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Statement by Dr Paul Paterson
of CRA International for
Mallesons Stephen Jaques on
the Economic Considerations for
LCS and WLR exemptions

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As my report contains information that is confidential to Telstra, I have been instructed to prepare a public version of the report. In this public version of my report, information that has been identified as confidential by Telstra is indicated by [C-I-C].

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- 1 The fundamental point I make in my report is that, due to the availability of ULLS (and other alternatives to the Telstra-operated access network), in many areas there is not a local loop bottleneck in the provision of telephony (or broadband) services. This means that, in these areas, access regulation is not needed to achieve competitive conditions in the downstream telephony market. Further, as regulation inevitably causes inefficient distortions, and LCS/WLR regulation is no exception in this regard, efficient competition, and efficient investment in and use of infrastructure, would be fostered by the removal of this regulation through the granting of an exemption order.
- 2 This is demonstrated in the report as follows:
 - I first use economic reasoning and factual evidence to show that technically and commercially viable substitutes for LCS and WLR exist in many areas, in particular ULLS but also competing fixed access network infrastructure. That is, I demonstrate that a bottleneck situation does not exist. This is done in *Section 3 of the report ('Are there Alternatives to LCS/WLR for Providing Downstream Services?')*
 - I go on to demonstrate that, in these non-bottleneck areas, downstream competition would not be compromised by an LCS/WLR exemption order. I do this by considering the situation in downstream markets with, and without, LCS/WLR regulation, concluding that upstream circumstances conducive to retail competition would continue to exist in a 'without' world and hence downstream competition would not be adversely disturbed. In coming to this conclusion I recognise that at present there may be some operators providing just local telephony services (i.e. not the full bundle of telephone services) using LCS and WLR, or just pre-selection services, and that these operators might exit the market if LCS/WLR are no longer provided on a regulated basis. However, I do not see this as negatively impacting downstream competition as they at best have a *di minimus* presence in the market, and would be replaced by a bundled, more efficient form of service delivery preferred by the vast majority of customers. These points are addressed in *Section 5: 'Would Competition in Downstream Market(s) be Compromised by an LCS/WLR Exemption Order?'*
 - I also demonstrate that, not only would competition be undiminished in the relevant downstream market(s), but efficient competition and efficient infrastructure investment and use would be promoted by an LCS/WLR exemption order. I do this by identifying the significant distortions that come from LCS/WLR regulation, which by simple deduction would not exist if this regulation was removed. This is done in *Section 6: 'Would LCS/WLR Exemptions Promote Competition and Efficient Infrastructure Investment and Use?'*

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- 3 To make these principles operational, I propose the conservative decision rule that an LCS/WLR exemption order should be granted in any area where at least one competitor DSLAM has been deployed. I chose this rule as the presence of one competitor DSLAM demonstrates in concrete terms that, in these areas, there are no material barriers to ULLS-based entry. This is done in *Section 4 'Scope of LCS/WLR exemption orders'*.

EXECUTIVE SUMMARY

- 4 I have been asked by Mallesons Stephen Jaques ('MSJ') whether, in my opinion as an expert economist, Exemption Orders for the local carriage service ('LCS') and wholesale line rental ('WLR') services in the metropolitan areas of Australia would be in the long-term interests of end-users ('LTIE'). Specifically, I have considered in detail the following three economic criteria:
- First, whether competition would be diminished by these Exemption Orders;
 - Second, whether these Exemption Orders would promote competition; and
 - Third, whether these Exemption Orders would facilitate efficient use of, and investment in, infrastructure.
- 5 In doing this I consider LCS and WLR together (as indicated by the use of 'LCS/WLR').
- 6 In my view, granting LCS and WLR Exemption Orders in exchange service areas ('ESAs') with current competitor DSLAM build ('Exemption Area') would not diminish competition, but rather would promote competition and facilitate the efficient use of and investment in infrastructure, for the following reasons:
- Currently unconditioned local loop service ('ULLS'), and to a lesser extent the Optus hybrid fibre coaxial (HFC) network and other competing fixed line networks, enable the replication of the downstream services LCS and WLR are used to provide (as well as other retail service offerings such as broadband) in the Exemption Area. Furthermore, there are no apparent material impediments to retailers commencing to use, or increasing their use of, these alternative means of service provision.

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- The LCS/WLR Exemption Orders would not impact the ready availability of these alternative means of providing the relevant downstream services. Therefore, retailers would be able to substitute away from Telstra-supplied LCS and WLR services if Telstra attempted to price LCS/WLR supra-competitively (or not supply LCS/WLR). While this is demonstrably so for supplying retail customers that purchase voice and broadband service bundles, my analysis leads me to conclude that this is also the case for supplying the majority of voice-only retail customers - those customers that are too small to contest using ULLS are likely to be unattractive at regulated LCS/WLR prices anyway. Consequently, competition in retail markets would not be compromised by the Exemption Orders.
 - Further, Exemption Orders for LCS/WLR in the Exemption Area would have the following benefits:
 - Exemption Orders would facilitate efficient facilities-based competition, stimulating innovation and allowing for more robust price competition. Further, to the extent that removing LCS/WLR regulation results in a shift to ULLS-based or full facilities-based competition, or existing ULLS and full facilities-based operators extending supply by these means, competitors would be more deeply vertically integrated, which would be likely to intensify competition in retail markets and result in direct benefits for customers as vertical efficiencies are realised and passed through to consumers.
 - Access regulation distorts incentives for efficient infrastructure investment and use, including by truncating investment returns and creating the potential for arbitrage and regulatory dependence. Exemption Orders would remove the distorting effects caused by LCS/WLR regulation in the Exemption Area and promote efficient investment.
- 7** I have also been asked to consider the particular scope of LCS and WLR Exemption Orders that would be justified on economic grounds. I propose that the exemptions be granted at the ESA level, as my analysis indicates that for the current purpose this is the relevant geographic scope of the wholesale market. I note that this is consistent with the view proposed by the Australian Competition and Consumer Commission ('the Commission') in its recent Fixed Services Review report.¹ Specifically, I come to the conclusion that exemptions are justified on economic grounds for those ESAs where at least one competitor has deployed a DSLAM. In my opinion the deployment of at least one competitor DSLAM provides concrete evidence for my finding that there are not material barriers to DSLAM-based entry and consequently that, absent LCS/WLR regulation, competition in downstream markets would not be reduced. The list of ESAs to which the proposed Exemptions apply is provided in Appendix A.

¹ ACCC, "Fixed Services Review – A second position paper" (Second Position Paper), April 2007, p.iv

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1. INTRODUCTION

- 8 My name is Dr Paul Paterson. I am a Vice President with CRA International, a major US-based economic consulting firm. My curriculum vitae, including qualifications, experience in the telecommunications and economics field and publications, is included in Appendix G.
- 9 I have read the Federal Court's 'Guidelines for Expert Witnesses and Proceedings in the Federal Court of Australia'. I have prepared this report accordingly, making all inquiries I consider to be appropriate, having regard to the instructions from Mallesons Stephen Jaques ('MSJ').
- 10 In April 2005, the Australian Competition and Consumer Commission ('the Commission') commenced an inquiry into the Local Carriage Service ('LCS') and the related Wholesale Line Rental service ('WLR'). In March 2006, the Commission indicated in its *Local Services Review: Draft Decision* ('Draft Decision') that it intended to renew the declared status of the LCS, and proposed declaring the WLR service.² On 28 July 2006, the Commission determined that it would declare WLR and re-declare LCS ('Final Decision').³ All such declarations exclude the 5 major CBD areas, as these areas were exempted for LCS by the Commission in July 2002 ('CBD Exemption Order').⁴
- 11 Telstra has indicated that it intends to apply for Exemption Orders ('Exemption Orders') under Part XIC of the Trade Practices Act 1974 ('the Act') with respect to LCS and WLR. I have been asked by MSJ to consider whether LCS and WLR exemptions in the metropolitan areas of Australia would be in the long term interest of end users ('LTIE') under the economic criteria set out in the Act.⁵ I have also been asked to give my view on the appropriate geographic scope of these exemptions.
- 12 The report is structured as follows:
- In **Section 2** I define the services in question, LCS and WLR, and consider the relevant retail and wholesale markets for assessing the competition implications of the Exemption Orders for these services;

2 ACCC, 'Local Service Review' (Draft Decision), March 2006

3 ACCC, 'Local Service Review' (Final Decision), July 2006

4 ACCC, 'Future Scope for the Local Carriage Service' (Final Decision), July 2002

5 A copy of Mallesons Stephen Jaques Exemption Instructions is provided in Appendix F

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- In **Section 3** I determine whether there are alternative means to Telstra-supplied LCS/WLR that allow the provision of downstream services currently supplied by use of LCS/WLR;
- In **Section 4** I consider the appropriate geographic scope of the Exemption Orders;
- In **Section 5** I consider whether LCS/WLR Exemption Orders would compromise competition in the relevant retail market(s);
- In **Section 6** I consider whether LCS/WLR Exemption Orders would promote competition and the economically efficient use of, and investment in, infrastructure; and
- In **Section 7** I present my conclusions.

13 At various points in the report, references are made to the following appendices, which contain the more detailed data and/or analyses summarised in the main body of the report:

- **Appendix A** contains a list of the ESAs for which I conclude LCS/WLR exemptions should apply (the Exemption Area), and details the specific competitor DSLAM build activities evidenced in each of these ESAs;
- **Appendix B** contains a review of the current state of competition in the retail fixed voice services and broadband market(s);
- **Appendix C** details on local switching and gateway infrastructure for the provision of telephony services over ULLS;
- **Appendix D** provides the evidence supporting my view that there are no material costs in switching from line sharing service ('LSS') to ULLS;
- **Appendix E** lays out the assumptions underpinning my voice-only contestability modelling;
- **Appendix F** contains the instructions provided by MSJ; and
- **Appendix G** presents my curriculum vitae, including qualifications, publications and relevant experience.

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2. THE RELEVANT MARKETS

- 14 The two services relevant to this exemption application are LCS and WLR.
- 15 The Commission defines the LCS as ‘a service for the carriage of telephone calls from customer equipment at an end-user’s premises to separately located customer equipment of an end-user in the same standard zone’.⁶ The carriage provider, in this case Telstra, is responsible for the carriage of the call between end-users, with the access seeker reselling this service to end-users as a local call. The access seeker provides retail level elements of the service, such as billing and customer service.
- 16 The Commission defines WLR as ‘a line rental telephone service which allows an end-user to connect to a carrier or carriage service provider’s public switched telephone network, and provides the end-user with (a) an ability to make and receive any 3.1khz bandwidth calls (subject to any conditions that might apply to particular types of calls), including, but not limited to, local calls, national and international long distance calls and (b) a telephone number’.⁷ The access seeker resells this service to end-users as basic access, again providing the retail level elements of the service.
- 17 I consider exemption for LCS and WLR together as the economic arguments supporting exemption of the two services are essentially the same, access seekers always take these services together from Telstra Wholesale, and basic access provides the functionality for local calls. Further, they are invariably offered to retail customers as a bundle.⁸

⁶ (Final Decision), July 2006. p. 87

⁷ Final Decision, July 2006 p. 88

⁸ Under the Commissions definition of WLR, the service provides the functionality to make and receive any 3.1 kHz bandwidth calls including but not limited to local calls (see paragraph 16). As such the services are invariable offered to end users as a bundle.

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18 In the remainder of this section, I apply the appropriate market definition tests to delineate the bounds of the relevant markets, namely the market in which LCS and WLR are provided and the downstream market(s) which these wholesale inputs serve. As instructed, I limit my analysis to the metropolitan areas of Australia;⁹ I have been advised that these are Band 2 ESAs for the purposes of Telstra's Ordering and Provisioning Manual as at the date of Telstra's Exemption Application in respect of the LCS/WLR. For the purpose of this report, I assume that there are distinct functional markets for the supply of wholesale and retail services. I delineate the relevant retail market(s) first, as this obviously has implications for wholesale purchasing requirements of retail service providers.

2.1. RELEVANT RETAIL MARKET(S)

19 For reasons outlined in this section, I conclude that the relevant retail market includes the full bundle of fixed voice services, these being basic access, local calls, national and international long distance calls and fixed to mobile calls. The market potentially also includes broadband services.

2.1.1. Fixed voice services

20 I conclude that the retail product market includes the full bundle of retail fixed voice services for the following (interrelated) reasons, on which I expand below:

- First, there is likely to be a cluster market for the full bundle of retail fixed voice services;
- Second, on commercial reality grounds – retailers face commercial incentives to supply the full bundle of retail fixed voice services to any given customer; and
- Third, there is scope for supply side substitution in the retailing function between the various retail fixed voice services.

Cluster market

21 A cluster market for two (or more) products exists when there are strong demand and/or supply side unbundling costs within the group of products, with the result that unbundled supply is not a close substitute for, and competitive constraint on, bundled supply. The Commission describes a cluster market as follows:¹⁰

⁹ See Exemption Instructions provided by MSJ, laid out in Appendix F.

¹⁰ ACCC, Merger Guidelines, June 1999, 5.60

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In some cases it may be appropriate to define 'cluster' markets, comprising a bundle of related products, where the costs of unbundling mean that suppliers of the component products are unable to defeat a SSNIP by a hypothetical monopolist supplying the whole bundle of products. These unbundling costs could be costs incurred directly by the consumer of unbundled products, e.g. additional transaction costs, or additional costs incurred by the suppliers of single products, e.g. diseconomies of scope, which are then reflected in the relative prices of bundled and unbundled products.

- 22 In the context of considering whether there is a cluster market for retail fixed voice services, unbundling costs may arise in a number of ways. For customers, such costs may entail the inconvenience of receiving multiple bills from splitting voice services between multiple providers and, more generally, the costs of having to deal with multiple providers. On the supply side, unbundling costs may, for instance, relate to the customer-specific economies of scope associated with billing, as well as customer acquisition and retention costs.
- 23 In my opinion, the evidence on actual patterns of customer purchasing behaviour is consistent with the existence of a cluster market. In particular, almost all customers purchasing local telephony services from Telstra's competitors (basic access and local calls) also purchase national long distance services. Telstra has around 2.16 million resale lines (WLR),¹¹ and based on additional information provided by Telstra I have assumed that only [c-i-c] Telstra customers take Home Line Part ('HLP') and Business Line Part ('BLP') services. HLP and BLP are the fixed voice services products typically purchased by customers that wish to subscribe to Telstra for basic access and local call services, but to a retail competitor of Telstra for national and international long distance calls and fixed to mobile calls. In other words, based on these estimates, around [c-i-c] per cent of resellers bundle basic access lines with local call services and the other fixed voice call services. Turning to the retail market as a whole, around [c-i-c] per cent of basic access lines are bundled with local calls and the other fixed voice call services.¹²

Commercial reality

- 24 Defining a retail market for the full bundle of fixed voice services is also warranted on commercial reality grounds.

¹¹ Telstra, Annual Report, June 2006. Note this figure excludes ISDN

¹² ACMA recently estimated 11.26 million PSTN fixed voice SIOs (Source: ACMA, 'Communications Infrastructure and Services Availability in Australia 2006-2007'). [c-i-c].

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- 25 The Commission recognises the role of commercial reality in defining markets in its Merger Guidelines. It notes that commercial realities are a relevant consideration in defining functional markets, in addition to other formal tests:¹³

Delineation of the relevant functional market requires identification of the vertical stages of production and/or distribution which comprise the relevant arena of competition. This involves consideration of both the efficiencies of vertical integration, commercial reality and substitution possibilities at adjacent vertical stages.

- 26 Although the Commission has discussed the role of commercial reality in the context of specific examples and market dimensions, I believe that it is relevant to consider commercial reality more generally, including in the current context of defining the downstream retail product market.

- 27 The commercial reality grounds for concluding a broad market that includes all fixed voice services are as follows. Telstra and all of its closest competitors sell and market the full range of fixed voice services. For example Optus, Primus and AAPT include local, national and international calls as well as fixed to mobile calls as part of their standard home phone package.¹⁴ Moreover, I am not aware that Telstra and its closest competitors seek only to market and sell particular voice services to customers. Rather, the objective appears to be to market and sell as many retail voice services to customers as possible. The data on observed bundled purchasing behaviour (i.e. that almost all customers purchase the full bundle of retail fixed voice services) noted above is consistent with this.

- 28 Such an approach makes sense when one considers retailers' incentives to minimise per unit costs. In particular, a significant portion of voice retailing costs are likely to be fixed and common to the supply of all retail voice services (e.g. advertising, front-of house services and billing and collection). These essentially fixed costs can be shared at the customer level across different voice services, creating a potential economy of scope. There is a commercial incentive therefore to sell as many fixed voice products to customers as possible, rather than limiting the range of products sold, in order to achieve economies of scope in retailing costs at the customer level.

Supply side substitution

- 29 Defining a retail market for the full bundle of retail fixed voice services is further warranted on the basis of scope for supply side substitution.

13 ACCC, Merger Guidelines, June 1999, 5.64

14 Company websites (accessed 4th June 2007)

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- 30 In particular, once a retailer has made the investments in retailing functions (e.g. customer support, billing, marketing, etc.) to supply a particular subset of retail fixed voice products, that same retailing function can in general be readily used for the purpose of supplying an additional retail fixed voice service. Alternatively, any additional costs associated with moving into the supply of the additional retail fixed voice service are likely to be low. Put differently, it is unlikely that such a move would require substantial duplication of retailing investments.

2.1.2. Broadband services

There are reasons for including broadband services in the relevant retail market, on grounds of supply side substitution and commercial reality.

In particular, even if one believes, for the sake of argument, that the primary objective of those retailers that have established ULLS-based supply at an exchange is to target supply to the significant fraction of customers that purchase bundled retail broadband and fixed voice services,¹⁵ such retailers will have the technical capability to supply either retail voice or retail data customers i.e. supply side substitution is technically feasible.

Moreover, ULLS-based retailers will have commercial incentives to supply voice-only customers, provided that the incremental revenues associated with doing so exceed the costs of supply. Analysis presented in section 5 suggests this is likely to be the case for the majority of voice customers.

2.1.3. Current state of retail market competition

- 31 Although the current competitiveness of this market is not directly germane to the central economic question for exemption applications (rather, what is important is whether competition, and efficient investment in and use of infrastructure, is enhanced), I note that I am of the view that this market is workably competitive. The basis of this view is described in Appendix B.

2.2. RELEVANT MARKET FOR WHOLESALE INPUTS

- 32 Patterns of retail demand, and the implied scope of the relevant retail market, inform the delineation of the relevant wholesale market from which retailers can purchase wholesale inputs.

¹⁵ In this report I use the term 'ULLS-based' to cover competitor DSLAMs used for both ULLS- and 'LSS-based entry. I do this for two reasons. First, at the practical level, for confidentiality reasons information available to me does not allow me to differentiate between DSLAMS used to activate ULLS and those used to activate LSS. Second, I am of the view that the viability of ULLS-based and LSS-based service provision is similar, given their very similar technical capabilities, underlying economics and the absence of material barriers to LSS-based operators switching to ULLS-based supply. These matters are addressed in detail in Section 3.2 and Appendix D of the report.

