



**TELSTRA CORPORATION LIMITED**

**Public submission on the roll-out and operation of a National  
Broadband Network for Australia**

25 June 2008

## Contents

<b>Executive Summary</b> .....	<b>i</b>
<b>A Introduction</b> .....	<b>1</b>
<b>B The opportunity of next generation networks</b> .....	<b>3</b>
<b>B.1 Opportunities for end users</b> .....	<b>3</b>
<b>B.2 Opportunities for competition</b> .....	<b>5</b>
<b>C Profound technological change demands profound regulatory change</b> .....	<b>8</b>
<b>C.1 How do next generation networks change the problem regulation is trying to solve for?</b> .....	<b>8</b>
<b>C.2 Need to focus on investment as primary criterion</b> .....	<b>9</b>
<b>C.3 Getting the National Broadband Network built</b> .....	<b>11</b>
<b>C.3.1 Existing regulatory cost-based models will undermine investment incentives</b> .....	<b>11</b>
<b>C.3.2 Regulatory uncertainty will undermine investment incentives</b> .....	<b>15</b>
<b>C.4 Attracting investment in competing infrastructure</b> .....	<b>16</b>
<b>C.5 Conclusion</b> .....	<b>18</b>
<b>D Proposed regulatory framework</b> .....	<b>20</b>
<b>D.1 A single process</b> .....	<b>22</b>
<b>D.2 Reform of Part XIC in any event</b> .....	<b>23</b>
<b>D.3 The FTTN open access principles should reflect bottlenecks</b> .....	<b>24</b>
<b>D.4 Removal of ULLS and LSS</b> .....	<b>25</b>
<b>D.5 Efficient and timely NBN roll-out</b> .....	<b>28</b>
<b>D.6 Consumer protection and social policy objectives must be met and funded</b> .....	<b>28</b>
<b>Schedule A – Technical and operational issues with ULLS</b> .....	<b>32</b>
<b>A Introduction</b> .....	<b>32</b>
<b>B Technical issue with exchange based loops</b> .....	<b>32</b>
<b>C Operational issues</b> .....	<b>33</b>

## Executive Summary

### *Australia is ready for the National Broadband Network*

World-class broadband infrastructure is a **national imperative for Australia**. We are a developed, educated, creative and aspiring nation. But Australia also has a small population, is relatively isolated internationally, and we contend with large distances domestically. The lack of high speed broadband is already a significant drag on our international competitiveness.<sup>1</sup>

There is a **national consensus** in favour of the substantial investment required to achieve world class broadband infrastructure in Australia. The Rudd Government won a clear electoral mandate for its broadband policy, and a key objective emerging from the 2020 summit was “building and enabling the use by all Australians of a world class broadband system to foster full participation in the digital economy.”<sup>2</sup>

The Request for Proposals (**RFP**) for a National Broadband Network (**NBN**) contains four elements that are essential to achieving world class broadband infrastructure in Australia:

- the NBN must represent a **technological step change** from today’s broadband networks if it is to be transformational;
- access to the NBN must be **equitably available to Australians – in the bush and across urban areas**, not just those areas close to exchanges;
- building the NBN to the Government’s requirements will need investment on an unprecedented scale for a civil works project in Australia. Without the **Government’s willingness to commit \$4.7 billion** to the project, it is likely that the NBN would not be feasible beyond the major urban and regional areas; and
- even with the Government’s funding contribution, there must be **regulatory certainty and appropriate returns** to provide the incentives for private investors to make such a large, high-risk investment.

All that presently stands between Australia and world class broadband infrastructure is the current regulatory regime. After all, this RFP has had to be issued precisely because **no one will invest in next generation, fibre-based network infrastructure under the regulation that presently exists in Australia**.

### *The National Broadband Network needs a tailor-made regulatory framework*

Best practice regulation tailors the regulatory response to the problem that it is trying to address. A regulatory regime that has evolved to address the problems – real or perceived – of the legacy fixed network is not fit for purpose for next generation networks. The

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<sup>1</sup> Although Australia was ranked seventh out of 55 countries in terms of total competitiveness, IMD reports that we are held back by chronic infrastructure problems. Part of this is our lack of investment in telecommunications infrastructure: Australia only ranked 44<sup>th</sup> in terms of the standard of voice and data communications infrastructure. IMD, *World Competitiveness Yearbook 2008*, cited in A. Rollins, “Could do better globally”, *The Australian Financial Review*, May 16, 2008.

<sup>2</sup> Australia 2020 Summit, *Initial Summit Report*, April 2008, p. 8. (available at [http://www.australia2020.gov.au/docs/2020\\_Summit\\_initial\\_report.pdf](http://www.australia2020.gov.au/docs/2020_Summit_initial_report.pdf)). Broadband was also identified as a priority in pre-summit submissions (see p. 11), in the rural and regional Australia stream (p. 18), and in the creative Australia stream (p. 25)

technological, service and economic characteristics of legacy networks and next generation networks are as different as night and day, as set out below:

**Key differences between the current legacy network and the NBN**

<b>Element</b>	<b>Current legacy environment</b>	<b>Future next generation network environment for the NBN</b>
<b>Network costs</b>	Ubiquitous network whose costs are mainly sunk	As yet un-built network requiring massive new investment in copper remediation, new fibre rollout and high-speed DSL nodes
<b>Deployment</b>	Incremental deployment of network over decades	Rapid roll out of new network – 5 years in the RFP
<b>Demand</b>	Relatively stable, known demand patterns	Unknown, unpredictable demand
<b>Upgrade path</b>	Limited investment in maintaining and upgrading existing network	In addition to initial massive investment, much larger future investment required to upgrade and extend – eg fibre to the node, to fibre to the premises
<b>Network features</b>	Separate networks with different (and in some cases proprietary) technology required to support services	Open, layered networks Single network that supports multiple services
<b>Retail product innovation</b>	Limited set of competing retail products, many based on highly specified wholesale products	Unrivalled opportunity for retail product innovation, based on bitstream
<b>Customer use</b>	Limited scope for simultaneous service delivery to customer premises	Multi-service usage in customer premises will be the norm
<b>Quality of service</b>	Voice specific quality	Differential quality of service for individual services
<b>Access</b>	Mainly access provider built and managed access products	Scope for access seekers to independently manage quality of service using access inputs

Some argue that the NBN provides an opportunity to impose yet more regulation, such as separation. However, it is inconceivable that such a large, risky project as the NBN could be successfully undertaken facing even more regulation than applies to today's fixed network, which was rolled out long before regulation came along.

As the former FCC Chief Economist, Thomas Hazlett, has said:<sup>3</sup>

*... in order to become a bottleneck, [the next generation network] must first be built. Taxing investors via regulatory burdens is a curious way of doing that.*

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<sup>3</sup> Thomas W. Hazlett, *Germany's Cable Problem*, WSJ Europe, 30 August 2006.

### What we need

We need new thinking focused on the fundamental issue: how do we create an environment that enables the NBN operator to earn a rate of return on its investment commensurate with the risk of the project while also ensuring open access and while meeting the social equity goals for the NBN?

The following table sets out what Telstra believes to be the key elements of a regulatory regime capable of achieving the Government's ambitious goals for the NBN.

Issue	What the NBN needs
Regulatory certainty – Parts XIB and XIC of the Trade Practices Act could be used to unpick the NBN-specific regulatory regime agreed between the Government and the successful bidder	A <b>single process</b> arriving at a single answer that will be certain enough for investors to bank on A legislative mechanism will be required to ensure that the undertakings given to the Government by the successful bidder substitute for Part XIB and Part XIC
Scope of mandated access to the NBN	Telstra endorses open access principles for the NBN The NBN access regime should adhere to best regulatory practice and only <b>reflect bottlenecks</b> As competition should boom at the applications and services level, the NBN operator should <b>not be required to provide wholesale versions of its own retail products</b> in addition to open access to bottleneck inputs As next generation networks can enhance opportunities for alternative network infrastructure, there should be scope <b>to roll back access regulation in competitive areas</b>
Access pricing – <ul style="list-style-type: none"> <li>• today's regulated TSLRIC pricing focuses on costing a sunk asset to maximise demand (without regard to supply-side considerations) and does not promote efficient investment</li> <li>• TSLRIC affords significant regulatory discretion, eg regarding allocation of common costs</li> </ul>	NBN pricing principles should be focused on: <ul style="list-style-type: none"> <li>• ensuring proper investment incentives for the NBN</li> <li>• recognition that as the next generation networks are multi-service platforms, there is a much higher level of common costs and therefore no easy basis for cost allocation, and</li> <li>• remove scope for regulators to price in an opportunistic, highly discretionary manner</li> </ul> NBN access pricing should recognise supply- and demand-side business considerations – ie, take a <b>value-based pricing</b> approach
Pricing flexibility	The NBN operator requires a reasonable degree of <b>pricing flexibility</b> at retail and wholesale levels because demand is unpredictable and many products will be new to the market; scope is needed to experiment to discover demand and price levels Required flexibility must be provided in a manner that does not deprive the NBN operator of pricing certainty, and hence must accommodate scope for fixed price ceilings or other pricing arrangements that are locked in for the life of the relevant assets

Issue	What the NBN needs
Reset of access terms – Currently there are regulatory resets of access prices accompanied by broad, unpredictable regulatory discretions	Ex ante regulatory commitment to access pricing on the NBN to provide <b>regulatory certainty</b> for investors
Part XIC during transition period and going forward	Even with an NBN-specific access regime, <b>urgent reform of Part XIC</b> is required in any event and particularly because it will operate side by side with the NBN regime during roll-out and could be gamed to undermine the transition to the NBN
Current access services	ULLS and LSS cannot co-exist with the NBN for sound business and technical reasons. <b>The current ULLS and LSS access regulation should be removed within the NBN footprint</b>
Land access	<b>Ameliorate land access risks</b> to maximise the successful bidder’s ability to cost-effectively achieve the coverage and performance requirements of the NBN within an aggressive build timeframe
Addressing consumer protection and social policy objectives	Telstra supports robust consumer protections for the NBN: <ul style="list-style-type: none"> <li>• <b>unnecessary retail price regulation should be removed</b> in light of regulated wholesale prices and pro-competitive nature of NBN (maintain only safeguards necessary to protect vulnerable consumers)</li> <li>• given its critical importance, bidders must persuade the Government of their capabilities to provide <b>emergency services</b>, particularly during the migration phase at nodes</li> <li>• <b>service reliability and performance regulations need to be rethought</b> to reflect the changed service delivery environment of the NBN. For example, current service parameters, such as physical site appointments, will be less significant than in today’s environment; the relevance of the Network Reliability Framework will decline, and</li> <li>• <b>Universal Service Obligation funding needs to be completely revamped</b>. If not met by direct Government funding – the most efficient outcome – uniform national pricing of key wholesale services provides a reasonable alternative subject to being set at an appropriate level, a mechanism to address the erosion of cross-subsidies by cherry-picking and flexibility for the NBN operator to competitively respond to pricing in areas where there are competing next generation networks</li> </ul>

Telstra recognises, of course, that these principles will need to be balanced against each other in the design of the NBN regulatory regime: for example, while the NBN operator requires a sensible degree of price flexibility to experiment with new offerings, access seekers

and end users fairly require some certainty on pricing of key products migrated from today's network.

None of this will be easy. The stakes are high if regulatory errors are made. Overseas regulators, such as Ofcom, have been prepared to let go of the familiar ways of thinking and take a pragmatic, open minded approach in searching for regulatory solutions that give primacy to investment incentives. In stark contrast, the ACCC's blueprint for next generation network regulation, set out in the draft G9 SAU Draft Decision,<sup>4</sup> looks more like a "drag'n'drop" from the legacy public switched telephone network (**PSTN**) world, including positions OfCom explicitly rejects as outmoded for a next generation world.

