowest price that the regulator estimates is consistent with recovery of fixed and variable costs. If the bottleneck owner charges this price universally to all firms then it can expect to recover its total fixed and variable costs (assuming the regulator has accurately estimated both costs and sales). An access seeker may be free to negotiate an alternative price with the bottleneck owner but those negotiations will be bounded from above by the knowledge that the access seeker can obtain regulated access at ' W ' per unit.

We now analyse how a non-vertically integrated bottleneck owner would behave when confronted with such constraints. Imagine that the bottleneck owner is initially selling all units of the bottleneck to downstream firms at W . Further, assume that W is greater than the marginal cost of production (eg, TSLRIC₊₊ > marginal production cost). Provided the bottleneck owner does not have to reduce prices on all existing sales it has a strong incentive to promote demand by selling additional units at any price greater than MC. Consequently, the bottleneck owner will have a strong incentive to encourage sales by reducing the price for additional units if, and only if, it can impose conditions 'i' that prevent full 'cannibalisation' / diversion of pre-existing sales made at W .

Conditions 'i' simply represent price discrimination conditions set by the bottleneck owner as a requirement for selling access at prices less than the regulated maximum price (W). For example, the condition may be that lower access prices are only to apply when the bottleneck is used to serve particular types of customers or when the downstream product is sold subject to particular types of conditions. The minimum average access price a profit maximising bottleneck owner will be willing to accept under conditions of sale 'i' is given by the following equation:

$$P_{\text{Access}}^i \geq OC_{\text{Access}}^i = (W - MC) * \gamma_i + MC; \quad (1)$$

where:

- 'i' *signifies the price structure/conditions placed on the sale of the bottleneck service in order to qualify for the discounted average access price P_{Access}^i ;*
- P_{Access}^i *= the average access price of bottleneck services sold subject to conditions i;*
- OC_{Access}^i *= opportunity cost to the bottleneck owner of selling access subject to conditions 'i'.*
- MC *= marginal production cost (this is assumed to be independent of i, although the analysis holds if it is not); and*
- γ_i *= the proportion of units sold subject to 'i' that would otherwise have been sold at W (ie, γ_i is the diversion ratio for goods sold under conditions 'i').*

The intuitive understanding of equation 1 is straightforward. It simply states that a stand-alone bottleneck owner would be willing to sell access to any downstream firm subject to conditions 'i' as long as the average price from such sales exceeded the marginal cost of producing access (MC) plus any lost margin as a result of 'cannibalisation' of sales that would have taken place anyway at the regulated maximum price of W ($(W - MC) * \gamma_i$). (See Armstrong et. al. (1996)² for one of the early discussions of diversion ratios and opportunity cost in access pricing.)

The closer the diversion ratio (γ_i) is to 1 then the less effective is the particular form of price discrimination in preventing cannibalisation of sales that would have occurred anyway. Consequently, the lower γ_i the higher the discount on W that the bottleneck owner will be prepared to offer. In the extreme when $\gamma_i = 1$ there is no effective price discrimination and all additional sales result in an exactly offsetting loss of pre-existing sales. In this circumstance the bottleneck owner will be unwilling to offer any discount on the maximum regulated access price (W).

It is useful to understand what sort of conditions 'i' could potentially result in a diversion ratio of less than 1. While the bottleneck owner does not actually provide the downstream long distance service it still has an interest to increase the (derived) demand for its bottleneck service. Using PSTN O/T to illustrate, it is possible that demand for long distance calls by business customers is substantially less price elastic than demand from residential customers. A profit maximising form of price discrimination may be to offer discounted access (ie, at less than W per unit) only where the downstream product is being sold to residential customers. Assuming competition causes this to be passed on in lower downstream residential long distance prices and assuming residential demand is sufficiently elastic then γ_i will be sufficiently below 1 to make the price reduction profitable. Another example of price discrimination is the introduction of two part tariffs or optional calling

² Armstrong, M. C. Doyle, and J. Vickers, (1996), The Access Pricing Problem: A Synthesis, Journal of Industrial Economics, 46, 115-121.

plans. These work by lowering the marginal price to customers and hence stimulating additional demand but levying a compensating increase in usage invariant charges. A further example may be that long distance calls to Greece are more price elastic than long distance calls to the UK or long distance calls at night are more price elastic than long distance calls during the day. In these cases the stand-alone bottleneck owner may have an incentive to offer access at prices lower than W for calls to Greece or made at night.

The cost structures of bottleneck services (such as the PSTN) invariably mean that there is a large gap between average costs (TSLRIC/total usage) and marginal production cost. This means that there are inevitably very strong incentives for price discrimination in order to meet unserved demand, ie, which values the bottleneck at more than MC but less than W . Indeed, from equation 1 it is clear that the incentive for price discrimination is a function of $W-MC$ – the larger is $W-MC$ the greater the incentive to design conditions 'i' that lead to a diversion ratio of less than 1. This incentive will be even greater where W is based on TSLRIC+ or TSLRIC++ as this will further widen the gap between W and MC . Consequently, it is highly likely that price discrimination of PSTN access services would be significant by a stand-alone PSTN owner.

A question then arises as to whether the stand-alone bottleneck owner would have an incentive to make such price discrimination available to all downstream firms or to only make it selectively available. For example, would the bottleneck owner have an incentive to make the above-discussed residential PSTN O/T discounts only available to one downstream firm or to all downstream firms? In answer to this question, there is no obvious reason why a stand-alone firm would favour one downstream firm over any other. In fact, there would be strong incentive to make price discrimination of the bottleneck available symmetrically to all downstream firms.

Consider a situation whereby there are two downstream firms each with 50 percent of the downstream market and also assume that conditions 'i' can be placed on bottleneck sales such that the average opportunity cost of sales made subject to 'i' is less than W . If the access seeker only made discounted sales subject to 'i' only available to one of these access seekers then it immediately reduces the potential channel for its price discrimination to 50 percent of end users. In addition, by supplying price discrimination to only one of the two downstream firms there is no competitive pressure on that firm to fully pass associated discounts onto final customers. Furthermore, asymmetric treatment of the downstream firms may advantage one firm more generally and enable it to increase its market share. If this results in an overall reduction in competition, and higher downstream prices than otherwise, it may result in lower derived demand for the bottleneck.

Symmetric price discrimination of the bottleneck is used in this report to signify conditions placed on the purchase of access that apply to all downstream firms symmetrically.

3. VERTICAL INTEGRATION AND RESTRICTED PRICE DISCRIMINATION

In contrast to the previous section, this section examines the impact of allowing a vertically integrated monopolist to pursue price discrimination of the bottleneck solely through its affiliated downstream entity.

A stylised example is used to illustrate the potential impact of such a policy and the following discussion is reflected in the below graphical analysis. In this stylised example we assume that all consumers are identical which allows us to carry out the analysis by examining a *single* customer's demand curve and inferring the impact on all customers from the impact on that 'representative customer'. The simplifying assumptions adopted are:

- $D_{\text{Repres. Consumer}}$ = the downstream demand function - **which is assumed to be identical for all consumers**;
- $MC=0 \Rightarrow$ the marginal production cost of the bottleneck is zero over the relevant range;
- $C_{\text{DS}}=MC_{\text{DS}}=AC_{\text{DS}} \Rightarrow$ that is, downstream production costs exhibit constant returns to scale and all downstream producers (including the VIM) have identical marginal and average production costs; and
- X_1 = consumption by the representative consumer when the downstream product is priced at $W + C_{\text{DS}}$;
- X_2 = consumption by the representative consumer when the downstream product is priced (at the margin) at C_{DS} ;
- the units of the downstream product are defined such that one unit of the downstream product requires one unit of input of the bottleneck (eg, one minute of a long distance call requires one minute of PSTN originating and/or terminating service);