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- 33 Retailers that do not have their own network need to access relevant wholesale inputs that enable them to supply the full suite of fixed telephony services. Moreover, as just noted, to compete effectively it appears retailers increasingly require the means to supply broadband services.
- 34 Currently, retailers can utilise a wide range of underlying wholesale inputs to source their retailing needs. In order of increasing sophistication, retailers can supply retail fixed voice services to end consumers by using any one of the following means:
- By using a full range of resale telephony products (including WLR, LCS and PSTN originating and terminating access ('OA' and 'TA')) from Telstra or third party resale equivalents;
 - By using resale broadband access, wholesale ADSL ('WADSL'), to provide voice over internet protocol ('VoIP');
 - By using LSS or ULLS, in combination with other wholesale inputs (e.g. backhaul) and/or their own facilities, to provide VoIP;
 - By using ULLS, in combination with other wholesale inputs (e.g. backhaul) and/or their own facilities, to provide a standard telephony service; and
 - By relying entirely upon their own network facilities (i.e. self-supply of upstream inputs).
- 35 In order of increasing sophistication, the retailers can additionally supply retail broadband products using any one of the following means:
- By using a WADSL service from Telstra or a third party;
 - By using LSS or ULLS, in combination with other wholesale inputs and/or their own network facilities; and
 - By relying entirely upon their own network facilities.
- 36 This *prima facie* suggests LCS and WLR sit a relatively broad wholesale market. However, in a practical, purposive sense the key market definition issue to be resolved is whether there are available alternatives for LCS/WLR, so that in the event of Exemption Orders for these services, retailers could continue to access upstream inputs to compete in downstream markets; and whether there are impediments to effectively utilising such alternatives.

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- 37 These issues are addressed in section 3, where I show that there do in fact exist alternatives for LCS/WLR, and that there appear to be few impediments to effectively utilising these alternatives. It follows from this that the relevant market for wholesale inputs for the purpose of analysing the exemption application is broad, and includes at least ULLS, the Optus HFC network and other competing fixed line networks.
- 38 Before embarking on this discussion, however, the following sub-section outlines my views on the relevant geographic markets for wholesale inputs for assessing the appropriateness of LCS and WLR Exemption Orders.

2.2.1. Geographic scope of wholesale input markets

- 39 I proceed on the basis that the geographic scope of wholesale input markets is exchange based.
- 40 As shall be explained below, I believe the relevant scope might in fact be (significantly) broader this, encompassing groups of exchanges exhibiting similar competitive characteristics. However, I adopt exchange based markets largely because of the particular context in which this market definition analysis is undertaken.
- 41 I start by noting that application of substitution tests in the strictest sense – i.e. a strict application of the hypothetical monopolist test – might lead to the delineation of narrow markets.
- 42 In particular, adopting this test, demand side substitution would be limited. In fact, defining markets on the basis of demand side substitution alone might lead to a conclusion that markets are as narrow as the level of the customer premise.
- 43 Broadening the relevant market would therefore depend very much upon scope for supply side substitution.
- 44 Strictly applied, the hypothetical monopolist ‘small but significant non-transitory increase in price’ (‘SSNIP’) test often used in identifying markets requires that supply side substitution be achieved without significant new investment. Given the presence of a ULLS-based retailer at any particular exchange, although investments might be required in connecting an additional new customer at that exchange, these are likely to be low.¹⁶ Hence, there is likely to be scope for supply side substitution within any given ESA. Even if (for the sake of argument only) this were not possible, it does not seem relevant to consider a market scope that is narrower than the local exchange in the current context, since granting Exemption Orders at the customer premise level would seem impractical.

16 [c-i-c]

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- 45 The question is therefore whether supply side substitution from one exchange to another is possible.
- 46 Applying the hypothetical monopolist test strictly, supply side substitution from one exchange to another might be considered to entail significant new investments, implying that markets should not be broadened beyond exchange based markets. However, even if (again, for the sake of argument) one believes that the strict application of a SSNIP test might be failed on the basis of exchange-specific investment requirements, in my view a more pragmatic assessment of the commercial context suggests that the relevant markets might be broader than exchange based, and perhaps significantly so.
- 47 In particular, I believe proper regard should be had to the fact that, in the real world, as opposed to any hypothetical world, investments of some kind are invariably required in expanding supply from one geographic area to an adjacent area.
- 48 Moreover, I believe proper regard should be had to the nature of costs in telecommunications. In particular, in this industry – and, more generally, network industries – a significant fraction of costs are common, and so incremental investments associated with expansion from one exchange to another are likely to be low, at least relative to costs already incurred.
- 49 The important point here is that once a competitor begins to provide service in a local area, that competitor will have secured a ‘beach-head’ from which it can readily expand, at least within that area, at relatively low incremental cost – low enough to weigh on the incumbent’s pricing decisions. The question then is how to assess the extent or reach of that area within which the ready threat of competitive expansion imposes a material degree of competitive constraint.
- 50 The approach I adopt is one that has been widely used by regulators, which is to assess the extent and reach of the constraint associated with supply at one exchange on other exchanges – and, hence, delineate relevant geographic markets – by considering those other exchanges in the general area that exhibit broadly similar competitive conditions. In adopting this approach, I recognise that this method has an element of circularity to it (as the assessment of competitive conditions informs the market definition, as well as *vice versa*), although I note that the Commission itself has adopted this approach.¹⁷

¹⁷ The ACCC adopted a similar position in ACCC, “Information Paper on Anti-Competitive Conduct in Telecommunications Markets”, 1999

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- 51 Analytically, it rests on the assumption that the observed differences in competitive conditions between areas reflect or signal those underlying factors – such as the demography, service cost or revenue potential of each area – which, in a complete analysis, could properly be used as a basis for geographical market definition. In that sense, the method is a short-cut which relies on the observed fact of difference in competitive conditions as a proxy for the underlying elements that define the geographical scope of the relevant markets. Where those conditions differ, the inference may be drawn that the underlying factors, properly observed, would lead to different geographical markets being defined.
- 52 Properly implemented, such an approach would also recognise that the area entrants contest tends to grow over time, as the initial beach-head is secured. This appears to be the case in the current context, as reflected in the rate of actual and forecast deployment of DSLAMs. Hence, currently observed similarities and differences in competitive conditions between exchanges might not reflect future similarities and differences.
- 53 To summarise, the analytical approach I have outlined might well imply that geographic markets are broader than exchange based, and in fact encompass clusters of exchanges within bands that exhibit similar competitive conditions (even if these clusters are not as broad as, say, ULLS bands).
- 54 I nonetheless believe that, in this particular context, which is an application for Exemption Orders, an exchange based approach is more appropriate, for the following reasons:
- First, it is consistent with the context of the current enquiry, in the sense that Exemption Orders would not reasonably be capable of implementation in an area defined any more narrowly;
 - Second, it reflects the topology of the incumbent network, and hence the units that the incumbent is likely to see as being at direct risk of stranding; and
 - Third, it minimises the risk that the choice of too-broad a geographical market definition will inappropriately lead to a decision not to forbear, when forbearance would have been desirable.
- 55 As a practical issue, I note that data on DSLAM deployment – which is used to proxy the extent of actual and forecast ULLS-based activity - is available at a granular exchange based level.

'Substitutability tests tend to be of limited relevance when delineating the geographic dimensions of telecommunications markets. For example, a local call in one capital city is unlikely to be substitutable for one made in another capital city. Accordingly, in delineating the geographic dimension of telecommunications markets, the Commission looks to factors such as the area over which major suppliers operate to ensure that it describes the relevant arena of competition.'

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- 56 Having established the relevant geographic bounds of the market for wholesale inputs, the following section focuses on issues relevant to delineating the product dimension of that market, in particular, whether there are alternatives to LCS/WLR for providing downstream services.

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3. ARE THERE ALTERNATIVES TO LCS/WLR FOR PROVIDING DOWNSTREAM SERVICES?

57 In its Final Decision, the Commission recognised a number of possible competitive infrastructure platforms and services that could potentially act as substitutes to WLR and LCS. Specifically, the Commission spoke of the use of ULLS, VoIP, fixed wireless platforms and fixed to mobile substitution,¹⁸ as well as the Optus HFC network.¹⁹

58 The Commission concluded that competitive infrastructure platforms were not sufficiently developed to provide effective competitive constraints on Telstra's LCS/WLR decisions:

There is considerable uncertainty about the development of competitive infrastructure platforms and services, such as wireless access, fixed-to-mobile substitution, VoIP and the ULLS, to the WLR service and the LCS. It could be expected that much of this uncertainty might be resolved in two years and that the effectiveness of these alternatives in constraining Telstra's decisions regarding LCS and WLR would be more evident at that time.²⁰

59 I am of the view that the Commission's conclusion, even if justified at the time, is no longer valid. This view is based on my analysis of the following considerations:

- First, there are well-established alternative means of providing the relevant downstream services;
- Second, these alternative means of providing the relevant downstream services have been demonstrated – by their continued use - to be viable (at prevailing retail prices) in ESAs where they have been deployed. In my view, this demonstrates these alternative means are good substitutes for (that is, are in the same markets as) LCS/WLR;²¹ and

18 Final Decision, July 2006, p. 7

19 Final Decision, July 2006, p. 34

20 Final Decision, July 2006, p. 30

21 The typical approach to examining demand and supply side substitution is through the application of the 'SSNIP' test. This involves the thought experiment of considering whether a hypothetical monopolist could, for the service(s) in question (here LCS/WLR), successfully implement a small but significant non-transitory increase in price. In practice, the SSNIP test is difficult to implement over a market with several regulated products since the prevailing prices may not reflect underlying market realities. Given this, the next best approach is to consider whether there are available alternative possible means of providing services identical or similar to those in question (LCS/WLR) and whether they appear, in their own right, to be viable. If viable substitutes do exist then one can reasonably conclude that the SSNIP test would have been defeated.

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- Third, there are no material impediments to effectively utilising these alternative means beyond their current deployment/usage.

60 In the following sub-sections I describe the analysis that leads me to conclude that ULLS and wholesale inputs supplied on alternative fixed line networks are alternative means for providing downstream services supplied on LCS/WLR. Moreover, mobile voice and broadband networks, and fixed wireless broadband networks, if they are not at present fully substitutable alternative means for providing downstream services supplied on LCS/WLR, are, at the least, likely to become increasingly available as a means for providing relevant downstream services.

61 In Section 3.1 I identify the technically possible alternatives to LCS/WLR for providing the relevant retail services. In section 3.2 I look at the extent to which the contending alternatives for providing the relevant retail services are actually in place and being used for this purpose at this time. Finally, in section 3.3 I consider the whether it is likely that any barriers to entry into, or expansion of, the use of the most compelling of these alternatives to LCS/WLR are material.

3.1. ALTERNATIVE MEANS FOR PROVIDING LCS/WLR

3.1.1. ULLS

62 ULLS is defined as follows:

*The unconditioned local loop service is the use of unconditioned communications wire between the boundary of a telecommunications network at an end-user's premises and a point on a telecommunications network that is a potential point of interconnection located at or associated with a customer access module and located on the end user side of the customer access module.*²²

ULLS provides an access seeker with the full capacity of the copper wire between Telstra's local exchange (or another point of interconnection associated with a customer access module) and the end user. This means that while LCS/WLR (in combination with other upstream inputs e.g. terminating access for long distance and fixed-to-mobile calls) only enables an access seeker to provide retail fixed voice services, a ULLS-based provider can offer both a standard telephone service (STS)-equivalent voice service and broadband services.²³ These can either be directly sold to end users, or wholesaled to resellers who will then retail the product(s) to end users.

²² ACCC, 'Declaration Inquiry for the ULLS, PSTN OA, and LLS', Final determination, July 2006 (Glossary)

²³ [c-i-c]

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3.1.2. Alternative fixed line networks

- 63 It is self-evident that alternative fixed line networks (such as the Optus HFC network) enable network providers to offer voice and broadband services which potentially act as a constraint to Telstra's retail and wholesale fixed line service offers. Alternative fixed line networks are also well suited to the provision of STS quality VoIP services.²⁴

3.1.3. Wireless Networks

Mobile Wireless Networks

- 64 Mobile voice and broadband networks provide an alternative network for the provision of services similar to those provided using LCS/WLR. I have not considered whether fixed voice telephony services and mobile voice services are in the same market; rather, for the sake of avoiding controversy, I have simply assumed fixed line and mobile communications are in separate markets. Consequently, I do not contend that mobile services are fully substitutable alternative means of providing downstream services supplied on LCS/WLR. I nevertheless consider it unarguable that mobile services place some constraint on the price of fixed voice telephony services.

Fixed Wireless Networks

- 65 Fixed wireless networks can be used to provide STS quality VoIP services which potentially act as a constraint to Telstra's retail and wholesale fixed line service offers.²⁵ As with mobile voice services, I do not argue that VoIP provided over fixed wireless networks is a fully substitutable alternative means of providing downstream services supplied using LCS/WLR. I nevertheless believe that the scope to supply VoIP over fixed wireless networks provides some constraint on Telstra's pricing practices.

24 I understand that a connection of 256/64Kbps download/upload is the minimum requirement for a quality VoIP service; <http://www.cnet.com.au/broadband/voip/0,239035972,240056481-3,00.htm> (Accessed on data 29th June 2007). Fixed line networks can partner with VoIP service providers and third party interconnection arrangements (or supply their own) to deliver STS equivalent service to customers.[c-i-c].

25 Fixed wireless carriers can partner with VoIP service providers and make third party interconnection arrangements (or supply their own) to deliver STS equivalent services to customers. [c-i-c].

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3.2. CURRENT DEPLOYMENT AND USE OF ALTERNATIVES TO LCS/WLR

66 In this section I analyse the extent to which ULLS and competing alternative networks are currently rolled out and being used as alternative means of providing relevant downstream services. By way of introduction, Figure 1 depicts a downward trend in Telstra's WLR and LCS services. In fact over the one year period from May 2006, while the number of Telstra's retail basic access services remained flat, there were [c-i-c] and [c-i-c] percent declines in the number of WLR and LCS services respectively. This suggests that alternative means of providing competing retail telephony services are not only available, but are becoming increasingly popular.

Figure 1: [C-I-C]

3.2.1. ULLS

67 Access seekers are engaging in ongoing purchases of ULLS from Telstra and in extensive DSLAM deployment to provide voice and broadband services to end customers. This demonstrates that, in the locations where such investments are observed, market participants perceive ULLS-based supply as being viable. In short, competing services are in place which act (or could readily act) as direct substitutes to the LCS/WLR service.²⁶

²⁶ I note that if supply requires incurring sunk costs that are not incurred when LCS/WLR is used, then providers that have already sunk those costs are all the more likely to be fierce competitors (although possibly creating a barrier to *de novo* entry).

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- 68 In measuring the extent of ULLS-based entry, commercial confidentiality considerations have forced me to rely on DSLAM deployment at the ESA level that does not differentiate between DSLAMs used for ULLS and DSLAMs used for LSS. That is, I use the terms ULLS-based entry and ULLS-based supply to cover any circumstances where an access seeker has deployed a DSLAM. This might be seen as potentially over-stating the extent of ULLS-based activity, as some DSLAM deployment will relate to LSS-based entrants. However, I am of the view that LSS-based DSLAM entry strongly suggests ULLS-based entry would also be profitable, due to: (a) the technical and commercial similarity of LSS- and ULLS-based supply;²⁷ and (b) the ease of moving from LSS- to ULLS-based operations.²⁸
- 69 In support of this view I note that prevailing market conditions strongly suggest that the economic rational for either LSS- or ULLS-based entry is to supply end users with both voice and broadband services. Table 1 demonstrates that the majority of LSS-based entrants for which we have information, like ULLS-based entrants, retail both voice and broadband services through either LCS/WLR or VoIP.
- 70 Furthermore, [c-i-c]voice services provided using ULLS and LSS can be indistinguishable from STS:

“At present, a telecommunications service provider wishing to provide a standard telephone service (“STS”) quality voice services using a ULLS-based network can adopt one of three technologies choices. An acquirer of ULLS or LSS may supply voice services on the line using standard switching technology (ULLS only), POTS emulation (ULLS only) or VoIP (ULLS or LSS).”

“The voice service supplied by the access seeker using ULLS network and POTS emulation is the same, from an end-user’s perspective, as a voice service supplied using standard switching. The quality of the voice service is equivalent to that provided using standard switching.”

and

²⁷ The minimum number of SIOs necessary to make entry viable is low for both ULLS (see section 3.3.1) and LSS (see Appendix D). [c-i-c]

²⁸ The reasons for this are presented in Appendix C and Appendix D. Appendix C demonstrates that there are no material constraints to LSS operators acquiring the switching capacity to provide voice services, while Appendix D looks at the issues relevant to movement from LSS-based supply to ULLS-based supply more broadly.

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*The carriage of a call by POTS emulation or VOIP does not necessarily result in an inferior quality service to an end-user as compared with a call which is carried using standard switching. In circumstances where an Internet Protocol path is congested, the packets of information carrying the voice call may be afforded priority over the packets of information carrying other data, with the result that the quality of the call will not be deteriorated by any congestion on the network and will therefore be equivalent to that of a call carried by a traditional switching technology.*²⁹

- 71 Finally, an existing LSS-based VoIP entrant wishing to switch to a ULLS-based POTS emulation voice service would simply require disconnection of “*the second jumper*” and the installation of voice cards in an existing DSLAM.³⁰ Thus, for the LSS-based VoIP providers listed in Table 1, there are no material barriers to switching from LSS to ULLS.³¹

Table 1 : Selected voice service offerings of current LSS-based providers

LSS-based provider	Does it provide retail voice services?	Are voice services provided over PSTN, as VOBB/VoIP, or Both ¹
Adam Internet	No ²	-
Agile/Internode	Yes ¹	VoIP
Amcom	Yes ²	VoIP
iiNet	Yes ¹	Both
Netspace	Yes ³	Both
Nextep	Yes ⁴	VoIP
OnTheNet	No ²	-
PowerTel	Yes ²	ISDN and PSTN
Soul	Yes	PSTN
TPG	Yes	VoIP

29 [c-i-c]

30 [c-i-c]

31 Switching costs are discussed further in Appendix D.

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Source: (1) Carriers websites (accessed 19th June 2007); (2) Submission to the Commission's LSS redeclaration inquiry; (3) The Commission's Notification of Amcom's access dispute (<http://www.accc.gov.au>); (4) The use of LSS is referred to at http://www.wildit.com.au/dsl_max.htm.