As John Maynard Keynes said "the difficulty lies, not in new ideas, but in escaping from the old ones".<sup>5</sup>

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<sup>4</sup> ACCC, Assessment of FANOC's Speed Access Undertakings in relation to the Broadband Access Service, Draft Decision, 7 December 2007 (**G9 SAU Draft Decision**).

<sup>5</sup> Keynes, *General Theory of Employment, Interest and Money* (1935), at xxiii.

## A Introduction

- 1 This submission responds to the Government's call in the RFP for public submissions on policy and regulatory issues relevant to the NBN.
- 2 This submission sets out the key principles of the tailor-made regulatory regime that Telstra believe are necessary to achieve the Government's ambitious objectives. Telstra believes that calls for operational, structural and ownership separation are a noisy, hollow distraction from the main game addressed in this submission. Accordingly, we address vertical integration and separation issues in a separate companion submission.
- 3 The rest of this submission is structured as follows:
  - (a) in **Part B**, we review the opportunity presented by next generation networks;
  - (b) in **Part C**, we discuss the changing nature of competition under next generation networks and why a return to regulatory first principles is essential;
  - (c) in **Part D**, we consider what investors will require in order to get the NBN built; and
  - (d) in **Part E**, we outline the new regulatory solution that Telstra believes will achieve the goals of investment and open access.
- 4 Debate about next generation network regulation is going on around the world, and Australia will be one of the first countries to reach a landing on these issues. In developing our regulatory proposals for the NBN, Telstra has drawn on economic and regulatory thinking by leading international experts. Annexed to our submission are the following expert statements:<sup>6</sup>
  - (a) Professor George Yarrow (**Annex A**): recognised as one of the leading economists in the UK, Professor Yarrow and his colleague Dr Chris Decker review the fundamental change required in thinking about regulation of telecommunications in the transition to next generation networks. They consider the emerging shortcomings of the current telecommunications regulatory model in today's world and why it will be even more inadequate to meet the challenge of next generation networks;
  - (b) Brian Williamson (**Annex B**): an advisor to the European Commission on next generation network regulation, Mr Williamson reviews why current cost-based pricing approaches to access regulation are likely to undermine incentives to invest in next generation network infrastructure and outlines the parameters that need to be considered in developing an appropriate pricing approach to next generation network access pricing; and
  - (c) Professor Martin Cave (**Annex C**): Professor Cave, also an advisor to the European Commission on next generation network regulation, discusses

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<sup>6</sup> Note that Professor Yarrow's and Professor Cave's reports are also attached to the separate Telstra submission on vertical integration as they address separation issues.

the opportunities for competing next generation networks and how investment in those networks is promoted by competition.

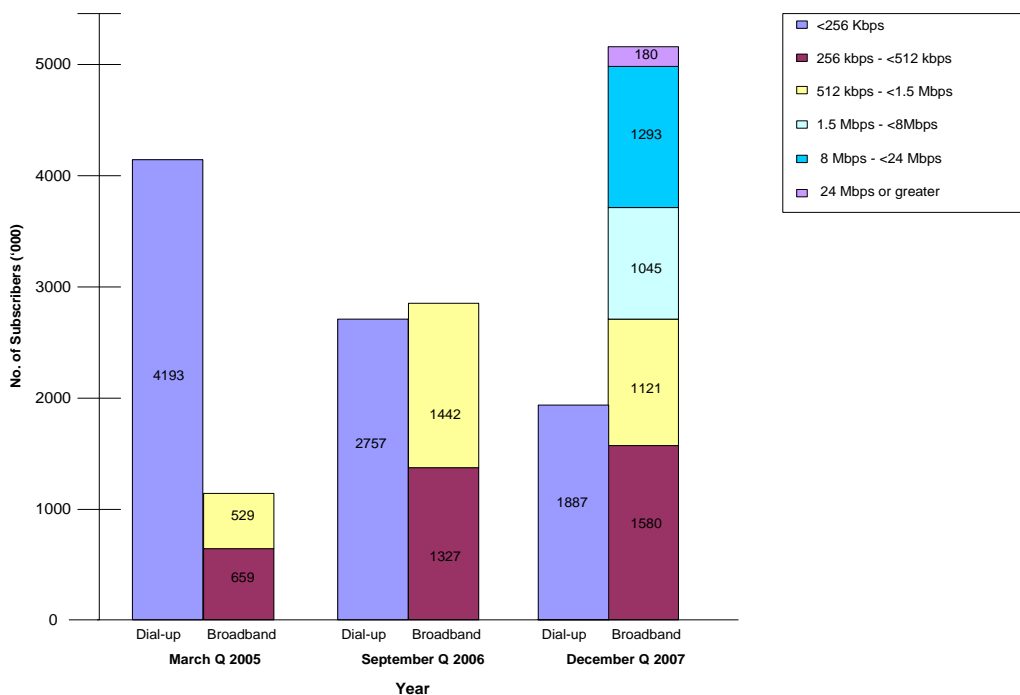
## B The opportunity of next generation networks

- 5 In this Part, we examine the economic and social opportunities provided by the NBN and the evidence of a growing appetite amongst end users for high speed services. We also discuss the expanded opportunities for competition in a next generation network environment.

### B.1 Opportunities for end users

- 6 Despite the Government’s clear platform and mandate, there are still those who do not believe in consumer demand for, and compelling gains from, broadband services exceeding 6-8 Mbps.
- 7 Yet Australians are clearly voting with their feet for more speed. As at December 2007, 1.5 million broadband subscribers connected at broadband speeds greater than 8 Mbps – a category the Australian Bureau of Statistics did not even measure one year previously.<sup>7</sup> As Figure 1 shows, while demand for entry-level broadband grows, customers seem to be moving on to speeds at the higher end – from 1.5 Mbps up.<sup>8</sup> This probably understates demand for higher speeds because in today’s legacy environment, availability of higher speeds is limited to small islands around some current exchanges or within the two hybrid fibre coaxial (HFC) network footprints.

**Figure 1: Higher demand for higher speed internet in Australia**



Source: Australian Bureau of Statistics data, Internet Activity, December 2007. Due to measurement limitations prior to 2007, the 512 kbps – 1.5 Mbps category before December 2007 includes services >1.5 Mbps.

<sup>7</sup> The Australian Bureau of Statistics (ABS) refers to broadband as an “always on” internet connection with an access speed equal to or greater than 256 kbps.

<sup>8</sup> Note that the ABS did not report figures for speeds 1.5 Mbps and above for the March Quarter 2005. In the upper range (greater than 1.5 Mbps) the profile further underscores the growth in demand for high speeds. The largest group enjoys speeds of 8 – 24 Mbps.

- 8 Next generation network infrastructure can deliver large gains in productivity. In the UK, next generation networks are estimated to increase GDP by £22 billion over 15 years.<sup>9</sup> Extrapolating from an ACIL Tasman study of the impacts of broadband adoption on the Victorian economy, broadband would increase Australia's economy by over \$50 billion in the same period.<sup>10</sup> Broadband-enabled strategies could lead to a 5% reduction in Australia's national emissions and AU\$6.6 billion a year in energy and travel cost savings for businesses and households.<sup>11</sup>
- 9 While the NBN will lead to efficiency gains in existing services (such as telephony), it is new content-rich, application-heavy services – many of which are yet to be developed – where the NBN will come into its own. The combination of a “fat pipe” into the home, capable of simultaneous delivery of multiple services, and a much bigger backchannel is ready-made for Web 2.0 services that allow end users to collaborate online, create their own content, and participate in social networking. Internet usage is already dominated by Web 2.0. YouTube<sup>12</sup>, a company that did not exist in 2005, is said to account for more bandwidth than the total global capacity of the internet in 2000<sup>13</sup> and approximately 10% of all internet traffic.<sup>14</sup>
- 10 Another key driver of consumer demand for bandwidth includes the sizeable amount of two way traffic between end users using applications such as BitTorrent (called peer-to-peer (P2P) traffic)<sup>15</sup>, which require upstream and downstream speeds capable of supporting video. A German study in 2007 found that over 60% of Internet traffic was P2P and almost 80% of this was video.<sup>16</sup> In Japan, the Ministry for Internal Affairs and Communications cites evidence that 60% of backbone bandwidth is consumed by only 1% of Internet users.<sup>17</sup> Telstra estimates that over 50% of BigPond traffic is already P2P.
- 11 While Web 2.0 and P2P might be regarded by some as the frivolous creations of teenagers and bandwidth hogs, experience shows that end users are beta testing and honing technologies that businesses later exploit.<sup>18</sup> Major US media companies such as 20<sup>th</sup> Century Fox, MTV, Warners and Paramount Pictures are now harnessing P2P technology and social networking sites to deliver and sell

<sup>9</sup> CEBR (Centre for Economics and Related Business Research Ltd), 'The Economic Impact of a Competitive Market for Broadband', November 2003.

<sup>10</sup> ACIL Tasman, 'Economic impacts of broadband adoption in Victoria', June 2004, p. 37.

<sup>11</sup> These opportunities include using telecommunications networks to reduce commuter travel, remotely managing power usage, and operating presence-detecting services that turn off devices that do not need to be on. Some of these opportunities can be realised with the existing network, but many are contingent on fibre roll-out: Climate Risk, 'Towards a High-Bandwidth, Low Carbon Future: Telecommunications-based Opportunities to Reduce Greenhouse Gas Emissions', (Fairlight, NSW: 2007). Similarly, a 7% increase in broadband adoption in the US would reduce CO2 emissions by 3.2 billion lbs per year and could generate US\$18 million in carbon credits: Connected Nation Inc, 'The Economic Impact of Stimulating Broadband Nationally', February 2008, p. 5.

<sup>12</sup> <http://www.youtube.com>.

<sup>13</sup> Lohr, Steve 'Video Road Hogs Stir Fear of Internet Traffic Jam', New York Times, March 13, 2008 (available at: [http://www.nytimes.com/2008/03/13/technology/13net.html?\\_r=1&pagewanted=print&oref=slogin](http://www.nytimes.com/2008/03/13/technology/13net.html?_r=1&pagewanted=print&oref=slogin)).

Ellacoya Networks Media Release, Ellacoya Networks Data Shows Web Traffic Overtakes Peer-to-Peer (P2P) As Largest Percentage of Bandwidth on the Network, June 18, 2007 (available at: <http://www.ellacoya.com/news/pdf/2007/nxtcommellacoyamediaalert.pdf>).

<sup>15</sup> Use of the term peer to peer at the retail level is to be distinguished from 'peering' at the interconnection level between operators.

<sup>16</sup> ipoque, Internet Study 2007, available at: ([http://www.ipoque.com/news\\_&\\_events/internet\\_studies/internet\\_study\\_2007](http://www.ipoque.com/news_&_events/internet_studies/internet_study_2007)).

<sup>17</sup> Working Group on Network Neutrality, Report on Network Neutrality, Ministry of Internal Affairs and Communications (Japan) (MIC Report), September 2007, p.16.