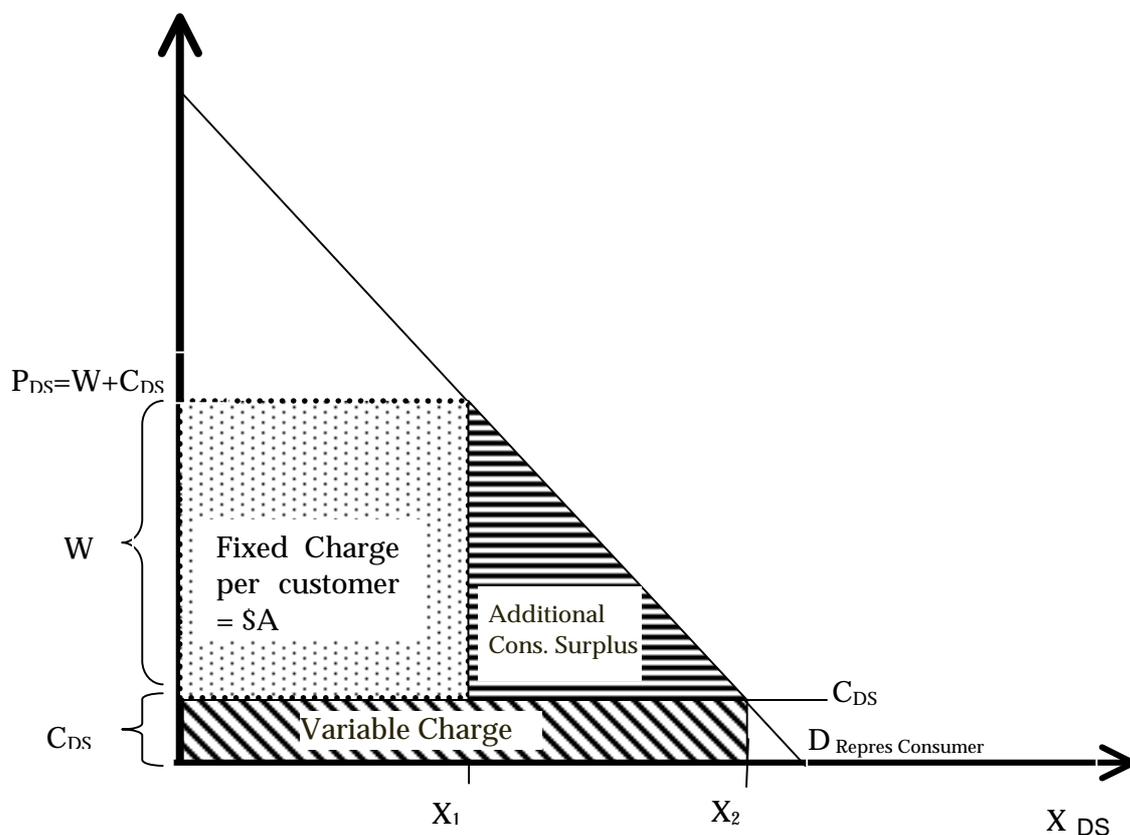
Initially let us assume that the VIM is charging itself and all other rivals an access price of W which is reflected in downstream prices. As all downstream firms costs are identical this means that all firms are pricing the downstream product at W plus C_{DS} . Similarly, as all consumers are identical they are all consuming the same quantity (X_1). The bottleneck owner is receiving revenue of $W * X_1$ per final customer plus $C_{\text{DS}} * X_1$ (the number of downstream customers served by the VIM). That is, the VIM receives $W * X_1$ from all customers irrespective of who serves them in the downstream market and also receives C_{DS} per unit from those customers it sells downstream services to directly.

Now, let us examine the impact of asymmetric price discrimination with the VIM introducing a two-part tariff in the downstream market with a fixed charge of $A=W * X_1$ and

a variable charge of C_{DS} . If customers continue to consume X_1 , then the VIM will receive the same revenue per customer as under the previous pricing structure. If demand increases then the VIM will recover sufficient additional revenue to cover its marginal cost (zero for the bottleneck and C_{DS} for the downstream service).

The VIM's new price structure will indeed stimulate downstream market demand beyond the previous equilibrium (from X_1 to X_2). The VIM's level of profits are unchanged as it continues to extract a contribution to bottleneck fixed costs of $A=W \cdot X_1$ per customer and charges marginal units at marginal cost (ie, downstream marginal costs in this example). As a result, the entire surplus created by serving additional demand accrues to consumers.

Figure 1



However, the VIM's new price structure drives all downstream competitors out of the market as they can no longer supply the new equilibrium quantity per customer (X_2) at a profit. To see that this is the case note that it would cost rivals $(W + C_{DS}) \cdot X_2$ to supply each customer. However, revenues would only be equal to $A + C_{DS} \cdot X_2$. Since A has been set by the VIM equal to $W \cdot X_1$, if the rival matches the VIM's downstream price structure it must be making a loss of $W \cdot (X_2 - X_1)$. That is, the rival loses $\$W$ on every additional unit sold as a

result of matching the VIM's two-part tariff. This reflects the fact that the VIM is charging rivals W for each additional unit of the bottleneck beyond X_1 but is charging itself zero (ie, marginal cost). Essentially, the VIM is charging itself a two-part tariff for access to the bottleneck per customer served (of $\$A$ per customer plus zero dollars per unit) while it continues to charge downstream rivals a single price of W per unit.

The average price charged for the bottleneck is now less than W and welfare is increased for all consumers while the VIM's profits are the same as previously. Thus, the introduction of price discrimination is, at least in the short run, superior to the strategy of charging W per unit for the bottleneck to all suppliers (including itself). However, there are potentially significant costs in terms of the impact on downstream competition and the ability of rivals to restrain monopoly pricing and promote dynamic efficiency in the downstream market.

Furthermore, the same efficiency benefits from price discrimination could be achieved with no cost to downstream competition if the VIM offers price discrimination symmetrically to all downstream firms. In particular, if the VIM made available the option of an identical two-part access tariff to rivals then downstream rivals could have chosen to match the VIM's downstream price. In fact, in a world where all downstream producers are not identical (ie, some product differentiation) this would mean that the efficiency benefits of price discrimination would be increased as they would become available to all consumers – irrespective of their preference for one or the other of the downstream firms.

This would be the result that would occur if the VIM followed the following access pricing rule:

“Access prices should be set in the same manner as they would be set by a stand-alone bottleneck owner”

3.1. Anticompetitive Asymmetric Price Discrimination by the VIM?

The simple answer to this question is that if the VIM wishes to increase its downstream market share then it will tend to have an incentive to only offer price discrimination through its affiliated arm. However, such favouritism will come at a cost to the VIM (at least short term) if its downstream affiliate is not the perfect conduit for all forms of price discrimination (eg, because it does not currently have 100% of the downstream market). In addition, there may be long term costs to the VIM if the VIM's downstream affiliate is not as efficient as potential rivals (and therefore long run demand is reduced for the bottleneck good).

Nonetheless, there may be privately rational reasons for favouring the downstream affiliate notwithstanding the above potential costs. In particular, economies of scale or scope may exist in the downstream market and between the downstream market and other markets. Furthermore, dominance in the downstream market (and the ability to maintain that dominance through preferential supply of the bottleneck) may create the ability to set future

monopoly prices in that market that can not be achieved directly from sale of the bottleneck which is subject to a regulated maximum price of W . Noll (1995)³ analyses why a vertically integrated monopolist may wish to favour its downstream affiliate in some detail although this discussion of favouritism is not restricted to price discrimination of the bottleneck.

Under these conditions, where marginal access prices are set above the monopolists marginal production costs, the monopolist will have the capacity and the incentive to reduce the addressable market for downstream rivals by selling the bottleneck service to itself at a lower price than it sells it to rivals. Only by reducing marginal access prices to marginal cost can this incentive be eliminated. This is because only when access seekers face the same marginal cost of using the bottleneck as does the monopolist will they be able to compete for all downstream customers on an equal footing.

3.2. Efficient Asymmetric Price Discrimination by the VIM

Restricting price discrimination may be justified if the costs of monitoring that conditions ‘i’ are being satisfied is prohibitively high for downstream firms. In terms of our previous residential/business example, if the bottleneck owner can not properly monitor who its downstream rivals are selling their services to (residential or business customers) it may not be able to prevent them buying access at the residential rate and then using it to serve business customers. Such a process would effectively undermine the benefits of price discrimination – ie, some business customers would end up with the lower access price leading to a diversion ratio closer to 1.

Nonetheless, in the absence of this agency problem, it is difficult to perceive of any a priori reason price discrimination should be restricted to the bottleneck VIM’s downstream affiliate. Of course, it would be expected that the bottleneck owner would work closely with all downstream producers on such matters. For example, if downstream producers believed that they could significantly increase existing sales of the bottleneck by pursuing a particular strategy then they could be expected to approach the bottleneck owner to negotiate a discount for access used to supply sales made in accordance with such a strategy.

³ Noll R., (1995) “The Role of Antitrust in Telecommunications”, *The Antitrust Bulletin*, (Fall), pp. 501-528.

4. ACCESS PRICING AND PRICE DISCRIMINATION

This section addresses the regulatory tools available to the regulator to enable consumers to benefit from the positive aspects of price discrimination while reducing the scope for damage to downstream competition.

4.1. First best solution – Marginal Cost Pricing

Clearly, the first best solution in terms of promoting efficient use of the bottleneck is for the regulator to set marginal access prices equal to marginal production cost and for the recovery of fixed costs to be collected either through inframarginal access prices (such as fixed charges per customer) or tax transfers. With zero marginal bottleneck production costs (as per the stylised scenario from the previous section) this would be achieved via a regulated access price equal to \$A per customer served. Of course, this would require that it is possible to monitor how many final customers are being served by access seekers – which is relatively easy in the case of the PSTN but may not be in other bottleneck industries such as rail.

