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ACCC Fixed Service Review – Declaration Inquiry

CBD Exemptions

A report commissioned by King & Wood Mallesons to provide legal advice to Telstra Corporation Limited

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Contents

Executive Summary

In the absence of strong evidence that either earlier analysis was incorrect or the situation has fundamentally changed, revocation of the long-standing and frequently tested CBD exemptions would reflect serious regulatory inconsistency and would not be in the long term interests of end users (**LTIE**).

I arrive at this conclusion by examining the CBD exemptions from three points of focus: perspective (historical and current trends), the geographic level of assessment (CBD or national), and a detailed economic analysis at the CBD level. While my analysis is directed at primarily WLR service, the same conclusions apply to the closely related LCS service as LCS is supplied with WLR in virtually all circumstances—the scope for the commercial supply of LCS to compromise competition and infrastructure efficiency (and thus the LTIE) is the same as for WLR.

In relation to perspective, I observe that:

- The CBD areas have been exempt from WLR and LCS regulation for several years—since 2002 for LCS and 2006 for WLR. There has been a substantial period of regulatory forbearance, with no evidenced negative effect on the LTIE;
- There is an unparalleled level of network competition in CBD areas—on copper from DSLAM/ULLS deployment, and extensive fibre infrastructure. Regulatory forbearance has not hindered the development of infrastructure competition, rather, competition in the CBD areas (indicated by the market shares of access seekers) is stronger than in areas affected by the regulation of the WLR and LCS;
- WLR in CBD areas is a relatively small and declining service:
  - Around **[C-I-C starts]**[redacted]**[C-I-C ends]** SIOs in June 2013, less than **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent of national WLR services and overshadowed by almost **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent by the ULLS
  - WLR SIOs fell by **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent between June 2012 and June 2013, while ULLS SIOs rose by **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent;
- Using premises-level data, it is clear that only a small fraction of end users in CBD areas (approximately **[C-I-C starts]**[redacted]**[C-I-C ends]**) acquire a single PSTN voice service (and no other voice or fixed-line broadband services)—meaning it is not appropriate for the ACCC to rely on SIO-level data (i.e. the number of "voice only SIOs") in its assessment of contestability and the overall importance of this subset of end users. The prevalence of multiple services within CBD premises (due in large part to the greater proportion of businesses compared to residential end users) means that the use of "voice only SIOs" in assessing contestability in CBD areas is likely to lead to regulatory error; and
- The pending rollout of the NBN reduces, not increases, the LTIE significance of the legacy regulatory arrangements.

Regarding the geographic level of analysis, I consider that competition and infrastructure efficiency analysis at the national level is required, informed but not driven by analysis at the CBD level, given the markets for relevant services are national and the main operators focus nationally. My analysis demonstrates that national competition and infrastructure efficiency (and thus the LTIE) would not be enhanced by the introduction of CBD regulation—even if the ACCC/Frontier Economics view that competition is lacking at the CBD level is correct.

Concerning the detailed economic analysis at the CBD level, it needs to be pointed out that the analysis by the ACCC and Frontier Economics focuses almost entirely on a "without" world where the CBD exemptions are revoked, but does not include a detailed consideration of a "with" world where the CBD exemptions continue. I consider that the case for regulation is not evidenced because:

- Limits to supply and demand substitution for the WLR and downstream voice-only services identified by the ACCC and Frontier Economics are, in fact, unlikely to be material. To the contrary, suitable alternatives exist—particularly when the preponderance of multiple-service premises in CBD areas is taken into account;
- It is not evidenced that access seekers are disadvantaged by commercial WLR and LCS prices in CBD areas, given the availability of economic substitutes for the WLR and LCS services;
- Despite the commercial WLR and LCS pricing being higher than the regulated pricing for these services, this is not necessarily indicative of limited competition and Telstra's market behaviour is not consistent with an environment in which Telstra is unconstrained by any supply and demand substitutes for WLR and LCS;
- Retail prices are not likely to be inflated by commercial WLR and LCS pricing;
- Infrastructure efficiency is unlikely to be compromised; and
- Even though the wholesale prices for the WLR and LCS would be reduced as a result of revoking the CBD exemptions, this would likely be accompanied by a reduction in service innovation and access seeker choice of wholesale supplier of voice-only services.

When the three points of focus of this report are considered individually, there are solid grounds for ongoing regulatory forbearance. When taken together, the forbearance case is compelling.

Furthermore, regulatory proportionality needs to be considered, including the weight of evidence sufficient to justify reversing the long-standing and frequently-tested position of the CBD exemptions being in the LTIE. There needs to be clear and significant evidence that the LTIE would be better served in a "without exemptions" world than under the current "with exemptions" situation to make this significant change in position. In my view, no such evidence is apparent.

In short, I conclude that the LTIE would not be advanced by regulation of WLR and LCS in CBD areas at this time. To the contrary, end users are best served by the CBD exemptions remaining.

1 Introduction

Background

King & Wood Mallesons (**KWM**) is acting for Telstra Corporation Limited (**Telstra**) in relation to the Australian Competition and Consumer Commission's (**ACCC**) current *Fixed Services Review – Declaration Inquiry – Public inquiry into the fixed line services declarations.*

The regulatory context of this inquiry is that:

- The local Carriage Service (**LCS**) and the Wholesale Line Rental (**WLR**) service are declared services under the *Competition and Consumer Act 2010* (Cth) (**CCA**);
- The current service descriptions for LCS and WLR exclude the CBD areas of Sydney, Melbourne, Brisbane, Adelaide, and Perth, as determined by the ACCC for LCS in 2002 and WLR for 2006—meaning these services are exempted from declaration in these CBD areas (**CBD exemptions**); and
- As the declarations for LCS and WLR (and other fixed line services) are due to expire in July 2014, the ACCC is conducting a public inquiry to consider whether to extend, revoke, or vary the declaration of these services, or to let the declaration expire without issuing a new one—as required by the CCA.

As part of this inquiry, the ACCC is considering whether or not the CBD exemptions for LCS and WLR should be continued or revoked.

In determining whether to continue or revoke the CBD exemptions, the ACCC must be satisfied that this will promote the LTIE, having regard to the following objectives:

- Promoting competition in markets for listed services;
- Achieving any-to-any connectivity in relation to carriage services that involve communication between end users; and
- Encouraging the economically efficient use of, and the economically efficient investment in:
  - The infrastructure by which listed services are supplied
  - Any other infrastructure by which listed services are, or are likely to become, capable of being supplied.

In its draft "Fixed Services Review—Declaration Inquiry" report in December 2013 (**Draft Report**), the ACCC has proposed varying the LCS and WLR service descriptions to revoke the existing CBD exemptions, and in forming this draft view, the ACCC considered (among other things) two reports prepared by Frontier Economics on behalf of Macquarie Telecom. These are the:

- "Service Definitions for Wholesale Line Rental and the Local Carriage Service", September 2013 (Frontier Economics September report); and
- "Reply on WLR and LCS exemptions in CBD areas", November 2013 (Frontier Economics November report).[1]

[1] Information provided to me by KWM by letter dated 19 December 2013.

Instructions

To assist KWM in providing legal advice to Telstra on this matter, I have been instructed to:

> *Prepare a report providing my expert opinion in relation to:*
>
> *(a) The ACCC's proposal to revoke CBD Exemptions for WLR and LCS as set out in the Draft Report and, in particular, its reasons for revoking those exemptions. Please set out the basis of, and reasoning for, your opinion.*
>
> *(b) The Frontier Economics September Report and the Frontier Economics November Report and, in particular, the reasons advanced in those reports for the revocation of the CBD Exemptions for WLR and LCS.*

The letter of Instruction is attached at Appendix C.

Qualifications

I am a trained economist with the following qualifications:

- Bachelor of Agricultural Economics (Honours 1st class), University of New England, 1972;
- Master of Economics, Australian National University, 1973; and
- PhD (Economics), Australian National University, 1979.

I have worked as a professional economist in both the public and private sectors for the past 40 years. This has covered corporate senior management, consultant (advisory) and regulator roles.

For the past 20 years I have specialised in telecommunications, media, and other network economics, with a focus on competition matters and access arrangements. In this time I have prepared a number of expert reports to inform various tribunal hearings and ACCC regulatory proceedings.

I am currently a Tribunal Member of the Independent Pricing and Regulatory Tribunal (IPART), and Executive Director of the economic advisory company PP Consulting Telecommunications Media.

My CV is provided in Appendix B. This documents my career as an economist, my experience in telecommunications, and the matters on which I have advised over the past 10 years.

Approach

The ACCC's preliminary conclusion is that revoking the CBD exemptions would enhance the LTIE, on the following grounds (based on the view that the LTIE impacts of regulation should be considered at the CBD level rather than nationally):

- There is significant end user demand for voice-only services in CBD areas—across the residential, business, and corporate and government (**C&G**) segments;
- Telstra's WLR service is critical to access seeker provision of voice-only services, as there are limited competitive substitutes;
- Telstra's WLR service in CBD areas is priced above cost—enabled by (and demonstrating) the lack of competitive substitutes;
- Above-cost WLR prices in CBD areas reduce the ability of access seekers to compete with Telstra;
- Above-cost WLR prices in CBD areas raise the price of retail voice services; and

- Above-cost WLR prices force access seekers to make inefficient investments in CBD area exchange equipment, and under-employ their in-place equipment more generally due to loss of C&G customers.

The ACCC approach of considering the LTIE impacts of regulation at the CBD level alone contrasts with its view on the markets that are relevant to this matter, those for:

- The national retail and wholesale supply of fixed voice services; and
- The national retail supply of bundled fixed voice and broadband services.

My approach to providing an expert opinion on the ACCC's analysis and conclusions is driven by five basic considerations. First, the appropriate analysis comprises "with-and-without" testing (as generally used by the ACCC): would there be an improvement in the competitive environment and infrastructure efficiency if the CBD exemptions were not in force relative to the current situation?

Secondly, in conducting this with-and-without testing, all relevant evidence needs to be considered in a balanced manner. The ACCC's analysis in the Draft Report (pages 55-70), and that in the two Frontier Economics reports, is in my view deficient in this regard, meaning the conclusions are open to question. On my reading of the ACCC and Frontier Economics material, evidence that supports the conclusion that the LTIE would be better served by a "without" world where the CBD exemptions no longer exist has been marshalled, but the same has not been done for evidence that supports the counter-position. Presenting additional, balancing evidence and weighing the different perspectives on relative merit is an important thrust of my analysis.

Thirdly, I am of the view that with-and-without analysis should be conducted at the national level, in line with the national markets for the services in question and the national perspective of service providers. This is not to deny that the implications of CBD exemption revocation at the CBD level are of particular significance. My point is that the LTIE impacts of the largely CBD-level effects—on competition and infrastructure efficiency—need to be considered in a national context.

Fourthly, my views on the appropriateness of national level LTIE testing notwithstanding, the detailed CBD analysis needs to be conducted in the analytically more rigorous manner outlined in my second point above. As well, the voice-only issue needs to be framed correctly, focussing on voice-only premises as the critical economic unit rather than voice-only SIOs.

Finally, regulatory proportionality needs to be considered, including the weight of evidence sufficient to justify reversing the long-standing and frequently-tested position of the CBD exemptions being in the LTIE. I am of the view there needs to be clear on-balance evidence that the LTIE would be better served in a "without exemptions" world than under the current "with exemptions" situation to warrant this very significant change.

Reflecting these considerations, my assessment of the ACCC/Frontier Economics analysis involves the following three key considerations:

- First, that of **perspective**—in considering whether to regulate the WLR service in CBD areas, it is important to comprehend the history of CBD regulatory forbearance and how voice service provision in CBD areas has unfolded during this period. It is also important to consider the general market structure in terms of infrastructure competition, the materiality of the WLR wholesale service, the right framing of the voice-only issue, and the pending widespread NBN rollout.
- Secondly, the **geographic level of analysis**—as indicated above, I question whether it is appropriate to focus attention exclusively at the CBD level (as the ACCC and Frontier Economics have done) rather than ultimately conducting the

necessary with-and-without LTIE testing at the national level. That is, national markets are relevant.

- Thirdly, the **detailed economic analysis at the CBD level**—on a balanced assessment, would competition be promoted, infrastructure efficiency encouraged, and the LTIE enhanced by regulation of WLR in CBD areas?

Accordingly, my first task is to set the matter in perspective. My findings here are documented in section 2 of the report. I then consider the appropriate geographic level of analysis, concluding that LTIE testing at the national level while comprehending the competition and infrastructure efficiency effects at the CBD level is appropriate. This is reported in section 3.

In section 4 I assess at the national level the LTIE impact of revoking the CBD exemptions. I conclude that revocation of the CBD exemptions would not materially enhance the LTIE *even if there were beneficial effects at the CBD level as concluded by the ACCC*, suggesting ongoing regulatory forbearance is warranted.

I then focus on the detailed economic analysis at the CBD level by the ACCC and Frontier Economics including the availability of close substitutes to the WLR service, the impact of commercial pricing of WLR on access seekers' ability to compete, and the impact of WLR prices on the level of retail prices. While the ACCC and Frontier Economics present a number of points that initially suggest the LTIE may be enhanced by revocation, a balancing consideration of wider evidence suggests continued regulatory forbearance is more likely to be in the LTIE. This analysis is presented in sections 5 to 12.