Note: Table 1 is not intended to be an exhaustive list of LSS-based market participants. I note that all companies listed above are reported to have DSLAM infrastructure by ACMA 'Communications Infrastructure and Services Availability in Australia 2006-2007'

72 The above demonstrates that LSS-based operators have the technical capability to provide, are familiar with retailing, and face no substantive barriers to providing, voice services. I note that iiNet reported that it has 45,000 VoIP customers, with growth estimated at 4-5 per cent per month.³²

73 I now show that access seeker deployment of DLSAMS is substantial and widespread, demonstrating the viability of ULLS and LSS entry at current (and, a *fortiori*, higher) prices. Table 2 indicates 371 Band 2 ESAs (comprising 77 percent of SIOs) can be reached by ULLS-based competitor infrastructure.³³

Table 2: Band 2 ESAs with at least one ULLS-based competitor, by State (June 2007)

	ESAs with at least one ULLS-based competitor	[c-i-c]	Band 2 SIOs covered by ULLS-based competitor build	[c-i-c]	[c-i-c]
SA	32	[c-i-c]	518,971	[c-i-c]	[c-i-c]
ACT	11	[c-i-c]	119,976	[c-i-c]	[c-i-c]
WA	54	[c-i-c]	664,044	[c-i-c]	[c-i-c]
NSW	117	[c-i-c]	1,792,203	[c-i-c]	[c-i-c]
QLD	64	[c-i-c]	851,937	[c-i-c]	[c-i-c]
VIC	89	[c-i-c]	1,234,346	[c-i-c]	[c-i-c]
NT	1	[c-i-c]	14,119	[c-i-c]	[c-i-c]
TAS	3	[c-i-c]	36,639	[c-i-c]	[c-i-c]
Total	371	[c-i-c]	5,232,235	[c-i-c]	[c-i-c]

Source: [c-i-c]

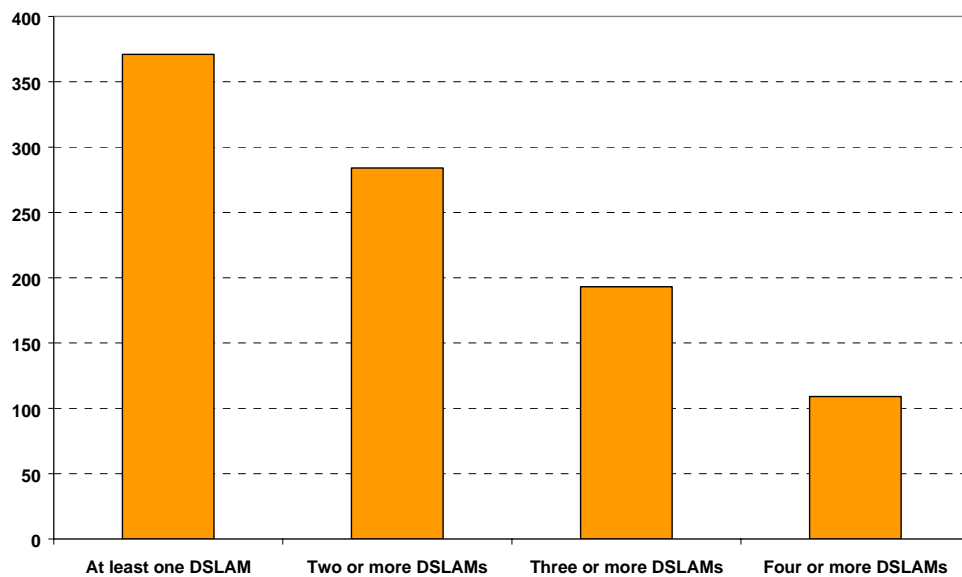
³² iiNet, Presentation to Euroz Small Caps Conference, 6 March 2007

³³ The information on DSLAM deployment on an ESA-by-ESA basis for Band 2 on which I rely can be found in Appendix A.

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- 74 Further, a substantial majority of these ESAs have two or more ULLS-based competitors. Of the 371 Band 2 ESAs with ULLS-based competitors, only 87 (23 per cent) have a single ULLS-based competitor (Figure 2). In addition, 193 of these ESAs (more than 50 per cent) have three or more ULLS-based competitors, and 109 (29 per cent) have four or more competitors.

Figure 2: Number of ULLS-based competitors in Exemption Area ESAs, (June 2007)

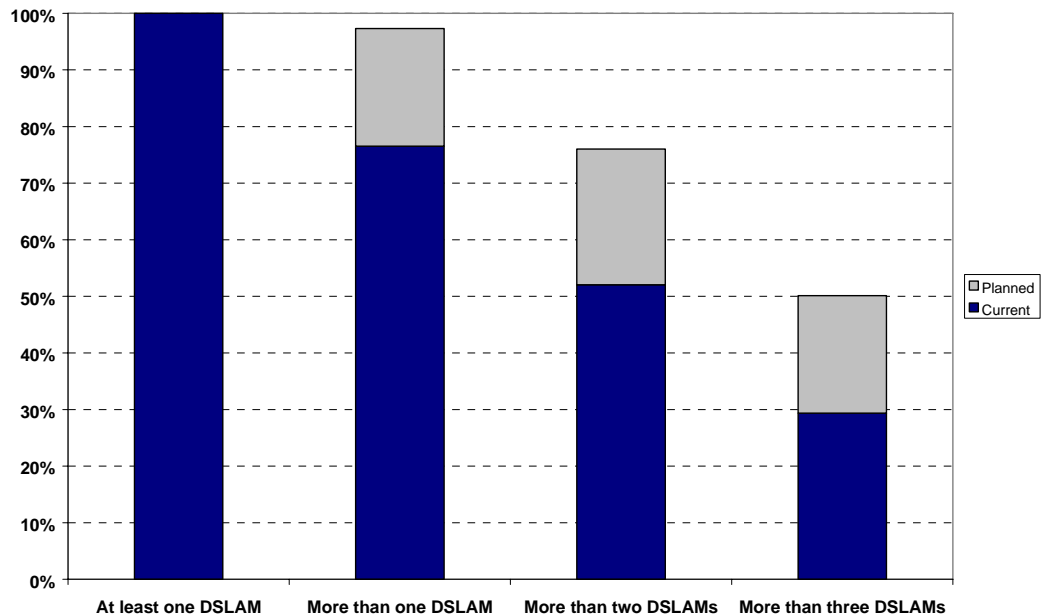


Source: [c-i-c]

- 75 [c-i-c]Further, evidence on planned ULLS-based infrastructure deployment indicates that the 'competitive build' landscape presented above is likely to intensify in the immediate future. In addition to the 1,048 DSLAMs in place in June 2007, an additional 348 are planned by the end of the year (equating to a 33 per cent increase in the number of DSLAMs). This increases the share of competitor DSLAM ESAs with two or more competitors present to over 97 per cent and the share of ESAs with three or more competitors rises to 282 (or over 76 per cent).

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Figure 3: Number of current and planned ULLS-based competitors in Exemption Area ESAs, (June 2007)



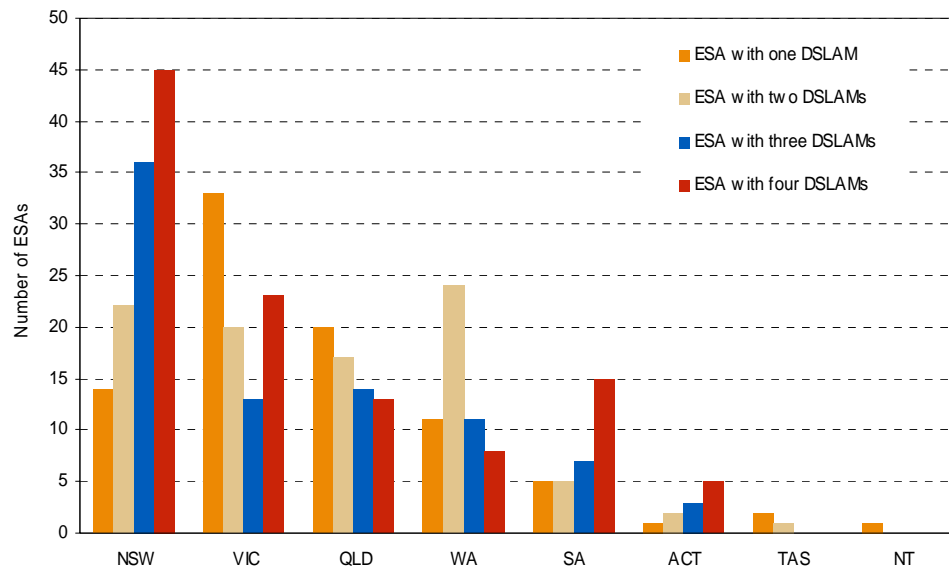
Source: [c-i-c]

76 [c-i-c]Turning to ULLS-based infrastructure build at a state level, I observe that, except for Tasmania and the Northern Territory, the majority of Band 2 ESAs with competing DSLAMs deployed have two or more ULLS-based competitors.³⁴

³⁴ Both Tasmania and the Northern Territory are having a limited number of Band 2 ESAs with ULLS-based infrastructure. iiNet/PowerTel, Internode and iPrimus have all deployed DSLAMs in Tasmania, but not in a majority of Band 2 ESAs. iiNet/PowerTel is the only competitor to have rolled out DSLAMs in the Northern Territory.

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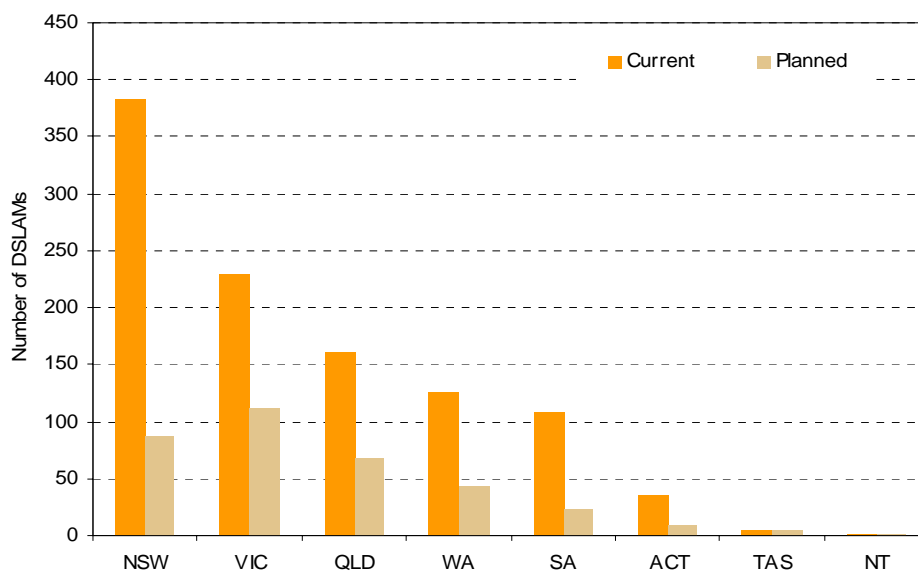
Figure 4: Number of ESAs with more than one ULLS-based competitor in the Exemption Area, (June 2007)



Source: [c-i-c]

77 [c-i-c]The number of planned DSLAMS relative to the DSLAMS actually in place is relatively even across states.

Figure 5: Current and planned ULLS-based deployment in the Exemption Area, by State and Territory (June 2007)



Source: [c-i-c]

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- 78 Telstra's forecast of SIOs served by ULLS-based infrastructure to the year 2011-12 is presented in Figure 6. These estimates indicate the Telstra anticipates continued growth in ULLS-based SIOs.

Figure 6: [C-I-C]

[C-I-C]

- 79 To conclude, in this sub-section I have shown that substantial ULLS-based infrastructure, which is used to provide voice as well as and broadband services, is in place at June 2007. Furthermore, information on planned build indicates that the depth of ULLS-based infrastructure competition (within ESAs with current build) and the breadth of ULLS-based infrastructure competition (into ESAs without current build) are likely to increase during 2007.

3.2.2. Alternative fixed line network deployment

- 80 Competing fixed line networks complement extensive competition from DSLAM infrastructure. Here I present and analyse evidence on the extent of alternative fixed line networks in Band 2 ESAs. The most important alternative network is Optus' extensive HFC network which operates in NSW, Victoria and Queensland. Within these states, Optus' HFC network can reach 195 (or 72 percent of) ESAs in the Exemption Area.

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Table 3: [C-I-C]

- 81 There are several other HFC networks also in operation capable of providing alternative voice services to end users:
- TransACT operates an extensive fibre-optic network providing Canberra and Queanbeyan (NSW) voice, broadband and television services to over 90,000 end-users covering over 50 suburbs.³⁵
 - Neighbourhood Cable has an HFC network offering voice, broadband and television service to end users in a number of important regional centres in Victoria, as shown in Table 4.
 - PowerTel operates a fibre communications network covering metropolitan areas, connecting Brisbane, Gold Coast, Newcastle, Sydney, Canberra, Melbourne, Adelaide and Perth providing business and wholesale voice and switched data services over a single connection.³⁶
 - Soul Pattison Telecommunications offers business and wholesale voice, broadband, television and video services over a CISCO powered network throughout Queensland, N.S.W and VIC.³⁷
 - E-wire operates a HFC network throughout Perth and subsequent areas; they are continuing to expand and increase service offerings.³⁸

Table 4: Extent of the Neighbourhood Cable HFC Network

City	Homes passed	Population passed
Mildura	8,500	24,000
Ballarat	32,000	70,000
Geelong	50,000	180,000

Source: <http://www.ncable.net.au> (accessed 15 May 2007).

- 82 These networks, most especially those recently rolled out (such as TransAct's and e-wires network), strongly suggest that market participants consider such investments to be viable.

35 www.transact.com.au/about/ourcompany.aspx (accessed 28th June 2007)

36 PoweTel's Network is available to business customers and on a wholesale basis to carriers and service providers. www.powertel.com.au (accessed 28th June 2007)

37 http://soulaustralia.com.au/network/SPT_Map_Sun.jpg (accessed 28th June 2007)

38 www.e-wire.net.au/ (accessed 28th June 2007)

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83 In short, a number of fixed line operators provide voice services either on a standalone basis or part of a bundle with other broadband services. However, this understates the full extent of voice service offering available to Australian consumers. End users with a broadband connection can also purchase a VoIP service from one of four Australian stand-alone VoIP service providers (Engin, MyNetPhone, Ace Communications and Freshtel). As the call quality of these VoIP services may not be comparable to that of POTS calls, I make no claim that they are in the same market as STS. Nonetheless, I consider that these services place some competitive discipline on Telstra's pricing for voice services.

3.2.3. Wireless Networks

Mobile Wireless Networks

With the widespread adoption of mobile technology and the increasing affordability of the service, mobile calls increasingly act as a substitute for fixed voice telephony services.

Table 5 demonstrates that, in comparison to the 11.3 million fixed voice services, there are now 19.7 million mobile telephone services in operation covering over 96% of Australia.³⁹

Table 5: Mobile take-up

Type of Network	Mobile services at 30 June 2006
GSM	15.5 million
CDMA	1.8 million
3G	1.6 million
Total Retail	18.9 million
Wholesale (combined GSM, CDMA, 3G)	0.8 million
Total mobile service	19.7 million

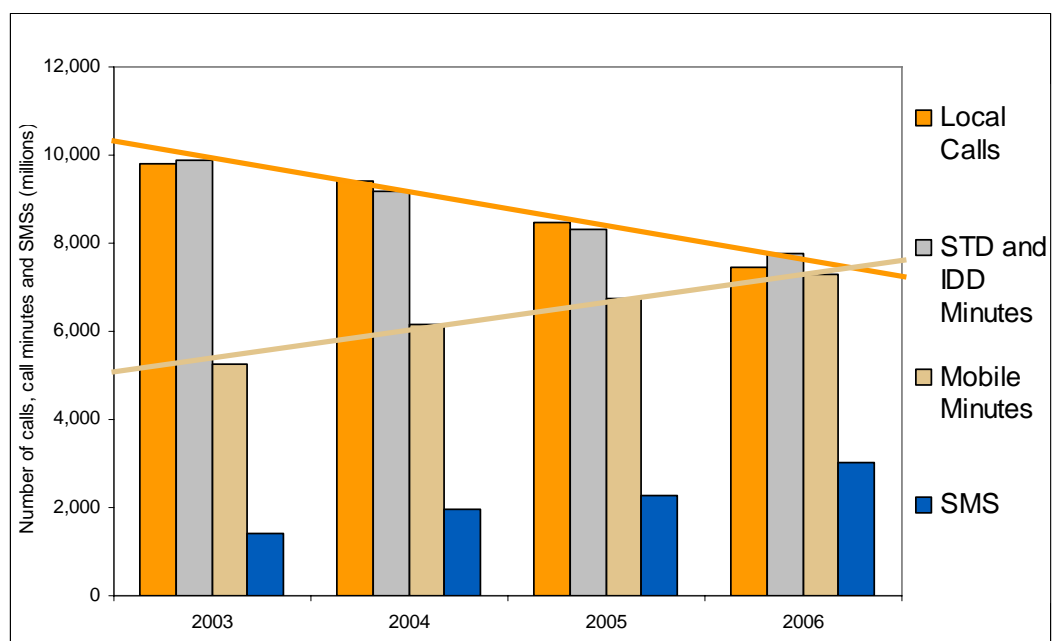
³⁹ ACMA, "Communications Infrastructure and Services Availability in Australia 2006-2007".

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Source: ACMA, 'Communications Infrastructure and Services Availability in Australia 2006-2007'

84 Further, as shown in Figure 7, one can observe parallel declines in the number of local calls, STD and IDD minutes over Telstra's fixed line network and increases in the number of minutes spent on mobile phone calls and the number of SMSs sent, consistent with fixed voice to mobile substitution. Similarly, the decline in the number of fixed-line SIOs and the increase in mobile SIOs also supports fixed-mobile substitution.⁴⁰

Figure 7: Telstra Mobile and Fixed call volumes: 2003-2006



85 Source: Telstra Annual Reports (2004-2006)

Fixed Wireless Networks

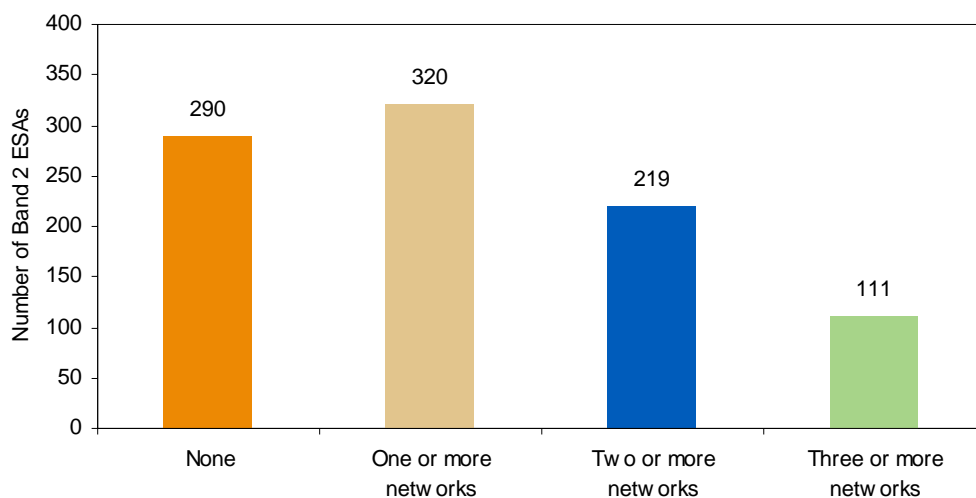
86 Wireless broadband networks have now achieved wide coverage in metropolitan Australia. In many metropolitan areas, an end customer can be reached by at least one, and often two, three and sometimes four different wireless networks (see Figure 8 and Table 6 below). These networks are being used to provide both voice and broadband services.

40 Based on information provided by Telstra I have assumed that over the period July 2003 and May 2007 the number of fixed SIOs in Australia declined by approximately [c-i-c]%. A certain proportion of this decline is due to the migration from dial-up internet to broadband. Over the period 2001-02 to 2004-05 the number of mobile SIOs reported by carriers has increased by 3.7 million or 32.6 per cent (ACCC, "Telecommunications Market Indicator Report 2004-05", July 2006,).