However, such an approach will not always be practicable for a number of reasons including the fact that it may result in a significant change in the structure of downstream prices.

4.2. Problems with Imputation Testing

One regulatory response to the existence damage to downstream competition as a result of price discrimination is to impose a downstream price floor based on application of an imputation test. There is detailed discussion in the literature of the appropriate price floor for a vertically integrated bottleneck owner necessary to identify the existence of a price squeeze⁴ in the VIM's downstream price. Hausman and Tardiff (1995)⁵ analyse this question under a number of different circumstances. In the situation where the production cost of supplying a rival is the same as the production cost of supplying itself the downstream price floor for a VIM is given by:

$$P_{DS}^{VIM} \geq W + C_{DS}^{VIM} \quad (2)$$

That is, the VIM's downstream price (P_{DS}^{VIM}) must be greater than or equal to the access price it charges rivals (W) plus the VIM's downstream costs of production (C_{DS}^{VIM}).

⁴ A price squeeze exists where the VIM is charging a bottleneck access price such that an equally efficient downstream producer who relies on the bottleneck as an input can not compete with the VIM's downstream price.

⁵ Hausman J., and Tardiff T., (1995) "Efficient Local Exchange Competition", *The Antitrust Bulletin*, Fall 1995, pp529-556.

While such a price floor, strictly applied, will prevent damage to downstream competition as a result of price discrimination it also outlaws efficient price discrimination. To see this note that price discrimination, by definition, involves a reduction in the average (implicit or explicit) unit price for the bottleneck below W for some customers. This is done in a deliberate attempt to encourage those customers with the most elastic demand to increase consumption. Consequently, a VIM can not price discriminate its own product without breaching the price floor given by equation 1.

Of course, it is possible that the threat of a strictly enforced price floor will force the VIM to make price discrimination available through all access seekers. That is, if the only way a VIM will be allowed to price discriminate is to also offer equivalent access discounts to rivals then it may have an incentive to do so. This would require that the regulator strictly enforces, and the VIM expects strict enforcement, of the imputation test.

However, carrying out an imputation test effectively involves the regulator establishing the VIM's implicit access price. In which case, the obvious question is wouldn't it be better to make this discounted implicit access price available to rivals rather than forcing the VIM to raise downstream prices (and stop price discrimination)? This question is addressed in the next sub-section.

4.3. Second Best Solution – ECPR plus TSLRIC

As long as regulated marginal access prices remain above marginal production cost, the only way in which downstream competition can be protected without sacrificing the benefits of efficient price discrimination is for the VIM's implicit price discrimination of internally supplied access to be made explicit in access prices available to all downstream producers – as would be the case if the bottleneck owner were not vertically integrated.

This can be achieved by continuing to allow access seekers to have unconditional access to the bottleneck at W (based on TSLRIC) but to also have the option of conditional access at:

$$P_{\text{Access}}^i (\text{regulated}) = P_{\text{DS}}^{\text{VIM},i} - C_{\text{DS}}^{\text{VIM}}; \text{ Where:} \quad (3)$$

$P_{\text{DS}}^{\text{VIM},i}$ = the VIM's downstream price which is available subject to the conditions 'i'; and

$C_{\text{DS}}^{\text{VIM}}$ = the VIM's downstream production costs.

That is, if the VIM offers the downstream product at a given price/price structure under given conditions 'i' then access seekers would be able to buy access at the access price the VIM is implicitly charging itself – calculated as the VIM's downstream price less the VIM's downstream costs. However, this access price would only be available where the access seeker imposed the same or 'similar' conditions 'i' in the downstream market as does the VIM. Of course, access seekers would always have the choice of buying access at W per unit which would serve to constrain the VIM in its own downstream pricing.

It is apparent that the above access pricing methodology is essentially the combination of cost based (TSLRIC) access pricing with a version of the efficient component-pricing rule (ECPR). The TSLRIC price sets the ceiling for access prices and the application of ECPR to downstream prices ensures that whenever the VIM implicitly charges itself a lower access price access seekers also have the option of that lower price – provided they meet any conditions ‘i’ that the VIM has placed on its associated sales.

It is interesting to note that in combination with TSLRIC regulation ECPR acts to protect downstream rivals. This is in comparison to the common view of ECPR on its own as being an ‘incumbent friendly’ access pricing methodology. Partly because of the ‘baggage’ associated with ECPR and partly because of the similarity with the ACCC’s retail minus approach we refer to equation 3 in this report as ‘downstream minus’ access pricing.

The benefit of joining ‘downstream minus’ to existing cost based regulation is that it allows the vertically integrated monopolist to pursue efficient price discrimination techniques without damaging downstream competition. The importance of this benefit should not be under-estimated given the cost structure of bottleneck industries. That is, in high fixed cost low marginal cost industries price discrimination will inevitably be a policy vigorously pursued when possible by the bottleneck owner. Furthermore, such price discrimination can be efficient but is also likely to damage downstream competition. With the parallel introduction of ‘downstream minus’ access pricing, regulation is no longer forced to choose between stopping efficient price discrimination in the use of the bottleneck (and therefore lowering welfare) or allowing the incumbent to advantage itself at the expense of downstream rivals.

APPENDIX A. APPLICATION TO LCS

A.1. Current Access Pricing Methodology – ‘Retail Minus’

The ACCC currently applies a ‘retail minus retail costs’ access pricing methodology to determine the wholesale price of the local carriage service (LCS). The retail minus methodology employed by the ACCC is similar to the ‘downstream minus’ methodology suggested in equation 3 above. However, an important exception is that where Telstra bundles line rental/local calls with other services then the bundled price of line rental/local calls is excluded from the calculation of the wholesale LCS price. For example, if Telstra sells line rental/local calls at retail in a bundle with long distance then the prices Telstra sets for line rental/local calls within that bundle are ignored for the purpose of establishing wholesale LCS prices.

Under these rules, any price discrimination practised by Telstra outside bundles will become automatically available to downstream rivals such as Optus. This means that if Telstra introduced price discrimination in the stand-alone market (say through the use of optional calling plans (OCPs)) then downstream rivals’ access prices would be automatically adjusted to enable them to offer similar price discrimination to their customers. This enables rivals to compete for all customers, including those who benefit from Telstra’s price discrimination, and ensures that the benefits of price discrimination in terms of promoting efficient utilisation of the PSTN is maximised.

However, if Telstra introduces price discrimination within bundled offerings then this price discrimination will not be available to downstream rivals at the access level. Consequently, downstream rivals may not be able to compete for any sub markets created by Telstra’s price discrimination *within* bundles.

A.2. Telstra’s Conduct

A.2.1. Expected Conduct by Telstra

If it is assumed that Telstra wishes to increase retail market share even if it is not the least cost downstream provider then one would expect Telstra:

- to exclusively supply the sale of price discriminated PSTN services to its own retail arm by only offering OCPs within bundles but not outside bundles;
- to restrict any lowering of retail prices that are not related to price discrimination practises to bundled offerings; and

- to be biased towards bundling relative to other forms of price discrimination – even if the necessary underlying demand conditions to justify bundling (ie, poor correlation between line rental/local calls and other bundled services) are not met.

Alternatively, if Telstra’s objective was maximising efficient utilisation of the PSTN Telstra would be expected:

- to provide OCPs at the wholesale level as well as the retail level;
- to only bundle line rental/local calls at a discount to stand-alone prices where there is evidence of poor correlation between local calls and the other services bundled that could commercially justify such a correlation;⁶ and
- where discounted bundles are deemed to be justified as a price discrimination tool to promote sales of bottleneck services, to offer downstream rivals discounts on their wholesale bottleneck price subject to the condition that units sold at such discounts are used to serve customers in similarly constituted bundles.

A.2.2. Actual Conduct by Telstra

Local calling services are already price discriminated at the retail and access level by the use of two part tariffs. However, as is discussed below, Telstra further price discriminates the PSTN at the retail level by offering a menu of optional two-part tariffs – or optional calling plans (OCPs). Optional two part tariffs are a standard form of price discrimination used by monopolists, Tirole’s (1998)⁷ chapter on price discrimination notes:

“Suppose, however, that the monopolist cannot tell the consumers apart. In particular, assume (in contrast to the previous section) that there is no exogenous signal of a consumers demand function (such as age or occupation). This does not mean that the monopolist will not try to discriminate between consumers and will content himself with a unique bundle for all consumers. He can offer a menu of bundles to choose from. In doing so he must, however, take into account the possibility of personal arbitrage, ie., the possibility that a consumer to whom a given bundle is directed may want to choose a bundle directed to another consumer. This introduces ‘self-selection’ or ‘incentive-compatibility’ constraints, which, in general make perfect price discrimination impossible...”

⁶ In terms of equation 1, this means that poor correlation between services means that gamma must be less than 1 (reducing the right hand side of the equation) by enough to justify the discount implicit in the bundled price (ie, the left hand side of the equation).