I conclude that there is not a LTIE case for introducing regulation of WLR at this time. Rather, there is a compelling case that regulatory forbearance should continue. These conclusions are presented in section 13.

While my analysis and conclusions are directed at WLR, the same conclusions apply to the closely related LCS service. This is because LCS is supplied with WLR in virtually all circumstances, meaning the scope for the commercial supply of LCS to compromise competition and infrastructure efficiency (and thus the LTIE) is the same as for WLR.

2 Perspective

In this section, I seek to place into perspective the current WLR/LCS CBD exemption arrangements, network competition in CBD areas, the significance of CBD WLR services, the scope of the voice-only issue, and the imminent NBN rollout.

Summary

I find that:

- The CBD areas have been exempt from WLR and LCS regulation since the declaration of these services—in 2006 and 2002 respectively. During this significant period of regulatory forbearance, negative competition and efficiency consequences are not apparent. To the contrary, there has been significant competitive infrastructure build;
- There is a substantial amount of competing network infrastructure in the CBD areas, to an extent unparalleled elsewhere in Australia—on copper lines from DSLAM/ULLS deployment, and extensive fibre networks;
- WLR in CBD areas is a relatively small and declining service:[2]
  - Around **[C-I-C starts]**[redacted]**[C-I-C ends]** SIOs in June 2013, less than **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent of national WLR services and exceeded by the ULLS by close to **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent
  - WLR SIOs fell by **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent between June 2012 and June 2013 while ULLS SIOs rose by **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent over this period;
- Voice-only premises are far less prevalent in CBD areas than they are nationally, due in large part to most voice-only SIOs in CBD areas being delivered to business premises taking multiple voice-only services:[3]
  - Using premises level data, it is clear that only a small fraction of end users within CBD areas acquire a single PSTN voice service (around **[C-I-C starts]**[redacted]**[C-I-C ends]** relative to a total of over **[C-I-C starts]**[redacted]**[C-I-C ends]** voice only SIOs); and
- The pending rollout of the NBN reduces, not increases, the LTIE significance of the legacy regulatory arrangements.

History of the CBD exemptions

The CBD areas have been exempt from WLR and LCS regulation since the declaration of these services—2006 in the case of the WLR service and 2002 for LCS. This represents a long period of regulatory stability. Shifting from regulatory forbearance would be a marked change in approach towards the end of the PSTN's life, with NBN rollout and blanket migration to this new network now imminent (as described later in this section).

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[2] Calculated from information in the spreadsheet at Attachment 1 of the Telstra confidential submission to the ACCC "Response to other parties' submissions to the Commission's Discussion Paper on the Declaration Inquiry—Response to the Commission's request for market information on 9 October 2013", 25 October 2013. See Appendix A, section A.2.

[3] Based on information provided to me by KWM on voice-only services and voice-only premises in CBD areas (see Appendix A, section A.2); and from Telstra Corporation Limited "Fixed Services Review: Response to the Commission's Discussion Paper on the Declaration Inquiry", 6 September 2013, section 6.6, "Voice-only premises as distinct from voice-only SIOs", p.27.

Competition outcomes in CBD areas

There is no obvious high-level evidence that competition and infrastructure efficiency have been materially compromised by regulatory forbearance.

1. *Retail*

On the simple measure of market share, access seekers do significantly better in CBD areas where the WLR service is not regulated than nationally where it is regulated, as follows (at June 2013):[4]

- For all copper-base voice services (Basic Access, WLR, and ULLS SIOs), access seekers have **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent market share in CBD areas (WLR and ULLS SIOs) and **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent nationally;
- For PSTN SIOs (Basic Access and WLR), access seekers (WLR) have **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent market share in CBD areas and **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent nationally; and
- For voice-only SIOs (as conceived by the ACCC), access seekers have **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent market share in CBD areas and **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent nationally.

2. *Wholesale*

On the simple measure of market share (at June 2013), for all copper-based voice services (Telstra self-supply for retail Basic Access, WLR, and ULLS for access seeker self-supply), access seeker market share (ULLS SIOs) is **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent in CBD areas and **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent nationally.[5]

These market share outcomes are consistent with stronger competition in the exempt CBD areas than nationally, rather than weaker competition. While market share differences are obviously driven by more than the degree of competitive tension in these areas, and comparative market shares in-and-of themselves are not an entirely unambiguous indicator of the prevailing level of competition, there is no obvious evidence of weaker competition in CBD areas.

Infrastructure efficiency

There is no obvious under or over-investment in, or use of, Telstra or access seeker infrastructure in CBD areas as a result of the CBD exemptions. There has been substantially more access seeker DSLAM deployment in CBD areas than nationally, driven by the more favourable investment climate in CBD areas—a higher average ratio of SIOs to service addresses, a higher percentage of premises classified as business premises, and a greater proportion of SIOs served from non-MDF infrastructure.[6] This favourable business climate has also driven the high level of fibre access network investment in CBD areas.

On infrastructure use, despite WLR prices in CBD areas being higher than the regulated price prevailing elsewhere, the proportion of copper SIOs that are Telstra WLR services is broadly equivalent to that for Australia as a whole: **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent for CBDs and **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent nationally.[7]

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[4] See footnotes 2 and 3, and Appendix A, section A.2).

[5] See footnote 2 and 4. Note that this measure underestimates access seeker market shares as access seeker wholesalers who buy WLR and on-sell the service will be counted as Telstra market share (as Telstra market share is estimated as all WLR services but some WLR SIOs are resold).

[6] See Telstra confidential submission to the ACCC *Fixed Services Review: Response to the Commission's Discussion Paper on the Declaration Inquiry*, 6 September 2013, Appendix 2 "Market Infrastructure report", p.17.

[7] See footnotes 2 and 4.

The ACCC and Frontier Economics (and access seekers) have raised specific infrastructure efficiency concerns pertaining to CBD areas. However, as reported in sections 4 and 12 below, there are sound grounds for the view that there has been no material distortion to infrastructure efficiency from the CBD exemptions.

Network competition in CBD areas

Telstra has documented the extent of network competition in Band 1. In summary (at June 2013):[8]

- There are at least **[C-I-C starts]**[redacted]**[C-I-C ends]** and up to **[C-I-C starts]**[redacted]**[C-I-C ends]** (average **[C-I-C starts]**[redacted]**[C-I-C ends]**) ULLS-based access seekers present in each Band 1 ESA;
- **[C-I-C starts]**[redacted]**[C-I-C ends]** are present in all 16 Band 1 ESAs (with blanket coverage for other access seekers likely in the five exempt CBD areas);
- ULLS represents almost **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent of basic access SIOs in Band 1;
- There are almost **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent more access seeker installed interconnect pairs than active CAN lines in Band 1 ESAs, with only **[C-I-C starts]**[redacted]**[C-I-C ends]** of the access seeker installed pairs in use at present; and
- There is on average of over eight fibre owners in each CBD ESA, with the average number of fibre owners in the CBD ESAs increasing between September 2011 and September 2013 from 6.6 to 8.4.[9]

The ACCC, Frontier Economics and access seekers posit there are limits to the competitive tensions these competing networks can bring to voice service provision (addressed in sections 6 and 7 below). However, at this broad level there is clearly the potential for very substantial infrastructure-based competition in the supply of voice services.

The WLR service in CBD areas

Access seekers acquired **[C-I-C starts]**[redacted]**[C-I-C ends]** WLR services in CBD areas in June 2013, fewer than **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent of the WLR services acquired nationally. The number of WLR services acquired by access seekers in CBD areas has fallen by **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent over the 12 months to June 2013, while the number of ULLS acquired has increased by **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent.[10] The fall in overall CBD area WLR numbers has been substantially greater for some access seekers—Macquarie Telecom has indicated it took **[C-I-C starts]**[redacted]**[C-I-C ends]** WLR SIOs in CBD areas in September 2013, down from **[C-I-C starts]**[redacted]**[C-I-C ends]** in September 2011, an **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent fall over this 2-year period.[11]

The number of voice services provided using WLR relative to total copper-based services is broadly equivalent in CBD areas and nationally—**[C-I-C starts]**[redacted]**[C-I-C ends]** per cent and **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent respectively.[12]

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[8] Telstra confidential submission to the ACCC "Fixed Services Review: Response to the Commission's Discussion Paper on the Declaration Inquiry", 6 September 2013, Appendix 2 "Market Infrastructure report", pp.14-18.

[9] ACCC "Infrastructure RKR, ESAs with two or more fibre asset owners", September 2013.

[10] See footnote 2.

[11] Macquarie Telecom supplementary submission, "Fixed services Review: Response to the Commission's Discussion Paper on the Declaration Inquiry", 6 September 2013", 16 September 2013. p.1.

[12] See footnote 2.

Finally, there were **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent more ULLS SIOs than WLR SIOs in CBD areas in June 2013—that is, substantially more access seeker self-supplied voice services rather than rely on WLR. This ULLS focus has risen substantially since June 2012 (**[C-I-C starts]**[redacted]**[C-I-C ends]** per cent more ULLS SIOs than WLR services), and much greater than nationally (**[C-I-C starts]**[redacted]**[C-I-C ends]** per cent more ULLS SIOs than WLR SIOs in June 2013).[13]

Overall, the supply to end users of voice services by access seekers using WLR in CBD areas is relatively small, falling over time, and is considerably less important relative to ULLS in CBD areas than nationally.

Voice-only premises in CBD areas

The most appropriate economic metric for competition analysis is voice-only premises, rather than voice-only SIOs. This is because total demand for the main telecommunications services—voice and broadband—and the associated supply alternatives are determined at this level. In particular, the economics of various supply options differ depending on whether a premise takes only a single voice access service, multiple voice access services, or both voice and broadband services.

For voice-only premises (customers that only want to take a copper-based voice service, not a copper broadband service), the challenge of "upselling" a bundled voice and broadband service is clearly greater than shifting customers currently taking voice and broadband services on separate lines to a lower-priced bundled voice and broadband service delivered on one connection. Similarly, customers taking multiple voice-only services at one address (premise) are a reasonable target for selling, at a lower overall cost, a single connection carrying multiple voice services.

Voice-only premises are much less prevalent in CBD areas than nationally and it is not appropriate for the ACCC to rely on SIO-level data. In its submission in response to the ACCC Discussion paper, Telstra pointed out that nationally the number of voice only premises is **[C-I-C starts]**[redacted]**[C-I-C ends]**, compared to **[C-I-C starts]**[redacted]**[C-I-C ends]** voice-only SIOs—**[C-I-C starts]**[redacted]**[C-I-C ends]** voice-only premise for every **[C-I-C starts]**[redacted]**[C-I-C ends]** voice-only SIOs. At the CBD level, data provided to me by KWM show that there were **[C-I-C starts]**[redacted]**[C-I-C ends]** voice-only premises compared to **[C-I-C starts]**[redacted]**[C-I-C ends]** voice-only SIOs—**[C-I-C starts]**[redacted]**[C-I-C ends]** voice-only premise for every **[C-I-C starts]**[redacted]**[C-I-C ends]** voice-only SIOs.[14] That is, the incidence of voice-only premises relative to voice-only SIOs is far lower in CBD areas than nationally, with most voice-only services in CBD areas delivered to premises taking multiple voice services. This means that reliance on the number of voice-only SIOs in an assessment of competition in CBD areas is likely to lead to regulatory error.

Moreover, premises taking multiple voice-only services are a reasonable target for selling a single ULLS-based connection carrying multiple voice services. That is, this characteristic has favourable implications for the economics of ULLS-based supply.

NBN rollout

There has been much discussion about the relevance of the imminent widespread rollout of the NBN and the associated blanket migration to this new network from Telstra's current copper network. Some parties have argued that regulated access to resale services is particularly important to current and latent retail service providers who wish to maximise customer numbers and market profile for the contest for end users migrating to the NBN.

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[13] See footnotes 2 and 4.

[14] See footnote 3.

A wider perspective on this matter is required for an accurate assessment of the relevance of the NBN to WLR regulation in CBD areas, including:

- The widespread deployment of the NBN is now imminent—the Coalition currently plans to complete the first tranche of the national network by 2016, two years away;
- The principal industry dynamic in the current transition period is consolidation to achieve scale, not market entry:
  - Scale is seen as critically important for direct connection to the NBN (rather than through an aggregator), to maximise scale economies in NBN points-of-interconnection (PoIs), CVCs, and backhaul capacity
  - Successful new entrants are likely to be "born-IP" and "born-on-the NBN", avoiding the transition from PSTN to VoIP services with a staged market entry strategy covering NBN service areas as they come on stream;
- It is likely to be the larger retail service providers that service low margin voice-only premises in the NBN environment, not new entrants or existing smaller operators. New entrants and existing smaller operators are likely to chase higher margin customers to offset their scale disadvantages and the higher unit cost of supply of working through an aggregator;
- The larger retail service providers are primarily increasing customer numbers through M&A activity, not through organic growth;
- In the NBN transition period, established operators will be servicing voice-only customers in CBD areas on a strategic basis, not for narrow commercial reasons. In this context, commercially-determined WLR prices that are above the regulated rate are unlikely to be either a deterrent to this strategic behaviour or a business case show-stopper; and
- The telecoms business environment in CBD areas will be substantially less impacted by the NBN than Band 2 areas and beyond, as a much higher proportion of CBD telecommunications custom is, and will be, serviced by alternative networks— fibre and some fixed wireless.