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87 BigAir and Unwired have partnered with VoIP service providers MyNetPhone and Freshtel to offer VoIP as part of a voice-broadband bundle.⁴¹ BigAir has indicated that “BigAir’s symmetrical high speed broadband services are very suitable for business-grade VoIP delivery.”⁴² In addition, any end user with a wireless broadband connection can purchase VoIP from a VoIP service provider. As such all of the networks listed below are either currently used or could potentially be used to provide VoIP in partnership with VoIP service providers.

Figure 8: Number of competitor broadband wireless networks in Band 2 ESAs (October 2006)⁴³



Source: [c-i-c].

Note: This measure of wireless broadband networks does not include 3G networks operated by Telstra, Optus, Vodafone and Hutchinson.

41 Media Release, ‘Unwired and Freshtel announce wireless VoIP partnership’ 10 August 2005, <http://www.freshtelholdings.com> and ASX Announcement ‘MyNetFone and BigAir deliver true convergence of voice and broadband data services’, December 5th 2006.

42 ASX Announcement ‘MyNetFone and BigAir deliver true convergence of voice and broadband data services’, December 5th 2006.

43 [c-i-c]

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Table 6: Band 2 ESAs covered by competitor wireless networks

Carrier	Number of Band 2 ESAs in Network Footprint
iBurst	200
BigAir Wireless	54
Unwired	143
Other access providers	200
Total ESAs covered	320

Source: [c-i-c].

Note: This measure of wireless broadband networks does not include 3G networks operated by Optus, Vodafone and Hutchinson. [c-i-c].

3.3. BARRIERS TO ENTRY AND EXPANSION FOR ULLS AND ALTERNATIVE NETWORKS

88 My analysis so far is undertaken conservatively by focusing on observed ULLS and alternative network deployment. It does not consider the extent to which DLAMS/ULLS or alternative networks could be deployed beyond their current footprints or used more intensively within existing footprints. Here I address this question by consideration of barriers to entry and expansion.

89 This section shows that there are no apparent impediments to retailers commencing to use, or expanding their use of, ULLS. At the very least, any such impediments appear no greater than those to firms seeking to use of LCS/WLR. Impediments are likely to be greater in respect of further deployment of alternative networks, although such impediments do not appear to be insurmountable.

3.3.1. Barriers to ULLS entry and expansion

90 There appear to be few material barriers to commencing to use ULLS for those retailers currently using LCS/WLR, or expanding the use of ULLS for those retailers already using ULLS. This conclusion is based on consideration of the following factors, that are arguably most likely to give rise to such barriers:

- Sunk costs of ULLS supply;
- Minimum efficient scale considerations;
- Technical constraints to providing an STS voice service;
- Backhaul costs; and
- Non price impediments.

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Sunk costs of ULLS supply

91 The Commission's Merger Guidelines defines:⁴⁴

Sunk costs are costs which are unrecoverable on exit, creating a risk from entry.

92 Costs that appear to potentially constitute the most significant sunk costs in respect of ULLS supply include the following:

- **DSLAMs.** I have been advised of the following points. First, DSLAMs can be relocated or resold. The DSLAM shelf, voice and ADSL cards can be reinstalled in another exchange. While the cables connecting the DSLAM to Telstra's equipment need to be purchased afresh as they are pre-cut to the appropriate length, the costs of cables are a negligible component of the overall DSLAM cost. To this extent DSLAM investment can not be considered a sunk cost.⁴⁵ Second, DSLAMs have a relatively short life.⁴⁶ By definition, over any period longer than this life span, DSLAM expenses are not sunk costs.

44 ACCC, Merger Guidelines, June 1999, 5.117.

45 [c-i-c]

46 [c-i-c]

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- **Switching infrastructure.** Switching infrastructure used to provide the voice component of a voice-broadband bundle, could, if self-provided, include sunk costs.⁴⁷ However, as it is technically feasible for ULLS-based access seekers to purchase traditional switched technology from existing network operators (such as Optus, Primus, AAPT, Soul and Telstra),^{48,49} access seekers can avoid sinking such investments. Telstra's PSTN currently interconnects with [c-i-c] network operators who will have at least some switching infrastructure, including [c-i-c] network operators who interconnect with Telstra in all 66 CCAs.⁵⁰ Furthermore, a ULLS access seeker could use ULLS-based POTS emulation to provide an equivalent standard telephone service. This technology relies on the same softswitches and PSTN Gateway infrastructure as LSS-based VoIP. Hence current LSS-based VoIP service providers not presently using POTS emulation could switch to POTS emulation without acquiring additional switching equipment. Finally, Optus currently provides a wholesale switched VoIP Interconnection service for those LSS service providers who wish to provide ULLS emulation but do not want to invest in softswitching infrastructure.⁵¹
- **Retailing costs for both voice and ADSL.** There are no obvious differences in the extent to which competitive carriers must sink retail costs when they enter using ULLS as compared with LCS/WLR or LCS/WLR and LSS. Further, it is unlikely there will be any material addition to sunk costs in moving from an 'LSS and Wholesale PSTN' arrangement to use of ULLS to provide voice-only or bundled retail services. Finally, in-so-far as voice retailing costs are sunk, they will likely be largely sunk with respect to an entrant's overall network, rather than sunk with respect to entry at a particular exchange.

93 Therefore, I conclude that sunk costs of ULLS-based supply are unlikely give rise to material barriers for ULLS-based entrants.

47 Sunk costs of local voice switching and gateway infrastructure are considered in greater detail in Appendix C.

48 [c-i-c]

49 Companies websites (accessed 16th June 2007)

50 [c-i-c]

51 www.optus.com.au (accessed 5th July 2007)

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Minimum efficient scale (MES) considerations

- 94 In my view minimum efficient scale (MES) is not a valid barrier to entry, so long as entrants have adequate access to financing. I further consider that there are no reasons to believe that firms such as Optus and AAPT would have difficulty in gaining access to the required financing to enter at on efficient scales, especially given the evidence below that the necessary SIO numbers for viable ULLS-based operations at current prices are relatively low.
- 95 I have been provided with the results of analysis undertaken by Telstra experts that allows me to examine MES for ULLS-based (and LSS-based – see Appendix D) suppliers.⁵²
- 96 The outputs of the Telstra analysis include estimates of monthly per SIO revenues for customers purchasing the bundle of ADSL and voice services. In addition, the outputs include estimates of the monthly per SIO costs of supplying this bundle, by band, for three levels of SIOs, these being [c-i-c]. These outputs are summarised in Table 7. I can infer from these outputs that, in Band 2, the minimum number of retail ADSL SIOs at which ULLS entry becomes viable is less than [c-i-c] SIOs, given current retail prices.⁵³
- 97 This threshold would increase if there were retail price reductions post exemptions from the increased competition expected to ensue. However, this would be of no concern if it was due to increased competition resulting in lower prices (this clearly being in the LTIE). In any case, the Band 2 SIO threshold at current prices identified by the model is very low and in my view affords substantial leeway for retail price reductions for voice services without raising MES concerns. In short, I conclude that MES issues are unlikely to prevent *de novo* ULLS entry at present (or lower) retail prices, especially for existing retailers currently using LCS/WLR who could be expected to already have significant customer numbers in Band 2 ESAs.

Table 7: [C-I-C]

- 98 Although I have not seen modelling of the customer SIO viability thresholds for ULLS for voice-only customers, in section 5 I present modelling that demonstrates that in most instances the incremental cost of an additional voice only customer for a ULLS-based operator is low with respect to incremental revenue.

52 [c-i-c]

53 This indicates the break even point where entry becomes profitable. For competitors to be operating at their optimal efficient scale they may require a greater number of SIOs. To the extent that there are no material barriers to entry, demonstrated above in this section, what is important is when entry becomes profitable not when scale becomes optimal.

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- 99 On the basis of the above evidence I conclude that MES issues are not likely to be a barrier to ULLS-based entry.⁵⁴

Technical constraints to providing an STS voice service

- 100 I have been advised that there are no technical constraints to ULLS-based operators providing a STS of an equivalent quality to Telstra's STS. I have been further advised that this absence of technical constraints is true for both legacy PSTN switching equipment (TDM) and in general for the current generation of soft switches, which are readily available in the marketplace.⁵⁵ Furthermore the provision of business grade VoIP is commercially feasible across a number of different networks and is currently provided by MyNetFone, Engin and Optus.⁵⁶
- 101 In my view the ability of competitors to provide equivalent voice service offerings to Telstra addresses any concern that Telstra may be able to leverage any competitive advantage from superior quality voice services into the wholesale market.
- 102 In short, as technical constraints to providing an STS voice service do not exist, they do not pose a material barrier to ULLS-based supply.

54 Furthermore, even if it was considered that there is likely to be a barrier created by MES, there is no competitive asymmetry in such impediments between Telstra and prospective entrants.

55 [c-i-c]

56 ASX Announcement, Engin, 'Engin uniquely positioned to deliver broadband services to the digital home', 12th June 2007; ASX Announcement MyNetFone, 'MyNetFone and BigAir deliver true convergence of voice and broadband data services', December 5th 2006:
<http://www.optus.com.au/portal/site/aboutoptus/menuitem.813c6f701cee5a14f0419f108c8ac7a0/?vgnextoid=89731fcd0e5e2110VgnVCM10000029867c0aRCRD&vgnnextchannel=daf6d7ef03820110VgnVCM10000029867c0aRCRD&vgnnextfmt=default> (accessed 28th June 2007)

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Backhaul costs

- 103 I do not believe backhaul costs pose a material entry barrier to using ULLS. The backhaul transmission market is mature and ULLS-based operators in Band 2 ESAs are able to purchase call charge area transmission services from a number of carriers.⁵⁷ Further, as the transmission service used for backhaul is either a declared service or provided in a competitive market, access seekers can request the Commission to arbitrate any dispute about prices for backhaul services (if declared) or shop around for a competitive price. On this basis, it is difficult to conceive that access to these services creates a barrier to ULLS entry.

'Non price' impediments

- 104 It might be argued that the use of ULLS might be impeded due to non-price conduct on the part of Telstra - for example that Telstra might engage in quality degradation or delays in respect of supply of ULLS - adversely impacting the viability of ULLS competitors.

⁵⁷ Telstra, Optus, Nextgen, PIPE Networks, Powertel, Silk Telecom and Soul operate backhaul networks in metropolitan and regional areas across Australia. Source: ACMA, 'Communications Infrastructure and Services Availability in Australia 2006-2007'

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105 I do not believe this to be a barrier to entry, since allegations of such practice could – and I anticipate would - be addressed through the anti-competitive conduct provisions of the Act, and damages recovered if Telstra was found to be in breach.⁵⁸ Putting that aside, I also note the following. First, Telstra is required under the standard access obligation provisions of Part XIC of the Act to take all reasonable steps to ensure the operational quality of the service.⁵⁹ Further, the standard access obligations are judicially enforceable.⁶⁰ Second, Telstra has obligations under its Operational Separation Requirements to ensure that it provides equivalent notice of network upgrades to access seekers as it does to itself.⁶¹ Third, such quality degradation may not be profitable for Telstra to undertake (because while it may reduce competitive supply in retail markets, it also reduces access seeker demand in wholesale markets).⁶² Moreover, the particular characteristics of telecommunications make it especially unlikely that sabotaging the quality of access seekers' services would raise Telstra's profits.⁶³

3.3.2. Barriers to alternative network entry and expansion

106 I recognise that there are very substantial costs involved in rolling out new networks (particularly for fixed line networks, less so for wireless), and that for most market participants this will not, in the short term, be a realistic alternative to use of LCS/WLR. However, a number of fixed and wireless alternative networks are already in place. The operators of these networks have the option of using and expanding their own network rather than relying on access services (such as LCS and WLR) for expanding their customer numbers.

58 Telstra is constrained by Part XIB of the Act which restrains a telecommunications firm from engaging in anticompetitive conduct (per s 151A).

59 The Act, s 152AR.

60 The Act, s 152BB.

61 Specifically see clause 3.8 and 5.15 of the Operational Separation Plan which Telstra was required to prepare under the provisions of the [Telecommunications Act 1997](#) (Cth).

62 Mandy, D. and D. E. M. Sappington (2007), "Incentives for sabotage in vertically related industries." *Journal of Regulatory Economics* 31(3): 235-260.

63 Telecommunications firms typically compete through price and product differentiation. In such markets, harming the quality of rivals' retail services is likely to lower retail prices, possibly lowering the vertically integrated firm's retail profits. It may also lower wholesale demand, again lowering the vertically integrated firm's profits (Mandy and Sappington, *ibid.*)

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- 107 For servicing additional customers with an alternative network's existing footprint, economies of scale and scope characteristic of network industries can be realised within the existing network footprint. Given this, and the generally low incremental costs of expanding utilisation of a fixed line network within its existing footprint, I am of the view that there would not be substantial barriers to exercising this alternative.
- 108 Moreover, for the expansion of a carrier's geographic footprint to allow them to enter these areas using their own network rather than LCS/WLR, carrier's can use market information and demand forecasts to tailor their proposed expansion to the most lucrative areas, maximising the scope to recover the costs of this expansion.

Fixed line networks

- 109 I have suggested above that barriers to expansion of fixed line networks, particularly in existing footprints, may not be prohibitively high. E-wire has demonstrated that greenfields fixed line entry and expansion is not insurmountable. E-wire is currently expanding its HFC network to new estates in Perth and surrounding areas. Similarly Telstra has recently demonstrated that expansion within a network footprint can occur. Telstra has begun to roll out Wideband, a new network which links end users with either an optical fibre or copper wire connection.⁶⁴
- 110 Wideband allows the end user to control its data network by having the ability to dynamically change the data access capacity of the network from 2Mbps to 1000Mbps via the internet.⁶⁵ The network is analogous to deploying a new fixed line network and as such Telstra does not have an historical advantage derived from incumbency. This new network deployment demonstrates that any barriers to entry that might exist are surmountable. Further, Figure 9 indicates that in many situations the cost of Wideband deployment in metropolitan areas (Band 2) is not substantially different from deployment in CBD areas (Band 1) (where an exemption already applies).⁶⁶

Figure 9: [C-I-C]

64 [c-i-c]

65 www.telstra.com.au/widebandip/index.htm (accessed on 28th June 2007)

66 [c-i-c]

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Wireless networks

111 In my conclusions on the economic issues pertaining to the proposed Exemption Orders I do not rely on wireless networks being a good substitute for LCS/WLR (although noting it is likely they do provide some competitive discipline on Telstra). Nonetheless, it is instructive to note that patterns of recent wireless network footprint expansion suggest that any barriers to entry and expansion in the case of this type network are indeed surmountable. For example iBurst, since obtaining a carrier licence and starting its operations in Sydney in 2003, has already expanded its network coverage to include Brisbane, Melbourne, Canberra and the Gold Coast. In May 2006 iBurst also announced that it would further expand its network to cover the Perth and Adelaide areas. Recent additions to coverage have also been implemented in Burleigh Heads (Gold Coast), Hawthorn (Melbourne), Manly (Sydney) and Red Hill (Canberra).⁶⁷

3.4. CONCLUSIONS

- 112 In this section I have shown that in the locations where ULLS-based operations and alternative fixed line networks exist, there is effective replication of Telstra's local loop assets and the wholesale services provided over these assets (including LCS and WLR). That is, these means of access provide an alternative means of providing the downstream retail services supplied on LCS/WLR.
- 113 Furthermore, I have demonstrated there are no material impediments to retailers commencing to use, or increasing their use of, ULLS. Any such impediments appear no greater than are faced by those firms seeking to use LCS/WLR. Impediments are likely to be relatively greater in respect of further deployment of alternative networks, although such impediments do not appear insurmountable.
- 114 In the next section I rely on these conclusions in addressing the appropriate scope of Exemption Orders for LCS and WLR.

⁶⁷ Press releases downloaded at www.pba.com.au on 18 December 2006.

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4. SCOPE OF LCS/WLR EXEMPTION ORDERS

- 115 Based on the preceding analysis of alternatives to LCS/WLR for the provision of relevant retail services, in this section I outline what I consider to be the appropriate geographic scope of Exemption Orders for LCS/WLR.⁶⁸
- 116 Having established in Section 2 that the ESA is the appropriate geographic level to consider the existence of alternatives and hence the case for exemptions, I now develop a decision rule which identifies for which ESAs LCS and WLR exemptions are justified. I am of the view that such a decision rule is of greater utility in the regulatory process than, for example, an analytical approach applied on a case-by-case basis, for the following reasons. First, from a practical perspective it is unrealistic to apply a full blown economic analysis of market characteristics for individual ESAs. Second, I do not believe this approach involves any significant compromise in the quality of regulatory decision-making compared to a detailed analysis on an ESA-by-ESA basis, as the decision rule I propose in fact reflects in an indirect way the underlying characteristics of each ESA.
- 117 Specifically, I consider that a decision rule relating to the number of active alternatives to LCS/WLR in an ESA would provide economically-justified and practical guidance on the appropriate footprint for Exemption Orders for these services. That is, the observed presence of active alternatives to LCS/WLR in an ESA is itself a concrete proxy for examination of the underlying market characteristics, as it reflects the industry's judgement that the characteristics of an ESA are such as to be attractive to the deployment of alternative access arrangements.
- 118 Furthermore, I am of the view that, given the primacy of ULLS as an alternative to LCS/WLR, a decision rule with a key focus on competitor DSLAM deployment (i.e. the presence of a ULLS-based competitor) is the most useful manner in which to proceed.
- 119 I posit that there are strong economic and practical grounds for the exemption footprint decision rule of one ULLS-based competitor (i.e. the presence of one competitor DSLAM) qualifying an ESA for LCS/WLR exemption.

⁶⁸ Of course the strength of applications for LCS and WLR Exemption Orders depends not only on the scope for substitution, but also on competition and efficient use of and investment in infrastructure being enhanced. These considerations are addressed in subsequent sections. That said, it is analytically convenient to determine the geographic scope of the Exemption Orders prior to undertaking this analysis.

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- 120 The reason for taking this position is not that I believe that the presence of one active competitor *per se* would necessarily provide sufficient competitive discipline on Telstra absent LCS/WLR regulation. Rather, it is a clear indication of the validity of the conclusion reached in the previous section that barriers to entry and expansion for ULLS-based operators are low. In short, the market has already been entered by at least one ULLS-based operator and, given the low SIO viability threshold identified, can clearly be entered by others.
- 121 Hence it is my view that the presence of one in-place competitor, having access to ULLS at cost-based prices, and having already demonstrated a capacity to serve the market, demonstrates the inevitability of constraint on Telstra's retail pricing behaviour at least as well as the availability of LCS/WLR. The basis for this conclusion is considered in detail in section 4.1.
- 122 However, I am mindful of the propensity of regulators and review tribunals to act conservatively in this respect. Accordingly, I also examine some more demanding alternative thresholds, based on greater amounts of existing alternative infrastructure (section 4.2). These alternative rules represent a significantly more (and in my view unnecessarily) conservative approach to determining the LCS/WLR exemption footprints.