⁷ Jean Tirole “*The Theory of Industrial Organisation*” MIT Press (1998) pp 148-149 and 154-157.

“This section starts with a simple example of a two part pricing. Because a [single] two part-tariff is generally not optimal it then proceeds to a consideration of more general non-linear pricing schemes.” Page 143. .

The non-linear pricing schemes referred to by Tirole are essentially different menus of optional two part-tariffs. The term ‘bundle’ in the above text is best interpreted as the ‘price structure’ that defines the cost of each given consumption level. In discussing the profit maximising structure of such a menu of two part tariffs (or optional calling plans in a telecommunications context) Tirole further notes:

“A high demand consumer can consume the low demand consumers’ bundle if his own bundle does not generate enough surplus. To relax this personal arbitrage constraint, the monopolist offers a relatively low consumption to the low demand consumers. Because high demand consumers suffer more from a reduction in consumption than low demand ones, this relaxes the personal-arbitrage constraint. Hence, the monopolist reduces the quantity consumed by the low demand consumers so that the high demand consumers will be less tempted to consume the low demand consumers’ bundle. Conversely, low demand consumers are not tempted to exercise personal arbitrage, and there is no point to introducing a distortion in the high-demand consumers’ consumption (any welfare gains stemming from a move of the marginal price toward the marginal cost can be captured by the monopolist through an increase in T_2).”⁸ (Page 149) T_2 can be thought of as the fixed component of the optional tariff aimed at high usage customers

Precisely this conduct is observed in Telstra’s retail offerings for local calling services. The following table summarises Telstra’s retail residential pricing of line rental/local calls as it relates to stand-alone prices in the residential market.

⁸ If a monopolist is access regulated then when offering optional tariffs for use of the bottleneck (either directly to access seekers or indirectly through downstream prices) it also faces the constraint that access seekers (and implicitly downstream customers) always have the option of buying access at the regulated maximum average price (W).

Telstra's Residential Retail Pricing of Line Rental and Local Calls

	Line Rental (\$/month)	Per call (cents)
Stand Alone Packages		
HomeLine Part	23.50	22.0
Bundled Packages (line rental/local calls plus carrier preselect services)		
HomeLine Budget (OCP1)	17.50	30.0
HomeLine Complete (OCP2)	23.50	20.0
HomeLine Plus (OCP3)	26.50	17.5
As above plus 1 of internet or mobile or pay TV	Choice of above OCPs less 5%	Choice of above OCPs less 5%
As above plus 2 of internet or mobile or pay TV	Choice of above OCPs less 10%	Choice of above OCPs less 10%

Consistent with the above table, Telstra offers three OCPs within its bundled services– with the highest line rental OCP being 50% higher than the lowest and the highest per call charge OCP being 71% higher than the lowest. This reflects a very significant degree of price discrimination occurring through OCPs within bundles. As discussed previously, OCPs are used as a form of price discrimination by monopolists in a range of industries to promote maximum utilisation of fixed costs by lowering marginal costs to high elasticity customers but not to low elasticity customers. In addition, Telstra also reduces both these prices a further 5% if one (10% if two) of internet, mobile services or Pay TV is also purchased from Telstra.

Telstra offers no such price discrimination outside its retail bundle customers – with only one price being available to customers who do not bundle (the HomeLine Part price). This means that price discrimination of the PSTN bottleneck is not practised on:

- customers who are served by Telstra for line rental/local calls but who preselect a rival for long distance; and
- customers who are served by Telstra's downstream rivals for line rental/local calls.

If Telstra's objective is to maximise the efficient usage of the PSTN it is difficult to conceive of a rationale for denying OCPs to its own retail customers. That is, currently Telstra does not price discriminate amongst its retail customers for local calls who choose a rival for preselect services. In particular, Telstra does not offer any variation in the line rental/local call price structure outside of bundles including preselect services. This failure to offer OCPs outside bundles is likely to reduce the impact of price discrimination and therefore reduce the efficient level of utilisation of the PSTN relative to a scenario where price discrimination was practised symmetrically with all downstream retail producers – not just restricted to Telstra's retail arm.

A.3. The ACCC's Draft Determination

The ACCC's draft determination examined the issue of including Telstra's bundled retail prices in the calculation of the LCS wholesale price. This examination was in the context of submission's by Telstra's rivals, including Optus, that Telstra's bundling strategy imposes a 'price squeeze' on them in relation to reselling LCS. Optus argued that a weighted average of all Telstra's local call prices be used to set the starting price for local calls and that this be combined with a starting line rental charge equal to the HomeLine Part line rental.

However, the ACCC rejected any change to its current methodology on the following grounds:

- Telstra's bundles, taken on aggregate, did not fail an imputation test;
- local call/line rental prices within the bundle may be lower due to 'cross subsidisation' from carrier preselect services; and
- applying a retail minus methodology to bundled offerings may result in a 'ratcheting down' of retail prices.

We discuss these grounds in the following subsections. We also examine Optus' specific proposal for including bundled prices in the LCS calculation. We find that neither the ACCC nor Optus' conclusions capture the ideal policy response to the issues. This is especially so once the role of price discrimination is understood.

A.3.1. Imputation Test Analysis

A.3.1.1. The ACCC's approach

The ACCC carries out an analysis of whether a downstream rival would be able to profitably match Telstra's entire bundled services if they paid the ACCC's regulated access prices. This is equivalent to asking "if Telstra was separated into a wholesale (PSTN) entity and a downstream (non-PSTN) entity could the downstream entity profitably serve all its current bundle customers if it was forced to pay the wholesale entity the ACCC's regulated access prices"? When it carries out this analysis the ACCC finds that the answer is 'yes' when all bundles are taken together but 'no' if local call services are looked at individually.

The ACCC further argues that rivals generally seek the LCS service as an input not just into retailing local calls but rather as one of many inputs into providing a full suite of services to customers – including long distance and other preselect services. It follows that provided Telstra's bundles as a group pass the imputation test, equally efficient downstream rivals must be able to match Telstra's prices. The ACCC concludes from this analysis that it is sufficient to require that the entire set of bundles offered by Telstra (taken in aggregate) pass the imputation test.

A.3.1.2. *Problems with the ACCC's approach*

An imputation test is a useful tool in detecting a price squeeze (predatory pricing) by a vertically integrated monopolist. On the basis of the ACCC's findings and assumptions it may be reasonable to draw the conclusion that Telstra's bundled prices are not predatory and, therefore, there is not a case for action aimed at disciplining predatory conduct.

However, the ACCC's analysis goes beyond this statement and elevates the role of the imputation test to a de facto access pricing mechanism – a role for which it is not designed and for which its usefulness is severely limited. In doing so, the central role of monopoly profits (or rents) in driving the competitive process is potentially materially damaged. To understand this, note that the ACCC's approach is actually consistent with an access pricing methodology that states:

“Telstra is able to set wholesale prices for LCS (based on HomeLine Part prices) at any level⁹ that allows an aggregation of all Telstra's bundled offerings to pass an ACCC imputation test (based on ACCC assumptions regarding downstream costs)”

This is clearly a significantly different (and less transparent¹⁰) access pricing methodology than retail price minus retail costs applied to all retail prices. However, the major concern with this approach is that it effectively allows Telstra to extract all rents being earned by competitors in the downstream preselect market via higher LCS access prices. It is therefore potentially highly damaging to competition in that market as the existence/prospect of rents no longer drives the competitive process (ie, incentives for competitive entry, facilities investment and customer acquisition are all suppressed).

Telstra is able to lock in its current level of rents in the sale of preselect services *and* to acquire all rents being earned by rivals in that market. In doing so, Telstra effectively extracts the rents that should be driving the competitive process to deliver lower prices and better quality to end-users. A simple example can illustrate this. Initially, let the downstream retail prices for Telstra and access seekers be identical for both local calling (priced at LCS plus retail costs) and long distance (priced at \$20 above cost per annum and

⁹ Under the ACCC's current approach to LCS pricing and imputation testing Telstra can choose to increase HomeLine Part retail prices up to the maximum level imposed by the price cap. This will increase its wholesale LCS price commensurately. However, Telstra can choose not to increase its bundled local call prices commensurately. If an imputation test is the only constraint on Telstra pursuing this strategy then wholesale LCS prices can rise relative to Telstra's bundled retail local call prices until an imputation test on all bundles suggest that they are unprofitable. Depending on the ACCC's application of the imputation test and the margin being earned on long distance, such an approach could easily lead to Telstra's *retail* bundled local call prices being significantly below *wholesale* LCS prices.

¹⁰ Under this access pricing methodology the ACCC's estimates of downstream long distance and fixed to mobile costs take greater precedence in the calculation of Telstra's access price constraint than do retail local calling prices and costs. Consequently, in assessing the practical implementation of this approach it is more important for interested parties to have access to the ACCC's long distance cost assumptions than it is to have access to Telstra's retail RAF accounts.

per customer). This creates the conditions for strong price and non-price competition between existing long distance providers and for the entry of new long distance providers.