In short, there is an appealing case that the pending deployment of the NBN diminishes the LTIE significance of the current CBD exemptions, rather than increases their relevance.

3 Geographic level of LTIE assessment

In this section I address the appropriate geographic level for LTIE impact analysis.

Summary

I find that while CBD level considerations are of direct and substantial importance given that the CBD exemptions relate specifically to CBD areas, correct LTIE analysis ultimately needs to be conducted at the national level as this reflects the national markets in which the relevant services are provided, and the national focus of market participants.

Analysis

I agree with the ACCC that the relevant markets are national markets for the wholesale and retail supply of fixed voice services, and the retail supply of a bundle of fixed voice and broadband services. I also agree that consideration should be given to the effect of CBD exemption revocation on retail competition for voice-only and bundled voice and broadband customers in the CBD areas, and to the efficiency of infrastructure used to provide these services.[15]

However, I disagree with the ACCC in how this plays out in the assessment of the LTIE implications of CBD exemption revocation. In my view, the finding that the relevant markets (the arenas of competitive activity) are national, and cover both voice services and bundled voice and broadband services, means that the competition and LTIE implications of revoking the CBD exemptions must be considered at this level. I do not dispute that detailed analysis of the CBD exemption revocation should, in particular, take place at the CBD level. My point is that whether the LTIE will be enhanced by revocation needs to be assessed at the national level. As NERA advised in a well-known report to the ACCC, competition testing should be undertaken with reference to the market within which the alleged behaviour is taking place:[16]

> *... behaviour in a sub-market should not be considered as damaging to the relevant market if the sub-market is relatively insignificant and/or other firms are able to shift their focus to other parts of the market.*

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[15] I disagree with the narrow market definition proposed by Frontier Economics that the relevant markets are the wholesale and retail supply of fixed voice services in CBD areas, particularly in the absence of the usual assessment at the margin of the market of potential supply and demand substitutes as widely used in competition analysis and routinely used by the ACCC.

[16] NERA report to the ACCC "Imputation Tests for Bundled Services", 2003. In addressing the relevant level of analysis for imputation tests, NERA surmised that imputation tests should be undertaken with reference to the market within which the alleged behaviour is taking place. A price squeeze in a sub-market should not be considered anticompetitive if this sub-market set is relatively insignificant and/or rival firms have the option of shifting their focus to other parts of the market. The same considerations apply for the LTIE analysis relevant to the present case.

4 LTIE analysis at the national level

In section 3 above, I concluded that while the geographic level of LTIE analysis clearly needs to comprehend the purpose at hand, it must also reflect economic reality—that the markets for the relevant services are national, and that Telstra and all significant access seekers operate at the national level. Hence the LTIE analysis needs to be conducted at the national level.

Summary

When I conduct the LTIE analysis at the national level, *assuming for the present that the ACCC's core claims of no close substitutes for the WLR service and Telstra's commercial WLR prices are above those that would prevail in a competitive market,* I conclude that it is unlikely the LTIE would be materially enhanced by revocation of the CBD exemptions. I reach this conclusion on the basis that:

- Any improvements from revocation in competition and infrastructure efficiency within the CBD areas would, at most, be small;
- There would be minimal impact beyond the CBD areas; and
- Any CBD-level impacts would be trivial when considered at the national level as the CBD areas are small in a national context (for example, less than 3 per cent of copper lines).

This conclusion is strengthened if, as I find in subsequent sections, there is convincing evidence of (among other things) the existence of close substitutes for the WLR service in CBD areas and that Telstra's commercial prices for WLR are not necessarily above competitive levels.

4.1 Competition effects of revocation

The approach I take is to consider the competition impacts of revocation of the CBD exemptions first in CBD areas, then at the aggregate national level—in all cases assuming that the ACCC (and Frontier Economics) is correct in its view that there are no close substitutes for the WLR service and commercial WLR prices are above competitive levels. I address the impact of revocation of the CBD exemption by considering the likely change on the usual benefits from competition: lower prices, more innovation, and greater choice. This price-innovation-choice paradigm is applied first at the wholesale level, then for retail.

4.1.1 Impacts in CBD areas

Wholesale

Prices

Prices for WLR, and competing WLR-like services, would fall with revocation, as the current regulated WLR price of $22.84 would prevail.

Innovation

Service innovation would, at best, be unchanged by revocation, and possibly deteriorate as current competing suppliers of WLR-like services (Optus and AAPT) would have less incentive to innovate to take wholesale business away from Telstra—such as adding valued-added services (when suppled over ULLS).

Choice

Choice between wholesale voice-only service providers would, if anything, reduce with revocation as Optus and AAPT would find it less lucrative to provide a WLR-like service. At the same time there would be no change in the availability of Telstra's WLR service in CBD areas—Telstra has supplied these services in CBD areas for over 10 years.

In short, the most favourable impact of CBD exemption revocation at the wholesale level would be a reduction in the price of these services to regulated rates—but quite likely this would be accompanied by a reduction in service innovation and access seeker choice of wholesale supplier of voice-only services.

Retail level

1. *Prices*

While there would be scope for downward pressure on voice-only prices from a reduction in access seekers' cost base, prices for residential and small business end users in CBD areas would not consequently fall as Telstra and the other major service providers price mass market voice services (as well as broadband services) on a national basis. Voice prices may fall for larger businesses, which are more likely to be custom-priced, and C&G end users.

2. *Innovation*

Innovation would at best be unchanged, and possibly fall, with revocation—as at the wholesale level.

3. *Choice*

The number of retail service providers selling voice products would be unlikely to increase with revocation, as new entry is unlikely ahead of the NBN. In my view, new entrants are more likely to be "born on the NBN" with a staged roll-out strategy that focusses on NBN service areas as they come on stream. Furthermore, meaningful differentiation between existing service providers would not be enhanced, as access seekers would be using Telstra's PSTN.

4.1.2 National impacts

National impacts of revocation are the weighted sum of the CBD area impacts (reduced wholesale prices, and possible falls in retail prices for larger business and C&G end users) and what is likely to occur in non-CBD areas (very little or nothing). As the CBD areas are small in a national context, with the number of WLR services falling (**[C-I-C starts]**[redacted]**[C-I-C ends]** per cent in the 12 months to June 2013—see section 2), any competitive boost from a reduction in access seekers' cost base would be very small overall. This would provide little advantage for the major telecommunications service providers in their national operations.

While voice-only competitiveness in CBD areas may be seen as a strategic necessity, this possibility does not change my conclusion for the following reasons. First, I am not aware of any evidence that this is the case. Rather, the relatively low occurrence of voice-only premises in CBD areas means voice-only SIOs are of limited relevance. Secondly, if the competitive provision of voice-only services in CBD areas is of national strategic importance, it is, in my view, likely that access seekers could cross-subsidise this minor service within their national businesses with little impact on their overall cost-effectiveness and viability.

Further, it is likely that access seekers would have raised the CBD exemptions as an issue before the current declaration inquiry if they were of national strategic importance. Finally, if voice-only competitiveness is of strategic importance in CBD areas, I consider that access seekers would have more likely developed alternatives rather than supposedly relying on the WLR.

Moreover, it is difficult to conceive of any impact on wholesale and retail prices, innovation, and choice of supplier in areas outside the CBDs from revoking the CBD exemptions.

In short, any overall favourable competition effects at the national level from CBD exemption revocation would at best be minimal, with scope for deterioration in service innovation.

4.2 Infrastructure efficiency

I first consider the impact of CBD exemption revocation for CBD areas, then for the aggregate national level. My focus is on productive, allocative, and dynamic efficiency in infrastructure investment and use. For productive efficiency in particular, I find it useful to separately consider infrastructure belonging to Telstra, access seekers, and that belonging to end users (customer premises equipment—**CPE**).

4.2.1 Impacts in CBD areas

Productive efficiency

The issue here is whether incentives to deploy and employ the least cost infrastructure and techniques would be heightened by revocation and the associated fall in price of the WLR service in CBD areas.

1. *Telstra*

Telstra is unlikely to change network technology or operational practices in CBD areas (or in general) between now and NBN deployment in response to changed CBD WLR prices. Network technology and network operating practices are a national decision, not made at the local level, and would not be driven by the WLR price in the relatively small CBD areas.

In limited individual ESA circumstances a change in network technology may be warranted ahead of NBN deployment because the cost of copper remediation and ongoing maintenance is prohibitive. Here copper would be replaced by an all-fibre access network, as has occurred in the South Brisbane exchange service area (**ESA**). This technology shift would not be driven by WLR prices in CBD areas, but by wider cost and performance considerations.

In short, Telstra access network investment or use is likely to be independent of WLR prices in CBD areas—current prices are not inducing productive inefficiency, with network technology and work practices driven by broader considerations.

2. *Access seekers*

Revocation would give access seekers a lower cost voice-only supply alternative, with a heightened incentive to use Telstra's copper PSTN rather than their own infrastructure for voice-only SIOs in CBD areas. However, this would only occur at the margin and revocation would be unlikely to change any existing supply arrangements involving their own network (as recognised by the ACCC). With the volume of voice-only SIOs falling fairly sharply (**[C-I-C starts]**[redacted]**[C-I-C ends]** per cent reduction in the 12 months to June 2013—see section 2), it is unlikely there would be a lot of change in this regard from a fall in CBD WLR prices between now and NBN deployment. Furthermore, there would not be additional network duplication in the absence of revocation, as access seekers already have DSLAMs in place.

With lower WLR prices access seekers would have a stronger incentive to attempt to churn voice-only SIOs to them. Competition considerations aside, it is not apparent this would result in network efficiencies, as these SIOs would remain on Telstra's network. Besides, access seekers are unlikely to be pursuing residential and small business voice-only end users as these are low value customers now, and are likely to be so in an NBN environment. For larger business and C&G end users, technology choice would be a multi-product consideration with the price of WLR in CBD areas being just one factor.

To summarise, little change in access seeker network investment or use is expected from revocation and the resultant fall in CBD WLR prices.

3. End users

There could be a small positive productive efficiency effect for voice service end users from revocation—if they were to stay on the PSTN longer than otherwise and be able to use their analogue CPE longer, rather than make the inevitable change to an all-IP environment now. However, it is not apparent revocation would change the prevalence of PSTN-based voice access if it is assumed there are no close substitutes for WLR—voice-only end users would stay on the PSTN whether with Telstra or an access seeker.

Hence for end users also, it is not apparent that there will be any material enhancement of infrastructure efficiency.

Allocative efficiency

Allocative efficiency refers to the incentives for producers to devote their resources (and taken together, the Australian economy's resources) to the production of the services consumers value most highly. Price signals are critical in this regard and if, as the ACCC and Frontier Economics posit, Telstra's commercial prices for WLR in CBD areas are above the level that would prevail in a workable competitive environment, infrastructure allocative efficiency should be enhanced by revocation.

In practice for the situation being considered, allocative efficiency relates to CBD end users optimising their inevitable transition from analogue (PSTN) voice services to digital (VoIP) services. This optimisation period is in effect from the present until the NBN is deployed—two years only based on current government policy. In this short period any allocative efficiency benefits are unlikely to be significant.

Hence allocative efficiency effects in CBD areas will, at best, be small.

Dynamic efficiency

Dynamic efficiency relates to the responsiveness of infrastructure investment and use to changing supply and demand, in particular technological development and changing end user tastes. For the matter to hand, the key issue is whether revocation would enhance this responsiveness.

As the key change in telecommunications in both supply and demand is a shift to an all-IP world (for example, VoIP and personal video-calls), it is not apparent that the reduction in the price of the "old technology" PSTN-based WLR service would enhance dynamic efficiency.

ACCC views on infrastructure efficiency impacts of revocation

The views expressed by the ACCC (and Frontier Economics) in relation to the infrastructure efficiency impacts of the revocation of the CBD exemptions do not change my position on the CBD area infrastructure efficiency impacts of revocation, for the following reasons:

- Even if, as posited, the CBD exemptions were revoked and WLR prices fell, this would be unlikely to save access seekers from making inefficient investments in copper-based exchange equipment. Established operators already have exchange equipment in place, and there is no sound economic or commercial basis for facilities-based market entry with NBN deployment imminent. Besides, the ACCC and Frontier Economics posit that ULLS-based upstream services are not a close substitute for WLR services. If this is correct, it would mean this investment would not occur. Also, if there were to be an exchange equipment investment response, at least some of this investment may be efficient with the NBN in prospect, for example, soft switching capability. Furthermore, it is possible that introducing regulation would result in inefficient investment in end user CPE—end users continuing to invest in analogue CPE and EFTPOS and alarm systems because they are not getting pushed towards the future all-IP environment;

- Regarding access seeker loss of C&G customers due to the high price of Telstra's WLR service with resultant inefficient under-employment of their in-place exchange equipment in CBD areas and more widely (as expressed by the ACCC and Frontier Economics), it is questionable whether access seekers would really lose C&G customers on the basis of Telstra's WLR commercial pricing vis-à-vis regulated prices, given the magnitude of the CBD WLR costs relative to overall contract value, as discussed in section 9 below.

Overall infrastructure efficiency effects in CBD areas

My analysis above leads me to the view that any productive and allocative efficiency gains from revocation would accrue through differences in access seeker infrastructure investment and use (not Telstra or end users), and could, at best, be small. No dynamic efficiency gains are anticipated from revocation.