<sup>18</sup> However, P2P traffic presents considerable challenges to networks around the world because, by its very design, it consumes as much bandwidth as is available and current charging models may not allow recovery of network investment. See generally, MIC Report, FTC Staff Report, Broadband Connectivity – Competition Policy, June 2007; Briscoe, Moncaster & Burnese, 'We Don't Have To Do Fairness Ourselves,' (available at: <http://www.cs.ucl.ac.uk>).

content.<sup>19</sup> In Australia, significant drivers for bandwidth in the future will be commercial IPTV and Video on Demand services and video streaming from media companies.<sup>20</sup>

- 12 While small and medium enterprises (**SMEs**) form a large part of the Australian economy, they face significant hurdles in operating and growing their businesses. The high quality data connectively provided by the NBN will open new business opportunities for SMEs and allow them to more cost effectively manage their businesses. In today's market, only large companies get the benefit of advanced data services because only they have the resources to spend on "one shot" fibre connections to their premises. SMEs must essentially get by with best efforts residential broadband services. The absence of a reasonable upchannel particularly limits their ability to take advantage of remotely hosted applications, which they cannot afford to load onto their local area network on a standalone basis.
- 13 Other big winners from the ubiquitous reach of the NBN will be regional and rural customers. The effect of next generation networks on rural areas in particular has been illustrated by the UK's experience with current-generation broadband, where the proportion of connected rural users now surpasses urban users.<sup>21</sup> A larger proportion of rural users are spending their time listening to internet radio, engaging in e-commerce,<sup>22</sup> and social networking than their urban neighbours.<sup>23</sup>
- 14 However, the population of "broadband disadvantaged" is not limited just to rural areas. Telstra can only provide the 12 Mbps rate required by the Government with high confidence to premises within a maximum of approximately 1,500m of the exchange<sup>24</sup> – whether an urban or rural based exchange. Approximately two thirds of customers in metropolitan Australia live outside that radius and today cannot get true broadband over a fixed network.
- 15 While we currently have high speed pockets in a wider landscape of lower speed services, the NBN will be a **National** Broadband Network that will offer high broadband speeds on a true nationwide basis.

## B.2 Opportunities for competition

- 16 Next generation networks will transform the nature of competition, not only at the applications level, but also the opportunities for end to end competing networks.
- 17 Within the limited technology envelope of the current PSTN, today's retail level competition is mainly between basic connectivity products, such as retail telephony and retail internet access services. Many wholesale products are

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<sup>19</sup> J. Finkle, 'BitTorrent moves from piracy to video streaming', Reuters, October 9, 2007; Paramount Pictures making movie clips available as Facebook messages, AP, March 9, 2008.

<sup>20</sup> For example, the ABC in Australia is currently trialling a service called ABC Playback. This is similar to BBC iPlayer, which had over 700,000 video requests per day just in April 2008 alone: BBC Press Release, 'BBC iPlayer receives more than 75 million requests to view since launch', 20 May 2008.

<sup>21</sup> Ofcom, *The Nations & Regions Communications Market 2008*, May 2008 and accompanying Ofcom Press Release, 'Rural broadband households overtake urban for the first time', May 22, 2008, (available at: <http://www.ofcom.org.uk/research/cm/cmnr08/>).

<sup>22</sup> Around 75% of rural users use the internet for transactions, compared to around 69% for the UK as a whole: K. Allen, The Guardian, 'Fears of digital divide groundless as online access soars in rural areas', May 22, 2008 (available at: <http://www.guardian.co.uk/technology/2008/may/22/internet.digitalmedia>).

<sup>23</sup> Ofcom, 'UK Summary', *The Nations & Regions Communications Market 2008*, May 2008 (available at: <http://www.ofcom.org.uk/research/cm/cmnr08/uksummary.pdf>).

<sup>24</sup> There is some variation depending on cable type.

versions of the incumbent's retail connectivity products: PSTN termination is essentially "half a local call", WLR/LCS are "white label" retail telephony services, and layer 2 bitstream is the retail broadband service minus the global interconnect connectivity and some national backhaul. While the unconditioned local loop service (**ULLS**) allows access seekers to install their own DSLAM infrastructure, the limitations of current ADSL technology – speed, narrow asymmetrical upchannel capacity and "best efforts" connectivity – constrain the scope for downstream product differentiation.

- 18 As a result, the predominant model in today's world is "me-too" competition in which Telstra's competitors essentially offer the same retail products as Telstra. The sustainability of their business models artificially depends on the margin spread established by the ACCC through fixing the bottom end of the bracket through low regulated access prices and the top end through imputation tests.
- 19 The inherent characteristics of the NBN should allow the mould of "me-too" competition to be broken. Separate retail/wholesale product "silos" will be replaced by an open, layered architecture in which generic inputs from upstream layers can be used to build diverse downstream services. Innovation will shift from being primarily in the network core to also encompass the network edge and downwards to the applications layer – from the network owner into the hands of access seekers. Interfaces between layers are open and standardised – both for external and internal providers. Competitors can choose the network layer at which they wish to participate.
- 20 It is wrongly asserted that next generation networks represent a "re-monopolisation" at the physical and basic connectivity levels. While quasi-facilities-based competition using unbundled loops will become an outmoded model, the opportunities for *true* end to end facilities-based competition should increase. Next generation networks *enhance* the economic feasibility of deploying alternative network infrastructure because, as those networks can support multiple services, the total revenue that can be generated from subscribers is much higher than with legacy networks.
- 21 As Professor Martin Cave has said, "It is in the long term interests of end-users that this competition should not start from the presumption of monopoly."<sup>25</sup> Current fixed and wireless networks are capable of being upgraded to compete against fibre to the node (**FTTN**) being deployed using copper sub-loops:

*First, it is often asserted, falsely in my view, that NGAs are a natural monopoly, and that the development of end-to-end competition in the delivery of electronic communications services which have been seen in the past twenty years will be reversed.*

*This view is sometimes based on a definition of NGAs which confines them to FTTx networks which are a development and extension of the copper access network or CAN. But this omits hybrid fibre co-axial (HFC) networks ('cable networks'), which when developed up to DOCSIS 3.0 standard, are capable of meeting the functionality of FTTC and some variants of FTTH networks. They also have the capacity to broadcast entertainment programmes, rather than rely on IPTV.*

*Moreover, observation of NGAs in Europe suggests that investment in them is promoted by competition. Thus the Netherlands loss of subscribers to cable companies seems to have been one of the factors driving KPN's investments in an NGA network, and competition between France Telecom and Free in parts of France has triggered an investment race which has benefited end users. Accordingly the European Commission's forthcoming Recommendation on the regulation of NGAs is likely to focus to a considerable degree on means of promoting competition among them, via sharing passive assets such as ducts, for example, rather than treating the network as a whole as a bottleneck.<sup>26</sup>*

- 22 Australia already has significant alternative network infrastructure that supports high speed broadband services and is capable of being further upgraded to support next generation services. The SingTel Optus HFC network passes more than 2.2 million homes. Telstra's Next G™ network, covering 99% of the population, will be upgraded to support speeds of 42 Mbps. SingTel Optus has announced that its high speed packet access network will offer at least 14 Mbps to 98% of the population.<sup>27</sup> Hutchison has achieved a growth in its broadband wireless services of 48% in only 4 months.<sup>28</sup> Vodafone recently announced its national mobile broadband network will cover 95% of the Australian population by December 2008.<sup>29</sup> Fixed wireless providers such as BigAir and Unwired are preparing for future competition with the FTTN network.<sup>30</sup>
- 23 Therefore, while the NBN will be a national network, we should not lose sight of the opportunities to promote competing next generation networks in different parts of Australia. As we discuss in the next Part, the current regulatory regime has led to the bizarre situation where SingTel Optus is proposing to use cheap regulated access to local loops to deploy an FTTN that overbuilds its own HFC network. As Professor Cave has remarked, SingTel Optus' use of regulated access, rather than its own network, is unique amongst cable operators in the world and, as a result, Australian consumers are missing out on the benefits of the race to be the next generation network between copper and cable networks.<sup>31</sup>

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<sup>26</sup> Annex C, pp. 22-23.

<sup>27</sup> Optus media release, 'Optus sets new milestone with the expansion of mobile network coverage to 98 per cent', May 7, 2008 (available at: <http://www.optus.com.au>).

<sup>28</sup> Communications Day, 'Hutchison mobile broadband nos surge 48% in 4 months', May 20, 2008.

<sup>29</sup> Vodafone, 2008, (available at: <http://www.vodafone.com.au/personal/services/coverage/index.htm>).

<sup>30</sup> Communications Day, 'Wireless operators: we are the true winners from FTTN push', May 20, 2008.

<sup>31</sup> M. Cave, 'Applying the ladder of investment in Australia', annexed to Telstra submission to ACCC, in relation to its application for an exemption in respect of the supply of regulated access services to SingTel Optus in HFC areas, December 2007, p. 6.

## C Profound technological change demands profound regulatory change

24 Next generation networks show again how technology can up-end the conventional wisdom on which existing regulation is based. This Part examines why the challenges and issues to be addressed by regulation are so different between the legacy PSTN and next generation networks like the NBN.

### C.1 How do next generation networks change the problem regulation is trying to solve for?

25 The technological, service and economic characteristics of legacy networks and next generation networks are as different as night and day, as shown in Table 1.

**Table 1: Key differences between the current legacy network and the NBN**

Element	Current legacy environment	Future next generation network environment for the NBN
<b>Network costs</b>	Ubiquitous network whose costs are mainly sunk	As yet un-built network requiring massive new investment in copper remediation, new fibre rollout and high-speed DSL nodes
<b>Deployment</b>	Incremental deployment of network over decades	Rapid roll out of new network – 5 years in the RFP
<b>Demand</b>	Relatively stable, known demand patterns	Unknown, unpredictable demand
<b>Upgrade path</b>	Limited investment in maintaining and upgrading existing network	In addition to initial massive investment, much larger future investment required to upgrade and extend – eg fibre to the node, to fibre to the premises
<b>Network features</b>	Separate networks with different (and in some cases proprietary) technology required to support services	Open, layered networks Single network that supports multiple services
<b>Retail product innovation</b>	Limited set of competing retail products, many based on highly specified wholesale products	Unrivalled opportunity for retail product innovation, based on bitstream
<b>Customer use</b>	Limited scope for simultaneous service delivery to customer premises	Multi-service usage in customer premises will be the norm
<b>Quality of service</b>	Voice specific quality	Differential quality of service for individual services
<b>Access</b>	Mainly access provider built and managed access products	Scope for access seekers to independently manage quality of service using access inputs

- 26 Thinking about how to regulate next generation networks is so challenging because, while we know the changes will be big, much is still uncertain and unpredictable. As Professor Yarrow says:

*The introduction of next-generation access networks (NGANs) in communications changes the market and technological context in which public policy operates. It does so in a way that, in terminology used in the economic analysis of innovation, can be said to be 'drastic' in nature...*<sup>32</sup>

*...demand (for use of NGANs) assessments are likely to be particularly uncertain. In the colloquial way of putting things: we are not only dealing with known unknowns, but also with unknown unknowns.*<sup>33</sup>

- 27 However, we know enough to be clear that fiddling the dials on the current regulatory regime will not be enough. As Ofcom has said:

*Next generation access poses a new set of questions. While these new investments may also constitute an enduring economic bottleneck, there is significant risk involved in their deployment, including demand side uncertainty. In this environment, it may not be appropriate to simply roll-over our existing regulatory approach to these new networks.*<sup>34</sup>

- 28 In stark contrast, the ACCC has comprehensively failed to make any adjustment to its thinking to reflect these profound changes. Its blueprint for next generation network regulation, set out in the G9 SAU Draft Decision, looks more like a “drag’n’drop” from the legacy PSTN world, including positions OfCom has rejected as outmoded for a next generation world. The ACCC treats the transition to FTTN as its chance to achieve the “fixes” it has been advocating for problems it perceives with competition in the current legacy world. If the ACCC had taken a more forward looking, open minded approach, it would have seen (as Ofcom did) that many of the perceived problems will either be resolved or irrelevant in a next generation world, and that a whole set of new challenges will instead demand regulatory attention.