4.1. EXEMPTION DECISION RULE OF ONE ULLS-BASED COMPETITOR IN AN ESA

- 123 Based on the analysis in Section 3 of this report, I am of the view that there are strong economic grounds for an exemption threshold of one ULLS-based competitor in an ESA. That is, if one or more ULLS-based access seekers have installed a DSLAM at an exchange, then LCS/WLR should be exempt at that exchange. The ESAs meeting this criterion are listed in Appendix A.
- 124 I come to this conclusion for two reasons:
- The existence of a ULLS-based competitor clearly demonstrates that there are not material barriers to competitive entry by ULLS-based operators; and
 - Economic analysis leads me to the reasoned conclusion that there are no material barriers to ULLS-based entry/expansion (consistent with the empirical observation that entry has actually occurred).
- 125 Furthermore, I believe this would be a low risk decision rule for the Commission to adopt, for the following reasons:

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- 126 First, if any particular ULLS-based competitors fail to adequately achieve their business plans and are forced to exit the market, it is likely a competing ULLS-based presence would be maintained in the ESAs they currently cover by the purchase of their assets (and possibly customer base) by another ULLS-based operator. In all, there are currently at least 11 competitors that have deployed DSLAMs.⁶⁹
- 127 Second, there are no material barriers to ULLS-based expansion for these competitors, nor indeed do entry barriers appear material for potential new entrants currently relying upon resale products. Telstra cannot reasonably make supra-competitive pricing and output decisions at an ESA level, not only due to pressure from existing ULLS-based competitors, but also the *entry threat* posed by the large number of ULLS-based competitors operating in the market.
- 128 Third, there exist alternative fixed line networks that provide an effective alternative to LCS/WLR, including the Optus and other HFC networks. For example, in NSW, Queensland and Victoria over 70% of ESAs in the Exemption Area defined by this decision rule are covered by Optus' HFC network.⁷⁰
- 129 Fourth, wireless networks (voice and data, with the latter capable of providing VoIP over wireless) will become an increasingly tenable alternative means of serving the relevant downstream market(s) as current trends continue - increasing network coverage, rising service up-take (penetration), falling prices and rising customer acceptance of wireless as a close substitute for fixed line services.
- 130 Fifth, there are only a relatively small number of ESAs in the exemption footprint determined by this decision rule with only one ULLS-based competitor. Figure 3 showed that over 76% per cent of ESAs in such a footprint have two or more ULLS-based competitors.⁷¹
- 131 Finally, if planned DSLAM build during 2007 is taken into account, the proportion of ESAs in the proposed exemption footprint that will have two or more competitors by the end of 2007 increases to at least 97 per cent (conservatively ignoring the deployment of any unannounced DSLAMS) (see Figure 4).

69 Note that there are more than 11 downstream retail providers operating through wholesale agreements; [c-i-c]

70 Of the 270 ESAs in NSW, QLD and VIC with DSLAM build Optus HFC cable reaches 195. [c-i-c]

71 I note that ULLS-based competitor estimates exclude Telstra. That is, a substantial majority of ESAs within the Exemption Area have at least three competitors.

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4.2. ALTERNATIVE EXEMPTION DECISION RULES

132 A possible alternative rule is at least two ULLS-based competitors in an ESA. However, even if there was a desire to be even more conservative than my preferred threshold of one ULLS-based competitor in an ESA, I believe this to be an unduly restrictive decision rule. This is because the presence of two ULLS-based competitors tells little more about scope for viable ULLS-based entry and operations than the presence of just one ULLS-based competitor.

133 Rather, given: (a) the signals to the retail market that additional DSLAM deployment is imminent (planned ULLS-based services); and (b) the presence of fixed line networks, if an alternative, more conservative approach is sought, my preference is for a decision rule requiring at a minimum just one of the following conditions:

- at least two ULLS-based competitors in an ESA; or
- at least one current ULLS-based competitor plus at least one planned ULLS-based competitor; or
- at least one ULLS-based competitor plus at least one HFC network deployed in the majority of the ESA.

134 However, as indicated earlier, I do not believe the **economic** case for LCS/WLR exemptions is materially enhanced by adopting this alternative test rather than that which I originally propose (at least one ULLS-based competitor in an ESA).

135 In the following section I examine whether, in the presence of close substitutes to LCS and WLR, downstream markets would be compromised following Exemption Orders in ESAs with ULLS-based competitor build.

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5. WOULD COMPETITION IN THE DOWNSTREAM MARKET/S BE COMPROMISED BY LCS/WLR EXEMPTION ORDERS?

- 136 Perhaps the most serious regulatory concern associated with granting an Exemption Order might be that Telstra would attempt, through perceived pricing freedom gained by the exemption, to raise or hold retail prices above cost in a manner it could not do absent the exemption, thereby increasing its profits. In particular, the concern would be that Telstra could achieve such goals by raising LCS and/or WLR prices, or by withdrawing these services.
- 137 For Telstra to have the incentive to engage in either strategy, it must reasonably expect that profits raised through increased demand for its retail services more than compensate for reductions in wholesale service sales. In my view this is unlikely given the ready availability of upstream inputs, notably ULLS, in the proposed exempted ESAs. Any rise in Telstra's LCS/WLR price would not materially effect competition the retail market, and prices would continue to be pressed toward underlying (and ultimately efficient) costs. Stated differently, supply side substitution in the upstream input market effectively negates Telstra's ability to foreclose competitors from the downstream retail market.
- 138 The situation revealed in Figure 10 on the number of Telstra wholesale plus retail basic access SIOs in band 2 ESAs with and without competitor DSLAMs is consistent with supply-side substitution at play in the proposed exemption area. In comparison to non-exemption band 2 ESAs, where the number of SIOs has remained relatively stable, exemption area ESAs have experienced, on average, an [c-i-c]% decrease in Telstra's basic access SIOs since March 2004. This strongly suggests to me that Telstra is constrained by supply side substitutes in the proposed exemption area.
- Figure 10: [C-I-C]**
- 139 Because the exemption would not impact the ready substitutability of upstream inputs to LCS and WLR, enabling retailers to substitute away from Telstra-supplied LCS and WLR services (as well as other voice and broadband upstream services), competition in downstream markets would not be compromised by an exemption. That is, in my view future workable competition in the downstream markets is not dependent on the ongoing existence of active LCS/WLR regulation in the ESAs identified in the previous section as appropriate for LCS/WLR Exemption Orders.

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- 140 In coming to this view I am mindful that there are a significant number of customers that still purchase voice only services. I am also aware that it might be argued that some resellers target these customers for the purpose of supplying standalone voice services, and that the LCS/WLR exemption may reduce the ability and/or incentives for current resellers to compete for and supply these customers on this basis, in turn compromising downstream competition.
- 141 Putting aside the issue of whether resellers are (or will continue to be) an efficient and effective form of competition, to address these potential concerns I have examined the viability of servicing voice-only customers using ULLS. I conclude that, *prima facie*, it is likely an exemption would have no material effect on competition in respect of the voice-only customer segment, for the following reasons. First, in the proposed Exemption Area Telstra will be constrained by at least one other service provider with the technology base to provide resellers with a wholesale voice-only service. I note that PowerTel is a ULLS-based service provider supplying unbundled wholesale voice and data products as well as self-supplying these services.⁷² Second, existing ULLS-based operators can viably supply voice-only services to the majority of this customer segment. In this respect Telstra will be constrained by competitive pressure in the proposed LCS and WLR Exemption Areas.
- 142 Considering the issue in more detail, whether or not it will be profitable for existing ULLS-based operators to target voice-only customers will depend upon the incremental revenues and costs of supplying voice only over ULLS. Provided incremental margins are positive, firms should be both willing and able to supply these customers, as such margins would assist in the recovery of any fixed costs associated with ULLS-based supply. That is, with the Exemption Area defined by the presence of at least one competitor with all or most of the necessary infrastructure in place to provide ULLS-based services, incremental costs will be low (primarily ULLS monthly charges) relative to anticipated voice-only revenue.
- 143 To substantiate this point, I have had implemented high level modelling of the viability of supplying voice services only over ULLS based on average retail expenditure on voice services. This modelling is described in detail in Appendix E. The modelling suggests that the supply of voice-only services only over ULLS is viable for the majority ([c-i-c]%) of SIOs in Band 2.

⁷² http://www.powertel.com.au/html4/business_line.htm (accessed 6th July 2007)

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- 144 I acknowledge above that if retail prices were to fall, this would reduce the percentage of ULLS viable voice-only customers available to Telstra's competitors. It would be perverse, however, to conclude that this lower percentage indicates that Telstra somehow faces reduced competitive constraints. The very reduction in viability arises as a result of increased competitive pressures forcing down retail prices. Rather, the reduction in viability would reflect an increase in competitive constraints.
- 145 While it may be the case that not every voice-only customer will be profitable for a ULLS operator, in my view this does not diminish the viability of servicing these customers using ULLS. Rather, Telstra's competitors can be rationally expected to target the higher-revenue customers and accordingly enjoy a viable business model using ULLS.
- 146 While this indicative modelling might be taken to imply that there will be some voice-only customers susceptible to being exploited by Telstra, I do not believe this would likely be the case, for the following reasons:
- The HomeLine Part (HLP) price cap disciplines Telstra's pricing for basic access for other plans, as Telstra faces the risk of its full telephony service customers switching to HLP and preselection;
 - With regard to the fact that there is a fraction of preselect service providers not currently supplying the full bundle of voice services, I make the following comments. First, as noted in section 2.1, preselection carriers only account for [c-i-c]% of Telstra's WLR sales and only [c-i-c]% of the total telephony market. In this regard they are a *de minimis* set of customers at issue. Second, to the extent that these carriers would be forced to leave the market, it is likely they would be replaced by a more efficient and intense form of competition - competition would be facilities based (ULLS), and providers would be competing for the larger revenues from the full bundle of customer services rather than parts of the bundle.
 - Telstra would face significant marketing challenges in effectively targeting these customers;
 - Theoretically Telstra could presumably exploit these marginal customers under current arrangements, as they are very unlikely to be attractive to competitors anyway with regulated LCS/WLR supply, but to the best of my knowledge this does not occur. This is understandable given on the one hand it is not likely to be a particularly lucrative practice, and on the other hand would raise significant customer relationship and image issues; and
 - If Telstra was able to charge higher prices that more than reflected costs, the viability analysis would be likely to change (substantial price increases would push at least some of the previously unattractive customers over the ULLS viability threshold), suggesting entry would occur to defeat this attempt.

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- 147 I also recognise that at present there may be some operators providing just local telephony services (i.e. not the full bundle of telephone services) using LCS and WLR, and that these operators might exit the market if LCS/WLR are no longer provided on a regulated basis. However, I do not see this as negatively impacting downstream competition as they at best have a *di minimus* presence in the market, and would be replaced by a bundled, more efficient form of service delivery preferred by the vast majority of customers.
- 148 For these reasons, I conclude that competition in the retail market for fixed voice telephony or bundled voice and broadband services would not be compromised by the effective withdrawal of LCS/WLR regulation in the proposed exemption area through a LCS/WLR Exemption Orders.

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6. WOULD LCS/WLR EXEMPTIONS PROMOTE COMPETITION AND EFFICIENT INFRASTRUCTURE INVESTMENT AND USE?

149 In the preceding section I concluded that an LCS/WLR exemption would not lessen downstream competition within the Exemption Area. In this section I demonstrate that the granting of an Exemption Order would in fact promote efficient competition and the efficient use of, and investment in, infrastructure in the Exemption Area. This is because regulation of LCS/WLR distorts efficient competition and efficient infrastructure investment. Consequently, regulatory forbearance would eliminate these distortions without harming competition.

150 Against this backdrop, I consider in turn the promotion of efficient competition, and efficient use of and investment in infrastructure. I maintain that:

- The form of competition which best promotes efficiency is facilities-based competition, since it allows for greater innovation and more robust price competition. Exemption would facilitate (and not hinder) a movement away from access based competition, towards facilities-based competition when this is efficient.⁷³ (section 6.1)
- Access regulation dampens efficient levels of infrastructure investment by truncating investment returns and creating the potential for arbitrage and regulatory dependence. Exemption would reduce these dampening effects and thus promote efficient investment. (section 6.2)
- Competition is a better stimulant for efficient investment than access regulation. In a market where there is robust competition across the supply chain, investment and innovation gives a player a competitive edge, providing an effective incentive for efficient investment. That is, exemption would also stimulate efficient investment by facilitating competition. (section 6.3)

⁷³ Telstra may still offer an LCS/WLR or similar service after it is exempted. In particular, it faces efficient incentives to do if this will prevent inefficient bypass, either on full-facilities infrastructure or over ULLS. Hence it is plausible, but not certain, that the net effect would be a shift toward increased use of ULLS in an exempt ESA.

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6.1. EXEMPTION WOULD PROMOTE ECONOMICALLY EFFICIENT COMPETITION

151 It is widely accepted that competition will best promote economic efficiency where that competition penetrates up the value-chain beyond the resale (service) layer. It creates greater scope for both cost savings through efficient operations, and product differentiation and innovation. The Commission expressed this view in its recent fixed services review:

The Commission's approach is based on the principle that where it is economically efficient, facilities-based competition is more likely to promote the LTIE. This is because this form of competition allows rivals to differentiate their services and compete more vigorously across greater elements of the supply chain.⁷⁴

152 Facilities-based competition can lead to greater price competition as entrants have more control over costs and face incentives to develop and deploy more efficient technologies in order to compete with incumbent operators.⁷⁵ By contrast, access-based competition limits the degree of price competition since access seekers' costs are closely connected with regulated access prices and in turn, the incumbent's costs (where access prices are cost-based).

153 Facilities-based competition also enables greater service innovation since entrants are no longer tied to the functionality of the incumbent's network.⁷⁶ Where access-seekers are vertically integrated and have control over more points of the supply chain, their ability to compete on non-price dimensions of the product (e.g. service quality or service functionality) is enhanced.

154 Robust facilities based competition can also overcome a 'chicken and egg' problem that can arise with new technologies. Consumers are often unwilling to adopt new technologies without some assurance of value-for-money or risk-sharing from suppliers, for example in the form postponed payments. In this case the supplier guarantees the service is valuable by recovering costs in ways that allow users to bear less risk. This might take the form of usage fees (set at a level to reflect the risk born by the service provider) rather than upfront charges: the consumer, if it finds the service is not valuable, simply can stop using it, and will not have foregone substantial upfront charges.

74 Second Position Paper, April 2007, p iii

75 See e.g. Duarte Brito and Pedro Pereira, (2005), 'Ownership Structure of Cable Networks and Competition in Local Access,' *mimeo*, April.

76 Cave, M., (2006), 'Encouraging infrastructure competition via the ladder of investment', *Telecommunications Policy*, 30,223-237.

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- 155 However, when control over technologies and services is decentralized, and usage charges set at cost, as occurs under access regulation, suppliers may be unwilling to risk new developments. They recognise that while they must share the benefits that might be generated, they will be the sole bearer of any costs and risks that are incurred, including those of failure. In that environment, network operators are likely to take few risks in promoting new technologies, while consumers will likely delay adoption of a technology until services or content operating on that technology are widely available and assured. The net effect will be substantial delays in service deployment.
- 156 A more appropriate alignment of incentives for service introduction and network sponsorship can exist when owners of the technology (here, the network infrastructure) vertically integrate into service provision.⁷⁷ These network owners have an incentive to introduce innovative new services in an effort to spur adoption and use of their network platform. They are the direct beneficiaries of consumer gains generated by innovative services, and can ensure that network development proceeds in a fashion that is supportive of services demanded by consumers.
- 157 Exemption would promote facilities-based competition where it is efficient for this to occur, reducing reliance on access products at lower points in the supply chain and bringing with it consumer benefits of greater scope for product differentiation and stronger price competition. In the following section I indicate that, for a number of reasons, regulation of LCS/WLR where competitive alternatives exist is likely to result in less-than-efficient levels of facilities-based competition (including supply based on ULLS).

6.2. EXEMPTION WOULD PROMOTE ECONOMICALLY EFFICIENT USE OF AND INVESTMENT IN INFRASTRUCTURE

- 158 Connected to the promotion of efficient competition is the efficient use of and investment in infrastructure. In this section, I show that the presence of access regulation where workable competition exists is likely to discourage efficient infrastructure investment and use and that consequently, its removal will promote efficient investment and use. Moreover, I reason that it is competition – not regulation – that drives efficient investment and that the post-exemption improvement in competition will improve the incentives for efficient investment.

⁷⁷ Robert W. Crandall, (2005), *Competition and Chaos: U.S. Telecommunications since the 1996 Telecommunications Act*, Brookings Institution Press, p. 122-123.

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6.2.1. Incentives to Invest

159 Access regulation, particularly downstream access regulation (including declaration of LCS/WLR), can distort 'build' and 'buy' decisions. Most often, this distortion comes with a bias towards under-investment by both entrants and incumbent operators. This in turn is associated with less-than-efficient levels of innovation and competitive activity at different points on the production value chain.

160 In particular, access regulation has a number of potential risks that include:

1. **The inherent truncation of returns** by cost-based access pricing: To the extent that access prices are binding, they truncate the rewards from a successful investment but do not reduce the losses from unsuccessful ventures. The effect is to reduce investment incentives. Further, if the loss of expected returns is sufficiently large, as is more likely in a rapidly developing and changing environment such as telecommunications, the access provider will face inefficient disincentives to expand or modernise its infrastructure.

Expressed in more detail, access-based competition can be severely detrimental to the level of investment where access provider investment incentives are reduced by the truncation of investment rewards from access price regulation. This truncation occurs as cost-based access pricing restricts an investor enjoying super-normal profits when a successful investment decision is made. This eliminates the scope to fund those investments that turn out to be loss-making, dampening the incentive for risk-taking.

That is, an access provider may be reluctant to expand or modernise its network, lest successful investments are subject to an access claim at cost (truncating upside returns) but no recompense if the investment is unsuccessful (loss-making). In short, the rewards from regulation are socialised (shared with access seekers) or quickly bid away while losses are internalised (only borne by the investor).

2. **Potential for regulatory dependence.** Access regulation can distort access seekers investment to build upstream infrastructure if inputs further down the supply chain are priced below the competitive level. For example, if a resale asset is set at its competitive price, access seekers may find it profitable to supply the input by investing in infrastructure. However, if the regulated resale input is priced artificially low, an access seeker may find it profitable to use the reseller's infrastructure. In this manner regulation can create regulatory dependence, distorting access seekers incentives to invest and delaying the progression to facility based competition. Evidence of this occurring is presented below. Where workable competition exists, however, the risk of underpricing and the consequent investment distortions can be avoided, and efficient outcomes more reliably achieved, by reducing regulated access.

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3. **Arbitrage:** In efficient markets, arbitrage opportunities quickly disappear, typically due to price adjustments. However, inefficient arbitrage opportunities can be perpetuated by access regimes that offer substitute levels of access. Where access prices are set by regulators, and especially where prices are set for a number of access services that are close substitutes, the relativities of those prices determine their relative attractiveness. Where those relativities do not mirror those that would occur in an efficient, competitive market, inefficient arbitrage opportunities are created and maintained by regulation – some services are over-used and others are under-used relative to an efficient outcome. Below I present evidence that suggests that damaging regulatory arbitrage is or has been occurring with regard to LCS in Australia, due on the one hand to the technical scope for access seekers to provide local calls using either PSTN OA/TA or LCS, and on the other hand the different pricing approaches for these services taken by the Commission. In particular, the availability of LCS priced on an untimed basis is likely to lead to sub-optimal network investment by access seekers for serving customers that typically have long held calls.