4.2.2 National impacts

At the national level, it is not apparent that there will be any clear infrastructure efficiency improvement from revocation, as any beneficial CBD area effects would be small and questionable. The CBD areas themselves are relatively small (less than three per cent of copper lines), and non-CBD area impacts would be negligible (as access seeker use of their network investments for C&G end users is the only identified effect, and this specific effect is unlikely to be substantial).

5 LTIE analysis at the CBD level

LTIE analysis at the CBD level is relevant for two reasons. First, notwithstanding my view that the national level is of ultimate relevance, if the ACCC continues to focus its analysis and LTIE assessment at the CBD level, it is important to carefully test the veracity of this analysis. Secondly, CBD level analysis is obviously relevant to a national perspective. In my national LTIE analysis in section 4 above, I simply assume the ACCC is correct in its CBD level findings. The LTIE conclusions I draw would, however, be strengthened depending on the competition and infrastructure efficiency findings at the CBD level.

The ACCC and Frontier Economics conclude that revocation of the CBD exemptions would enhance the LTIE and support their reasoning with evidence and analysis on a number of key points, on which my own analysis is focussed in sections 6 to 12 as follows:

- There is limited supply substitution, as technologically-feasible alternatives to WLR are more costly—I address this issue in section 6 below. I find that ULLS-based supply of voice-only services by established access seekers is likely to be economically feasible, and latent market entry considerations are not realistic or relevant in current circumstances;
- There is limited demand substitution, as end users would incur significant switching costs in moving to an IP-based voice service—addressed in section 7. I conclude that end user costs incurred in shifting to IP-based voice and associated services (such as EFTPOS and alarm systems) are unlikely to be prohibitive, and robust IP solutions are now widely available;
- Market structure indicators reflect limited competition, in particular Telstra's high wholesale market share for voice-only services, and no functioning wholesale market for WLR—addressed in section 8. Available evidence leads me to an alternative view. High wholesale market share is not necessarily indicative of a lack of competition, the claim that there is no externally-functioning wholesale market for WLR is factually incorrect, and high barriers to entry are not relevant in current circumstances (the position of established access seekers is what counts);
- Market performance also suggests limited competition, specifically the above-cost price of Telstra's WLR service in CBD areas—investigated in section 9. I find that Telstra's commercial WLR pricing in CBD areas is not necessarily indicative of limited competition, nor are observed market movements in line with a lack of economic supply or demand substitutes for WLR in the provision of voice-only services by access seekers;
- Above-cost WLR prices disadvantage access seekers—considered in section 10. I find that supply and demand substitutes for the WLR service in the provision of voice services in CBD areas by access seekers, and the relatively small number of voice-only SIOs involved for C&G end users, suggest that access seekers are unlikely to be disadvantaged by Telstra's commercial price for the WLR service;
- Above-cost WLR prices increase retail prices—addressed in section 11. Here I find that the scope for retail price reductions for voice only services in CBD areas from the revocation of the CBD exemptions is limited for a number of reasons. These include the national pricing approach of Telstra and other major service providers for residential and small business customers. There is also the limited volume of WLR-based services provided to large businesses, and the relative immateriality of the price of WLR-based services for access seekers supplying the full range of telecommunications services to C&G customers who often want a whole-of-business arrangement with their telecommunications service provider;

- Efficient investment in, and use of, infrastructure used to deliver voice-only services, are compromised by the free operation of the market—addressed in section 12. I surmise that any productive and allocative efficiency gains from revocation would accrue through differences in access seeker infrastructure investment and use (not Telstra or end users), and could, at best, be small. No dynamic efficiency gains are anticipated from revocation; and
- The Ofcom precedent on the necessity of an incumbent-supplied WLR service for effective competition—addressed in this section below and found to be of limited relevance.

These specific conclusions inform the with-and-without analysis of revoking the CBD exemptions, as follows.

First, it is unlikely competition would be promoted by revocation, as:

- On the balance of available evidence, Telstra does not have, and cannot exploit, WLR bottleneck power, as economic supply and demand substitutes for the WLR service exist;
- There is, on balance, no unambiguous market structure or market performance evidence of an absence of wholesale competition under the current regulatory forbearance arrangements; and
- Access seekers would not be efficiently advantaged by CBD exemption revocation, and retail prices would be unlikely to fall.

Secondly, a careful examination of productive, allocative, and dynamic efficiency indicates that efficient use of, and investment in, infrastructure is unlikely to be encouraged by revocation.

Thirdly, the Ofcom WLR regulatory precedent referred to by Frontier Economics and the ACCC is of limited relevance as it relates to different circumstances to the WLR service in CBD areas in Australia. Ofcom's position, that WLR is an essential input for access seeker provision of voice-only services, relates to the United Kingdom as a whole and the Hull area. These markets differ to the Australian CBD areas in relevant characteristics for the current case (including customer density and the extent of network competition) and it is questionable whether this regulatory precedent can be applied here.

Hence, on the basis of a CBD-level assessment of the LTIE implications of revocation, I conclude that revocation is unlikely to positively promote the LTIE. In short, even if I agreed the LTIE assessment should be conducted at the CBD level (which I do not), it is not apparent that the LTIE would be enhanced by revocation of the CBD exemption.

This finding is supported by the general health of the industry under current arrangements, in particular the strength of the main challengers to Telstra, as recently reported in the press:[17]

> *The telco sector was a stand-out performer in 2013 compared to the Australian Stock Exchange. Whereas the S&P/ASX 200's value rose 12.7 per cent last year, Telstra's share price increased by 17.4 per cent, while SingTel-Optus rose by 20.7 per cent in the same period. Smaller telcos enjoyed an even stronger run. Shares in Perth-based iiNet grew by 41.2 per cent in 12 months, [and] TPG Telecom saw its share price double. ... M2 Telecommunications' share price has risen by 51.3 per cent over the past 12 months.*

[17] *Australian Financial Review* 10 January 2014, Companies and Markets section, p.17.

6 Supply substitution

In this section I present my analysis on supply substitution for the WLR service for access seekers providing voice services to end users.

Summary

The available evidence, as tendered by the ACCC/Frontier Economics on the one hand and by myself on the other, on balance leads me to the view that there are economic supply-side substitutes that discipline Telstra's commercial pricing in CBD areas. The most obvious is ULLS-based supply by established access seekers. A number of access seekers have blanket DSLAM coverage in the CBD areas. When assessed on an incremental basis, as a rational business would do in considering the economics of supplying voice-only end-users, the efficient cost of ULLS-based supply is likely to be less than the regulated price of WLR.

Fibre networks are another potential substitute. As documented in section 2, the average number of fibre owners in CBD ESAs has significantly increased to over eight. It is highly likely that substitutable voice-only services are being offered—and acquired—over those fibre networks to end users taking multiple voice-only services, and possibly to voice-only premises on an incremental basis. Although data to carefully test this proposition is not publicly available, given the number of fibre owners in CBD ESAs and the likely positive economics of incremental supply, this prospect must be considered when assessing the supply substitutes available in those ESAs.

Analysis

Given that information on ULLS-based supply is available and has been provided to me, I have focused my analysis on this substitute and not considered fibre-based supply in detail.

I do not agree with the ACCC's view that retail and wholesale voice services supplied using access seeker DSLAM infrastructure are not economically substitutable for voices services supplied using the WLR service as the costs of provision are higher. While it is possible that new-entrant access seekers would find supplying voice-only services to CBD area customers uneconomic given the start-up costs involved, I am of the view that this is not the right perspective from which to assess this issue, for two reasons:

- New entrant access seekers are not the relevant supplier in this case; and
- The end users being supplied will in most cases be taking multiple voice services.

1. *Party providing voice services*

In particular, I see it as highly unlikely that an access seeker would enter and focus on the CBD sub-market to provide voice and data services—given the imminent deployment of the national broadband network (NBN) and the associated national focus and industry consolidation to achieve scale.[18] It is even more unlikely that entry would occur for the sole supply of voice-only services. Such business models are fictitious and not helpful as LTIE hypotheticals.

Rather, the correct access seeker touchstone is incremental self-supply (or supply to a third party) by an existing operator with installed CBD DSLAMs and in-place switching (and possibly POTS emulation) capability. As the costs of these in-place plant and systems are sunk, they are not relevant to the incremental unit cost of providing DSLAM-based voice services.

[18] The Optus submission of August 2013 states: "*As access seekers grow to achieve a national footprint in preparation for NBN, it is expected there will be greater reliance on WLR with WADSL to connect SIOs outside Band 2; and when ESAs within Band 2 are starting to be migrated to NBN.*" (paragraph 5.14, p.43).

The main incremental cost is the regulated ULLS charge, which is currently set at $194.52 per year ($16.21 per month) for bands 1-3. Comparing this to the regulated price for WLR of $274.08 per year ($22.84 per month), additional incremental costs of up to $80 a year could be borne without exceeding the cost of using the WLR service. A confidential Gravel Road report authored by Mr Craig Lordan estimates these one-off costs to be between $23 and $42 per service for a major capacity expansion of up to 100,000 SIOs.[19] This is well within the $80 annual cost difference between ULLS and WLR, even if the average life of a voice customer is only 12 months. However, my expectation is that access seekers would in most cases not need to scale up their DSLAM operations to accommodate the small number of WLR SIOs likely to be migrated to ULLS. There are only about **[C-I-C starts]**[redacted]**[C-I-C ends]** CBD area WLR SIOs in total with far fewer for any one access seeker, and only a sub-set of these would be replaced by ULLS.

It appears there are at least three access seekers with blanket DSLAM coverage in all five CBD areas (DSLAMs in each ESA)— Optus, iiNet, and TPG.[20] Information on the Primus' website indicates it also has universal (or near-universal) DSLAM coverage in the exempt CBD areas.[21] All have voice capabilities in place, as evidenced by them supplying IP voice services on their ULLS-based networks, and possibly POTS emulation.

As the relevant costs of incremental self-supply are, in total, likely to be below the commercial price of Telstra's WLR service in CBD areas (and in fact below the national regulated price of the WLR service), the existence of this commercially-feasible option for access seekers already operating in the CBD sub-market provides an effective discipline on Telstra in its supply of the WLR service. If Telstra chose not to supply the WLR service, there is no guarantee that it would benefit from retail competition falling away, as existing access seekers could economically self-supply—and possibly provide a WLR-like wholesale service to others. Similarly, there is no certainty for Telstra that it could increase the price without eliciting a supply response, as evidenced by Telstra's ongoing supply of the WLR service at a steady price in CBD areas.

Access seekers have now, and in the past, argued against a DSLAM-based business model being feasible for the supply of voice-only services on the basis of the relatively short expected economic life of DSLAMs with the NBN imminent, and lack of space for additional DSLAMs in exchanges. However, it is not apparent these constraints are in fact binding. First, on the evidence I have seen it is unlikely access seekers would need to deploy additional DSLAMs—the number of access seeker connected pairs in CBD areas not only exceeds the number of copper-based services they currently provide by a factor of **[C-I-C starts]**[redacted]**[C-I-C ends]**, they exceed the total number of copper SIOs by around **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent (see section 2). Secondly, it is widely recognised that DSLAMs have short payback periods at reasonable volumes. Thirdly, I am not aware that CBD exchanges are at DSLAM capacity. Besides, if there are constraints from the short time to NBN activation that spoil the economics of DSLAM investment, it conversely means that the period for which access seekers need to endure WLR prices above the regulated rate in CBD areas would be short.

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[19] Gravel Road, "DSLAM Voice Service delivery Costs", October 2011, paragraph 6.18, p.20. These costs relate to volumes of between 25,000 and 100,000 SIOs, which are not unrealistic nationally (this equipment could service a national customer base).

[20] See the following websites:
TPG: http://www.tpg.com.au/maps/

iiNet: http://www.iinet.net.au/iinetwork/coverage.html

Optus:
https://www.optus.com.au/wholesale/Wholesale/About+Optus+Wholesale/Optus+Network/XYZed+DSL+Network+and+Coverage

[21] M2/Primus: http://www.iprimus.com.au/PrimusWeb/AboutUs/OurNetwork/DSLAMNetwork.htm

Furthermore, it is not apparent to me that there is, or will be, strong interest in latent entrants committing to copper-based supply. Latent suppliers of stand-alone fixed voice services contemplating market entry would not rationally contemplate a voice-only business model, nor a model focussed solely on CBD areas. Rather, they would pursue a mixed business model of both stand-alone voice and bundled voice and broadband services (and other data services more generally) as joint supply of these services offers significant economies of scale and scope. In addition, the more successful entrants are likely to be those "born all-IP" and "born on the NBN".

To the best of my knowledge, none of the existing retail service suppliers sell only voice services. Hence, supply of voice-only services would likely be considered on an incremental cost basis—would the additional revenue from the provision of voice-only services exceed the additional costs incurred in supplying this market?

2. *End users being supplied with voice services*

As described in section 2, in CBD areas most voice-only services are delivered to premises taking multiple services. End users taking multiple services (including multiple voice services) at one address (premises) are clearly a strong economic prospect for ULLS-based supply, given that ULLS-based supply on an incremental basis is economically feasible.

Although I do not have access to the data necessary to investigate the supply of voice services in CBD areas on an incremental basis using existing HFC and fibre networks, I note the following commentary:

> *Optus is reportedly considering a fibre-to-the-building rollout in order to reach inner-city apartment buildings and shopping complexes. Should the plans go ahead, it would see TPG and Optus compete with the publicly funded NBN Co in urban residential areas.*[22]

As initiatives such as these by TPG and Optus would provide voice bundled with broadband services, it is quite possible the incremental supply of voice services would be economic to tenants within the apartment blocks and shopping complexes covered.