However, Telstra is able to increase the access price for LCS by \$20 (by increasing the HomeLine Part price by \$20) before it fails the ACCC's proposed imputation test on the bundle of local and long distance services. It is clearly in Telstra's interest to do precisely this since this will immediately increase its overall profitability (as it will receive an additional \$20 per customer served by LCS) *and* it will dramatically reduce (eliminate) the impetus for entry and competition by rivals in the long distance market. In this fashion Telstra locks in existing rents on its own sales and extracts rents earned by competitors.

Essentially, the LCS access price is used by Telstra as a tax on customers who choose preselect services with a rival. Customers cannot avoid this tax as they either pay it implicitly in the form of higher access prices or in the form of higher retail prices if they choose to remain with Telstra for local calls (ie, pay the HomeLine Part price). It would appear highly dangerous to competition to provide an incumbent with an instrument that can be used as a tax on competition.

An additional, but by contrast much less important, problem with the ACCC's imputation test is the assumption that current Telstra customer usage patterns are appropriate when applying an imputation test. Access seekers who match Telstra's price structure are unlikely to win customers with Telstra's current usage patterns - as are Telstra customers who remain with Telstra unlikely to retain the same usage pattern. Usage patterns adapt with a lag to prices structures as individual customers take time to adapt to changed prices and to overcome transaction costs - such as switching to newly available OCPs.

To take a simple example, imagine HomeLine Plus has the lowest margin of all Telstra's OCPs and that overtime all customers can be expected to migrate to HomeLine Plus (and can be expected to take advantage of lower usage charges by increasing consumption). Imagine that after this process is complete then the margin on the ACCC's aggregate imputation test be failed. It may appear that this is only a problem in the future when customers migrate. However, a new entrant who matched all Telstra's OCPs would only win HomeLine Plus customers (as we have assumed that this is the most desirable OCP for all customers). The new entrant would find itself unable to compete with Telstra's prices *today* despite the fact that, when looking at Telstra's customers usage profile, an imputation on today's Telstra's retail prices is passed.

In addition to the above issues, it is also problematic for the efficient utilisation of the PSTN that Telstra has an incentive to restrict price discrimination in the provision of its PSTN services to its retail customers. This is because it will:

- artificially reduce the benefits of price discrimination in terms of improving efficient utilisation of the PSTN. This reflects the fact that restriction of price discrimination

to a subset of customers (ie, the incumbent's retail customers) automatically reduces the scope of price discrimination to encourage efficient consumption decisions; and

- reduce the addressable market for downstream rivals (as some customers such as large volume local call customers will simply no longer be profitable to compete for – despite these customers remaining profitable for Telstra to serve).

A.3.2. Do bundled LCS prices embody 'cross subsidies'?

Within a bundle a firm will rationally follow an (efficient) Ramsey pricing rule where the least price sensitive services make the greatest contribution to recovery of fixed costs. If line rental and local calls are likely to be less price sensitive than carrier preselect services (eg, long distance) then we would expect Telstra to raise the prices of these services within a bundle and lower the price of carrier preselect services. In this situation, it would be more likely for Telstra to *increase* the price of local calls and line rental and reduce the price of long distance in its bundles.

As discussed below in Appendix B, precisely this conduct is observed in Telstra's bundles with the price of long distance calls falling significantly in the bundles where line rental is highest. This suggests that rather than long distance 'subsidising' local call services (line rental and calls) that the opposite is true – at least for the HomeLine Plus bundle. Consequently, a case can be made that simply applying line rental and local call prices from within Telstra's HomeLine Plus bundle will result in *too high* an estimated access price. This is because, within the bundle, part of the line rental charge is actually attributable to the recovery of fixed long distance costs.

A.3.3. The issue of 'ratcheting down' retail prices

The ACCC has expressed concern that applying a retail minus methodology to all Telstra's prices could potentially result in a 'ratcheting down' of local call prices. In its draft determination the ACCC states:

"The use of Telstra's unbundled local call prices associated with different line rental offerings for determining the retail starting prices to calculate LCS prices is designed to capture Telstra's standard local call prices free of any cross-subsidisation by other call services such as long-distance calls. This avoids the prospect of 'ratcheting down' of the access price were access seekers to lower their retail local call prices below Telstra's which if matched by Telstra would lead to a lower LCS price in an ongoing process." (Page 67)

The above quote suggests that the ACCC has excluded bundled offerings from the retail minus methodology at least in part due to a concern over 'ratcheting down' of retail prices. This is a rather severe response to such concerns and effectively results in the great majority of Telstra's retail local call/line rental services falling outside the scope of the retail minus pricing methodology. As discussed above, this is an effective abandonment of the retail minus methodology.

It is questionable whether it is appropriate to be concerned about ‘ratcheting down’ given that Telstra has control over whether it matches rivals’ line rental/local call prices *and* Telstra sells all units at wholesale in any event. However, if such a concern remains then a less drastic way to deal with it is to require access seekers not to resell LCS at less than Telstra’s retail price (ie, Telstra’s wholesale price plus the ACCC’s estimate of retail costs). Alternatively, if access seekers do price below this level the access price paid by them could be increased by some proportion (up to 1) of the difference in retail prices. Such an approach removes any potential disadvantage to Telstra while also preventing Telstra from gaming the exclusion of bundled offerings by increasing the price of unbundled offerings relative to these. Any price competition would then occur in the long distance market.

A.3.4. Averaging all Telstra’s local call prices

Optus has argued that a weighted average of all Telstra’s local call prices be used to set the starting price for local calls and that this be combined with a starting line rental charge equal to the HomeLine Part line rental. This approach would address the above identified problem whereby Telstra can use the current HomeLine Part price (and associated LCS access price) as a tax on competition for preselect services. However, it is not first best as it may reduce Telstra’s incentive to offer OCP’s with low marginal usage prices and high fixed charges. This is because access seekers would receive lower per call access prices as a result but would not make any correspondingly higher fixed charges. As discussed below, access seekers (or their customers) should be required to match the price discrimination conditions imposed by Telstra on its retail offerings.

A.4. Solutions to Asymmetric Price Discrimination by Telstra

Assuming that it is accepted that price discrimination of local calls should be made widely available to all downstream rivals the question arises as to how the access-pricing regime can achieve this.

A.4.1. Marginal cost pricing

There would be no need for concern over asymmetric price discrimination if marginal access prices per customer were equal to marginal cost. However, retail prices are currently significantly divergent from marginal cost pricing and an immediate move to marginal cost pricing of LCS (with a large fixed cost per customer and small marginal cost) would likely be considered too disruptive to be contemplated.

A.4.2. Retail minus pricing

Within the retail minus approach, a comprehensive approach to this problem would be to apply retail minus retail costs to *all* of Telstra’s prices. Such an approach would involve a number of different access prices depending on whether rivals match the conditions Telstra currently places on its retail sales of local call services. That is, equation 3 can be used to set

access prices for each OCP. Under Telstra's current retail price structure the following access prices would apply:

- where a wholesale customer resells LCS on a stand-alone basis the wholesale LCS price is based on Telstra's HomeLine Part retail price of \$23.50 line rental and 22 cents per call; and
- where a wholesale customer resells LCS in a bundle with preselect services the wholesale LCS price per customer is based on whichever OCP (HomeLine Budget/Complete/Part) the rival nominates subject to that nomination meeting the same conditions Telstra imposes on its retail customers (eg, selection can only be changed with X days notice, LCS must be resold with preselect services etc.).

As already discussed, such an approach is likely to result in an overestimate of the true retail minus access price derived from within the HomeLine Plus bundle – as higher line rental 'subsidises' lower local call *and* lower long distance prices. That is, access seekers purchasing the HomeLine Plus OCP at retail minus prices will actually be paying in part for a contribution to lower long distance call prices that they do not benefit from. An adjustment could be made for this by removing an estimate of the average monthly reduction in long distance call costs attributable to higher line rental in the HomeLine Plus bundle.

It should also be noted that Telstra currently offers a 5 to 10% additional discount on local and preselect services if they are bundled with mobile/internet/pay TV. Unless there is some reason to believe that the discount on local call services is actually a disguised discount on internet/pay TV/mobile services then this discount should also be passed on in lower LCS prices – provided the access seeker also bundles its sales with internet/pay TV/mobile services.

A.4.3. Alternative approaches

It is possible that the ACCC may regard a change to comprehensive retail minus pricing of LCS to be too radical a shift in the near term. However, the ACCC may nonetheless be concerned that Telstra's non-symmetrical price discrimination of line rental/local calls is distorting downstream competition. If this is the case then other more partial approaches to preventing distortions to downstream competition may be employed.