## C.2 Need to focus on investment as primary criterion

- 29 As for today's legacy environment, next generation network regulation will involve trade-offs: between build or buy options, between the extent of access regulation and the impacts on investment incentives, between allocative, productive and dynamic efficiency. But as Professor Yarrow explains, policy makers would take false comfort in thinking that these trade-offs are familiar to the legacy world, just on a larger scale:

*It might be argued that the large, uncertain projects of interest here present nothing more than an enhanced challenge to get the investment allocation incentives right. The big difference is that whereas previous concerns about over-investment (from rate-of-return regulation) or under-investment (from price-cap regulation) related to distortions at the margin of capex programmes, the big-project distortions are potentially on a much larger scale, encompassing the possibilities that a major reconfiguration of a network is either (a) not undertaken when it is economically justified, or (b) undertaken*

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<sup>32</sup> Annex A, p. 2.

<sup>33</sup> Annex A, p.7.

<sup>34</sup> Ofcom, *Future broadband: Policy approach to next generation access*, 26 September 2007, p. 28.

*when it is not economically justified. The harm caused by 'getting it wrong' is much larger.*

*Whilst this argument is convincing on its own terms, we think it would be a mistake to suppose that this is the only thing that is different in a NGAN context. The second important characteristic of the problem under discussion is uncertainty about demand, and in the NGAN case about supply also (what is the best network architecture to adopt? What sorts of new products and services might be possible in consequence of greater bandwidth for large numbers of households?).*

*Regulators are required to develop policies governing how this uncertainty is best addressed; which is another way of saying that what is required are policy principles for approaching issues of 'discovery', ie, the dynamic process of creating, discovering and using new information. Importantly, (avoidable) risks can be expected to be introduced if policy fails to reflect this different balance of potential sources of consumer welfare gains; if, in effect, regulators do not get their priorities right.<sup>35</sup>*

- 30 Professor Yarrow concludes that dynamic efficiency, to which regulators have tended to give little more than lip service in current regulatory models, needs to become the dominant consideration in next generation network regulation:

*Whereas the shift in the balance between sources of potential efficiencies just described is largely endogenous to the regulatory process itself, the much bigger changes, and those that are now giving rise to the greatest challenges to policymakers, are arguably exogenous to network regulation. The two most important are:*

- *radically shifting priorities in environmental policy, which are driving the problems in energy and air transport networks referenced in section 1, above; and*
- *technological change, which is the more important influence in communications.*

*Both of these developments come with large uncertainties attached to them, albeit for different reasons. In both cases it is reasonable to expect that, for network companies and for policy makers, the future will be significantly different from the past, in as yet unknown ways. An immediate corollary is that issues of dynamic efficiency should be very much to the fore in policymaking.<sup>36</sup>*

- 31 The ACCC's established approach to regulated access follows the pattern of current regulation outlined by Professor Yarrow. The ACCC has given asymmetrical weight to promoting entry by competitors to the cost of investment incentives. Telstra has been required to provide access below cost, and competitors face incentives to refrain from building or using their own infrastructure (SingTel Optus' use of regulated access within its HFC network is unique amongst cable operators globally). This policy has also led, as Professor Yarrow predicts, to the situation where no one – Telstra or its competitors – is

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<sup>35</sup> Annex A, pp. 13-14.

<sup>36</sup> Annex A, p.12.

prepared to invest in next generation infrastructure given the risk of the ACCC taking a similar asymmetrical approach to new infrastructure.<sup>37</sup>

- 32 In the remainder of this Part, we focus on how to shift to a regulatory approach that, as Professor Yarrow says, puts dynamic efficiency to the fore in policymaking for the NBN. Investment incentives need to be considered at two levels:
- (a) incentives to invest in deploying the NBN itself and to continue upgrading it over time, for example to fibre to the premises (FTTP); and
  - (b) incentives for competitors to invest in their own infrastructure – investing in alternative next generation networks where feasible and where not, in alternative core networks and platforms connected to the NBN.

### C.3 Getting the National Broadband Network built

- 33 The goal to be placed ahead of everything else is getting the NBN built in the first place. This RFP was issued because no one will invest in an NBN under the regulation that presently exists in Australia.
- 34 The two features of the current regulatory model to blame are low expected returns attributable to aggressively applied cost based pricing models, and low levels of regulatory certainty about how those returns might be varied over time as a result of regulatory resets.

#### C.3.1 Existing regulatory cost-based models will undermine investment incentives

- 35 Using current legacy world cost-based pricing approaches to set access prices is likely to undermine incentives to invest in the NBN in the first place. There is a conflict between trying to squeeze access and retail prices down to ‘costs’, especially when the cost construct is inherently uncertain and contentious, and ensuring that consumers and society benefit from new investment in an environment of high uncertainty and risk.
- 36 Even Ofcom, which in the past has aggressively used cost-based pricing theories to drive down access prices on legacy networks, takes a different view on the relevance of cost-based pricing in a next generation world:

*To date, addressing significant market power in access networks has been achieved through mandated access for competitors at specific prices. These prices have been calculated by estimating the cost of the access assets, plus an allowable return for the asset owner. This approach is suitable to current generation access networks as they are legacy networks with low demand side risk and substantial sunk costs that have already generated a return on the initial investment.<sup>38</sup>*

*This approach may be less appropriate for next generation access networks. So far, these networks are characterised by high uncertainty about consumer demand and willingness to pay, with limited clarity on the applications and services they will deliver. In this situation, investors in a free market would*

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Annex A, p.23.

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See Annex A, p. 23.

*seek higher returns from their investment to compensate for the higher degree of risk. Applying traditional cost based approaches may not adequately reflect this higher risk profile, and therefore could disincentivise investment. As a result, deployment of next generation access could occur inefficiently late.*<sup>39</sup>

- 37 In theory TSLRIC models costs based on a forward looking network, so why can't it cope with the NBN? **First**, as Professor Yarrow explains, the practical experience of the last 10 years shows that TSLRIC models are much less 'scientific' than they might appear in theory:

*Determining the forward looking, long-run costs associated with network assets is a complex and often controversial task in most utility sectors, but this is particularly the case in telecoms. The complexity can, in part, be attributed to the general approach to pricing that has been adopted, which typically involves the modelling of a hybrid network and consequently allows considerable discretion in the estimation of relevant parameters. This discretion derives from the wide range of assumptions that can be incorporated into the modelling of costs associated with specific network services, including the assumptions adopted about: network configuration and the rate of technological change; the degree of optimisation of the network, and its assumed capacity utilisation; the approaches to depreciation and the valuation of assets over time in the light of potential obsolescence and changes in asset values; and, how fixed and common costs should be allocated across the different services/elements over the network.*

*In consequence, LRIC methods can, depending upon the particular combination of assumptions used (which are at the discretion of the regulator), yield quite a wide range of possible estimates of the unit cost of supplying a defined service.*<sup>40</sup>

- 38 **Second**, TSLRIC models were more about driving inefficiencies from existing infrastructure built originally by monopoly providers than about encouraging new infrastructure to be built. While not articulated so bluntly, some regulators seem to take the view that they can "low-ball" regulated prices because the incumbent's network is already deployed, making the modelled capital costs and risks only theoretical.<sup>41</sup> As Professor Yarrow explains, TSLRIC has very different effects when applied between existing networks with known demand, and new networks with uncertain demand, which Professor Yarrow attributes to a failure in TSLRIC to take account of "option values":

*The approach, which requires repeated re-valuations of network assets to reflect current replacement costs, is unfortunately wrong in theory because it ignores real option values. In circumstances in which there is some uncertainty about demand and cost conditions, and in which some of the investment is sunk, the efficient 'entry price' for new-build of capacity is likely to be above (efficient) TSLRIC. By under-rewarding investment, access at TSLRIC prices therefore tends to create adverse incentives for new investment.*

*The error is an interesting one, however, because it is another pointer to an overly static world-view, which is much closer to classroom economics textbooks than to commercial realities or higher economics. Specifically, neglect of option values is linked to neglect of changing information*

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<sup>39</sup> Ofcom, *Future broadband: Policy approach to next generation access*, 26 September 2007, p. 34.

<sup>40</sup> Annex A, pp. 22-23.

<sup>41</sup> See for example, Williamson at Annex B.

*conditions in the market, and hence to neglect of the central dynamics of market processes.*<sup>42</sup>

- 39 **Third**, cost-based pricing models are already difficult enough when applied to legacy networks because of the level of common costs, but this problem will be much greater on the NBN, as noted by Williamson:

*[A] a greater proportion of costs will be fixed capital costs which are common across services (NGA is a multi-service platform and there is therefore no clear cut way to allocate costs across services on a “cost oriented” basis).*<sup>43</sup>

- 40 In short the significant discretion as to how TSLRIC will be applied creates enormous regulatory uncertainty. That TSLRIC under-rewards investment is also a disincentive.

- 41 If not cost-based, what should be the approach to the NBN access policy? In Telstra’s view, an NBN-specific access pricing regime needs to be built around three principles:

- (a) a shift to access pricing for which there is a commercial business case, and that considers not just demand side but also supply side issues such as investment incentives and pricing for value (we call this a value-based pricing approach to distinguish it from today’s (below) cost approach);
- (b) flexibility to allow price experimentation at both retail and wholesale levels for new products; and
- (c) a shift away from requiring the setting of ex ante price points for each access service, while still allowing the NBN operator to set such price points where it believes that doing so enhances predictability and reduces vulnerability to regulatory risk.

- 42 As multi-service platforms, next generation networks can supply a heterogeneous range of downstream services which use common or similar upstream inputs. As a result, the costs of the upstream inputs are likely to vary much less than the value that consumers put on the downstream products. In this environment, value-based pricing is justified because, as Williamson describes:

*[L]ess might be charged for the access bandwidth required for a voice call versus a HD video call, and the premium on high bandwidth might be expected to grow over time as voice only service revenues were eroded by mobile and demand for services such as two way HD video calling and collaboration grows. Dynamic value - rather than cost reflective - pricing is an efficient means of promoting investment.*<sup>44</sup>

- 43 A shift to value-based pricing at the wholesale level as well as at the retail level will better encourage downstream product innovation. As Williamson explains:

*A final question is where price flexibility and differentiation is required if separate wholesale and retail prices are available (the Verizon pricing shown is for retail pricing). The answer is that differentiation must be possible at the*

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<sup>42</sup> Annex A, p. 23.

<sup>43</sup> Annex B, p. 26.

<sup>44</sup> Annex B, p. 11.

*wholesale level – otherwise downstream service providers will not be able to sustain differentiation on the basis of access attributes such as bandwidth due to arbitrage i.e. a higher price for higher bandwidth would be arbitrated away by others purchasing an average price wholesale access product.*<sup>45</sup>

- 44 As demand is so uncertain, a degree of flexibility is required to experiment with different pricing and service combinations as evidence of customer responsiveness emerges in the market. As Williamson observes:

*Since demand for different services and different access service attributes can be expected to change over time – potentially in unpredictable ways - as NGA and the ecosystem of applications it supports matures, there is a need for price flexibility and differentiation across periods in time. In other words, experimentation in products and pricing is needed to work out what customers want and how much they will pay for it.*<sup>46</sup>

- 45 **Finally**, the current approach in telecommunications of setting ex ante prices for each regulated access service could act as a straightjacket on both efficient value-based pricing and price experimentation. NBN owners need the scope to set “whole of network life” access prices, where doing so enhances predictability and reduces regulatory risk. However, providing NBN owners with that scope should not be confused with “micro-regulation” of individual access services, which is already out of step with the broader approaches to price regulation taken today in most other utility industries and, given the problems of the higher level of common costs and the need for price and product experimentation, carries much higher risks in a next generation network world. As Professor Yarrow explains:

*In broad terms it is useful to distinguish between two standard approaches that have been adopted in respect of the price regulation of monopoly/bottleneck activities in both the UK and Australia:*

- *the first – most commonly applied in the energy and transport sectors – has been to focus on setting the average price control based on the estimation of the average level of (efficiently incurred) costs...; and*
- *the second – most common in telecoms – has been to focus on setting the individual prices for different services on the basis of estimates of the incremental costs associated with providing such services.*<sup>47</sup>

*An important consequence of [the second] approach is that the regulated firm has less discretion to determine the structure of prices for the different services it provides, and the structure of prices for the different services provided over the network is effectively determined by the regulator. This approach to the regulation of network activities potentially conflates the regulator’s role in determining the average level of revenue for the regulated firm, to address general concerns regarding excessive pricing and cost efficiency, with a role in determining the structure of prices, which can be expected to have effects on how intensively different parts of the network are used, and which is therefore more a matter of promoting allocative efficiency.*<sup>48</sup>

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<sup>45</sup> Annex B, p. 13.