[22] *Communications Day*, "Is Optus mulling a FTTB rollout?" 20 December 2013.

7 Demand substitution

In this section I present my analysis of the demand substitution for the WLR service.

Summary

The available evidence suggests there are not material barriers to demand-side substitution. Furthermore, transitioning now to an all-IP environment would not be inefficient investment as this transition is inevitable in the foreseeable future, whereas any investment in analogue CPE and alarm systems prompted by the ongoing provision of analogue access services is likely to be inefficient. My statements in relation to the consideration of fibre set out in section 6 are also applicable here.

Analysis

I examine the three main issues raised by the ACCC in its analysis, each of which is related to the costs incurred by end users, as follows:

- End users using the service for voice calls would need to purchase a VoIP-enabled telephone or an IP-analogue modem;
- End users using the service to connect special services would need to replace their existing systems with IP-compatible equipment; and
- End users taking a WLR-based voice service from one retail service provider and a broadband service from another may need to commit to a new 1-2 year broadband contract if they switch to a bundled service from a single supplier.

A broader consideration I deem relevant to LTIE assessment—the widespread every-day reality of transition (adjustment) costs—is also examined below.

1. *Need to purchase a VoIP-enabled telephone*

An end user currently using a WLR-based voice service for traditional telephony purposes would only need to purchase a VoIP-enabled telephone to switch to a ULLS-based voice service if the alternative service provider does not have POTS emulation (or does not provide a "free" modem to customers to encourage the switch). If, however, a change to an IP environment is required, the cash cost of this ultimately-inevitable transition is not likely to be large (less than $100 for basic models).[23]

Furthermore, this change may be necessary when retail service providers switch away from Telstra's copper network to the NBN. While the current NBN design includes an analogue voice port in the customer premise network termination unit, consideration is now being given to removing the voice port specification.[24]

2. *Need to replace special services equipment*

Some of the same considerations from immediately above apply here—switching to a ULLS-based service would not necessarily involve replacing special services equipment or purchasing a modem, and this change may well be necessary for the NBN anyway. I am also aware that there are a range of alternative solutions for special services, including Wi-Fi arrangements and 3G mobile products designed specifically for this purpose. Significantly,

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[23] See for example, http://www.austechpartnerships.com.au/catalogue/index.php?main_page=index&cPath=23_65_139

[24] Peter Waters' summary of the NBN Strategic Review Report (referencing p.82 of the Report) says: "*The report hints that NBN Co should consider dropping the analogue voice ports in its termination devices, noting that only 12-15 per cent of current NBN end users use the voice port and that over 4.4 million Australians already use VoIP instead of the PSTN. The report has not factored PSTN costs into its modelling.*"

this transition has occurred in the South Brisbane ESA where all copper access lines have been replaced by fibre without visible evidence of major end user disruption or expense.[25]

3. Need to commit to a new broadband contract

Only a very small number of end users taking a WLR-based voice service from one service provider and broadband from another may need to re-contract for the broadband service and face the possibility of a one or two year lock-in period. I estimate that around **[C-I-C starts]**[redacted]**[C-I-C ends]** end users had a WLR-based mixed service provider arrangement in June 2013, and of these only those changing their broadband supplier (rather than their voice provider) in moving to a bundled service would be required to re-contract.[26]

In addition, the need to commit to a broadband contract in this way is clearly not a barrier for many end users, as demonstrated by the prevalence of the arrangement in the market. For those that are adverse to a term contract, many service providers now offer a no-contract broadband product. For example, Optus is currently advertising on billboards "*unlimited broadband bundles with no gotchas: no data limits; no compulsory contracts; no connection fees; no sneaky charges*".

4. A broader issue

More generally, the presence of non-zero transition costs does not necessarily pose a material barrier to change. Many changes that consumers and businesses face as their operating environment evolves cause disruption to established ways of operating, and in some cases incur some costs. It is, however, only significant transition costs that materially limit demand-side substitution. In terms of the issues at hand, the information on WLR use in CBD areas presented in section 2 demonstrates that end users are in fact rapidly transitioning to an all-IP environment:

- A relatively small number of WLR services—**[C-I-C starts]**[redacted]**[C-I-C ends]** per cent of total copper access SIOs in June 2013;
- Falling WLR SIO numbers—**[C-I-C starts]**[redacted]**[C-I-C ends]** per cent drop over the 12 months to June 2013;
- Rapid ULLS growth—**[C-I-C starts]**[redacted]**[C-I-C ends]** per cent in the 12 months to June 2013; and
- A predominance of ULLS over WLR services—**[C-I-C starts]**[redacted]**[C-I-C ends]** per cent more ULLS than WLR services at June 2013.

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[25] Telstra has stated in its letter to ACCC of 29 November 2013 in response to the Macquarie Telecom submission: "*Telstra notes that Frontier Economics argues that there 'are no currently-effective substitutes for many special services such as alarms, EFTPOS and other special services.' This is clearly factually incorrect; as such services can be delivered over alternative technologies—including fibre-based and wireless access networks, and in areas such as South Brisbane in which there are no copper based fixed line services.*" See also Telstra, Fixed Services Review: Response to other parties' submissions to the Commission's Discussion Paper on the Declaration Inquiry; and Response to the Commission's request for market information on 9 October 2013, 25 October 2013. p.6.

[26] Calculated from information provided to me by KWM. See Appendix A, section A.2.

8 Market structure

I examine the issues of market structure, market share, and barriers to entry in this section.

Summary

Overall, when considered more broadly, market structure considerations are not convincingly in favour of limited competition (as is posited by Frontier Economics) as:

- High wholesale market share is not necessarily indicative of a lack of competition;
- The claim that there is no externally-functioning wholesale market for WLR is factually incorrect; and
- High barriers to entry are not relevant. In current circumstances it is the position of established access seekers that counts (as discussed in section 6).

Analysis

1. *Telstra's high wholesale market share for voice-only services*

Telstra is not the only provider of wholesale voice-only services. **[C-I-C starts]** [redacted] **[C-I-C ends]** also supply this service. Although I do not have data to test whether there is also some incremental access seeker self-supply of voice-only services using ULLS, I expect this to be the case on the basis of the evidenced positive economics of supplying voice-only services to other access seekers by **[C-I-C starts]** [redacted] **[C-I-C ends]**, as indicated in its response to the ACCC's request for market information dated 30 October 2013.

Furthermore, while holding a substantial market share may be an indicator of limited competition, it is not a sufficient condition, as the ACCC recognises in its merger analysis. In particular, Telstra having substantial market share does not demonstrate Telstra is undisciplined in the market. Telstra's substantial market share may simply demonstrate that it is efficient in the provision of POTS services, including on the legitimate basis of its economies of scale and scope. It is significant that Telstra has not attempted to raise the price of its WLR (or LCS) service in CBD areas, consistent with effective wholesale market discipline on Telstra.

In my view, a plausible reason for the limited number of alternative WLR suppliers is not necessarily that there is no money to be made here as their costs are too high—although potential margins may be thin for what is essentially a commodity product. Rather, I see it as likely that access seekers are pursuing more lucrative or strategically important opportunities at present, particularly given the limited life of PSTN with the NBN imminent.

The Optus and TPG proposals to install fibre to apartment buildings and shopping complexes, referred to in section 6, are examples of access seekers' current focus.[27] Similarly, **[C-I-C starts]** [redacted] **[C-I-C ends]**[28] Furthermore, it should not be surprising that in the lead-up to the NBN, access seekers with DSLAMs are not freely offering WLR-like wholesale services as they do not want to assist other access seekers, even though they may be foregoing profitable revenue from doing this.

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[27] *Communications Day "Optus mull a FTTB rollout?"* 20 December 2013.

[28] [C-I-C starts] [redacted] [C-I-C ends]

2. *No functioning wholesale market for WLR*

There is, in fact, a functioning wholesale sub-market for WLR and like services. At the least, **[C-I-C starts]**[redacted]**[C-I-C ends]**, and Telstra provides the WLR on a commercial basis. Self-supply of WLR-like voice services by access seekers using ULLS is also part of this sub-market, on both an actual and latent basis.

3. *Barriers to entry*

Contrary to Frontier Economics' assumption that there are material barriers to entry, my analysis of supply and demand substitution in sections 6 and 7 above suggests that established service providers can economically self-supply voice-only services in CBD areas. Considering barriers to entry as a test of a competitive environment is not appropriate in the current circumstances. New entrants are unlikely to be targeting CBD areas, and, in particular, voice-only customers in these areas—such an approach is unlikely to be a sound business strategy under the most favourable circumstances. Besides, PSTN-based new entrants are likely to be scarce during the current transition to the NBN, with successful entrants typically being "born all-IP" and "born on the NBN." Rather, it is established players that service the CBD voice market segment.

4. *The missing perspective—competing networks*

Any realistic analysis of market structure indicators cannot ignore the overwhelming structural characteristic of the CBD areas, the predominance of competing networks as described in section 2 and section 6.

9 Market performance

I examine the issue of above-cost price of Telstra's WLR in CBD areas in this section.

Summary

I find that Telstra's commercial WLR pricing in CBD areas that is higher than the regulated price is not necessarily indicative of limited competition (as is posited by Frontier Economics), and Telstra's observed market behaviour is not in line with an absence of economic supply and demand substitutes for WLR.

Analysis

Telstra's list prices for WLR in CBD areas are $27.60 for residential end users and $31.77 for business. The national average cost of providing the service (the regulated price) is estimated by the ACCC to be $22.84 based on its Fixed Line Services Model. The ACCC and Frontier Economics see these above-cost list prices in CBD areas as contrary to what would be expected in an effectively competitive market.[29] With effective competition between a limited number of suppliers, however, the relevant comparator is not Telstra's supply cost. Rather, it is the price at which the next most efficient supplier is willing to provide the service.

Effective competition will, in general, result in a price reflective of the cost level of the second most efficient supplier, and not necessarily reflect the efficiencies of the winning service provider (a well-recognised result in auction theory). That is, with effective competition Telstra would rationally (and validly) price the WLR service at a price just below that which the most efficient competing access seeker could provide for a similar service. Without hypothetical "perfect competition", effective competition would not be expected to drive prices down to the supply cost of the most efficient supplier, but rather to slightly below the supply cost of the second most efficient supplier.

Frontier Economics further argues that Telstra can profitably price its WLR service well above cost as there are captive end users reliant on PSTN lines that, even at the margin, are unable or unwilling to switch away from Telstra's PSTN to a VoIP service. Critical loss analysis is tendered to support this argument, hypothetically identifying the proportion of wholesale customers that could be lost without damaging profits. It is posited that the likely switching of some WLR-based end users to Telstra Retail services when WLR prices and access seeker retail prices rise means it is profitable for Telstra to push up WLR prices well above costs.

This critical loss analysis assumes that above-cost WLR pricing would result in 80 per cent of WLR services surrendered by access seekers when the WLR price is increased going to Telstra Retail—60 per cent to Telstra Basic Access and 20 percent to Telstra VoIP or ISDN. Sensitivity testing of this churn rate is reported, but only for a 65 per cent churn to Telstra. In my view, access seekers are likely to seek solutions that retain these retail customers, including transferring provision of the retail voice service to their own or other access seekers' ULLS-based networks, either as voice-only SIOs or convincing them to take a bundled service. I have outlined in section 7 above why I think there are not significant demand limitations on substitution away from PSTN services.

The unlikelihood of the high-churn outcome posited is reflected in the fact that, between June 2012 and June 2013:[30]

- **[C-I-C starts]**[redacted]**[C-I-C ends]** WLR services were lost in CBD areas, while the ULLS grew by **[C-I-C starts]**[redacted]**[C-I-C ends]**; and

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[29] While the focus in this section is on WLR prices, the same considerations apply to commercial LCS prices, which are 9.28c/call compared to the regulated price of 8.9c/call.

[30] See footnote 2.

- The number of Telstra Retail voice services fell by **[C-I-C starts]**[redacted]**[C-I-C ends]**.

Furthermore, the critical loss analysis suggests that Telstra could profitably increase its WLR prices substantially from current levels. The fact that Telstra has not done so suggests that effective competitive constraints exist and Telstra would not benefit in the way Frontier Economics suggests from making WLR less attractive to access seekers.

10 Impact on access seekers

In this section I examine the ACCC and Frontier Economics position that above-cost WLR prices disadvantage access seekers.

Summary

Supply and demand substitutes for the WLR service in the provision of voice-only services in CBD areas by access seekers, and the relatively small number of voice-only SIOs involved for C&G end users, suggests that access seekers are unlikely to be disadvantaged by Telstra's commercial price for the WLR service.

Analysis

The ACCC and Frontier Economics analysis does not consider established access seekers with in-place exchange and switching equipment who can supply voice-only customers at an incremental cost at least as low as the regulated price of WLR. It is not rational for a potential entrant to contemplate voice-only supply in CBD areas (as evidenced in section 6).