One obvious example is to require Telstra to provide 'similar' OCPs outside bundles as inside bundles. Currently, Telstra has three OCPs within bundles with low, medium and high line rentals. The ACCC could indicate that unless Telstra provided a similar variety of price discrimination to access seekers (ie, in its unbundled prices) the ACCC would use Telstra's bundled prices to set access prices. If Telstra then responded by providing unbundled OCPs that are significantly higher than the bundled OCPs the ACCC may wish to ask Telstra to provide a commercial justification for this other than simply wishing to advantage its own downstream arm.

Similarly, the ACCC may wish to indicate that it considers the reasonable extension of wholesale price discrimination to access seekers as a desirable policy goal and will monitor Telstra's pricing structure with this in mind. The ACCC may further wish to indicate that, to the extent that significant price discrimination in Telstra's retail local calling prices is not reflected in its wholesale offerings (such as may be the case now with bundled OCPs) it will require Telstra to do so.

APPENDIX B. APPLICATION TO PSTN O/T

B.1. Current Access Pricing Methodology – TSLRIC++

The ACCC currently applies a 'TSLRIC++' methodology to PSTN O/T access pricing which essentially calculates the (forward looking) cost of the call conveyance network plus an allocation of costs common to other services plus an access deficit contribution (ADC).¹¹ This is then transformed into an access charge by allocating the total cost to calls/minutes and then dividing by the total forecast number of calls/minutes. The final access charge can then be characterised as follows:

$$\text{PSTN O/T} = \text{Average Cost of Conveyance} + \text{Average Common Costs} + \text{Average ADC}$$

This equation is important to understand Telstra's incentives for price discrimination. Recall from equation one, reproduced below, that the incentive for price discrimination is a function of the divergence between the access price (W) and the marginal cost of providing access. The larger is the gap 'W-MC' the greater the potential profit from any given price discrimination strategy (ie, any strategy 'i' that gives rise to a $\gamma_i < 1$).

$$P_{\text{Access}}^i \geq OC_{\text{Access}}^i = (W - MC) * \gamma_i + MC;^{12} \quad (1)$$

This incentive is particularly strong in the case of PSTN OT since not only is the access charge based on average conveyance costs but it is also increased by the inclusion of ADC and common costs. Even without the addition of the ADC and common costs (which account for around half of the PSTN OT access charge) the marginal cost of call conveyance is likely to be significantly less than the average TSLRIC due to the existence of significant fixed costs in the conveyance network (eg, trenching, building sites and to some degree

¹¹ The ADC is an allocation of CAN costs that are unrecovered from other revenue streams.

¹² 'i' signifies the price structure/conditions placed on the sale of the bottleneck service in order to qualify for the discounted average access price P_{Access}^i ;
 P_{Access}^i = the average access price of bottleneck services sold subject to conditions i;
W = the regulated access price
 OC_{Access}^i = opportunity cost to the bottleneck owner of selling access subject to conditions 'i'.
MC = marginal production cost (this is assumed to be independent of i, although the analysis holds if it is not); and
 γ_i = the proportion of units sold subject to 'i' that would otherwise have been sold at W (ie, γ_i is the diversion ratio for goods sold under conditions 'i').

switching costs). In fact, it is not an unreasonable assumption that the majority of the time the marginal cost of terminating/originating a call is zero.

B.2. Telstra's Conduct

B.2.1. Expected Conduct by Telstra

If it is assumed that Telstra wishes to increase downstream market share even if it is *not* the least cost downstream provider then one would expect Telstra to supply price discriminated PSTN services exclusively to its own retail arm (eg, by lowering retail long distance call prices if customers pay higher line rental but not offering similar wholesale price discrimination to access seekers).

Alternatively, if Telstra's objective was maximising efficient utilisation of the PSTN and allowing downstream (retail) market share to go to the most efficient downstream producer then one would expect Telstra to engage in price discrimination at the wholesale level not just the retail level. This would involve offering access price structures and conditions that match their retail price structures and conditions.

B.2.2. Actual Conduct by Telstra

To the best of NERA's knowledge Telstra does not offer any significant price discrimination at the wholesale level for PSTN O/T charges. However, there appear to be numerous and significant example of price discrimination at the retail level. Two examples are discussed in detail below, however, this is not intended as an exhaustive list.

B.2.2.1. Fixed internal charges for PSTN O/T – fixed to fixed calls

As was noted in Appendix A, a likely form of price discrimination of the PSTN services is to introduce a fixed monthly charge at the access or downstream level. In the case of the use of the PSTN to supply long distance services, this would involve a fixed monthly charge per customer and commensurately lower usage charges. Such a price structure can be made compulsory or optional. Again, as noted in Appendix A, optional multi part tariffs are a standard form of price discrimination used by monopolists, in his chapter on price discrimination, Tirole¹³ states:

“Suppose, however, that the monopolist cannot tell the consumers apart. In particular, assume (in contrast to the previous section) that there is no exogenous signal of a consumers demand function (such as age or occupation). This does not mean that the monopolist will not try to discriminate between consumers and will content himself with a unique bundle for all consumers. He can offer a menu of bundles to choose from. In doing so he must, however, take into account the possibility of personal arbitrage, ie., the

¹³ Jean Tirole “*The Theory of Industrial Organisation*” MIT Press (1998) pp 148-149 and 154-157.

possibility that a consumer to whom a given bundle is directed may want to choose a bundle directed to another consumer. This introduces 'self-selection' or 'incentive-compatibility' constraints, which, in general make perfect price discrimination impossible...

"This section starts with a simple example of a two part pricing. Because a [single] two part-tariff is generally not optimal it then proceeds to a consideration of more general non-linear pricing schemes." Page 143. .

The non-linear pricing schemes referred to by Tirole are essentially different menus of optional two part-tariffs. The term 'bundle' in the above text is best interpreted as the 'price structure' that defines the cost of each given consumption level. In discussing the profit maximising structure of such a menu of two part tariffs (or optional calling plans in a telecommunications context) Tirole further notes:

"A high demand consumer can consume the low demand consumers' bundle if his own bundle does not generate enough surplus. To relax this personal arbitrage constraint, the monopolist offers a relatively low consumption to the low demand consumers. Because high demand consumers suffer more from a reduction in consumption than low demand ones, this relaxes the personal-arbitrage constraint. Hence, the monopolist reduces the quantity consumed by the low demand consumers so that the high demand consumers will be less tempted to consume the low demand consumers' bundle. Conversely, low demand consumers are not tempted to exercise personal arbitrage, and there is no point to introducing a distortion in the high-demand consumers' consumption (any welfare gains stemming from a move of the marginal price toward the marginal cost can be captured by the monopolist through an increase in T_2)."¹⁴ (Page 149) T_2 can be thought of as the fixed component of the optional tariff aimed at high usage customers

Precisely this conduct is observed in Telstra's retail offerings with the price of long distance calls inversely related to the line rental charge. For example, if a customer pays line rental cost of \$17.50, the minimum cost for a 20 minute STD call between over 165km distance will be \$6.33 between 7am and 7pm. However, the same call made under a \$23.50 line rental will have a minimum cost of \$4.93. If the customer chooses the highest line rental rate of \$26.50 then the minimum cost of this call is \$2.50. The same call made in off peak will cost a minimum of \$3.00, \$2.50 or \$1.50 respectively (depending on which line rental charge has been chosen). This is summarised in the below table.

¹⁴ If a monopolist is access regulated then when offering optional tariffs for use of the bottleneck (either directly to access seekers or indirectly through downstream prices) it also faces the constraint that access seekers (and implicitly downstream customers) always have the option of buying access at the regulated maximum average price (W).

Minimum 20 min. STD call cost varying with line rental (greater than 165km)

	Line rental (\$/mth)	20 min peak call (\$)	20 min off peak call (\$)
HomeLine Budget	17.5	6.33	3.00
HomeLine Complete	23.5	4.93	2.50
HomeLine Plus	26.5	2.50	1.50

Source: NERA calculations based on Telstra call center advice .

This pricing structure suggests a material level of price discrimination of the PSTN O/T services embodied in Telstra's retail prices. That is, 'Telstra PSTN' is effectively charging 'Telstra downstream' a fixed monthly PSTN O/T access price and reducing PSTN O/T usage charges accordingly. However, no such price discrimination is made available at the wholesale level. Equivalent price discrimination of PSTN O/T at the wholesale level would involve Telstra offering access seekers the option of lower usage prices per customer in exchange for the introduction of positive fixed charges per customer.¹⁵

As was illustrated in section 3, restricting price discrimination of the bottleneck to the VIM's retail activities can create significant, if not insurmountable, barriers to effective competition in the downstream market.¹⁶

B.2.2.2. Fixed internal charges for PSTN O/T – mobile to fixed calls

The above discussion focused on price discrimination for calls made entirely on the fixed PSTN. However, other call types also utilise PSTN O/T services such as mobile to fixed calls. A sensible form of price discrimination would be for Telstra to reduce the price of calls from Telstra mobile customers to the PSTN below the level consistent with regulated PSTN O/T rates and to recover any loss in revenue through higher subscription charges. Such an approach would send more efficient signals to Telstra's mobile customers concerning the true marginal cost of a call to the fixed network and, as a result, a more efficient level of calls will result. This in turn creates economic surplus which Telstra and its mobile customers can share in (depending on the extent to which Telstra attempts to capture this benefit in the form of higher mobile subscription charges). This approach would be equivalent to 'Telstra PSTN' charging 'Telstra Mobile' a lower PSTN termination usage charge in exchange for a

¹⁵ Or, in the case of the HomeLine Budget package a negative monthly PSTN O/T charge and an *increase* in usage charges.