4. **Asymmetric impacts** from over-pricing and under-pricing regulated access services: Given that regulated access prices carry a significant risk of error, then even if the distribution of this risk is uniform (i.e. the risk of over-pricing is the same as the risk of under-pricing), this can impose a significant economic welfare cost in the form of below-optimal investment levels by both access seekers and the access provider. While over-pricing access by the regulator is unlikely to result in inefficient over-investment (as the access provider can price below the regulated price to avoid damaging by-pass investment by access seekers), under-pricing will tend to cause under-investment by both access seekers and the incumbent. Specifically, access seekers will have an incentive to use the incumbent's network to an inefficient extent rather than build themselves, while the incumbent will be reluctant to invest up to an efficient level as its returns are diminished by the below-cost access price.

Regulatory dependence in Australian fixed voice Markets

- 161 The distorting effect of resale regulation is particularly evident where competitors who already own networks have shifted their focus from self-supply to regulated products.⁷⁸ In particular, SingTel Optus has experienced negative growth in the number of telephony SIOs on its HFC network yet has seen dramatic growth in its use of LCS/WLR.⁷⁹ This is shown in Figure 10 below.

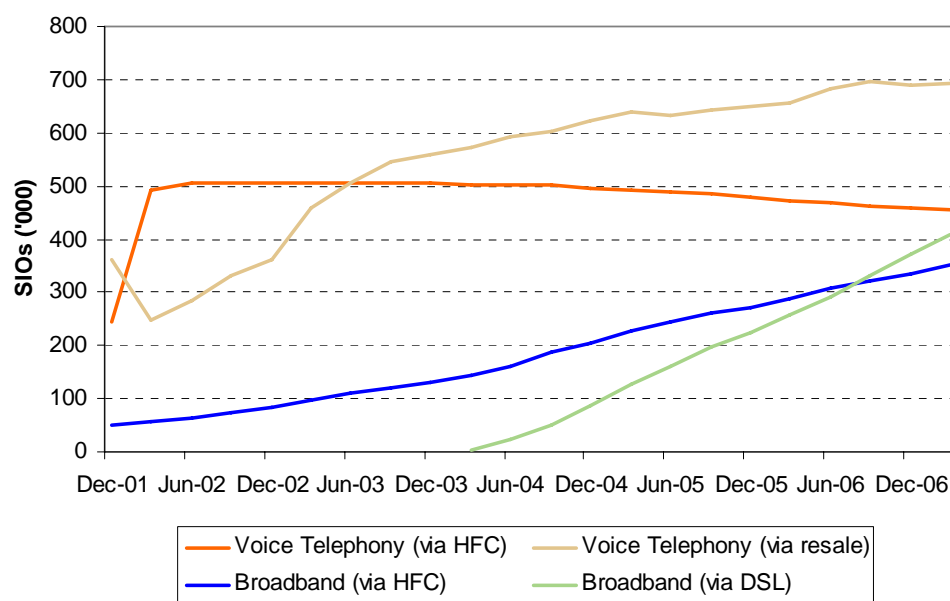
78 Note that I have assumed the real incremental cost of resale is greater than the real costs of the access seeker using their own platform. I believe that the decision by an access seeker to build and make operational such a platform substantiates this assumption.

79 A certain proportion of this could be related to Optus' shedding of its Pay TV customers; see: SingTel, *Management Discussion and Analysis of Financial Condition*, March 2006, p. 48.

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162 At its maximum, Optus has provided slightly more than 500,000 voice services on its HFC network. Earlier in the report (Table 3, section 3.2.2) I estimate that Optus can reach 195 metropolitan ESAs in the exemption area, in which there is a total 2.9 million SIOs,⁸⁰ using its HFC network, so there does not appear to be a network constraint preventing Optus serving more than 500,000 voice SIOs on the HFC network.

Figure 11: Demand for SingTel Optus' Voice and Broadband Services, by platform, Mar-02 to Mar-07



Source: Optus, Annual Reports.

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- 163 Furthermore, the number of voice SIOs on the Optus network has declined to close to 450,000 in recent years. In this regard, I would expect that Optus would use its own network to supply voice in households where it supplies cable broadband. Between 2002 and 2006, Optus increased its number of cable internet customers from 50,000 to over 350,000. Yet over this same period, the number of voice subscribers on the HFC network has fallen. Not all broadband customers purchase voice, but given that relatively new players can achieve high levels voice/broadband bundling, with for example rates of 80% for iiNet,⁸¹ Optus' failure to secure *any* increase in the provision of telephony services on its HFC network is striking. Unless *all* of Optus' new cable broadband customers are existing voice customers, it would appear that Optus is substituting resale voice services for HFC voice services.
- 164 In short, the regulatory environment appears to have, perversely, encouraged Optus to increase its consumption of a product designed to act as a 'stepping-stone' to network investment even where Optus has already made such investments. That is, LCS/WLR regulation is apparently leading to inefficient use of infrastructure and creating obstacles to the form of competition that is most likely to promote the LTIE – that is, facilities-based competition.

Arbitrage in the Australian fixed voice markets

- 165 An example of arbitrage between access services occurs between LCS and local call override using PSTN OA. Here I do not consider whether or not service providers are legally entitled to use the PSTN for the provision of override local calls but rather, to the extent that it has occurred, represent it as an arbitrage opportunity exercised by access seekers.⁸²

81 iiNet, iiNet Limited Annual Report 2006, p. 3, available at:
http://www.iinet.net.au/about/investor/20061002_iinet_annual_report_2006.pdf (accessed 25 May 2007).

82 It appears the Commission is of the view the PSTN OA is not intended for the provision of local calls. In its Fixed Service Review it does not identify PSTN AO as a means of providing local calls (rather, LCS and ULLS are identified for this purpose): Second Position Paper, April 2007, Table 3.2

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- 166 Regulated LCS prices are set on the basis of retail local call prices minus avoidable costs (RMAC). Consequently they are geographically averaged, and follow the untimed structure of retail local call prices that is required under the retail price controls.⁸³ PSTN OA, on the other hand, is set on the basis of TSLRIC is geographically deaveraged and has a charge structure consisting of a small flagfall (relative to the LCS untimed charge per call) and a per minute conveyance charge. The difference in pricing methodologies between LCS and PSTN OA means that for short-held calls, it is more attractive for access seekers to use PSTN OA, particularly for large business customers in CBD and metropolitan areas. This is because: (a) business calls are typically short; (b) large business customers typically have the ability to program the override code into their PABX; and (c) PSTN OA charges are geographically deaveraged and are lowest in CBD and metropolitan areas.
- 167 An implication of the arbitrage is that Telstra will not recover its costs of supplying LCS to customers in high-cost areas. This is because, given the methodology used to determine the LCS price, even if the LCS price reflects the average cost of supplying the service to all customers, it will be lower than the cost of serving the subset of customers from whom LCS is actually used.⁸⁴ The inability of Telstra to recover costs due to the arbitrage opportunity between LCS and PSTN OTA leads to a distortion by reducing Telstra's incentives to invest in its access network. It also provides poor signals to potential investors in facilities (since they can engage in arbitrage use of Telstra's infrastructure to avoid the full costs of network supply).

6.3. COMPETITION IS THE BEST DRIVER OF EFFICIENT INFRASTRUCTURE USE AND INVESTMENT

- 168 Efficient *use* of infrastructure will best be promoted by the operation of competitive markets. Where workable competition exists, firms face incentives to maximise efficient use of their existing infrastructure.
- 169 Moreover, in a competitive market, the discipline of rivalry provides the best incentives for carriers to invest efficiently in new infrastructure and use their existing infrastructure more efficiently. In a competitive facilities-based market, the process of investment and innovation gives a carrier a competitive edge.

83 Telstra Carrier Charges — Price Control Arrangements, Notification and Disallowance Determination No. 1 of 2005 as amended made under subsections 154 (1), 155 (1) and 157 (1) of the Telecommunications (Consumer Protection and Service Standards) Act 1999.

84 It is acknowledged that this distortion could be addressed by either LCS/WLR exemption or explicitly prohibiting the use of PSTN OA for providing local calls.

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170 Regulation cannot provide the same incentives for efficient use of and investment in infrastructure as a workably competitive market, as it imposes two classes of costs. First, regulation *per se*, even if perfectly executed, imposes transaction, compliance and administrative costs. Second, with the best intent and skilful execution possible, there is inevitably an element of regulatory error which itself imposes costs. Consequently, regulation always has distorting effects on investment incentives, which in competitive markets will be to the detriment of economic efficiency.

171 It follows that if an Exemption Order will not harm competition then, by removing sources of regulatory error, it will additionally promote it. Further, once it is clear that an Exemption Order will promote competition, the natural conclusion is that the enhanced level of competition will drive efficient investment in infrastructure.

172 I note that the Commission, in its Final Decision paper, discussed Telstra's ongoing plans to invest in a new core and access network as evidence that declaration was not impeding investment. It stated:

There is no information to suggest that Telstra has been unwilling to invest in infrastructure as a result of this declaration. Further, the Commission notes that Telstra has recently announced plans to significantly modernise its core network and considers that there is no evidence to suggest that the continued declaration of this service is likely to negatively impact on Telstra incentives to undertake investment in this, or any other new infrastructure ... In addition, any likely increase in wholesale-based and facilities based-competition as a result of this declaration will provide further incentives for either Telstra and [sic] other providers to innovate and invest in alternative technologies (such as wireless), and next generation networks (such as fibre to the node).⁸⁵

173 The problems inherent in this logic are, with the benefit of hindsight, remarkably clear. Not long after the Commission wrote this statement, Telstra decided not to proceed with the proposed fibre to the node aspect of its modernisation of the fixed-network.⁸⁶ In making this decision, Telstra identified regulatory practices as impeding its incentives to invest. Further, it is not a question of whether *any* investment will take place in the presence of unnecessary access regulation (for example, Telstra has an ongoing regulatory requirement to meet certain quality of service standards or face severe penalties and hence invests to meet this need), but rather whether an *efficient level of investment* will occur.

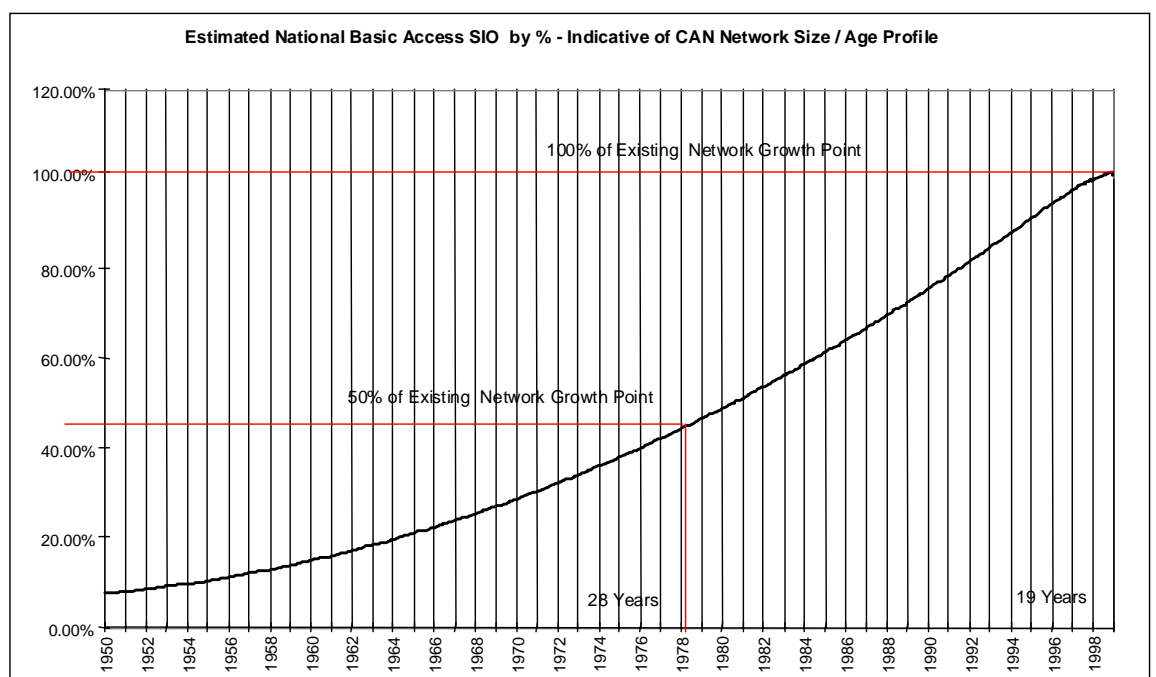
85 Final decision, (July 2006), p.45

86 Telstra, 'Fibre to the Node Talks discontinued', ASX Announcement, 7 August 2006. Modernisation focussed on the core network, and in particular moving to a full IP environment for the core network, has typically been done by telcos to reduce costs and is unlikely to be influenced by access price decisions.

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174 This is symptomatic of larger investment problems in the fixed line network. Over the period 2001-2003, Australia's annual average investment per access channel of US\$330.9 was below the OECD average of US\$346.4, and was well below the United States at US\$523.6, Japan at US\$414.6 and the United Kingdom at US\$392.8.⁸⁷ Rising demand has placed ever greater strain on the copper pair network, where in 1999 (the latest data accessed) 50 per cent of the pairs were more than 20 years old and 30 per cent were more than 30 years old.⁸⁸ The age profile of the copper access network in 1999 is shown in Figure 12.

Figure 12: Age of the Copper Pair Structure of Telstra's Network



Source: Telstra, CAN Access Strategy and the Link to Improving CSG Performance (1999).

⁸⁷ OECD 2005, *Communications Outlook*, Table 4.18

⁸⁸ If anything, we expect that the age profile of Telstra's copper network is even more skewed towards old assets today.

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- 175 At the same time, network utilisation was becoming unacceptably high, with some 20 to 25 per cent of the network having occupancy rates in excess of the 95 per cent mark, meaning that at times there has been effectively no spare capacity to provide for redundancy or cater for growth. These trends combined in a tendency for the underlying fault rate in the network to rise by about one percentage point a year.⁸⁹ While the international benchmark for the fault rate in a copper pair network is in the order of 5 to 7 faults per annum for each 100 Services in Operation (“SIOs”), by the close of the 1990s nearly half Telstra’s Distribution Areas (the basic geographical unit in the reticulation network) had an annual fault rate in excess of 10 faults per 100 SIOs, and a significant number were far higher than that.⁹⁰
- 176 At the same time, Telstra faced Customer Service Guarantee (CSG) and more recently Network Reliability requirements.⁹¹ While these create *de facto* requirements on Telstra to invest, there is no reason to believe that the resulting levels and patterns of investment are efficient, relative to those that would emerge in an environment less distorted by regulation.

⁸⁹ Telstra, (1999), CAN Access Strategy and the Link to Improving CSG Performance

⁹⁰ Telstra, (1999), CAN Access Strategy and the Link to Improving CSG Performance

⁹¹ The standard sets minimum service requirements for carriage service providers about (a) the making of arrangement with customers for connection and fault rectification or service difficulty and (b) the keeping of appointments to make such connections and rectifications. Source: Australian Communications Authority “Guide to the Telecommunications (Customer Service Guarantee) Standard” 2000 No. 2 (Issue No.1 of 2004)

7. CONCLUSIONS

177 In this report I have concluded that granting LCS and WLR Exemption Orders in ESAs with current ULLS-based competitor build would not diminish competition, but rather would promote competition and facilitate the efficient use of and investment in infrastructure, for the following reasons:

- Currently ULLS, and to a lesser extent HFC networks and other competing networks, enable the replication of the downstream services LCS and WLR are used to provide in the Exemption Area. Furthermore, there are no apparent material impediments to retailers commencing to use, or increasing their use of, these close substitutes.
- The LCS/WLR Exemption Orders would not impact the ready availability of these alternative means of providing the relevant downstream services. Therefore, retailers would be able to substitute away from Telstra-supplied LCS and WLR services (as well as other voice and broadband wholesale services) if Telstra attempted to price supra-competitively (or not supply LCS/WLR). While this is demonstrably so for customers that bundle voice and broadband services, my analysis leads me to the conclusion that this is also the case for the majority of voice-only customers, with those customers too small to contest using ULLS likely to be unattractive anyway at regulated LCS/WLR prices. Consequently, competition in retail markets would not be compromised by the Exemption Orders.
- Further, Exemption Orders of LCS/WLR in the Exemption Area would have the following benefits:
 - Exemption Orders would facilitate efficient facilities-based competition, stimulating innovation and allowing for more robust price competition. Further, to the extent that removing LCS/WLR regulation results in competitors moving to ULLS and full facilities based competition, existing competitors would be more deeply vertically integrated, which would be likely to intensify competition in retail markets and result in direct benefits for customers as vertical efficiencies are realised and passed through to consumers.
 - Access regulation distorts incentives for efficient infrastructure investment and use, including by truncating investment returns and creating the potential for arbitrage and regulatory dependence. Exemption Orders would remove the distorting effects caused by LCS/WLR regulation in the Exemption Area and promote efficient investment.

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- Finally, I have concluded that the appropriate Exemption area should be defined by the presence of at least one competitor DSLAM. It is my view that the presence of one in-place competitor, having access to ULLS at cost-based prices, and having already demonstrated a capacity to serve the market, indicates the inevitability of constraint on Telstra's retail pricing behaviour at least as well as the availability of LCS/WLR. Furthermore, I believe this would be a low risk decision rule for the Commission to adopt. That is, it is not that the presence of one active competitor *per se* would necessarily provide sufficient competitive discipline on Telstra absent LCS/WLR regulation. Rather, it is a clear indication of the validity of the conclusion reached in the previous section that barriers to entry and expansion for ULLS-based operators are low.

Paul Paterson

A handwritten signature in black ink, appearing to read 'Paul Paterson', with a long horizontal flourish extending to the right.**Vice President**

APPENDIX A: THE EXEMPTION AREA

178 In this Appendix I list the metropolitan ESAs with at least one competitor DSLAM present, which accords with my view on the appropriate exemption area. I also show ESA-by-ESA detail of current competitor activity in the Exemption Area. I have assumed this information obtained from Telstra via MSJ to be correct as of June 2007, and use it as the basis for my analysis of ULLS-based competitor build.