For the C&G segment, the need for WLR declaration in CBD areas to be able to meet C&G end users' whole-of-business needs is not apparent, as a number of major access seekers have blanket DSLAM coverage in CBD areas—at least **[C-I-C starts]** [redacted]

- [redacted] **[C-I-C ends]:** this is not relevant for CBD areas, as **[C-I-C starts]** [redacted] **[C-I-C ends]** and others have blanket DSLAM coverage in the CBD areas—and ULLS voice-only supply is economic if demanded by C&G customers;
- **[C-I-C starts]** [redacted] **[C-I-C ends]:** Large corporate and government premises in CBD areas are invariably served by, or proximate to, access seeker fibre networks—with ULLS an alternative supply arrangement where fibre is not feasible; and
- I am not aware of Telstra **[C-I-C starts]** [redacted] **[C-I-C ends]** in CBD areas for access seekers with in-place DSLAMs (these constraints have not been set out in **[C-I-C starts]** [redacted] **[C-I-C ends]** submission). On the contrary, data referred to in section 2 above indicate that there are almost **[C-I-C starts]** [redacted] **[C-I-C ends]** per cent more access seeker installed interconnect pairs than there are active CAN lines in Band 1 ESAs, with only **[C-I-C starts]** [redacted] **[C-I-C ends]** of the access seeker installed pairs in use at present.

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[31] **[C-I-C starts]** [redacted] **[C-I-C ends]**

Even if access seekers were to pay $31.77 for CBD WLR rather than the regulated monthly price of $22.84, it is unlikely this $107 annual difference for each voice-only service would have a material impact on the cost of providing the full package of services to typical C&G customers. Telstra has indicated that **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent of its Retail Basic Access SIOs in CBD areas were C&G customers in October 2013. If the same proportion applies for WLR-based access seeker services, this would total only around **[C-I-C starts]**[redacted]**[C-I-C ends]** million difference across all access seekers' C&G customers.

On the more general concern that Telstra might price WLR services above cost to frustrate the retail supply of bundled fixed voice and fixed broadband services using WLR and either WADSL or LSS, I note that this will be disciplined by ULLS-based supply (self-supply or by a third party).

Finally, I reference the following points from Telstra submissions:

> *...Further, with respect to the enterprise and government segment, there are an increasing range of substitutable services that can be, and are being, selected in preference to PSTN based voice services. As corporate and government customers' demands move towards Unified Communications, PSTN voice is increasingly being replaced with IP connectivity and a full range of voice, data and video services.*
>
> and
>
> *...Telstra's competitors are actively marketing and selling equivalent SIP [Session Initiated Protocol] trunking services in the enterprise and government market segment to support enterprise grade telephony services.* ***[C-I-C starts]***[redacted]***[C-I-C ends]*** *all supply SIP trunking services which allow for multiple voice lines to be provided over copper, fibre and even wireless access technologies.* ***[C-I-C starts]***[redacted]***[C-I-C ends]*** *also make SIP trunking available through its wholesale channel and has published a whitepaper outlining the benefits it offers over ISDN.*[32]

On the basis of this counter-evidence to that examined by the ACCC and Frontier Economics, it does not appear that Telstra's commercial pricing of WLR in CBD areas disadvantage access seekers in competing for end customers.

[32] Telstra, "Fixed Services Review: Response to other parties' submissions to the Commission's Discussion Paper on the Declaration Inquiry; and Response to the Commission's request for market information on 9 October 2013", 25 October 2013. p.6.

11 Impact on retail prices

In this section I examine the ACCC and Frontier Economics position that above-cost WLR prices increase retail prices.

Summary

The scope for retail price reductions for voice only services in CBD areas from revocation of the CBD exemptions is limited because of:

- The national pricing approach of Telstra and other major service providers for residential and small business customers;
- The limited volume of WLR-based services provided to large businesses; and
- The likely immateriality of the price of WLR-based services for access seekers supplying the full range of telecommunications services to C&G customers who typically want a whole-of-business arrangement with their telecommunications retail service provider.

Analysis

Revoking the CBD exemptions is unlikely to result in a reduction in retail prices for voice services for residential and small business end users in CBD areas, as Telstra and other major retail service providers have standard national pricing for these market segments.

There is a limited extent to which C&G customers are supplied using WLR services—data provided to me shows that around **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent of all copper-based SIOs in CBD areas are business WLR services, with some of these used to service small businesses.[33]

Furthermore, it is not apparent that the other important fruits of competition, innovation, and greater end user choice between differentiated suppliers would come from revoking the CBD exemptions. My expectation is there would, in fact, be less innovation with greater-than-otherwise use of resale services by access seekers, and the scope for truly differentiated service offerings would be diminished (even if the number of service providers is greater).

Finally, I estimate there were only around **[C-I-C starts]**[redacted]**[C-I-C ends]** WLR services coupled with an access seeker broadband service (wholesale ADSL or LSS) in CBD areas as at June 2013. This is less than **[C-I-C starts]**[redacted]**[C-I-C ends]** percent of all copper-based bundled voice and broadband services supplier on CBD areas—and significantly less than **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent if fibre-based voice and broadband packages are taken into account.[34] That is, the market presence of this bundled service approach is not material.

[33] See footnote 2, and Appendix 2, section A.2.

[34] See footnote 2, and Appendix 2, section A.2.

12 Infrastructure efficiency

In this section I examine the ACCC and Frontier Economics position that efficient investment in, and use of infrastructure used to deliver voice-only services are compromised by the free operation of the wholesale voice services market in CBD areas.

Summary

Infrastructure efficiency is not likely to be enhanced by revoking the CBD exemptions, as:

- Inefficient investment decisions due to Telstra's commercial WLR prices in CBD areas are unlikely as any response is likely to be from access seekers with in-place equipment, which if anything will be more intensively utilised; and
- It is unlikely the commercial WLR price will materially change access seeker behaviour as the relative bottom-line impact of the price difference is small.

Analysis

In section 4 I examined the infrastructure efficiency implications of revocation at the CBD level (as part of the national analysis conducted in that section), *assuming the ACCC and Frontier Economics are correct in their view that there are not close substitutes for the WLR service and commercial WLR prices are above competitive levels.* I concluded that it is unlikely the LTIE would be materially enhanced by revocation of the CBD exemptions. The findings from this earlier analysis, which are summarised below, are unchanged by the insights gained from the detailed economic analysis of the ACCC and Frontier Economics concerns in section 6 to section 11 above.

1. *Productive efficiency*

Telstra access network investment or use is likely to be independent of WLR prices in CBD areas—current prices are not inducing productive inefficiency, with network technology and work practices driven by broader considerations. Little change in access seeker network investment or use is expected from revocation and the resultant fall in CBD WLR prices, as their networks are now in place and use of them would be likely to remain economic.

There could be a small positive productive efficiency effect for voice service end users from revocation, if they were to stay on the PSTN longer than otherwise and use their analogue CPE longer, rather than make the inevitable change to an all-IP environment now. But this could also induce the inefficient purchase of PSTN-based CPE.

2. *Allocative efficiency*

For the situation being considered, allocative efficiency relates to CBD end users optimising their inevitable transition from analogue (PSTN) voice services to digital (VoIP) services. This optimisation period is in effect from the present until the NBN is deployed—two years only, based on current government policy. In this short period any allocative efficiency benefits are unlikely to be substantial. Hence, any allocative efficiency effects in CBD areas would, at best, be small.

3. *Dynamic efficiency*

As the key change in telecommunications on both supply (productively efficient all-IP networks) and demand (VoIP and personal video-calls), it is not apparent the reduction of the price of the "old technology" PSTN-based WLR service would enhance dynamic efficiency.

4. *The views of the ACCC and Frontier Economics*

In light of the above analysis, consideration of the ACCC and Frontier Economics views does not present a convincing case for positive infrastructure efficiency impacts from revocation of the CBD exemptions, for the following reasons:

- If the exemptions remain in place, it is unlikely this would force access seekers to make inefficient investments in copper-based exchange equipment as established operators already have exchange equipment in place, and there is no sound economic or commercial basis for facilities-based market entry with NBN deployment imminent. If, however, there would be additional exchange equipment investment from continued regulatory forbearance, at least some of this investment may be efficient with the NBN in prospect, such as soft switching capability. Furthermore, revoking the exemptions would result in inefficient investment in end user CPE if end users continued to invest in analogue CPE and EFTPOS and alarm systems as they are not getting pushed towards the future all-IP environment;
- Regarding access seeker loss of C&G customers due to the high price of Telstra's WLR service with resultant inefficient under-employment of their in-place exchange equipment in CBD areas and more widely, it is questionable whether access seekers would in reality lose C&G customers on the basis of Telstra's WLR commercial pricing vis-à-vis regulated prices, given the magnitude of the CBD WLR costs relative to overall contract value, as discussed in section 9.

5. Overall infrastructure efficiency effects in CBD areas

My analysis above leads me to the view that any productive and allocative efficiency gains from revocation would accrue through differences in access seeker infrastructure investment and use (not Telstra or end users), and could, at best, be small. No dynamic efficiency gains are anticipated from revocation. Continued regulatory forbearance is unlikely to result in inefficient investment in exchange equipment as established operators already have exchange equipment in place, and there is no sound economic or commercial basis for facilities-based market entry.

13 Conclusions

My investigation has three points of focus: perspective (historical and current trends/evidence), the geographic level of assessment (CBD or national), and a detailed economic analysis at the CBD level.

In relation to perspective, I observe that:

- The CBD areas have been exempt from WLR and LCS regulation since declaration—2002 for LCS and 2006 for WLR. There has been a substantial period of regulatory forbearance, with no evidenced negative effect on the LTIE;
- There is an unparalleled level of network competition in CBD areas—on copper from DSLAM/ULLS deployment, and extensive fibre infrastructure. Regulatory forbearance has not hindered the development of infrastructure competition; rather, competition in the CBD areas (indicated by the market shares of access seekers) is stronger than in areas affected by the regulation of the WLR and LCS;
- WLR in CBD areas is a relatively small and declining service:
  - Around **[C-I-C starts]**[redacted]**[C-I-C ends]** SIOs in June 2013, less than **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent of national WLR services and overshadowed by almost **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent by the ULLS
  - WLR SIOs fell by **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent between June 2012 and June 2013, while ULLS SIOs rose by **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent;
  - Using premises-level data, it is clear that only a small fraction of end users within CBD areas (approximately **[C-I-C starts]**[redacted]**[C-I-C ends]**) acquires a single PSTN voice service (and no other voice or fixed-line broadband services). It is not appropriate for the ACCC to rely on SIO-level data (i.e. the number of "voice only SIOs") in its assessment of the level of contestability and overall importance of this subset of end users. The prevalence of multiple services within CBD premises (due in large part to the greater proportion of businesses as compared to residential end users) means that the use of "voice only SIOs" in an assessment of competition in CBD areas is likely to lead to regulatory error.
- The pending rollout of the NBN reduces, not increases, the LTIE significance of the legacy regulatory arrangements.

Regarding the geographic level of analysis, I conclude that competition and infrastructure efficiency analysis at the national as well as CBD level is required, given the national markets for relevant services and the national focus of the main operators. My analysis shows that national competition and infrastructure efficiency (and thus the LTIE) would not be promoted by the introduction of CBD regulation—even if the ACCC/Frontier Economics view that competition is lacking at the CBD level is correct.

Concerning the detailed economic analysis at the CBD level, I have pointed out that the analysis by the ACCC and Frontier Economics focuses almost entirely on a "without" world where the CBD exemptions are revoked, but does not include a detailed consideration of a "with" world where the CBD exemptions continue. I consider that the case for regulation is not evidenced because:

- Limits to supply and demand substitution for the WLR and downstream voice-only services identified by the ACCC and Frontier Economics are in fact unlikely to be material. To the contrary, suitable alternatives exist—particularly given the preponderance of multiple-service premises in CBD areas;

- It is not evidenced that access seekers are disadvantaged by commercial WLR and LCS prices in CBDs, given the availability of economic substitutes for the WLR and LCS services;
- Despite the commercial WLR and LCS pricing being higher than the regulated pricing for these services, this is not necessarily indicative of limited competition and Telstra's market behaviour is not consistent with an environment in which Telstra is unconstrained by any supply and demand substitutes for WLR and LCS;
- Retail prices are not likely to be inflated by commercial WLR and LCS pricing;
- Infrastructure efficiency is unlikely to be compromised; and
- Even though the wholesale prices for the WLR and LCS would be reduced as a result of revoking the CBD exemptions, this would likely be accompanied by a reduction in service innovation and access seeker choice of wholesale supplier of voice-only services.

The three points of focus of this report considered individually give solid grounds for ongoing regulatory forbearance. When taken together, the ongoing forbearance case is compelling.

Finally, regulatory proportionality needs to be considered, including the weight of evidence sufficient to justify reversing the long-standing and frequently-tested position of the CBD exemptions being in the LTIE. There needs to be clear and significant evidence that the LTIE would be better served in a "without exemptions" world than under the current "with exemptions" situation to make this significant change in position. Contrary to the ACCC, in my view revocation of the CBD exemptions without substantial evidence that demonstrates that either earlier analysis was incorrect, or the situation has changed fundamentally, would constitute serious regulatory inconsistency. It would foster, rather than mitigate, regulatory uncertainty.

I conclude that the LTIE would not be advanced by regulation of WLR and LCS in CBD areas at this time. End users are best served by the CBD exemptions remaining.