¹⁶ Of course, not all of the increase in line rental in moving from one package to the next is necessarily attributable to an effective increase in implicit PSTN O/T fixed charges. In Telstra's residential bundles higher line rental is also associated with lower local call prices suggesting that some of the variation in line rental is also explained by an internal LCS access price that also involves fixed charge per customer. (This is discussed in the 'Application to LCS' Appendix of this report.) It is also possible that some of the variation in line rental involves price discrimination of the downstream service as opposed to the internal PSTN O/T service. However, in general the presumption should be that the downstream production technology is consistent with competition suggesting a smaller gap between average and marginal cost – giving rise to smaller incentives for price discrimination.

higher fixed charge (all be it that the higher fixed charge is actually collected in the form of higher mobile subscription charges).

Precisely this conduct is observed in Telstra's mobile offerings. An illustration is provided by Telstra Mobile's 'My Hour' offer, which allows mobile customers to nominate a particular hour of the day in which they will not be charged for the first 20 minutes of any calls. This effectively sets a PSTN termination charge of zero for all calls under 20 minutes made during that hour.

In this case, the market downstream to the PSTN bottleneck is the mobile market. The impact of Telstra restricting such price discrimination of the PSTN terminating service to its related mobile operations is to create a barrier to competition in the mobile market. Telstra is able to keep profits constant or even increase them (depending on the increase in the mobile subscription charge) under such a pricing structure since any generated increase in terminating calls only increases its costs at the marginal cost of termination. However, were any rival mobile network to match Telstra's retail price structure, including any increase in subscription charges, they must make a loss. This is because any increase in calls as a result of such a price structure causes rivals to incur a financial cost equal to the regulated termination charge they must pay Telstra for such calls.

The above is simply an illustration of precisely the same analysis set out in section 3 where it was shown that equally efficient downstream rivals who pay average cost based access prices can not compete with the bottleneck owner if the bottleneck owner discriminates in its retail prices. This also illustrates the same general conundrum discussed in section 4 whereby asymmetric price discrimination by the VIM is bad for downstream competition but may be better for consumers than no price discrimination.

B.3. Solutions to Asymmetric Price Discrimination of the Bottleneck

By definition (and as discussed in section 4), the problems associated with Telstra charging itself a lower marginal access price than it charges rivals can only efficiently be addressed by lowering the marginal access price for rivals towards marginal cost. Options for doing this are discussed below.

B.3.1. Moving marginal access prices closer to Telstra's marginal cost

If regulated PSTN O/T did not so significantly depart from marginal cost then the problem of asymmetric price discrimination by Telstra would be appreciably reduced. For example, if a \$1 monthly charge per preselect customer was used to finance a reduction in the usage

components of PSTN O/T then Telstra's downstream competitors would be much better placed to replicate Telstra's retail price discrimination.¹⁷

In terms of the mechanics for introducing a fixed PSTN O/T component, it is useful to begin with the current methodology for setting PSTN O/T usage charges. First TSLRIC++ is estimated and it is then allocated 50% to PSTN calls and 50% to PSTN minutes. This further has the effect of allocating TSLRIC++ costs between local calls and preselect services in accordance with their share of total calls and minutes. However, this later allocation is implicit in the initial allocation. Were a fixed PSTN O/T charge to be introduced the following steps would be required:

- identify the proportion of TSLRIC++ costs to be allocated to local calls versus preselect services. (Consistent with the current approach this could be done on the basis of their share of total PSTN calls/minutes.) This will result in an allocation of '%x' of TSLRIC++ costs to be recovered through PSTN O/T;
- determine the proportion of this to be recovered through a fixed charge (say y%);
- calculate the fixed charge per customer as $x*y*TSLRIC++$ divided by the total number of customers connected to the PSTN; and
- determine how the usage component is to be allocated to calls and minutes. Consistent with current practise (50/50), this would involve usage charges of $0.5*x*(1-y)*TSLRIC++$ divided by the total forecast number of calls/minutes.

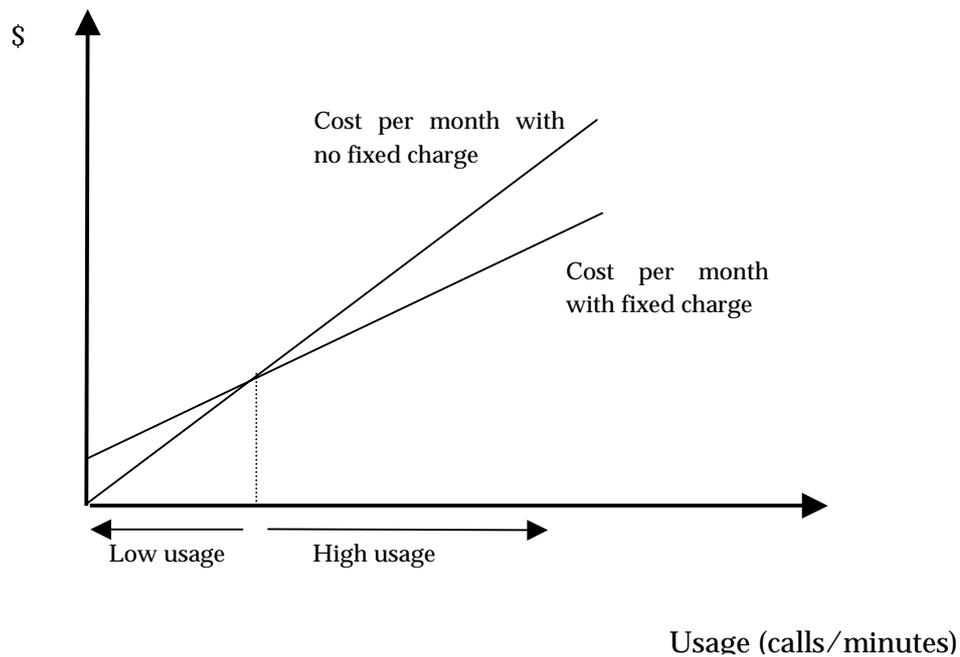
If a fixed monthly charge per customer was introduced in PSTN O/T then competition would tend to force this price structure to be reflected in rivals' downstream prices (ie, lower marginal call prices and higher fixed charges). Such a move would:

- have an unambiguously positive impact on the efficient utilisation of the PSTN – with customers increasing their demand for long distance and mobile to fixed calls;
- remove a potentially significant barrier to competition 'on merit' in markets downstream to the PSTN; and
- reduce the need for the ACCC to engage in examination of whether Telstra's price discrimination strategies in downstream markets involve a 'price squeeze' or are simply 'aggressive competition'.

¹⁷ That is, for every customer that an access seeker provides preselect services Telstra would receive a fixed monthly charge. The usage rates in the PSTN O/T would then be commensurately reduced. In terms of the mechanics for doing this, SX would be identified as the component of TSLRIC++ costs to be recovered through fixed access charges. SX would then be allocated between PSTN O/T services and other services using the PSTN (most notably local calls). The same allocatin

B.3.2. Distributional impact

The change in access price structure can be described graphically as below.



The distribution of welfare impacts of such a change to access prices would be as follows:

- total welfare of end-users would be improved as a result of a lowering in marginal access prices towards marginal cost (ie, more efficient usage signals);
- high usage customers would also benefit from a reduction in the average cost of pre-existing consumption levels (ie, even before taking into account any surplus generated by increased usage); and
- low usage customers would tend to be worse off at pre-existing consumption levels although the impact on these customers is ambiguous once surplus generated by additional consumption is taken into account.

In terms of the impact on companies:

- access seekers will benefit from a reduction in the ability of Telstra to leverage its PSTN monopoly into the downstream market;
- Telstra will tend to benefit as a result of increased utilisation of the PSTN;
- in the short run this benefit may tend to be offset if Telstra is constrained in passing on the access price structure into downstream prices for low usage customers. Of course, this equivalently would mean that the potential cost to low usage customers discussed above would not materialise.