<sup>46</sup> Annex B, p. 11.

<sup>47</sup> Annex A, p. 16.

<sup>48</sup> Annex A, p. 17.

### C.3.2 Regulatory uncertainty will undermine investment incentives

- 46 The already large risks that the NBN investor has to assume on an ex ante basis would be compounded if its wholesale prices were subject to periodic reset by the regulator. As Williamson says:

*Investors in the National Broadband Network, competing infrastructure and services provided over NGA will also want to know how regulation might develop in future. Without a credible commitment to a sound framework market players will factor in the risk of something less favourable emerging, and outcomes now and in the future will be inferior as a result.*<sup>49</sup>

- 47 In the current regulatory regime, access prices are typically set for short durations – 1 to 3 years – and resets are typically associated with significant regulatory discretion. Professor Yarrow describes the resulting incentives for the regulator and the regulated firm as follows:

*The choice of the length of the regulatory review period is one of the most important considerations made across utility sectors, and, as is well understood, can potentially have major impacts on the incentives of the regulated firm particularly in relation to investments in network assets ... This is because shorter regulatory periods are, in effect, similar to a short-term supply agreement between the regulator and the regulated firm to supply services at a set of pre-determined prices. A problem with such contracts is, however, that they do not provide any assurance as to what prices might be expected at the end of the relevant period. Consequently, for those investments in assets that are productive beyond the end of one regulatory period this necessarily creates some regulatory uncertainty. In some contexts, this uncertainty can be amplified by the fact that once the investment in the assets is made, the regulator will be in a strong bargaining position, since the relevant capital costs are likely to be non-recoverable/sunk. This potential for the regulator to act opportunistically where there are frequent regulatory reviews, can therefore diminish the incentives for investments in long-term projects, and is an example of a policy credibility problem.*<sup>50</sup>

- 48 We have seen clear examples of the unpredictable and severe nature of access price adjustments in the current regulatory regime. The ACCC has set regulated access charges progressively lower through time. For example, since July 2002, the price of Telstra's regulated (Band 2) ULLS has fallen by more than 58% (from \$35 per month to \$14.30 per month) while the costs of key inputs, such as copper and fuel, have increased sharply.
- 49 While in theory access prices can go up as well as down, NBN investors are likely to view the prospects of price increases and decreases asymmetrically. If demand has been under-forecast or costs over-forecast, the regulator will be tempted to intervene to truncate the upside and force lower access prices on the network owner. However, if demand has been over-forecast or costs underestimated, the network owner is unlikely to stimulate the needed take-up by raising its prices, even if the regulator would permit it to do so, as Ofcom candidly acknowledges:

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<sup>49</sup> Annex B, p. 6.  
<sup>50</sup> Annex A, p. 25.

*The problem is that, at some point in time, it may be hard to recall that deploying these assets was ever risky at all. The temptation therefore will be for future regulators to return to regulating assets using a cost-based approach assuming lower levels of risk and hence a lower cost of capital. If operators anticipate that this might happen, this will affect their incentive to invest. So regulators need some way of making contingent commitments; for example, committing themselves to regulating the asset in a particular way so long as the operator is found to have significant market power.<sup>51</sup>*

50 As a result, the investor faces a “heads we win, tails you lose” scenario under which the upside is appropriated by the regulator, while the downside remains the investor’s alone.

51 Ofcom recognised the importance of breaking the cycle of regulatory uncertainty in achieving investment in next generation networks:

*Next generation access networks will be with us for many years following their deployment. They therefore represent a long term investment. It is unlikely that operators will be able to justify their deployment when considering returns over two or three years; a much longer term view of the future costs and revenues will need to be considered. To allow analysis to take place, it is important that a potential investor has as much certainty about the future of the market as possible. In general, as we have discussed, there is much uncertainty in next generation access, particularly in terms of future demand and willingness to pay. Whilst many of the areas of uncertainty facing an investor in next generation access are inherent, one area where Ofcom can contribute certainty is with its regulatory policies.<sup>52</sup>*

52 By contrast with Ofcom, the ACCC pours cold water on long term price commitments in its G9 SAU Draft Decision:

*[T]he ACCC notes it is very unlikely it could be satisfied that setting access prices for much longer than three years would promote competition, due to significant difficulties in identifying appropriate access prices in the future, particularly given the degree of uncertainty as the long-term future demand in communication markets.<sup>53</sup>*

53 The ACCC would accept resetting access prices with a formula, but only if the inputs, the application of the formula, and its outcomes are subject to its ongoing supervision and review.<sup>54</sup>

54 Thus, while both the ACCC and Ofcom recognise that the biggest single challenge in setting access prices for next generation networks is demand uncertainty, Ofcom sees this as a compelling reason to provide **more** regulatory certainty while the ACCC sees it as a **constraint** on providing much certainty at all.

#### **C.4 Attracting investment in competing infrastructure**

55 Facilities-based competition is clearly recognised as best at promoting the long term interests of end users. It should continue to be a policy goal in the NBN

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<sup>51</sup> Ofcom, *Regulatory challenges posed by next generation networks*, November 2006, at 4.63.

<sup>52</sup> Ofcom, *Future Broadband, Policy approach to next generation access, Consultation Paper*, September 2007, at paras 5.41-5.42.

<sup>53</sup> G9 SAU Draft Decision, p. 138.

<sup>54</sup> G9 SAU Draft Decision, p. 99.

world. As discussed in Part B, competition between local access networks is a reality today in many areas. Telstra has not, and never would, seek a prohibition on overbuild.

- 56 However, the current access regime in Australia has not encouraged investment by competitors. A prime example is the SingTel Optus HFC network. While passing 2.2 million homes in Sydney, Brisbane and Melbourne, the availability of cheap regulated ULLS access has allowed it to get away with under-investing in that network. For example, in SingTel's home market, the competing HFC operator upgraded its network to 100 Mbps in January 2006; SingTel Optus has only recently upgraded its Australian HFC network to 20 Mbps. As a result of the disincentive effects of access regulation, end users are missing out on the benefits of the race between cable and copper networks to the next generation future – a race that is now underway in overseas markets.
- 57 The prospects and incentives for alternative infrastructure investment need to be factored into regulation of the NBN in two ways. First, where the NBN faces competition from other end to end next generation networks, asymmetric regulation of the NBN is likely to have distorting effects. In a market like Australia where the prospects of end to end facilities-based competition are likely to be uneven across the NBN's footprint, this means a geographically differentiated approach may be required. As Professor Cave has stated:

*There is also evidence that EU regulators in markets without ubiquitous alternative networks are recalibrating regulation to take account of the presence of alternative networks in 'pockets'. The standard test for a geographical market – homogeneity of competitive conditions within it – tends to yield national markets when there is a 'patchwork quilt' of areas with different endowments of infrastructures, which are, however, united by a uniform retail price imposed by the regulator on the incumbent in the Member State in question. But this story generally does not work for broadband, the retail price of which is not regulated. In such circumstances, there is a strong argument for permitting differentiated geographical treatment, either at the stage of market definition or of remedies.<sup>55</sup>*

- 58 Second, regulated access also needs to be carefully calibrated even in those areas where the prospects of competing next generation networks are limited. A lesson to be learned from the current access regime is that too many overlapping access services – ie, too many rungs in the ladder of investment – lead to the risk that access seekers will prefer those access services that require less investment by them in their own platforms; they squat on rungs rather than climb the ladder of investment. The ACCC has come to the view, too slowly in Telstra's opinion, that regulated access to resale services should be rolled back. As Professor Cave – who is recognised as the 'father of the ladder of investment' – has himself said:

*The role, configuration and duration of the ladder of investment in this rapidly changing environment needs to be carefully considered. As Ofcom has recently acknowledged in its NGA Consultation Paper, it is not acceptable simply to roll forward regulatory solutions from the current environment, including the ladder of investment as we have previously conceived or applied it.<sup>56</sup>*

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<sup>55</sup> M. Cave, *The application of the ladder of investment in Australia*, submission to ACCC, December 2007, p. 6.

<sup>56</sup> M. Cave, *The application of the ladder of investment in Australia*, submission to ACCC, December 2007, pp. 6-7.

## C.5 Conclusion

- 59 Historically, telecommunications networks in Australia were regulated as sunk-cost assets, with access and cost-based pricing rules rigorously applied in order to create competition where there was none. At the same time, social obligations were loaded upon Telstra (see D.6, below), further distorting competition policy, in the expectation that shortfalls could be funded by perceived monopoly profits. It was, in effect, a form a statutory liposuction applied to an ex-monopoly that was thought to have plenty of fat to go around.
- 60 Regulators will no longer have the comfort of an existing network. The challenge now is how to build a healthy investment appetite so that the new NBN is built in the first place. Table 2 summarises the discussion in this Part as to why the current regulatory regime is not up to the challenge and the principles around which the NBN-specific regulatory regime should be designed instead.

**Table 2: How and why regulation will need to change for the NBN**

<b>Feature of current regulatory regime</b>	<b>Why it won't work for the NBN</b>	<b>What will work for the NBN</b>
Cost based pricing	<ul style="list-style-type: none"> <li>• Primary focus must be on promoting investment incentives, yet TSLRIC under-rewards investment</li> <li>• TSLRIC models have limited credibility as have been applied by regulators in an opportunistic, highly discretionary manner</li> <li>• The NBN is a multi-service platform, with high level of common costs and therefore no easy basis for cost allocation</li> </ul>	Value-based pricing at retail and wholesale levels
Fixed ex ante regulated prices	Fails to recognise that as demand is unpredictable and many products will be new to the market, scope is needed to experiment to discover demand and price levels	Price flexibility at retail and wholesale levels
Price regulation at level of individual access services	Price structures determined at individual service level by the regulator are unlikely to result in efficient use of today's networks, let alone the NBN with its demand uncertainties	Broader approach permits flexibility
Frequent regulatory resets of access prices	Risk of future regulatory changes compounds existing high risk of NBN	Ex ante binding regulatory commitment to pricing and scope for NBN owner to commit to 'whole of network life' pricing where this reduces regulatory risk
Nation-wide availability of regulated access	Fails to recognise enhanced opportunities for facilities based competition in a next	Reduced regulation in areas where the NBN faces a competing next generation

Feature of current regulatory regime	Why it won't work for the NBN	What will work for the NBN
	generation network environment because of higher ARPUs and lower operating costs	network
Extensive set of overlapping access services	Fails to recognise enhanced opportunities for downstream competition at the applications and services layers	Access seekers should have incentives to invest in their own aggregation/backhaul network, core networks and service platforms

- 61 Telstra recognises, of course, that trade-offs are involved in applying the principles that we believe should shape regulation of the NBN. For example, value-based pricing and flexibility for price experimentation need to be balanced with ensuring that end users and access seekers do not pay materially more for the NBN versions of current services. Ex ante commitments by the regulator on pricing also need to be balanced with ex post supervision to ensure effective competition.
- 62 There is no single, obvious answer – other than that today's regulation won't work for the NBN. Overseas regulators have been prepared to step out of the comfort zone of today's regulatory approaches and to take an open minded approach to regulatory solutions that will promote incentives to build the NBN. While the RFP implicitly recognises the need for a fresh regulatory approach, the ACCC's blueprint for next generation network regulation set out in the G9 SAU Draft Decision refights old battles that will be irrelevant to the new environment. More significantly, if no one will build the NBN under today's regulatory model, how will an approach to add *more* regulation – such as separation – on top of that which exists already succeed in achieving the Government's ambitious goals?