[c-i-c]	State	Name	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
[c-i-c]	QLD	ACACIA RIDGE					
	SA	BROOKLYN PARK					
	NSW	AVOCA BEACH					
	QLD	ALBANY CREEK					
	QLD	ALBION					
	QLD	ASCOT					
	NSW	ALBURY					
	VIC	ALFREDTON					
	QLD	ALEXANDRA HILLS					
	QLD	ASPLEY					
	WA	APPLECROSS					
	WA	ARMADALE					
	VIC	ASCOT					
	NSW	ASHFIELD					
	QLD	ASHMORE					
	WA	ASCOT					
	WA	ATTADALE					
	NSW	AVALON BEACH					

[c-i-c]	State	Name	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
	VIC	BALACLAVA					
	NSW	BALGOWLAH					
	NSW	BALMAIN					
	NSW	BANKSTOWN					
	WA	BATEMAN					
	NSW	BAULKHAM HILLS					
	VIC	BAYSWATER					
	WA	BURNS BEACH					
	WA	BEECHBORO					
	VIC	BROADMEADOWS					
	QLD	BEENLEIGH					
	VIC	BELGRAVE					
	VIC	BELMONT					
	VIC	BENDIGO					
	VIC	BRIGHTON					
	VIC	BROOKLYN					
	SA	BLACKWOOD					
	NSW	BLACKTOWN					
	NSW	BLAKEHURST					
	VIC	BLACKBURN					
	ACT	BELCONNEN					
	WA	BALCATT					
	WA	BALLAJURA					
	QLD	BULIMBA					
	QLD	BUNDALL					
	NSW	BONDI					
	NSW	BOTANY					
	VIC	BOX HILL					

[c-i-c]	State	Name	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
	VIC	BALLARAT					
	SA	BRIGHTON					
	VIC	BRUNSWICK					
	WA	BASSENDAN					
	NSW	BURWOOD					
	QLD	BURLEIGH HEADS					
	NSW	CAMPSIE					
	WA	CANNINGTON					
	NSW	CARLINGFORD					
	NSW	CARRAMAR					
	NSW	CASTLE HILL					
	VIC	CAULFIELD					
	VIC	COBURG					
	NSW	CAMPBELLTOWN					
	NSW	COFFS HARBOUR					
	NSW	CHATSWOOD					
	QLD	CHERMSIDE					
	NSW	CHARLESTOWN					
	QLD	CHAPEL HILL					
	VIC	CLAYTON					
	QLD	CLEVELAND					
	SA	COROMANDEL VALLEY					
	VIC	CAMBERWELL					
	WA	CANNING VALE					
	NSW	CONCORD					
	NSW	COOGEE					
	VIC	CORIO					

[c-i-c]	State	Name	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
	QLD	CAPALABA					
	QLD	CAMP HILL					
	QLD	COORPAROO					
	VIC	CRAIGIEBURN					
	ACT	CRACE					
	VIC	CANTERBURY					
	NSW	CREMORNE					
	WA	CURRAMBINE					
	VIC	CROYDON					
	NSW	CRONULLA					
	QLD	CAIRNS					
	SA	CROYDON					
	VIC	CHELSEA					
	VIC	CHELTENHAM					
	WA	COTTESLOE					
	VIC	CARLTON					
	ACT	CIVIC					
	VIC	COLLINGWOOD					
	WA	CITY BEACH					
	TAS	DAVEY					
	VIC	DANDENONG					
	VIC	DANDENONG NORTH					
	WA	DOUBLEVIEW					
	NSW	DEE WHY					
	ACT	DEAKIN					
	VIC	DONCASTER EAST					

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[c-i-c]	State	Name	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
	VIC	DONCASTER					
	QLD	DARRA					
	NSW	DRUMMOYNE					
	NT	DARWIN					
	NSW	EAST					
	NSW	EDGECLIFF					
	SA	EDWARDSTOWN					
	VIC	ELSTERNWICK					
	VIC	ELTHAM					
	QLD	EIGHT MILE PLAINS					
	VIC	ENDEAVOUR HILLS					
	NSW	ENGADINE					
	QLD	EVERTON PARK					
	VIC	EPPING					
	NSW	EPPING					
	NSW	EDENSOR PARK					
	NSW	ERSKINE PARK					
	NSW	EASTWOOD					
	SA	ELIZABETH					
	QLD	FERNY HILLS					
	NSW	FIVE DOCK					
	WA	FREMANTLE					
	NSW	FRENCHS FOREST					
	WA	FORRESTFIELD					
	VIC	FRANKSTON					
	VIC	FOOTSCRAY					

[c-i-c]	State	Name	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
	VIC	FLEMINGTON					
	VIC	GREENSBOROUGH					
	VIC	GEELONG					
	WA	GIRRAWHEEN					
	NSW	GLEBE					
	VIC	GLEN IRIS					
	SA	GLENELG					
	SA	GOLDEN GROVE					
	WA	GOSNELLS					
	SA	GEPPS CROSS					
	NSW	GRANVILLE					
	WA	GREENMOUNT					
	NSW	GOSFORD					
	SA	GLENUNGA					
	QLD	GULLIVER					
	NSW	HAMILTON					
	WA	HAMERSLEY					
	NSW	HARBORD					
	VIC	HAWTHORN					
	VIC	HEIDELBERG					
	VIC	HIGHETT					
	WA	HILTON					
	SA	HENLEY BEACH					
	NSW	HOLSWORTHY					
	NSW	Homebush					
	NSW	HORNSBY					
	SA	HAMPSTEAD					

[c-i-c]	State	Name	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
	VIC	HARTWELL					
	NSW	HUNTERS HILL					
	NSW	HURSTVILLE					
	QLD	INALA					
	NSW	INGLEBURN					
	QLD	IPSWICH					
	WA	JOONDALUP					
	WA	JANDAKOT					
	QLD	JAMBOREE HEIGHTS					
	WA	JANDAKOT SOUTH					
	VIC	KARINGAL					
	ACT	KAMBAH					
	WA	KEWDALE					
	NSW	KELLYVILLE					
	WA	KELMSCOTT					
	NSW	KENSINGTON					
	VIC	KEW					
	VIC	KANGAROO FLAT					
	NSW	KILLARA					
	NSW	KINGSGROVE					
	QLD	KALLANGUR					
	NSW	KOGARAH					
	WA	KINGSLEY					
	VIC	KOOYONG					
	NSW	LAKEMBA					
	NSW	LANE COVE					

[c-i-c]	State	Name	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
	NSW	LAVINGTON					
	QLD	LUTWYCHE					
	WA	LANDSDALE					
	WA	LESMURDIE					
	NSW	LIDCOMBE					
	NSW	LINDFIELD					
	NSW	LISMORE					
	NSW	LIVERPOOL					
	QLD	LOGANHOLME					
	ACT	LANYON					
	SA	LONSDALE					
	VIC	LYNDHURST					
	WA	MADDINGTON					
	NSW	MAITLAND					
	VIC	MALVERN					
	NSW	MANLY					
	NSW	MAROUBRA					
	NSW	MASCOT					
	NSW	MATRAVILLE					
	NSW	MAYFIELD					
	WA	MAYLANDS					
	QLD	MITCHELTON					
	SA	MODBURY					
	WA	MIDLAND					
	WA	MAIDA VALE					
	WA	MEDINA					
	NSW	MENAI					
	QLD	MOUNT GRAVATT					

[c-i-c]	State	Name	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
	WA	MOUNT HAWTHORN					
	VIC	MILDURA					
	NSW	MILLER					
	NSW	MINTO					
	NSW	MIRANDA					
	VIC	MITCHAM					
	QLD	MACKAY					
	ACT	MELBA					
	WA	MORLEY					
	VIC	MORELAND					
	VIC	MORDIALLOC					
	WA	MULLALOO					
	WA	MINDARIE					
	ACT	MANUKA					
	WA	MANNING					
	ACT	MONASH					
	VIC	MOOLAP					
	NSW	MONA VALE					
	NSW	MOSMAN					
	QLD	MERRIMAC					
	VIC	MOUNT ELIZA					
	ACT	MAWSON					
	QLD	MAROOCHYDORE					
	SA	NORTH ADELAIDE					
	VIC	NARRE WARREN					
	NSW	NORTHBRIDGE					
	VIC	NORTHCOTE					

[c-i-c]	State	Name	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
	QLD	NUNDAH					
	WA	NEDLANDS					
	QLD	NERANG					
	VIC	NORTH ESSENDON					
	NSW	NEWTOWN					
	VIC	NORTH GEELONG					
	NSW	NORTH RICHMOND					
	NSW	NEW LAMBTON					
	VIC	NORTH MELBOURNE					
	QLD	NEWMARKET					
	QLD	NOOSA HEADS					
	NSW	NORTH PARRAMATTA					
	VIC	NEWPORT					
	QLD	NARANGBA					
	SA	NORWOOD					
	NSW	NORTH RYDE					
	NSW	NORTH SYDNEY					
	QLD	NEW FARM					
	VIC	OAKLEIGH					
	NSW	ORANGE					
	VIC	ORMOND					
	SA	OSBORNE					
	NSW	PARRAMATTA					
	QLD	PADDINGTON					
	NSW	PEAKHURST					

[c-i-c]	State	Name	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
	NSW	PENDLE HILL					
	NSW	PENNANT HILLS					
	NSW	PETERSHAM					
	NSW	PORT KEMBLA					
	VIC	PORT MELBOURNE					
	WA	PALMYRA					
	NSW	PENRITH					
	SA	PARADISE					
	SA	PROSPECT					
	VIC	PRESTON					
	SA	PORT ADELAIDE					
	NSW	PYMBLE					
	WA	QUINNS ROCKS					
	NSW	QUAKERS HILL					
	NSW	RAMSGATE					
	NSW	RANDWICK					
	QLD	ROBINA					
	VIC	RICHMOND					
	QLD	REDCLIFFE					
	NSW	REDFERN					
	SA	REYNELLA					
	NSW	REVESBY					
	WA	RIVERTON					
	WA	ROCKINGHAM					
	NSW	ROCKDALE					
	NSW	ROOTY HILL					
	NSW	ROSE BAY					

[c-i-c]	State	Name	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
	VIC	RESERVOIR					
	VIC	RINGWOOD					
	NSW	RYDALMERE					
	NSW	RYDE					
	SA	SALISBURY					
	WA	SCARBOROUGH					
	ACT	SCULLIN					
	VIC	SCORESBY					
	SA	SEAFORD					
	NSW	SEFTON					
	SA	SEMAPHORE					
	NSW	SEVEN HILLS					
	NSW	SHALVEY					
	TAS	LAUNCESTON SOUTH					
	VIC	SHEPPARTON					
	NSW	SILVERWATER					
	QLD	SLACKS CREEK					
	VIC	SOUTH MELBOURNE					
	VIC	SOUTH MORANG					
	VIC	SANDRINGHAM					
	VIC	SOUTH OAKLEIGH					
	QLD	SOUTHPORT					
	QLD	SOUTH BRISBANE					
	VIC	SPRINGVALE					
	QLD	STRATHPINE					

[c-i-c]	State	Name	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
	VIC	SEBASTOPOL					
	WA	SPEARWOOD					
	WA	SOUTH PERTH					
	QLD	SHERWOOD					
	QLD	SALISBURY					
	NSW	SOUTH STRATHFIELD					
	SA	STIRLING					
	TAS	ST JOHN					
	VIC	ST KILDA					
	NSW	ST LEONARDS					
	NSW	ST MARYS					
	SA	ST MARYS					
	SA	ST PETERS					
	WA	SUBIACO					
	QLD	SURFERS PARADISE					
	NSW	SUTHERLAND					
	QLD	SUNNYBANK					
	VIC	SOUTH YARRA					
	NSW	TAMWORTH					
	QLD	TINGALPA					
	QLD	THE GAP					
	VIC	THOMASTOWN					
	VIC	TULLAMARINE					
	VIC	THORNBURY					
	VIC	TARNEIT					
	QLD	TOWNSVILLE					

[c-i-c]	State	Name	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
	QLD	TOOWOOMBA					
	VIC	TOORAK					
	WA	TUART HILL					
	QLD	TOOWONG					
	VIC	TALLY HO					
	NSW	UNDERCLIFFE					
	SA	UNLEY					
	NSW	VAUCLUSE					
	WA	VICTORIA PARK					
	QLD	VALLEY					
	QLD	WACOL					
	NSW	WAGGA WAGGA					
	NSW	WAHROONGA					
	WA	WANNEROO					
	NSW	WAVERLEY					
	SA	WOODVILLE					
	VIC	WENDOUREE					
	QLD	WELLINGTON POINT					
	SA	WEST ADELAIDE					
	NSW	WETHERILL PARK					
	SA	WHYALLA JENKINS					
	VIC	WHEELERS HILL					
	NSW	WILLOUGHBY					
	VIC	WINDSOR					
	NSW	WOLLONGONG					
	WA	WEMBLEY					

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[c-i-c]	State	Name	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
	QLD	WOOLLOONGABB A					
	NSW	WOLFE					
	NSW	WARILLA					
	VIC	WANTIRNA					
	NSW	WINDSOR					
	QLD	WATERFORD					
	QLD	WYNNUM					
	QLD	YERONGA					
	QLD	ZILLMERE					

[c-i-c]

APPENDIX B: THE CURRENT STATE OF RETAIL COMPETITION

- 179 In the main body of this report (especially section 3), I have investigated whether there are alternative means to providing relevant LCS/WLR services and concluded there are a range of declared and competitively-supplied upstream inputs that can be used to supply the downstream markets. Given that a lack of access to competitively priced and viable upstream inputs to LCS/WLR would be the most likely factor to impede workable competition in the downstream retail market; this immediately suggests that the retail market is likely to be workably competitive.
- 180 There are potentially other factors that might, at least in theory, undermine workable competition in downstream markets (e.g. brand loyalty, switching costs, etc.). However, even a high level analysis of competition in the retail market – in particular, of trends in market shares and observed rates of customer churn – makes it readily apparent that such factors are not of practical effect in terms of impeding competition. Rather, I am of the view that the retail market is indeed currently competitive.

B.1 TRENDS IN RETAIL MARKET SHARES

- 181 Market share analysis is commonly used as a high level litmus test for determining whether markets are competitive. In particular, such analysis is often used to determine whether *prima facie* a firm is unlikely to have substantial market power. In this instance, the significant erosion of Telstra's market share for both voice and broadband services strongly suggests that Telstra does not have substantial market power, and that the market is workably competitive.

B.1.1 Fixed voice telephony services

- 182 Table 8 demonstrates that since the introduction of competition in the telecommunications markets, Telstra's revenue share in the supply of retail local calls has declined by 25percentage points, and its revenue share for international and STD calls has declined by 30 to 40 percentage points, respectively. In fact, since 2001 Telstra ahas continued to see market share decline (measured by revenue) across all if its core PSTN products.

Table 8: Retail Revenue Share by fixed line service, 2001-02 to 2004-05

	Retail Revenue Share 2001-02	Retail Revenue Share 2004-05	Change in market share
Basic Access			
Telstra	89.6%	80.1%	-9.5%
Other	10.4%	19.9%	9.5%
Local Calls*			
Telstra	78.2%	75.30%	-2.9%
Other	21.7%	24.70%	3.0%
IDD			
Telstra	71.4%	69.4%	-2.0%
Other	28.6%	30.6%	2.0%
STD			
Telstra	62.9%	61.4%	-1.5%
Other	37.1%	38.6%	1.5%
Fixed To Mobile			
Telstra	74.9%	74.2%	-0.7%
Other	25%	25.8%	0.8%
Total Fixed Line			
Telstra	78.7%	75.3%	-3.4%
Other	21.3%	24.7%	3.4%

Note: * for 2001-02 data in source does not sum to 100%. Total fixed line includes other call types, such as STD and IDD.

Source: ACCC, *Telecommunications Market Indicator Report*, (July 2006), p. 6.

183 Figure 13 demonstrates an increasing degree of facilities based competition in the telephony market. Over the twelve month period from May 2007 the demand for Telstra's WLR declined by over [c-i-c]% while demand for Telstra's retail line rental remained relatively flat. At the same time ULLS-based infrastructure increased by more than 100 percent. The substitution away from Telstra's services is, to my mind, a clear indication that end users are aware of and utilising alternative means of providing the competition downstream telephony services.

184 Further, Figure 13 reveals an [c-i-c] percent decrease in the number of wholesale LCS services. This is indicative of consumers taking advantage of alternative communication technology such as mobile wireless services, VoIP, SMS or email where previously they used voice telephony.

Figure 13: [C-I-C]

185 To summarise, in my opinion, the decline in Telstra's fixed voice telephony market shares *prima facie* indicates that Telstra is subject to competitive discipline in the supply of retail fixed voice services.

B.1.2 Broadband services

186 As of September 2006, broadband take-up in Australia was 3,639,700 - a 51% increase on a year earlier.⁹² Around 80% of the 2005-2006 growth came from ADSL (or 81% if also including other DSL technologies).⁹³ Overall, broadband subscribers now account for 67% all internet subscribers in Australia.⁹⁴

187 Telstra faces a large number of competitors in the retail market for broadband and voice services. These fall into various categories:

- ULLS-based and LSS-based carriers: carriers that have either a ULLS or an LSS arrangement with Telstra provide broadband services to end users. Some of these companies are also resellers of wholesale ADSL.
- Competitors with own fixed wire networks (typically fibre): e.g. Optus, TransACT. I discussed the geographic coverage of these players in 3.3.2.
- ISP resellers: further competition to Telstra comes from a large number of ISPs who resell wholesale ADSL. As of March 2007 there were 32 ISPs with over 10,000 subscribers and 9 with more than 100,000 subscribers.⁹⁵

92 ACCC, 'Snapshot of Broadband Deployment as at 30 September 2006'.

93 CRA calculations based on ACCC, 'Snapshot of Broadband Deployment as at 30 September 2006'.

94 ABS, Cat. Number 8153.0 – Internet Activity Australia March 2007.

95 ABS, Cat. Number 8153.0 – Internet Activity Australia March 2007.

- Wireless broadband networks: Many metropolitan areas across Australia have wireless network coverage (see section 3.2.3). The number of wireless broadband subscribers almost tripled over the past year to 139,500 September 2006.⁹⁶ The main players in this segment include iBurst and Unwired (see Table 6).

188 The growth in number and size of Telstra's competitors has had an impact on Telstra's (and Optus') retail broadband market share. In the broadband market, Telstra's market share has fallen from over 50% in 2002 to 40% in 2006, while Optus' market share has fallen from 29% to less than 20% in the same period (see Table 9).

Table 9: Australian broadband market, market shares by retail subscribers, 2002-2006

Carrier	2002	2003	2004	2005	2006 (est.)
Telstra	52.5%	50.4%	48.3%	40.3%	40.0%
Optus	28.8%	20.7%	13.8%	15.6%	17.5%
DSL resellers	15.3%	25.6%	34.5%	40.7%	34.2%
Others	3.4%	3.3%	3.4%	3.4%	8.3%
CR2⁹⁷	81.3%	71.1%	62.1%	55.9%	57.5%

Source: ACMA, Communications Report 2005-2006, p64.

189 In my opinion, the large number of market participants and trends in retail broadband market shares indicates that Telstra is subject to competitive discipline at the retail layer - consistent with a competitive retail broadband market.

B.2 SWITCHING COSTS AND CHURN BEHAVIOUR

190 Switching costs refer to the costs incurred by customers when changing retail supplier. They can be monetary or non-monetary. For example, a customer choosing to 'switch' supplier for their local call service may have to incur an immediate monetary cost to connect to a new provider, or they may be required to buy out a 'lock-in' contract. Such a consumer would also incur a non-monetary cost, for example, the time taken to contact a provider and purchase a new product.

⁹⁶ ACCC, 'Snapshot of Broadband Deployment as at 30 September 2006'.

⁹⁷ Concentration ratio: sum of the market shares of the two largest market players.

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- 191 Whilst low churn rates are potentially consistent with competitive market outcomes, high churn rates are almost always incompatible with an uncompetitive market. High churn rates imply that consumers are not only aware of available alternatives to their current supplier, but also willing and able to switch.
- 192 The following shows that there has been significant churn away from Telstra in retail fixed voice and broadband services. It implies that Telstra is not insulated from competitive pressure in the relevant retail market, and reinforces the conclusion I have drawn based on analysis of market share trends.