It is not obvious that Telstra would be constrained in reflecting fixed access charges in higher fixed retail prices for preselect services. In fact, as already discussed this is precisely what Telstra is already doing with its HomeLine Plus product. Furthermore, there are no obvious constraints on Telstra offering additional options to all customers (eg, pay an extra \$X per month and receive Y% discount on long distance). Similarly, there are no constraints on Telstra reducing mobile to fixed charges and increasing subscriptions. However, in the short run it is possible that Telstra may be constrained in requiring (as opposed to offering) customers with low usage of preselect services to pay additional amounts to cover the increased costs of access for these customers. This is because the current price cap imposes a 4.5% cap on the annual rate of increase in compulsory fixed charges.

In weighing any such concerns the regard must be given to:

- the flexibility that Telstra does have in its retail prices under the price cap which increases over time (ie, any constraint would only be short term);
- any above normal profits Telstra is already earning from the PSTN. Postponing access price reform on the basis of a loss in monopoly profits by Telstra could reasonably be viewed as taking into account 'consequential losses'; and
- the benefits that Telstra would receive as the owner of the PSTN from more efficient usage of the PSTN.

B.3.3. Optional calling plans at the wholesale level

The discussion in the previous sections was focused on the ACCC moving access prices for PSTN O/T closer to marginal costs, irrespective of what Telstra's conduct in terms of price discriminating the PSTN service. An alternative and more conservative approach would be to monitor Telstra's price discrimination practises and to reflect these in access prices. Where the ACCC is simply reflecting in access prices Telstra's voluntary decision to price discriminate the bottleneck in its downstream prices then there will be no deleterious effect on Telstra's profitability (except in so far as its ability to leverage monopoly power into the downstream market is affected).

As discussed above, Telstra has voluntarily introduced optional calling plans (OCPs) where long distance prices fall in exchange for customers paying a higher fixed charge. The mechanics of reflecting this in access prices could be as follows:

- the ACCC sets PSTN O/T access prices on the basis of the current price structure (with the entire cost recovery coming from usage charges);

- the ACCC also requires Telstra to offer OCPs to access seekers that embody the same price discrimination as practised by Telstra's downstream operations (eg, involve a fixed monthly charge per customer and lower usage charges).¹⁸

The structure of the alternative access price structures could be based on the ACCC's own analysis and on observed downstream pricing by Telstra. Where Telstra's downstream pricing reflects this form of price discrimination of the bottleneck then the strong presumption must be that reflecting this price discrimination in access prices will actually increase Telstra's PSTN revenues.¹⁹ Of course, Telstra could be expected to pursue this strategy at wholesale itself if it did not also perceive a benefit to its downstream operations from restricting downstream rivals' ability to compete for customers benefiting from its price discrimination.

B.3.4. Other forms of price discrimination

Tying the ACCC's access prices to observations of Telstra's downstream price discrimination may invite some controversy. The ACCC would have to estimate the variation in Telstra's implicit PSTN O/T charges that are attributable to variations in downstream prices. This process would be contentious with Telstra having an incentive to claim all the variation in prices was attributable to price discrimination of downstream costs and not to price discrimination of the PSTN (and access seekers vice versa).

Perhaps more problematically, the ACCC would have some difficulty in:

¹⁸ Wholesale billing systems would have to be capable of distinguishing between calls originating from/terminating to customers on different access plans. Telstra's retail billing systems clearly have this capacity.

¹⁹ For a discussion of why this optional calling plan (at retail or wholesale) strategy can increase profits for the incumbent see Jean Tirole "*The Theory of Industrial Organisation*" MIT Press (1998) pp 154-157. A simple example can also illustrate how Telstra can be better off as a result of such a strategy. Imagine there are two customers (the same analysis applies to customer classes) 'high demand' and 'low demand'. Let the high demand customer use 60 minutes PSTN per month and low demand customer use 40 minutes). Let the TSLRIC++ of the PSTN be \$100 per month and the marginal cost of additional minutes on the PSTN be zero. If current prices are purely minute based then a charge of \$1 per minute of usage is required to recover TSLRIC++ costs. This is paid 60% by the high demand customer and 40% by the low demand customer.

Let the regulator introduce two optional tariffs. The first is the same as the existing tariff (ie, \$1 per minute and no fixed charge) while the second is fixed monthly charge of \$30 per customer and a 50 cent/minute usage charge. Customers will end up being served by whatever access plan is cheapest for their given level of consumption. Assuming no change in consumption patterns the low demand customer will be served using the \$1/minute access charge and the high demand customer will be served using either access plan – with the effect that both customers pay the same amount in access charges as they would if the access plan remained at \$1/minute.

However, the clear incentive is now for customers to consume more. High demand customers face a marginal price of 50cents/minute rather than \$1/minute. Similarly, low demand customers face greater incentives to become high demand customers as the cost of making calls over 60 minutes per month has fallen. Thus such usage patterns have become more attractive. Of course, if some customers were consuming above 60 minutes per month under the \$1/minute price structure then there may be some loss of revenue from these customers who would pay less for the same usage. However, any increased consumption by such customers (who would face lower marginal prices) would tend to increase revenues – with the net effect from any such customers ambiguous.

- identifying other forms of price discrimination of the PSTN (eg, associated with Telstra Mobile's 'My Hour' offer); and
- implementing equivalent access price structures (eg, consistent with the 'My Hour' example, allowing access seekers to nominate 1 hour per mobile customer where PSTN O/T usage charges are zero for calls of less than 20 minutes duration).

Given these potential difficulties it is probably reasonable to believe that the ACCC's main priority should be moving marginal access prices closer to marginal cost irrespective of Telstra's downstream pricing.

APPENDIX C. APPLICATION TO ULLS

C.1. Current Access Pricing Methodology – TSLRIC+

Access seekers use the unconditioned local loop service (ULLS) to provide end users with voice and broadband data services (using DSL technology). In order to make use of the ULLS access seekers must build out their networks to the Telstra local exchange at which the end user is connected by the ULL.

The ACCC currently applies a ‘TSLRIC+’ methodology to ULLS access pricing. The ACCC also discriminates in its regulated ULLS access prices between different geographic regions depending on the TSLRIC of the ULLS in each region. As with PSTN O/T the regulated access price is based on the average cost of the service rather than Telstra’s marginal production cost – which is close to zero.

C.2. Telstra’s Conduct

The fact that the marginal production cost is approximately zero suggests, other things equal, that ‘Telstra PSTN’ will have a strong incentive to price discriminate its sale of this service to ‘Telstra downstream’. That is, if reducing the implicit access price causes additional internal sales then Telstra will have a strong incentive to do so.

However, this incentive will be muted in bands 1 and 2 by the fact that the ACCC’s draft model price terms set the access price for ULLS at around the same as the wholesale line rental and call revenue Telstra already receives from these customers. If close to 100% of customers who would be served by ULLS are already contributing around the same as the regulated ULLS charge means that Telstra has little incentive to offer a lower implicit ULLS price to those customers. That is, the opportunity cost of engaging in any price discrimination strategy must be higher than the revenue generated.

NERA understands that ULLS may not currently be suitable to provide DSL services in bands 3 and 4, due to greater distances between customers and exchanges. Consequently, competition for voice customers in these areas will continue to occur via the use of PSTN O/T and LCS. This means that ULLS pricing in these bands can be ignored unless it results in a lower monthly access price (and additional network costs) than the combination of PSTN O/T and LCS – which is currently not the case in the ACCC’s draft model prices.

C.3. Averaging ULLS costs

While the ACCC has adopted a geographically de-averaged approach to access pricing it is worth noting that Telstra has proposed that ULLS prices be averaged across bands. Should the ACCC alter its position on this issue it should be aware that this would likely raise the

regulated price of ULLS in bands 1 and 2 above Telstra's opportunity cost of providing the service (ie, above the revenues they already receive).

This would have the effect of opening up significant incentives for Telstra to price discriminate its sale of the ULLS through its downstream arms with the effect that rivals would face a barrier to competing with Telstra for DSL services. For example, imagine Telstra currently recovers \$60/month in downstream voice revenues per customer in band 2. Further imagine that downstream voice costs per month are \$35 meaning the band 2 customers make a \$25 contribution per month to the cost of the ULL. Also let all downstream rivals have identical downstream costs – in voice and DSL.

Now if the regulated price of the ULLS is \$40 per month then a rival wishing to take out a ULLS in band 2 must be able to charge the end-user the downstream costs of DSL *plus* \$15 (being the difference between the ULLS charge and the contribution to the ULLS charge that voice would make). This means that rivals cannot profitably serve customers who value DSL at less than the cost of DSL plus \$15 per month. However, Telstra can profitably serve these customers as Telstra purchases the ULLS service at opportunity cost (ie, \$25) rather than at its regulated price.

This in turn would mean that a potentially significant proportion of the DSL market was beyond the reach of Telstra's downstream rivals. To the extent that there are increasing returns to scale in the provision of DSL services this could reduce the capacity of rivals to compete for *all* DSL customers.