## D Proposed regulatory framework

63 In Part C, we discussed what is needed, and as importantly not needed, to get the NBN built and to fully realise its benefits. In this Part, Telstra sets out its specific regulatory proposals, which are summarised below in Table 3.

**Table 3: How to tackle the regulatory challenges head on**

Issue	What the NBN needs
Regulatory certainty – Parts XIB and XIC of the Trade Practices Act could be used to unpick the NBN-specific regulatory regime agreed between the Government and the successful bidder	<p>A <b>single process</b> arriving at a single answer that will be certain enough for investors to bank on</p> <p>A legislative mechanism will be required to ensure that the undertakings given to the Government by the successful bidder substitute for Part XIB and Part XIC</p>
Scope of mandated access to the NBN	<p>Telstra endorses open access principles for the NBN</p> <p>The NBN access regime should adhere to best regulatory practice and only <b>reflect bottlenecks</b></p> <p>As competition should boom at the applications and services level, the NBN operator should <b>not be required to provide wholesale versions of its own retail products</b> in addition to open access to bottleneck inputs</p> <p>As next generation networks can enhance opportunities for alternative network infrastructure, there should be scope <b>to roll back access regulation in competitive areas</b></p>
<p>Access pricing –</p> <ul style="list-style-type: none"> <li>• today’s regulated TSLRIC pricing focuses on costing a sunk asset to maximise demand (without regard to supply-side considerations) and does not promote efficient investment</li> <li>• TSLRIC affords significant regulatory discretion, eg re allocation of common costs</li> </ul>	<p>NBN pricing principles should be focused on:</p> <ul style="list-style-type: none"> <li>• ensuring proper investment incentives for the NBN</li> <li>• recognition that as the next generation networks are multi-service platforms, there is a much higher level of common costs and therefore no easy basis for cost allocation, and</li> <li>• remove scope for regulators to price in an opportunistic, highly discretionary manner</li> </ul> <p>NBN access pricing should recognise supply- and demand-side business considerations – ie, take a <b>value-based pricing</b> approach</p>
Pricing flexibility	<p>The NBN operator requires a reasonable degree of <b>pricing flexibility</b> at retail and wholesale levels because demand is unpredictable and many products will be new to the market; scope is needed to experiment to discover demand and price levels</p> <p>Required flexibility must be provided in a manner that does not deprive the NBN operator of pricing certainty, and hence must accommodate scope for fixed price ceilings or other pricing arrangements that are locked in for the life of the relevant assets</p>

Issue	What the NBN needs
Reset of access terms – Currently there are regulatory resets of access prices accompanied by broad, unpredictable regulatory discretions	Ex ante regulatory commitment to access pricing on the NBN to provide <b>regulatory certainty</b> for investors
Part XIC during transition period and going forward	Even with an NBN-specific access regime, <b>urgent reform of Part XIC</b> is required in any event and particularly because it will operate side by side with the NBN regime during roll-out and could be gamed to undermine the transition to the NBN
Current access services	ULLS and LSS cannot co-exist with the NBN for sound business and technical reasons. <b>The current ULLS and LSS access regulation should be removed within the NBN footprint</b>
Land access	<b>Ameliorate land access risks</b> to maximise the successful bidder’s ability to cost-effectively achieve the coverage and performance requirements of the NBN within an aggressive build timeframe
Addressing consumer protection and social policy objectives	Telstra supports robust consumer protections for the NBN: <ul style="list-style-type: none"> <li>• <b>unnecessary retail price regulation should be removed</b> in light of regulated wholesale prices and pro-competitive nature of NBN (maintain only safeguards necessary to protect vulnerable consumers)</li> <li>• given its critical importance, bidders must persuade the Government of their capabilities to provide <b>emergency services</b>, particularly during the migration phase at nodes</li> <li>• <b>service reliability and performance regulations need to be rethought</b> to reflect the changed service delivery environment of the NBN. For example, current service parameters, such as physical site appointments, will be less significant than in today’s environment; the relevance of the Network Reliability Framework will decline, and</li> <li>• <b>Universal Service Obligation funding needs to be completely revamped</b>. If not met by direct Government funding – the most efficient outcome – uniform national pricing of key wholesale services provides a reasonable alternative subject to being set at an appropriate level, a mechanism to address the erosion of cross-subsidies by cherry-picking and flexibility for the NBN operator to competitively respond to pricing in areas where there are competing next generation networks</li> </ul>

## D.1 A single process

- 64 Whatever one's views on the shape of regulation of next generation networks, it should be common ground that there should be a single process to arrive at the answer, and that answer should have sustainability and continuity.
- 65 The successful bidder will enter into binding commitments with the Government on roll-out, technology and wholesale and retail products. The Government cannot realistically expect to hold the successful bidder to the Government's roll-out and penetration objectives if the regulatory assumptions on which the successful bidder's commitments to those objectives are based do not come about or are changed in the future.
- 66 If Parts XIB and XIC of the *Trade Practices Act 1974* (Cth) apply to the NBN, there is a risk that they could be used to unpick the agreements with the Government. Under Part XIC, the ACCC could:
- (a) declare a different set of access services to those to that the successful bidder commits to in its agreement with the Government;
  - (b) apply cost-based pricing principles inappropriate for the NBN; or
  - (c) make standard terms or arbitrate terms bilaterally that are also at variance to those set out in the agreement with the Government.
- 67 Part XIB could also be used as an end run around the agreement with the Government. The ACCC has used Part XIB in the past to secure access or wholesale arrangements; for example, layer 2 bitstream is not a declared service but has been the subject of competition notices.
- 68 The Government has only limited powers of direction over the ACCC. Based on the views the ACCC expressed in the G9 SAU Draft Decision, the Government could have no confidence in contractual mechanisms that were based on an expectation that the ACCC would subsequently "tick off" the outcome of the tender under Part XIC (such as a condition precedent providing for the ACCC to approve the arrangement through the Standard Access Undertaking). Even if the ACCC was minded to "fall into line", it may be vulnerable to challenge in the Australian Competition Tribunal or the courts.
- 69 The requirement for regulatory certainty also applies in the transitional period leading to deployment of the NBN. As the NBN will take years to roll-out, Part XIC would still apply to the legacy copper network in the lead up period to its cutover to the NBN. This is more complicated than simply moving from Part XIC to the NBN-specific access regime at the same time as customers are cut over to the NBN in a node area.
- 70 This is not a proposal to lock out the ACCC. The ACCC will have the opportunity to put its views, including on the continuing regulatory powers which it should have, in the tender process. Accordingly, the Government should clearly specify that Parts XIB and XIC will not apply to NBN deployment, and must achieve this via its legislative or other implementation mechanisms.

## D.2 Reform of Part XIC in any event

- 71 Quite apart from the need to develop a tailor-made access regime specifically for the NBN, Part XIC is in need of dire and urgent reform.<sup>57</sup> This is because Part XIC will continue to matter even with an NBN-specific access regime. The NBN will take many years to build and there is tremendous scope for the economics of the builder to be undermined via Part XIC in the meantime. The Government needs to decide now whether to create a framework that facilitates investment in competing infrastructure, both while the NBN is being deployed and into the future. More consistency between a revamped legacy access regime and the more investment focussed NBN-specific access regime also will be essential if “boundary issues” between the regimes are to be avoided.
- 72 As discussed in Part C, Part XIC actively discourages investment in infrastructure both by incumbents and new entrants, as has been demonstrated by the unwillingness of anybody to invest in fixed next generation access networks absent regulatory reform. There is a stark contrast between the willingness of Telstra, Optus and Vodafone to invest in multiple competing 3G wireless networks – which are relatively regulation-free – with the reliance by SingTel Optus on Telstra’s regulated fixed network, even in areas where it has its own cable infrastructure.
- 73 This is a fundamental flaw in Part XIC. In a sector that should be characterised by innovation and competition driven by investment in new technologies, there is a distinct lack of risk-taking and an entrenched reliance on regulatory outcomes. Business decisions are regularly decided on the basis of their regulatory benefits and impacts, rather than on normal commercial grounds. The regime is beset by conflict, long-running disputes, gaming and inefficiencies. All of these undesirable outcomes are the hallmarks of a regulatory regime that is over-reaching and stifling the market that it is attempting to regulate.
- 74 The central problem is regulatory uncertainty. The cause of this uncertainty is the excessive discretion vested in the ACCC in both determining its own remit by declaring which services will be regulated and then in determining the terms of access.
- 75 Fundamental change is required to set clearer statutory guidance around the way in which each of those functions is undertaken, including the statutory criteria that must be met for declaration of services and determination of the terms of access, and the mechanisms for ensuring accountability.
- 76 An ACCC decision to declare a service is not subject to merits review, even though the criteria guiding that decision are vague and can be traded off against each other. This contrasts with the national third party access regime (provided for in Part IIIA of the *Trade Practices Act*), which (a) separates the task of recommending declaration from that of determining it; (b) provides for review on the merits of declaration decisions; and (c) limits declaration to situations where a service meets all of a range of hurdles.
- 77 Clear declaration criteria focused on enduring bottlenecks are required, as discussed below in section D.3.

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<sup>57</sup> This section draws on Henry Ergas (2008) *Wrong Number: Resolving Australia's Telecommunications Impasse*, Allen & Unwin, Sydney.

- 78 Clear pricing principles are needed, such as those under Part IIIA which, unlike Part XIC, require that the regulated price be set at a sufficient level to cover the efficient costs of providing access, including a return commensurate with regulatory and commercial risk. The inclusion of such a requirement alone would send a very clear signal to investors in terms of encouraging investment and reducing regulatory risk. Additionally, methods of determining those costs must be specified, as in the energy regime, so that all market participants can confidently predict how costs will be assessed. In particular, the cost of capital must be determined in a manner consistent with commercial and regulatory risk. Again as in the energy regime, the rules governing cost determination and access pricing more generally need to be established prior to and separately from the implementation of those rules by the regulator.
- 79 Given that some regulatory discretion will remain, it should be guided by a clearly specified, overarching duty for the regulator to act in a manner that will promote efficient investment and provide incentives for innovation and the efficient, timely and reliable availability of services.
- 80 Changes are also required to improve the process for, and timeliness of, regulatory decisions. The mechanism for regulatory wind-back should also be strengthened, and endowed with a deregulatory bias consistent with the basic principle that regulation should be retained only where it can be shown to remain warranted, with the burden of establishing that case resting on the proponents of continued regulation.
- 81 The undertaking mechanism was intended to provide regulatory certainty to all market participants and to reduce the burden on regulatory institutions by avoiding disputes, or simplifying their resolution. There can be little doubt that the telecommunications undertaking regime has failed in its objectives, with only a handful of undertakings accepted since 1997. This failure can be attributed to lack of clarity of the criteria for acceptance of the undertakings and how they are to be weighted. The burden to satisfy the ACCC, which can reject an undertaking on fairly arbitrary grounds, is virtually impossible to satisfy, particularly when the ACCC has little incentive to accept an undertaking. The ACCC should be required to accept an undertaking unless it is unreasonable (rather than the other way around, as is currently the case). Arbitral decisions made by the ACCC should be subject to merits review as a constraint on the ACCC's arbitral powers. The alternative is a lack of any substantial accountability on the merits of any arbitral determination.
- 82 A mechanism to restore the primacy of commercial negotiations – to prevent them being overhung by the prospect of, and therefore inevitably supplanted by, unreviewable regulated outcomes – is required. So long as recourse to arbitration remains a “one way bet” for access seekers, commercial negotiations will never operate as the primary means of dispute resolution.
- 83 Accordingly, reform of Part XIC cannot wait until the proposed 2009 review if the Government wants to ensure that the current distortions caused by Part XIC do not undermine market outcomes during and following the NBN tender.