Signed:

Paul Paterson

Appendix A: Information provided and data analysis

A.1 Information provided by KWM

Reports

- AAPT confidential submission to the ACCC "Submission by AAPT Limited in Response to the ACCC Fixed Services Review Discussion Paper on the Declaration Inquiry", August 2013
- AAPT confidential submission to the ACCC "Fixed Services Review—Request for Market Information", 30 October 2013
- Frontier Economics report "Service Definitions for the Wholesale Line Rental and the Local carriage Service: a Note Prepared on behalf of Other Access Seekers", September 2013
- Frontier Economics report "Reply on WLR and LCS Exemptions in CBD Areas: a Note Prepared for Macquarie Telecom", November 2013
- Gravel Road report "DSLAM Voice Service Delivery Costs: Document Prepared on Instructions from Mallesons Stephen Jaques", 5 October 2011
- iiNet confidential submission to the ACCC "Fixed Services Review Discussion Paper on the Declaration Inquiry: Submission by Herbert Geer Lawyers on behalf of iiNet Limited", 23 August 2013
- Macquarie Telecom confidential submission to the ACCC "Fixed Services Review: Reference IP 081 301", 28 August 2013
- Macquarie Telecom confidential submission to the ACCC "*Fixed Services Review: Reference IP 081 30x*", 16 September 2013
- Optus confidential submission to the ACCC "Submission in Response to the ACCC Discussion Paper on the Declaration Inquiry: Fixed Services Review", August 2013
- Telstra confidential submission to the ACCC "Fixed Services Review: Response to the Commission's Discussion Paper on the Declaration Inquiry", 6 September 2013
- Telstra confidential submission to the ACCC "Response to other parties' submissions to the Commission's Discussion Paper on the Declaration Inquiry—Response to the Commission's request for market information on 9 October 2013", 25 October 2013
- Telstra confidential submission to the ACCC "Fixed Services Review—WLR and LCS Exemptions in CBD Areas", 29 November 2013.

Data provided with the KWM Letter of Instruction

- The spreadsheet at Attachment 1 of the Telstra confidential submission to the ACCC "Response to other parties' submissions to the Commission's Discussion Paper on the Declaration Inquiry—Response to the Commission's request for market information on 9 October 2013", 25 October 2013

Data provided by KWM via email

- Telstra Retail Basic Access SIOs, Australia, June 2013: **[C-I-C starts]**[redacted]**[C-I-C ends]**

- WLR SIOs, Australia, June 2013: **[C-I-C starts]**[redacted]**[C-I-C ends]**
- Telstra Retail basic access SIOs, Australia, June 2013: **[C-I-C starts]**[redacted]**[C-I-C ends]**
- Telstra Retail ADSL SIOs bundled with WLR, CBD areas, June 2013: **[C-I-C starts]**[redacted]**[C-I-C ends]**
- ULLS SIOs, Australia, June 2013: **[C-I-C starts]**[redacted]**[C-I-C ends]**
- Voice-only SIOs, Australia, June 2013: **[C-I-C starts]**[redacted]**[C-I-C ends]**
- Voice-only premises, Australia, June 2013: **[C-I-C starts]**[redacted]**[C-I-C ends]**
- Voice-only premises, CBD areas, June 2013: **[C-I-C starts]**[redacted]**[C-I-C ends]**
- Proportion of Telstra Retail Basic Access SIOs in CBD areas that are C&G end users (October 2013)
- Proportion of Telstra Retail ADSL SIOs (Australia) bundled with the Telstra Retail basic access service at June 2013, and the proportion sourced elsewhere: **[C-I-C starts]**[redacted]**[C-I-C ends]** and **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent respectively
- Number of premises in CBD areas that have a single PSTN voice only service (with no other fixed broadband service supplied using Telstra access networks), June 2013: **[C-I-C starts]**[redacted]**[C-I-C ends]**.

A.2 Calculations

Footnote 2

- WLR SIOs in CBD areas relative to national WLR SIOs (June 2013):
  - WLR SIOs, CBD areas: **[C-I-C starts]**[redacted]**[C-I-C ends]**
  - WLR SIOs, Australia: **[C-I-C starts]**[redacted]**[C-I-C ends]**
- ULLS relative to WLR: CBD areas (June 2013):
  - ULLS SIOs: **[C-I-C starts]**[redacted]**[C-I-C ends]**
  - WLR SIOs: **[C-I-C starts]** [redacted]**[C-I-C ends]**
- Change in CBD area WLR SIOs: June 2012 to June 2013:
  - WLR SIOs June 2012: **[C-I-C starts]**[redacted]**[C-I-C ends]**
  - WLR SIOs June 2013: **[C-I-C starts]**[redacted]**[C-I-C ends]**
- Change in CBD area ULLS SIOs: June 2012 to June 2013:
- ULLS SIOs June 2012: **[C-I-C starts]**[redacted]**[C-I-C ends]**
- ULLS SIOs June 2013: **[C-I-C starts]**[redacted]**[C-I-C ends]**

Footnote 3

- Voice-only SIOs relative to voice-premises: CBD areas (June 2013):
  - Voice-only SIOs: **[C-I-C starts]**[redacted]**[C-I-C ends]**
  - Voice-only premises: **[C-I-C starts]**[redacted]**[C-I-C ends]**
- Voice-only SIOs relative to voice-premises: Australia (June 2013):
  - Voice-only SIOs: **[C-I-C starts]**[redacted]**[C-I-C ends]**

- Voice-only premises: **[C-I-C starts]**[redacted]**[C-I-C ends]**

Footnote 4

- See footnote 2 and 3 above
- ULLS SIOs, Australia, June 2013: **[C-I-C starts]**[redacted]**[C-I-C ends]**
- Telstra retail Basic Access SIOs, Australia, June 2013: **[C-I-C starts]**[redacted]**[C-I-C ends]**

Footnote 27

- The number of WLR SIOs used in conjunction with wholesale ADSL or LSS provided by Telstra or third party access seeker is estimated to be around **[C-I-C starts]**[redacted]**[C-I-C ends]**, as follows:
  - Data provided by KWM shows that for Australia as a whole **[C-I-C starts]**[redacted]**[C-I-C ends]** percent of Telstra Retail ADSL SIOs in June 2013 were bundled with the Telstra Retail basic access service and **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent on the same access line as a WLR service
  - Applying this proportion to the CBD areas for which there were **[C-I-C starts]**[redacted]**[C-I-C ends]** Telstra Retail SIOs in June 2013 gives **[C-I-C starts]**[redacted]**[C-I-C ends]** Telstra retail ADSL SIOs supplied on the same line as a WLR-based voice service from an access seeker
  - Assuming Telstra has **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent market share in retail ADSL supply, an equivalent number of third party retail SIOs would be provided
  - Combined, these give around **[C-I-C starts]**[redacted]**[C-I-C ends]** WLR SIOs with a third party broadband supplier.

Footnote 33

- There were **[C-I-C starts]**[redacted]**[C-I-C ends]** business WLR SIOs in CBD areas in June 2013, and **[C-I-C starts]**[redacted]**[C-I-C ends]** copper-based SIOs (from spreadsheet attached to Telstra confidential submission to the ACCC of 25 October 2013).
- See footnote 2.

Footnote 34

- The supply of bundled voice and broadband in CBD areas in June 2103 is estimated to be **[C-I-C starts]**[redacted]**[C-I-C ends]** as follows:
  - WLR SIOs with broadband (Telstra Retail ADSL, wholesale ADSL and LSS: **[C-I-C starts]**[redacted]**[C-I-C ends]**) less the Telstra Retail ADSL services bundled with WLR (**[C-I-C starts]**[redacted]**[C-I-C ends]**)
  - The **[C-I-C starts]**[redacted]**[C-I-C ends]** Telstra Retail ADSL services bundled with WLR is estimated by taking **[C-I-C starts]**[redacted]**[C-I-C ends]** per cent of Telstra Retail ADSL SIOs in CBD areas (**[C-I-C starts]**[redacted]**[C-I-C ends]**). There were **[C-I-C starts]**[redacted]**[C-I-C ends]** Telstra Retail ADSL SIOs in CBD areas in June 2013—see spreadsheet attached to Telstra confidential submission to the ACCC of 25 October 2013.
  - The total number of copper-based bundled voice and broadband services in CBD areas in June 2013 is calculated to be **[C-I-C starts]**[redacted]**[C-I-C ends]**, obtained by summing Telstra Retail ADSL SIOs (**[C-I-C starts]**[redacted]**[C-I-C**

ends]), wholesale ADSL SIOs (**[C-I-C starts]**[redacted]**[C-I-C ends]**), LSS SIOs (**[C-I-C starts]**[redacted]**[C-I-C ends]**) and ULLS SIOs (**[C-I-C starts]**[redacted]**[C-I-C ends]**). These SIO counts are taken from the same source referenced for Telstra Retail ADSL SIOs above.

Appendix B: Curriculum Vitae—Dr Paul Paterson

Summary

- 20 years of experience in telecoms/media sectors, as an external advisor and executive in major telcos. Key focus on fixed and mobile broadband network investment, access regulation, universal service obligation (USO) policy, and telecoms-media convergence
- Worked in a number of Commonwealth and State government policy/research agencies, and for the Organisation for Economic Cooperation and Development (OECD) in Paris
- Tribunal Member, NSW Government Independent Pricing and Regulatory Tribunal
- IT start-up advisory board—Advanced Control & Acoustics and CoTag Media
- Economics qualifications to PhD level; competition law studies; Distinguished Alumni, College of Business & Economics, Australian National University.

Consulting experience

- Advice on fixed and mobile regulatory, commercial, strategic, and policy matters for major telecommunications/media corporations, industry associations, and government agencies
- Clients include NBN Co, Broadcast Australia, Vodafone, Telstra, Foxtel, Apple, Harbour ISP, Telecom New Zealand, Eircom, European GSM Association, Submarine Cable Consortia, Commonwealth Department of Communications, and Victorian Government
- Jurisdictions cover Australia, New Zealand, Singapore, Hong Kong, Japan, United Kingdom, and Ireland.

Senior executive experience

- Director Regulatory, Telstra: Regulatory strategy, ACCC/ACMA/Government relationship management
- Chief Economist, OTC: Business forecasts, strategic planning, regulation
- Executive Director Policy and Resources, NSW Office of Economic Development: Industry development in NSW, ICT investment attraction, Government purchasing
- Visiting Economist, Commonwealth Treasury: budget allocations for social policies
- Assistant Secretary, Policy and Analysis, Bureau of Labour Market Research.

Qualifications

- PhD (Economics), Australian National University
- Master of Economics, Australian National University
- Bachelor of Agricultural Economics (1st Class Honours), University of New England.

Employment History

From 2012	**Ongoing**
Employer	PP Consulting Telecommunications Media
Position Held and Description of Duties	Executive Director Specialist telecoms/media regulatory, policy and commercial advice, expert testimony and litigation support. Key focus on the policy framework, deployment, and economic impacts of next generation broadband networks; and policy, regulatory, and competition issues from media/telecoms convergence.
From 2013	**Ongoing**
Employer	NSW Government Independent Pricing & Regulatory Tribunal
Position Held and Description of Duties	Tribunal Member (part time) The Tribunal leads the IPART secretariat of 70 professional staff in its price setting, quality monitoring, and licence compliance roles for energy, water, and transport utilities in NSW. It also conducts independent inquiries on economic and regulatory matters for the NSW Government.
From 2009	**To 2012**
Employer	Castalia Strategic Advisors
Position Held and Description of Duties	Vice President, Telecommunications Telecoms competition and infrastructure development advice. Specialist advice on the deployment, regulation, and economic impacts of high speed broadband networks (fixed and mobile). Responsible for providing strategic direction and management of Castalia's telecommunications practice including client relations, project design, resourcing, quality control, and budget.
From 2008	**To 2009**
Employer	Concept Economics
Position Held and Description of Duties	Head of Telecommunications Consulting; COO *Head of Telecommunications Consulting:* Strategic direction and management of telecoms team—project management, client relations, project sourcing. Provision of specialist telecoms and media advice to major clients. Expert testimony and litigation support in telecoms and media competition and IP cases. *Chief Operating Officer and board member:* Governance and management of Concept Economics.

From 2004	**To 2008**
Employer	CRA International
Position Held and	Vice President
Description of Duties	*Head of Telecommunications Consulting:* Strategic direction and management of CRA's Asia-Pacific telecommunications consulting team. Provision of specialist telecommunications advice to major clients in Australia, Asia-Pacific, and beyond. *Chief Operating Officer, Asia-Pacific:* Management of the operations and budget performance of CRA's Asia-Pacific business.
From 1998	**To 2004**
Employer	Telstra Corporation Limited
Position Held and	*Director Regulatory (2001-2004)*
Description of Duties	Development and execution of Telstra's regulatory strategy. Management of Telstra's relationship with key industry operators and regulators (ACCC and ACMA). Senior engagement with the Commonwealth Government on telecommunications competition and universal service policy. Member of the board of the Australian Communications Industry Forum. *Group Manager Competition (1998-2001)* Development and negotiation with the ACCC of the seminal terms and conditions for competitor access to Telstra's public switched telecommunications network (PSTN) under the then-new (July 1997) telecommunications competition legislation.
From 1992	**To 1998**
Employer	Office of Economic Development, Premier's Department (1992-95); Department of State and Regional Development (1995-98), New South Wales Government
Position Held and	Chief Economist (1992-95); Executive Director, Policy and Resources (1995-98)
Description of Duties	Provision of policy advice to the Minister for Economic Development and Cabinet on measures to stimulate ICT, regional, and small business development in NSW, and attract investment by multinational firms.
From 1988	**To 1992**
Employer	OTC Limited (Australia)
Positions Held	Chief Economist (1988-1990); Director Strategy (1990-1992)

From 1987	**To 1988**
Employer	The Treasury, Commonwealth Government (Australia)
From 1985	**To 1987 (and 1980–1983)**
Employer	Bureau of Labour Market Research (BLMR), Commonwealth Government (Australia)
From 1983	**To 1985**
Employer	Organisation for Economic Cooperation and Development (OECD) (Paris)
From 1980	**To 1983 (see above)**
From 1977	**To 1980**
Employer	Bureau of Agricultural Economics

Consulting Assignments

Commonwealth Mobile Coverage Program 2013—Engaged by the Victorian Department of State Development, Business and Innovation to advise on Mobile Coverage Program policy design alternatives to stimulate mobile competition in rural and remote areas.