B.2.1 Fixed voice telephony services

- 193 The local calls market has seen nearly a decade of reforms and market developments aimed at reducing customer switching costs. These reforms have been successful at reducing the barriers to entry posed by switching costs and incumbency advantage:
- Number portability has been in place since 1997.⁹⁸ Retail customers are now able to switch carriers without having to change their telephone number;
 - The wide availability and use of internet-based search (with all significant service providers advertising their rates on their website) and price comparison services allow consumers to quickly and effectively investigate the availability of cheaper plans, keeping to a minimum their time cost;⁹⁹ and
 - The existence of “truth in advertising” consumer protection measures and the Commission’s active involvement in misleading and deceptive conduct claims in the area of telecommunications services advertising.
- 194 Observed high churn rates are likely to be at least partly explained by the factors just described. Figure 14 shows the monthly ‘churn-in’ and ‘churn-out’ for wholesale line rental I services from July 2001 to April 2007.
- ‘Churn out’ occurs in two circumstances. First, where a customer shifts from being a Telstra retail customer to being supplied by a reseller using LCS/WLR as inputs. Second, where the customer switches to an alternative network such as Optus or TransACT’s HFC networks, or to ULLS.

⁹⁸ ACCC 1997, “Directions to the Australian Communications Authority on Number Portability”, September 1997.

⁹⁹ While information on call-quality and other non-price factors is less readily available than price comparisons, there seems little reason to think that this would make fixed-telecommunication customers anymore sticky than other utility customers. Because the product market (fixed telephony) is relatively homogenous there are less non-price considerations than in other markets where product differentiation is greater (i.e. in mobile telephony where network providers offer content and other ‘premium’ features).

- 'Churn in' occurs when a customer shifts from either a reseller or an alternative network to Telstra's retail service.¹⁰⁰
- 195 Collectively these two measures indicate the level of churn in the downstream market. Any such measure will understate the true churn, as it will not account for customers who switch between resellers or from a reseller to an alternative facilities-based provider.
- 196 During the period, on average [c-i-c] SIOs churned into Telstra per month, while [c-i-c] churned out. Over the full period there were [c-i-c] churn-in SIOs and [c-i-c] churn-out SIOs.

Figure 14: [C-I-C]

- 197 During the 12 month period to April 2007, churn-out of customers equalled approximately [c-i-c] per cent of the total SIO base. To this, I add the 'churn-in' in order to obtain an estimate of total market churn. Using this method, I can show that the number of churns over a 12 month period (i.e. a customer switching from one option to another) was approximately [c-i-c] per cent of the total SIO base.¹⁰¹

B.2.2 Broadband services

- 198 In my opinion the costs associated with retail broadband customers switching between retailers are low. I have reached this conclusion for two reasons. First, a brief review of the main retail broadband offers made available by the key industry players that shows very low switching costs (see Table 11).¹⁰²
- 199 Second, there is evidence that Telstra has experienced high level of retail customer churn.
- 200 I am not aware of reliable estimates of broadband market-wide churn estimates in the public domain. However, I have sought and been provided with confidential (commercial) Telstra data on BigPond customer churn over time.

100 We recognise that this analysis only considers existing SIOs and that alternative operators may have scope for expansion by providing their services to new SIOs (e.g. new houses being built).

101 [c-i-c]We have used the 'churn-in' figures, as well as the churn-out figures, as the sum of these gives the best indication of the number of times customers switch providers in the year. An efficient competitor is able to capture any of the customers who 'switch' regardless of their existing carrier.

It is possible that some of the churn were customers changing providers twice (or more) in the year. This is immaterial to the case at hand, which concerns the ability of entrants to capture customers when they are 'churning'. Whether customers churn regularly or irregularly is not relevant to this point.

102 I note that several providers waive connection costs to consumers who already have a broadband modem from their previous supplier.

Table 10: [C-I-C]

- 201 These customers leaving Telstra's ADSL Big Pond could go in three broad directions.
- 202 It might reflect withdrawal by a customer from the broadband market altogether. In my view the first category is unlikely to involve a significant proportion of broadband customers leaving BigPond. Rather, I believe it more likely reflects either:
- Movement to one of Telstra's competitor that has a wholesale arrangement with Telstra, via ULLS, LSS or wholesale ADSL (resellers); or
 - Movement to an alternative network, either fixed (e.g. Optus, TransACT) or wireless (e.g. Unwired, iBurst).¹⁰³

If this is the correct interpretation, then Telstra's retail ADSL churn data implies that Telstra's retail customers have switched to retail competitors in substantial numbers..

¹⁰³ Switching levels from broadband to narrowband are immaterial in today's market.

Table 11: Comparative switching costs for broadband

	Telstra	Optus	Adam Internet	Netspace	iiNet	Primus
Minimum contract Terms	12 months	12 months	1 month	1 month	6 months	1 month
Upfront costs ¹⁰⁴	\$99 connection fee, \$90 for a modem (where required)	\$89 connection fee, \$99 for a modem (where required)	\$125 connection fee, \$125 for modem	\$149 connection fee, \$50 for a basic modem	\$79.95 connection fee, \$109 for a basic modem.	\$118 connection fee, \$40 for a basic modem
Discounts available	Discounts available on higher plans for customers with a Telstra fixed line (\$10/month). Connection fee waived for customers who sign on for 24 months.	Connection and modem fees waived for customers who sign on for 24 months. \$10/month discount for Optus home phone or mobile customers. First 2 months free when combined with an Optus mobile or home phone.	\$25 discount on both modem and connection charges for customers signing on for 6 months. \$50 discount for customers signing on for 12 months, \$75 for 18 months, \$100 for 24 months.	\$50 discount on connection for customers signing on for 6 months, \$90 off connection for customers signing on for 12 months, free connection for customers signing on for 24 months. \$10/month discount for bundling with Netspace Home phone on higher plans.	\$40 discount on modem for customers who sign on for 24 months. \$10/month discount if bundled with telephony	\$59 off the connection fee and \$50 off modem charge if the customer signs for 12 months. Connection is free and the modem is further discounted if the customer signs for 24 months. \$10/month discount for customers who bundle with fixed line or mobile telephony.
Other price incentives	For Telstra fixed-line	2 months free broad-				Customers bundling

¹⁰⁴ Includes installation, connection charges, modems.

<p>Benefits from disconnecting from another carrier</p>	<p>and mobile customers, the first 12 months of a 24 month plans are at half price. Connection and modem costs are also waived for these customers.</p> <p>Rapid Transfer available – free if transferring to a BigPond 24 month plan, \$99 if transferring to a 12 month plan.</p>	<p>band when combined with an Optus home phone or eligible mobile on a 24 month plan.</p> <p>Rapid Transfer available - \$49 for customers transferring to an Optus 24 month plan, \$89 for customers transferring to a 12 month plan</p>	<p>Rapid Transfer available - free if signing up for a 12 or 24 month plan, \$35 if signing up for a 1 month plan.</p>	<p>Rapid Transfer available - free for customers signing up to a 6, 12 or 24 month plan, \$39 for customers signing up to a 1 month plan.</p>	<p>with telephony or VoIP receive discounts on these services</p> <p>Rapid Transfer available - \$39 for all plans</p>	<p>Rapid Transfer available – free for customers signing up to a 12 or 24 month plan, \$59 for customers signing up to a 1 month plan</p>
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Source: Providers' websites visited on 15 May 2007.

Notes: Latest information (based on 256kbps download speed and download limits of 200-500 MB)

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APPENDIX C: LOCAL SWITCHING AND GATEWAY INFRASTRUCTURE

- 203 I have been advised that an entrant that does not own a circuit switched PSTN network (or at least not one of national scope) has two technology choices for using ULLS to provide STS-quality voice and broadband services today.
- 204 The first option involves seeking commercial access to an existing circuit-switched PSTN network. I have been advised that this is technically feasible.¹⁰⁵
- 205 The second option involves an entrant self-supplying switching using ULLS emulation (i.e. a POTS card in a DSLAM/MSAN) and the current generation of soft-switching. It would also need to acquire access to media gateways in order to convert IP based voice packets to circuit-switched TDM format, and PSTN interconnection with Telstra and other carriers (in the 66 Telstra interconnection calling areas around Australia).¹⁰⁶
- 206 Market evidence indicates that softswitching and gateway infrastructure are indeed commercially viable. Optus has introduced an STS VoIP offering which targets SMEs using this technology.¹⁰⁷ Engin have partnered with Optus and introduced a broadband telephony services which is considered a true PSTN replacement allowing customers to forego line rental charges while continuing to use their existing handset.¹⁰⁸ Similarly, BigAir and MyNetFone have partnered offering wholesale broadband and business grade quality VoIP.¹⁰⁹ Furthermore, as indicated by Table 1, many LSS based entrants currently provide VoIP services, indicating either they have invested in or have access to softswitching and gateway infrastructure. Finally, for LSS-based service providers who do not want to invest in softswitched technology Optus has introduced a VoIP IP Gateway product which offers wholesale voice switched interconnectivity on an IP platform.¹¹⁰

105 [c-i-c]

106 [c-i-c]

107 www.optus.com.au (accessed 5th July 2007)

108 ASX announcement, Engin Limited, 12th June 2007

109 ASX Announcement, MyNetFone and BigAir Group, "MyNetFone and BigAir deliver true convergence of voice and broadband data service" December 5th 2006

110 www.optus.com.au (accessed 5th July 2007)

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- 207 In my view such an offering, in effect, obviates the need for a circuit-switched PSTN network to provide STS-quality voice services via ULLS, reducing switching infrastructure as a potential barrier to ULLS entry. Moreover, Optus' experience highlights that this technology is not only technically feasible, but is being introduced by an existing ULLS-based operator.
- 208 On this basis I conclude that access to switching infrastructure should not be viewed as a barrier to ULLS-based entry.
- 209 It might be argued that the current state of the 'technology cycle'¹¹¹ for switching infrastructure creates substantial barriers to ULLS entry as commercial or business imperatives may lead potential entrants to delay entry until the emergence of commercially available next generation soft switches.¹¹² However, for the following reasons it is my view that the current state of the soft switching technology cycle does not present a material barrier to ULLS entry:
- First, an entrant that does not operate a PSTN network (or at least not one of national scope) at present has two technology choices, as well as a range of commercial options, in using ULLS to provide broadband and STS-quality voice services today. This degree of choice allows for costs to be minimised.
 - Second, I have been advised that for some vendors upgrading to IMS will simply involve a software upgrade to current generation soft switches and IP interconnection.¹¹³ This suggests an entrant is unlikely to face material *additional costs* in ULLS-based entry using current generation soft switches and migrating to next generation soft switches, as compared to entry via a next generation soft switch platform.

111 By "technology cycle" we refer to the evolution of technology which, for cost related or other reasons, forces firms to integrate new technologies making previous infrastructure redundant.

112 Although market-based experience indicates entrants are looking to use POTS emulation and the current generation of soft switches to provide voice services, we have been advised that the next generation of soft switches (on the IMS protocol) will have attractive features (e.g. the ability to handle advanced voice and data flows such as multimedia and video conferencing) when compared with current generation soft switches.

113 http://www.ericsson.com/winningpropositions/docs/efficient_evolution_to_allip_ericsson.pdf (accessed 5th July 2007) and <http://market.huawei.com/hwgg/itu2006/en/ip/fmc.html> (accessed 5th July 2007)

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- Third, the presence of telecommunications technology cycles is not restricted to soft switching infrastructure and,¹¹⁴ as in other instances, I would expect any negotiated terms for purchase or lease of current switching infrastructure to reflect the anticipated availability of (the more desirable) next generation soft switches. For example, an entrant may agree to pay the market price for the current version of soft switches in return for a vendor discount on upgrading to next generation switches.
- Finally, ULLS-based entry is proceeding apace in other countries, despite any issues associated with soft-switching technology. The growth of ULLS entrants in the EU over the 2003 to 2006 period is presented in Table 12.

114 For example, the entry to the mobile phone market provides a close analogy. At a given point in time, a potential mobile entrant is likely to face risks in its choice of 'mobile generation platform'; however the presence of these risks does not necessarily require regulatory intervention. Rather, when left to the market we see competition occurring both within and across different 'mobile generations' as providers seek to best match products and services with end customer demands, resulting in a diverse range of innovative product and services offerings.

Table 12: ULLS entrants in Europe, 2003 to 2006¹

Country	2003	2004	2005	2006
Belgium	8	8	8	9
Czech Republic	n/a	2	4	5
Denmark	13	17	17	21
Germany	74	86	99	101
Estonia	n/a	7	n/a	7
Greece	7	7	12	13
Spain	9	9	13	16
France	9	13	21	n/a
Ireland	1	3	3	5
Italy	31	27	26	27
Luxembourg	2	3	3	5
Hungary	n/a	n/a	6	6
Netherlands	12	12	10	10
Austria	17	20	26	n/a
Portugal	4	2	2	4
Finland	n/a	n/a	n/a	n/a
Sweden	63	110	122	n/a
United Kingdom	57	59	52	55

Source: European Commission: European Electronic Communications Regulation and Markets 2003-2006 (9th-12th implementation reports).

Notes: (1) ULLS entry is inferred from the number of ULLS arrangements as at July 2003, July 2004, October 2005 and October 2006 in each EU country. n/a is not available.

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APPENDIX D: LSS TO ULLS SWITCHING

210 Here I consider the following factors that arguably would be most likely to give rise to barriers to *existing* LSS entrants switching to ULLS supply:

- Sunk costs of ULLS supply;
- Minimum efficient scale considerations;
- Technical constraints to providing an STS voice service;
- LSS disconnection charges; and
- Non price impediments.

Sunk costs of ULLS supply

211 We have been advised that there are no material barriers to an existing LSS VoIP entrant switching to ULLS emulation.¹¹⁵ As demonstrated in section 3.2.1 this would simply require the disconnection of *'the second jumper'* and the installation of voice cards into the DSLAM shelf. While a non-VoIP LSS service provider may require access or investment in softswitching infrastructure market evidence strongly demonstrates that these investments are not insurmountable.

212 On this basis it is my opinion ULLS sunk costs do not amount to a material barrier for existing competitors switching from LSS to ULLS.

Minimum efficient scale considerations

213 MES is unlikely to pose an entry barrier for competitors switching from LSS to ULLS.

214 I have been provided with the results of analysis undertaken by Telstra experts that enables me to undertake a comparison of the minimum viable scale of entry for LSS versus ULLS.¹¹⁶ A proper comparison is somewhat limited because, while the analysis of minimum viable scale for ULLS compares the per SIO revenues and costs associated with supplying the bundle of ADSL and voice services, the equivalent analysis of LSS does not consider revenues and costs associated with the supply of voice services. Nonetheless, it does provide a broad indication as to whether scale considerations are likely to materially differ between ULLS versus LSS.

115 [c-i-c]

116 [c-i-c]

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215 I have presented modelling outputs that are relevant to assessing ULLS minimum viable scale in sub-section 3.3.1. I inferred from those outputs that, at current retail prices, the minimum number of retail ADSL SIOs at which ULLS entry becomes viable is less than [c-i-c] SIOs in Band 2.

216 Table 13 Table 13 presents outputs that are relevant to assessing LSS minimum viable scale. In particular, it presents estimates of monthly per SIO revenues for customers purchasing ADSL services only, as well as estimates of the monthly per SIO costs of supplying ADSL only, by band, for three levels of SIOs, these being [c-i-c]. I can infer from these outputs that, at current retail prices, the minimum number of retail ADSL SIOs at which LSS entry becomes viable is [c-i-c] in Band 2.

Table 13: [C-I-C]

217 Subject to the aforementioned caveat, the results of this modelling suggest that MES is unlikely to pose an entry barrier for existing competitors switching from LSS to ULLS.

Technical constraints to providing an STS voice service

218 On the basis of material presented in Section 3.3.1 I conclude technical constraints to providing an STS voice service do not exist and therefore do not pose a material barrier for existing competitors switching from LSS to ULLS.

LSS disconnection charges

219 I have been advised that an existing LSS entrant *may* incur certain costs in disconnecting from an LSS arrangement and connecting to a ULLS arrangement.¹¹⁷ We have been advised that the terms and conditions of LSS to ULLS migration are the subject of ongoing arbitration proceedings. Due to confidentiality restrictions we do not have access to relevant materials relating to these arbitration proceedings that would likely enable us to make a conclusive view on this matter. That said, assuming these costs are once-off costs that vary with the number of migrating services in operation (SIOs), unless these costs are in total very substantial, then such costs are likely to be low on a per customer basis when amortised over the expected tenure of the customer.

117 Recently an Interim Determination's between Telstra and LSS access seekers has ruled that no LSS disconnection charge is to be imposed where the LSS is being migrated to a ULLS. See Access Dispute Between Chime Communications Pty Ltd (Access Seeker) and Telstra Corporation Limited (Access Provider), Line Sharing Service (LSS), 'Publication of Interim Determination and associated statement of reasons under Section 152CRA of the Trade Practices Act 1974.'

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Non price impediments

220 On the basis of material presented in Section 3.3.1 I conclude non price impediments do not pose a material barrier for competitors switching from LSS to ULLS.

Summary of barriers to LSS-ULLS switching

221 I conclude *existing* LSS entrants face no material barriers to exit or expansion associated with switching to ULLS.

APPENDIX E: CONTESTIBILITY OF VOICE-ONLY CUSTOMERS - MODELLING ASSUMPTIONS

[C-I-C]

APPENDIX F: ENGAGEMENT INSTRUCTIONS FROM MALLESONS STEPHEN JAQUES

[C-I-C]

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APPENDIX G: CURRICULUM VITAE

DR PAUL PATERSON

Vice President

Bachelor of Agricultural Economics
(First Class Honours)
University of New England

Master of Economics
Australian National University

Ph D (Economics)
Australian National University

Paul Paterson is a Vice President at CRA International. Paul joined CRA from NECG and brings with him commercial and government experience in industry analysis, corporate strategies, regulation and policy development. Paul has senior executive experience in the telecommunications industry. Prior to joining NECG, he was with Telstra Corporation Ltd as Director Regulatory from 2001 to 2004.

As a founding member of the Regulated Industries Forum in 2003, and convener since then, Paul also has extensive insight into regulatory issues in the utilities and transport sectors.

Prior to his appointment as Director Regulatory at Telstra, Paul was the Group Manager Competition, Regulatory and External Affairs for Telstra from 1998 to 2001. Until leaving Telstra he was on the Board of the Australian Communications Industry Forum. Paul has authored numerous economic reports and publications since 1978.

EXPERIENCE

Advice on regulatory, competition, commercial, strategic and government policy matters to major corporations and government agencies in telecommunications and other network industries. Jurisdictional experience spans Australia, New Zealand, Singapore, Hong Kong, Japan, United Kingdom, Ireland, Italy and the USA.

PROFESSIONAL HISTORY

Nov 04 – Present	Vice President, CRAI, Australia
2004	Principal, NECG, Australia
2001 – 2004	Director Regulatory, Telstra
1998 – 2001	Group Manager Competition, Regulatory and External Affairs, Telstra

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1992 – 1998	Executive Director, Policy & Resources, Department of State and Regional Development (previously Chief Business Economist, Office of Economic Development, New South Wales Premier's Department), Sydney
1988 – 1992	Chief Economist, OTC Limited (now Telstra), Sydney
1987	Visiting Economist, Department of the Treasury, Canberra
1986	Special Advisor, Department of Trade, Canberra
1985 – 1986	Assistant Director, Bureau of Labour Market Research, Canberra
1983 – 1984	Administrator, Organisation for Economic Co-Operation and Development, Paris
1980 – 1983	Senior Project Manager, Bureau of Labour Market Research
1977 – 1980	Project Manager, Bureau of Agricultural Economics

SELECTED PUBLICATIONS, PRESENTATIONS AND REPORTS

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