### **D.3 The FTTN open access principles should reflect bottlenecks**

- 84 Telstra supports open access to the NBN.
- 85 A well constructed gating mechanism should identify those access services that are the key inputs or bottlenecks that competitors can only realistically source from the regulated firm and where regulated supply will promote competition. The current gating mechanism in Part XIC – the long term interests of end users –

is substantially broader than an economically justifiable test of bottleneck facilities (such as applies under Part IIIA), which is the cause of its investment disincentive problems.

- 86 In addition, given the dynamic nature of the telecommunications industry, access regulation should not be built on the fixed assumption that today's bottlenecks will be the bottlenecks of the future. As Professor Cave remarks, "while regulation properly responds to structure it also shapes it – in the sense that regulating an asset as a bottleneck will probably keep it one, even if it could be replicated."<sup>58</sup>
- 87 Therefore, the NBN-specific regulated access arrangements should be treated as the high water mark of access regulation and there should be flexibility to pull back regulation in those areas where and when effective competition becomes available. A possible mechanism would be to adapt the existing exemption mechanisms within Part XIC, in line with the recommendation above as to the reform of those mechanisms.
- 88 Telstra endorses the principle that the NBN access products should provide access seekers with the opportunity to innovate with their own products. If access seekers have the access tools to build their own products, competition is not served by requiring the NBN operator to provide "white label" versions of its own retail products. Therefore, beyond identified bottleneck services, there should be no mandatory wholesaling obligations. In addition, plummeting demand for preselection has made this obligation outdated. This trend has been driven by market developments such as more extensive bundling by customers and greater use of VoIP.
- 89 For the reasons we discussed in Part C, setting access pricing to bottleneck services using today's cost based pricing models is likely to undermine investment in the NBN. Access pricing proposals will form part of the confidential commercial bid of each proponent, but the proposals should be evaluated against the pricing principles Telstra proposes in Part C: namely, value-based pricing, pricing flexibility and a shift from service-by-service ex ante pricing.
- 90 As we have said, Telstra recognises that there can be tension between certainty on the one hand for access seekers, and flexibility to price innovate for the NBN operator on the other hand. One solution might be the approach Ofcom is considering – namely, an anchor pricing model in which the next generation network operator and the regulator commit on a long term basis to prices for the NBN equivalent of current services. This provides the next generation network operator, access seekers and end users with pricing certainty for core competitive services. Other services – including future services yet to be developed – would only be regulated on an ex post competition law basis. The next generation network operator would have flexibility to experiment with retail and wholesale pricing and service configurations.

#### **D.4 Removal of ULLS and LSS**

- 91 In today's legacy environment, access to true high speed broadband is limited to end users fortunate enough to live sufficiently proximate to an exchange. The NBN is all about enlarging this circle of the broadband advantaged to include all

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<sup>58</sup> Annex C, p. 6.

customers within almost all exchange areas across Australia. For the technical and economic reasons we discuss below, this requires an “all or nothing” solution in which all customers – including those living near the exchange – are migrated to the NBN. As a result, the NBN and unbundled copper access services such as the line sharing service (LSS) and ULLS, whether full loop or sub-loop, cannot feasibly co-exist in an exchange area with the NBN.

- 92 There seems general acceptance, including by Terria/G9, that it is not feasible to deploy more than one FTTN network in the same node area sharing sub-loops at the node/pillar. However, some access seekers intent on preserving their legacy business may argue for the continued ability to provide DSL services directly from exchanges by either or both:
- (a) full loops otherwise served by nodes; or
  - (b) full loops for the small proportion of customers living near the exchange.
- 93 Co-existence of ULLS/LSS in either or both cases with the NBN will fundamentally undermine the economics of the NBN. Most of the costs of the NBN are fixed, upfront costs that will be common across all customers within the network footprint. Few of these costs will be avoided if some customers continue to sit on exchange fed services offered by ULLS/LSS-based operators paying legacy regulated access prices for their use of the network. The simple fact is that deployment of the NBN is only possible at anywhere near viable cost if all loops in each cabinet are cut over to the NBN and pre-provisioned together.
- 94 Co-existence of ULL/LSS with the NBN will also cause technical problems which adversely affect customer service levels. The speed and quality of the broadband service for NBN customers will be adversely affected if access seekers can provide broadband services from the exchange into the node area using copper loops in circumstances where the exchange-fed services are given priority (such as under the Deployment State A provisions of ACIF/CA C559).<sup>59</sup> The node power within the NBN would need to be reduced to permit co-existence of exchange-fed DSL lines with a node based network. As a result, the maximum distance from the node to deliver 12 Mbps would be reduced by 25% in the case of VDSL2 and more than 60% in the case of ADSL2+<sup>60</sup>. The implications of this are significantly increased costs of building the NBN as more nodes will be required due to the shorter loop lengths.
- 95 An alternative approach to prevent this problem is to reverse the prioritisation, so that the node-fed services take precedence over the exchange fed services (as provided for by C559 Deployment State B<sup>61</sup> (or the additional Deployment State C proposal from Telstra)).<sup>62</sup> This approach allows full power at the node and

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<sup>59</sup> **Deployment State A** is the only state for single feed DA's at present. In dual feed, Deployment State A is the default state that provides protection of the exchange-fed system at the expense of the node-fed system that must use power spectral density shaping or power reduction.

<sup>60</sup> See Schedule A, which details the technical and operational issues arising from ULLS coexistence.

<sup>61</sup> **Deployment State B** applies only to dual feed situations, in which it gives priority to the node-fed system at the expense of the exchange fed system which:

1. may suffer severe degradation in downstream performance due to unequal level crosstalk interference from the node fed system; and
2. may be required to modify its upstream psd to protect the upstream performance of the node fed system. This effectively means that VDSL2 cannot be deployed from the exchange in Deployment State B.

<sup>62</sup> **Deployment State C**, Telstra's current preferred approach for FTTN, is a more recent proposal from Telstra that has 2 implementations:

1. in single feed, it limits technology usage to DMT based ADSL, ADSL2+ and VDSL2 to minimise interference from other less spectrally compatible systems; and

hence full rate to the customers at the expense of degraded rate of ADSL2+ services from the exchange. However, the implications of Deployment State B are that exchange-fed VDSL2 is prohibited and exchange fed ADSL2+ rates are degraded – all exchange-fed customers would have reduced access to high-speed broadband.

- 96 Therefore, if ULLS/LSS are allowed to co-exist with the NBN, either node-fed customers will lose out to exchange-fed customers or vice versa: either ‘Peter is robbed of speed to pay Paul’ or vice versa. It will be difficult to explain to neighbours why one can get higher speeds but the other cannot.
- 97 Direct third party access to individual copper loops will also constrain the ability of the NBN operator to design the most optimal deployment in each exchange area. Such an access network architecture review is only possible when the existence and location of current nodes and exchange buildings are largely ignored for planning purposes.
- 98 Any FTTN design is also likely to place nodes closer to the exchange building than the 12 Mbps serving radius. It is very rare (particularly in metropolitan areas) that no pillars are within that radius of an exchange building. This means that the range of customers accessible directly from an exchange building will eventually decline to those customers that are within a few hundred metres.
- 99 There is also not a viable business case, in Telstra’s view, for an exchange fed only copper competitor to the NBN in any exchange service area. Telstra estimates that in the average metropolitan exchange service area, the number of potential customers within 500m of the exchange building is only 5% of the total number of customers in that exchange service area.
- 100 If the full benefit of the NBN is to be realised, competitors must begin re-thinking their business cases for the new environment and begin to make the required investment, rather than clinging to the existing legacy models. As Williamson notes from the European experience, there is a client population for current regulated access services which can try to hold up the migration to next generation networks:

*[P]hysical unbundling, at least in Europe, has led to the emergence of support for the status quo in terms of the underlying network architecture by many unbundlers. In the absence of strong platform based competition they have no reason to support an upgrade to NGA – even if it were in end users interests – since they utilise a common input (copper loops). Unbundling of FTTN would likely see similar resistance to the transition to FTTP.<sup>63</sup>*

- 101 In short, the NBN cannot be deployed in exchange areas like a donut with a hole in the centre in which current ULLS and LSS access services continue to be available for access seekers to serve customers directly from the exchange. Australia has decided to build a **National** Broadband Network; it must be *national* in application. Accordingly, the current ULLS and LSS regulated access services should be withdrawn within the NBN footprint.
- 102 The Government will need to make a decision as to whether it will compensate the owners of DSLAMs that are rendered obsolete as a result of its commitment

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2. in dual feed, it has the same technology limitations as for single feed, but also gives priority to the node as in Deployment State B.

<sup>63</sup> Annex B, p. 17.

to the rollout of the NBN and the consequential need to withdraw ULLS and LSS. To inform this consideration, Telstra advises it has DSLAMs deployed in 2751 exchange service areas as at 17 June 2008. Telstra estimates<sup>64</sup> that non-Telstra providers have deployed DSLAMs to approximately 530 exchange service areas. Telstra estimates that it has deployed around 73% of industry DSLAMs.

## **D.5 Efficient and timely NBN roll-out**

103 In order to maximise the successful proponent's ability to cost effectively achieve the coverage and performance requests for the NBN within an aggressive timetable, the successful proponent will need to have access to land and other facilities on/under which to roll out the network.

104 Existing consent and objection processes have the potential to delay some elements of the proposed network deployment by up to 12 months or more. Further, the successful proponent may be exposed to claims for compensation from affected land owners (including municipal authorities). There are substantial tracts of land (including in metropolitan areas) which the successful proponent will not be able to access under the existing land access regime; in these cases the proponent will need to obtain statutory approvals and negotiate tenure with landowners.

105 The Government will need to decide whether it will take steps to streamline the current land access processes and to ameliorate the potential compensation costs. The Government has proposed an extremely aggressive timeframe for rolling out an entire fibre network to 98% of homes and businesses. In Telstra's view it will be particularly difficult for any builder to achieve this timetable and meet the Government's coverage and performance requests if land access risks are not ameliorated as part of the regulatory framework for the NBN.

## **D.6 Consumer protection and social policy objectives must be met and funded**

106 Substantial consumer protection and social policy obligations are incorporated into Australia's current telecommunications regime, including:

- (a) retail pricing controls, such as price capping and regional-city price parity obligations;
- (b) obligations and arrangements for emergency calls;
- (c) customer and network fault management responsibilities and standards; and
- (d) the Universal Service Obligation (**USO**) and low income services.

107 As the NBN would replace the existing ubiquitous PSTN on which end users rely, it is important that they have confidence that services on the new network will be reliable and of high quality. Telstra therefore supports specific regulatory safeguards and commitments to protect end users.

108 However, the current regime is a mish-mash of obligations and commitments which, while they may individually have been justified at the time they were imposed, need to be updated, reformed and rationalised to be meaningful and

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<sup>64</sup> Telstra's estimate is based on publicly available data.

efficient in the NBN environment. In particular, obligations reflecting past problems in the legacy networks which either have already been resolved or will not be relevant to the NBN should be left behind.