Broadband Futures for Australia 2013—Engaged to advise the Victorian Government on possible broadband futures for Australia over the next 30 years. Advice covered technology options, service quality, and financial performance of the NBN under Labor and Coalition plans and other variations, and regulatory and policy issues.

National Broadband Network Regulatory Advice 2010–2013—Retained by NBN Co to provide expert advice on economic and finance matters pertaining to its Special Access Undertaking, including network costing and service pricing methodologies, competition matters, and the 30 year term of the Undertaking. Advice to NBN Co on Government policy regarding fibre network deployment for greenfield sites.

Regulatory Pricing for Broadcast Network Access 2013—Engaged by Broadcast Australia to advise senior management and the Board on the likely access price outcomes from ACCC arbitration.

Media Content Delivery Options, Australia 2013—Financial modelling of content delivery options (HFC, satellite, NBN) for a major media company. Modelling involved detailed consideration of the sunk, fixed, and variable costs of each of these technologies, and how these will change over the next 10 years.

Competition Issues from Exclusive Distribution Rights for Prime Entertainment Content 2013—Engaged to advise a major media company on the regulatory risks from exclusive distribution rights arrangements for live sport and other prime audio-visual content

NBN Points-of-Interconnect Architecture and Broadband Backhaul, 2013—Engaged by a Harbour ISP, a small regional ISP, to prepare a submission to the ACCC on the commercial and competition implications of NBN Co's PoI architecture and regulated backhaul prices.

Exemption from wholesale ADSL regulation, Australia 2012—Advised on identifying Telstra exchange service areas in which strong broadband network competition exists and wholesale ADSL access regulation is not required.

Productivity impact of Telstra's Digital Business service, Australia 2012—Engaged by Lighthouse Communications Group to calculate the value to individual small businesses, and the Australian economy, of time saved on IT-related activities from using Telstra's Digital Business service.

National Broadband Network Point-of-Interconnect Architecture, Australia 2012—Engaged to advise the Victorian Government on the implications for regional telecommunications service provision and ICT activities of the presence of a national broadband network (NBN) point-of-interconnect (PoI) in certain localities in regional Australia.

Commerce Commission UCLL pricing inquiry, New Zealand 2012—Partnered with Ovum to advise Chorus (New Zealand) on the industry impacts of the Commerce Commission's proposed changes to the regulated price of the unconditioned copper local loop service. Advice based on the incentives of customers, retail services providers, high speed broadband applications providers, Chorus (copper and fibre wholesale-only network operator), and other local fibre companies under the current New Zealand economic and commercial climate, and policy context.

Universal Service Obligation Policy and Practice, Australia 2011—Engaged by the Commonwealth in the context of the Telstra Definitive Agreements negotiation to provide expert advice on changes to the Australian USO policy framework, including costing Telstra's contractual obligation to retain its copper network outside the NBN fibre footprint, and to maintain its current payphone network.

Cloud Virtual Server Cost Model, Australia 2011—Engaged to model the cost of Telstra's cloud server solution compared to the traditional in-office hardware server approach. Done for a range of small/medium sized businesses. Led the modelling team and managed client relations.

ACCC Wholesale ADSL Declaration Inquiry, Australia 2011—Expert report examining whether there is evidence of alleged punitive price differentiation or other anti-competitive conduct by Telstra in the supply of wholesale ADSL services.

ACCC Fixed Line Services Regulatory Exemption Inquiry, Australia 2011—Strategic analysis and advice on key competition and commercial issues relevant to the ACCC's consideration of whether to exempt Telstra from on-going Fixed Line Services regulation

Layered Access Regulation, New Zealand 2010—In the context of the planned deployment of the Ultra-Fast broadband network (UFB), analysed the single or two-layered nature of access regulation for fibre networks in those countries where fibre has been (or is soon to be) deployed. Also investigated the network architecture and policy context of the decision to regulate access at only one or both layers, and compared this to copper access arrangements.

Mobile Telecommunications Productivity Impacts, New Zealand 2010—Advised a New Zealand mobile operator on the economic contribution of its mobile services used by business and government customers, for policy development and marketing purposes. This was done nationally and for key industry sectors—health, freight transport, agribusiness, finance, and central government services. Involved in in-depth interviews with leading Vodafone business and government customers, and an online survey of small business customers

Trans-Tasman Telecommunications Regulation, New Zealand 2009—Advised a New Zealand operator on telecommunications competition regulation in Australia, covering legislation and the design and operations of the Australian Competition and Consumer Commission.

Introduction of Cost-based Regulated Access Prices, Papua New Guinea 2008-2009—Supervised a detailed project on the application of cost-based pricing for interconnection by a mobile operator with Telekom PNG's network.

Exemption from Access Regulation, Australia 2008-2009—Key expert witness for two PSTN access regulation exemption applications considered by the ACCC and the Australian Competition Tribunal (ACT). Expert reports were influential in the ACCC and ACT decisions to grant exemption from access regulation for these services in competitive exchange service areas.

Impact of Mobile Broadband Services, Australia 2008-2009—Investigation into the economic impacts of Telstra's 3G mobile broadband service NextG, based on telephone and online user surveys, firm-level productivity analysis, and general equilibrium modelling.

Royalty Rate Changes, Australia 2008–2009—Retained as an expert witness to provide evidence on the likely impact on businesses and consumers of a proposed change in the royalty rate for online music downloads.

Impact of Business Matching Services, Australia 2008-2009—Designed and managed a research project on the likely national and industry-level impacts, in a range of countries, of a proposed business-to-business and business-to-customer online matching service.

Policy Options for Publicly-funded Deployment of High Speed Broadband Networks, Australia 2008—Led a cross-consultancy team investigating the economic impacts at the national, State, regional, and industry levels of various policy options for a government-sponsored next generation national broadband network. Policy variables considered included network performance parameters (speed and deployment footprint), network technology, network access regulatory settings, and the level of government funding.

Suitability of Broadband Pricing Plans for Online Movies-on-Demand, Australia 2008—Advised on whether the pricing plans typically offered by Australian ISPs, including download limits and over-limit charging, are conductive to online consumption of online movies.

The Economics of Interconnection for Next Generation Networks, United Kingdom 2008—Advised on the technical and economic aspects of interconnection in a next generation network environment, comprehending NGNs' technical capabilities (for example, session control), operational requirements (for example, quality of service differentiation), and service versatility.

The Costs and Benefits of Vertical Separation of Incumbent Telecommunications Companies, Australia 2005-2008—Advised on the economic effects of various forms of vertical separation of telecommunications companies, based on in-depth economic analysis and industry experience. Done for both traditional PSTN and IP environments.

Competition Effects of International Cable Acquisitions, Hong Kong and Singapore 2006-2007—Advised an international investor on the competition effects of proposed submarine cable acquisitions, where the client had existing infrastructure interests in relevant markets. A key aspect of the analysis was defining the markets which could be impacted by the proposed acquisitions, and establishing which parties within these markets had effective control of cable capacity through long term leases and indefeasible rights of use. Reports prepared were provided to competition regulators in Singapore and Hong Kong as evidence that competition would not be reduced by the proposed cable acquisitions.

Structural Separation of *Eircom*, Ireland 2006—Advised a major equity investor on regulatory and operation aspects of the structural separation of the Irish incumbent carrier *Eircom*.

Telecommunications Infrastructure Provision in New Estates, Australia 2006—Advised a major property developer on options to ensure buyers in high-value estates would have access to high speed broadband. Assessed customer broadband demand, and identified options trading off customer satisfaction, developer cost, and risk. Presented a range of network ownership and franchise models with both limited and open network access arrangements.

International Benchmarking of Regulated Network Access Prices, Australia 2006—Managed projects involving extensive international benchmarking of prices for unbundled local loops and other telecommunications access services in Australia, with comparison countries drawn primarily from Europe and North America.

Vertical Separation of Utilities through "Ring Fencing", Australia 2005—Advised a major telecoms utility on "ring fencing" arrangements for electricity and gas sectors, and potential suitability for telecoms given differences in industry characteristics and market circumstances.

Audit of Price Squeeze Compliance Testing Methodologies, Australia 2005—Advised industry participants and the ACCC on methodologies for price squeeze compliance testing for telecommunications consumer services.

Publications

"Bill and Keep and the Economics of Interconnection in Next Generation Networks", *Telecommunications Policy.* vol. 33, 2009. (with P. Reynolds, B. Mitchell, A. Jung, & M. Dodd).

"The Legislated Perils of Telecoms Investing", *Exchange.* Vol. 17 No 30, August 2005. (with S. McSkimming).

"Information Technology and Telecommunications Infrastructure for Delivering Government Services and Developing Employment Opportunities in Regional NSW". Department of State and Regional Development, 1997.

"NSW Competitiveness Report". NSW Premier's Department, 1994.

"Making it Happen in NSW—A Directory of Business Incentives and Assistance Provided by Federal, State and Local Governments for Investment and Economic Development in NSW, Australia", (with P. Thomas), jointly published by KPMG Peat Marwick, Office of Economic Development and Department of Business & Regional Development, 1993.

"The NSW Government—Working with Business to Internationalise the Economy", NSW Premier's Department, 1993.

"Preparing for the Future: Forecasting Demand and Planning Capacity for International Telecommunications in a Changing Environment", in "TeleGeography 1992: Global Telecommunications Traffic Statistics and Commentary", edited by Gregory C. Staple, International Institute of Communications, 1992.

"The World Economy to the Year 2020", in "Western Australia into the Twenty First Century: Economic Perspectives", (with H. Ergas), edited by R. T. Appleyard, Committee for Economic Development of Australia, 1991.

"The Impact of Youth Wages on Unemployment in Australia", Bureau of Labour Market Research, 1986.

"A Reserve Price Scheme for Australian Wheat", Bureau of Agricultural Economics Research Papers, 1978.

Conference Presentations

"Content Access: the New Bottleneck?" *Network Insights Communications Policy & Research Forum 2011*, Sydney, November 2011.

"Mobile and Fixed Broadband: Where Does the Future Lie?" *Informa conference Broadband Australia 2009*, Sydney, June 2009.

"Platforms for IT Productivity", ASCN Preliminary Conference for APEC 2007 *Reshaping APEC for the Asian Pacific Century—priorities and strategies*, Melbourne, December 2006. (With O. Renard).

"Fixed-Mobile Convergence: What is happening and why this is important?" *International Telecommunications Society Conference,* Perth, August 2006. (With D. Schadt).

"Interconnection: the Australian Experience—Telecommunications Competition and Access Regulation in Australia", *IBC Conference Interconnection '98,* Amsterdam, November 1998.

"Integrating Non-financial Measures into Department Strategic Planning with the Balanced Scorecard", *ICM Conference Performance Management of Strategic Planning in Government,* Canberra, 17 March 1998.

"A Government Balanced Scorecard – One Size Does Not Fit All", *International Quality and Productivity Centre Conference Using the Balanced Scorecard to Measure Corporate Performance*, Sydney, February 1998.

"Where are the Future Markets for Regional New South Wales?" *Planning Research Centre Conference,* University of Sydney, Sydney, November 1997.

"Using Business Plans and Measured Outcomes to Drive Performance within the Public Sector", *International Quality & Productivity Centre Conference Business Planning for Government,* Melbourne, October 1997.

"State Merchandise Exports—A Survey of Policy and Practice", *Industry Economics Conference,* University of Melbourne, July 1995. (With M. Jerks & M. Carman).

"The New Government: Industry Development Initiatives, Including Government Purchasing", *Australian Information Industry Association Seminar NSW Familiarisation*, Sydney, April 1995.

"The Big Picture View: NSW Government Initiatives and Policies Relevant to Facility Management", *Facilities Management Conference: The Competitive Advantage*, Sydney, 1994.

"Establishing Australia as your Regional Headquarters", paper presented to the *KPMG Peat Marwick Conference Establishing Australia as your Regional Headquarters*, Sydney, July 1994. (With J. Saunders & H. Peterson).

"Practical Benchmarking – Keynote Address", *IIR Conference Practical Benchmarking*, Sydney, February 1994. (With J. Saunders).

"State Level Industries Strategies: NSW—Leading Australia into the 21st Century", *Royal Institute of Public Administration Australia National Conference The Changing Ethos*, Sydney, November 1993. (With J. Saunders).

"Sub-National Governments, Economic Development and International Competitiveness", *Economic Society of Australia (Queensland) Conference Economics in Business and Government: Micro-Economic Policy and Reform for International Competitiveness*, Gold Coast, September 1992.

"The Pursuit of World Best Practice in International Telecommunications: a Challenge for Human Resource Management", *AIC Conference Human Resource Management in the Public Sector,* Sydney and Melbourne April 1992.

Appendix C: Letter of Instruction

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