- 109 To date, Telstra has also borne the bulk of the social and consumer obligations. It is vital that the Government require other bidders to explain which obligations they consider will be relevant to the NBN under their model, who will bear these obligations should their bid succeed, and how they will be funded. The current customer protection and social obligations can be seamlessly provided **precisely** because they are delivered by Telstra as a vertically integrated operator. The true costs of these customer protection and social obligations are also understated or misunderstood because they are absorbed within a vertically integrated operator.
- 110 The Government's Assessment Panel will need to understand how any wholesale-only proposal will address the unique challenge of allocation of legal responsibilities, task co-ordination and cost sharing between separate wholesale and retail businesses to ensure that end users continue to get the services at the quality level and comparable price levels to which they have become accustomed. A wholesale-only bidder cannot "wash its hands" of end user customer protection and social obligations because, while the downstream providers may be supplying the end user service, they vitally depend on timely, high quality, fairly priced network services to be able to provide those services.
- 111 A key consumer safeguard is the reliable delivery of emergency calls. Whether the successful NBN bidder is vertically integrated or a wholesale-only model, this obligation should fall on the person who owns and operates the network – or at least be shared between the network operator and the telephony provider. Meeting the emergency call requirements intimately depends on the underlying quality of the access network, even if the network operator only provides an unswitched telephony connectivity service and the switching and routing of calls is undertaken by a downstream service provider. If this is the model proposed by any wholesale-only operator, it will need to explain to the Panel:
- (a) if it is not the provider itself of the emergency call service to end users, who will bear the obligation to provide the emergency call service? If Telstra's role is reduced to a service provider, it should not be automatically assumed that Telstra will continue to provide services in all areas; and
  - (b) how would the wholesale-only provider ensure that the quality of the underlying connectivity service is to the level required for the emergency call service?
- 112 Physical connection and therefore service attendance will become less important for the NBN where, in most cases, customer services can be connected, reconfigured, tested and disconnected remotely without a truck roll. An example of how current regulation needs to be adapted to the NBN is the Network Reliability Framework (**NRF**) to which Telstra is subject through its licence. The NRF was imposed to deal with the quality problems that Telstra inherited with the monopoly copper network. Telstra has had to resolve these quality issues in the face of competitive pressures and so the NRF addresses problems that no longer exist. In any event, the NRF will be inappropriate to a next generation network environment given the different technology used (ie, substantially more fibre in the network). Telstra proposes that the NRF be removed once the NBN is complete.

- 113 Again, any wholesale-only operators will need to explain how they will achieve the required service levels in an NBN environment, including how they intend to solve the co-ordination problems when the network is 'cut up' between Telstra (as the sub-loop provider), the wholesale-only network operator and the retail providers.<sup>65</sup> A wholesale-only NBN builder, while not directly responsible for service commitments to end users, would nevertheless bear a parallel obligation to downstream operators to build a network that enables those operators to meet their end user service standards. This matching obligation would need to be factored into the costs and maintenance of a wholesale-only model. In addition, if an FTTN model is used, the wholesale-only provider (or a vertically integrated provider other than Telstra) would need to co-ordinate with Telstra in respect of the sub-loops.
- 114 Telstra supports a safety net to ensure rural customers have access to NBN services at pricing parity with city customers. Telstra believes that retail price regulation is not required to achieve this if key wholesale services are provided at geographically uniform prices, but notes that this must not be implemented inflexibly as it involves a cross-subsidy, the basis for which is open to erosion by cherry-picking, as described below.
- 115 Telstra also supports a safety net for vulnerable customers, such as those on low incomes. The pro-competitive nature of the NBN – ie, that it will promote retail competition, innovation and differentiation – means that price cap regulation will be unnecessary except to the extent it is needed to provide that safety net.
- 116 Commitments on retail prices will place a vertically integrated bidder at a disadvantage to a non-vertically integrated bidder. A non-vertically integrated bidder is likely to argue that it would face competition law problems in making any commitments to the Government about the retail prices which those wholesale customers will be permitted to charge.
- 117 Equitable access to communications services is currently addressed through two mechanisms. First, the USO currently requires Telstra, as Australia's primary universal service provider, to ensure that a Standard Telephone Service is reasonably available to all people in Australia on an equitable basis, wherever they may live or work. Huge costs are involved in meeting the USO. Part is funded by industry levy, but the bulk is paid for by Telstra out of the pockets of its shareholders because the USO subsidy is arbitrarily capped at a level bearing no relationship to cost. It is widely recognised that reform of the USO's funding is needed.<sup>66</sup> The Minister, Senator Conroy, has also recognised the "significant and growing shortfall in USO funding" and that "the time is rapidly approaching when tough decisions will need to be made to resolve the increasing contradictions inherent in this [USO] regime."<sup>67</sup>
- 118 The problem of the costs of loss making or unprofitable services will grow with the NBN. Currently, the big losses on service provision occur in relation to remote users. In non remote rural areas, much of the asset base is written down or off and the cost differential, though real, is manageable. However, there will

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<sup>65</sup> See Telstra's separate companion submission on vertical integration issues.

<sup>66</sup> See, for example: Telecommunications Service Inquiry report, *Connecting Australia* (2000); Productivity Commission, *Telecommunications Competition Regulation inquiry report* (2001); Regional Telecommunications Inquiry report, *Connecting Regional Australia* (2002); and Department of Communications, Information Technology and the Arts, *Review of the Operation of the Universal Service Obligation and Customer Service Guarantee* (2004).

<sup>67</sup> Conroy, Address to ATUG Conference, March 7, 2007 (available at: <http://www.atug.org.au/pdf-2007/Conroy-ATUG-2007.pdf>).

be many more 'uneconomic' services as the expensive infrastructure is rolled out in rural areas.

- 119 Telstra's view is that, as the USO is directed at meeting the Government's social policy goals, it should be directly and entirely funded by the Government. Some of these increased losses may be offset by the Government's proposed contribution to the NBN of up to \$4.7 billion. However, the greater the extent to which the Government is seeking a return on that contribution, the lesser the extent to which it can cover the higher loss.
- 120 In the past, the provision of new services at below-cost prices was largely covered by internal cross-subsidies, and this could be done through averaged prices. However, if this is what the Government wants for the NBN, it will need to deal with the ACCC's strong objection to averaging (such as with ULLS). Additionally, it also will be important to take into account the fact that NBN will face competition from other next generation networks, such as HFC, 3G and fixed wireless. They will be able to 'cherry pick' the most profitable customers, whether in metro or non-metro areas, undermining internal cross-subsidies within the NBN service. There will need to be a mechanism to ensure that the NBN owner is not trapped into averaged prices in responding in competitive areas and that deals with the eroded cross subsidy that was otherwise available to fund the loss making areas.
- 121 Telstra's low-income safety net is the subject of separate licence obligations. As noted, it is important that this protection remains to ensure equitable access to telecommunications services. Again, the challenge of meeting this obligation will be more difficult for a wholesale-only model as a vertically integrated provider can cross-subsidise between customers with higher and lower propensities to pay. If the Government does not fully fund the obligation, it is likely that a special, discounted service for those customers on social security would need to be developed; any wholesale-only bidder's approach needs to be set out in their bid, along with how they would address the complex administration of such a specialised service.

## Schedule A – Technical and operational issues with ULLS

### A Introduction

- 1 The Federal Government’s requirements for the fibre-based NBN include the delivery of services at 12 Mbps. Node-based delivery in the FTTN network is necessary to provide the 12 Mbps government objective to customers distant from the exchange.
- 2 There are both technical and operational reasons why a FTTN-based network cannot co-exist with copper-based ULLS. These reasons are outlined below.

### B Technical issue with exchange based loops

- 3 In order to deliver an efficient FTTN network it is essential to have full power from the node. That is, the power from the node cannot be reduced in order to ensure that there is no interference with any exchange-fed services.
- 4 The usual approach to the deployment of an FTTN network is to place nodes at points relatively close to consumer premises and to run fibre to those nodes. Once the node is deployed, the copper pairs from the exchange to the node are connected to the fibre. Some low speed services may continue to use existing copper for a period after node cut-over.
- 5 Some access seekers have argued that there is no need to “cut the copper” as both exchange-based unconditioned local loop services (**ULLS**) supporting ADSL2+ and FTTN can co-exist *provided* that the output power of the VDSL2 service at the node is reduced. The proposed approach is set out in Figure 2.

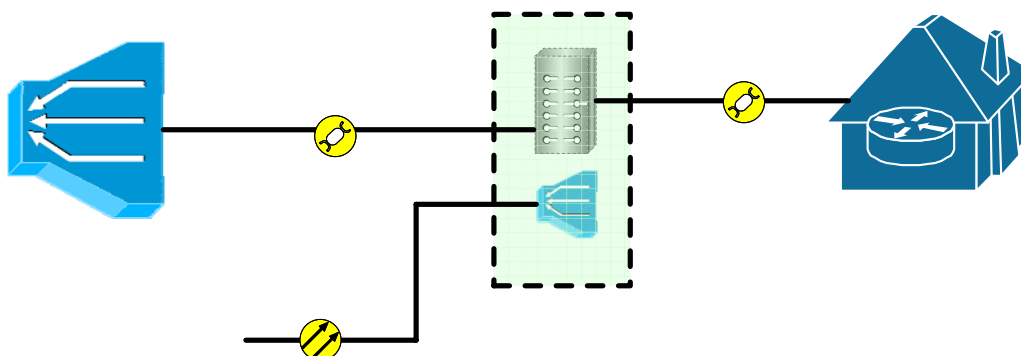


Figure 2 – Co-existence of ULL and FTTN

- 6 Telstra has modelled the limitations that would need to be imposed on node design in order to permit this co-existence. This co-existence is only possible if the power from the node is significantly limited in order to ensure that there is no interference from the node to copper-based services running from the exchange. The results of this modelling are that the node to customer distance

for 12 Mbps services drops by as much as 25% if the service is VDSL2 based, or by as much as 60% if the service is ADSL2+ based.<sup>68</sup>

- 7 Particularly in regional areas, the reduction in distance would require a significant redesign of the access network resulting in many more nodes having to be deployed than would be required in an efficient design. It is unlikely that such a redesign would have a viable business case.

## C Operational issues

- 8 A number of operational issues also arise, highlighting the difficulties inherent in ULLS and FTTN co-existence. For example, operational procedures for activation of new services and for churn of services between providers currently require physical jumpering of the ULLS to the provider's equipment in the exchange. Those operations are batched and performed by field staff who may perform 20 such operations in one visit. In an FTTN network that permits ULLS, the number of customers per node is such that typically only one such operation would be required at each node, and the field staff would be required to travel to, open up, and re-jumper one line at each of 20 nodes where previously they could do them all efficiently on the one main distribution frame. FTTN offers the opportunity to avoid almost all such expense by pre-providing DSL and voice to all customer lines at the node so that activation and churn of the bitstream service on the DSL and the voice can usually be done through software without a truck roll.
- 9 Each intrusion in the CAN results in a higher probability of a fault occurring. One of the advantages of the FTTN is that the CAN can be 'locked down' and fault levels thus reduced. This benefit disappears if ULLS coexistence is permitted.
- 10 Further operational issues relate to management of performance in the FTTN. In order to support the necessary range of services (including video), systems for management of performance of VDSL2 and ADSL2+ in an FTTN need to be more complex and interactive than for current internet service provision. The stability and performance of systems is dependent on having automated management of DSL profile parameters to optimise performance on the line. Those procedures are now extending to cooperative mechanisms where the parameters of all lines in the cable are optimised for the common good; such schemes include dynamic line management and dynamic spectrum management.
- 11 In a ULLS environment, Telstra is responsible for the assurance of the copper pair access network for all providers. Assurance decisions depend strongly on the information returned from automated testing systems that retrieve information from test heads and from the DSLAMs. There is currently no regulatory requirement for Access Seekers to even have such testing equipment. Even those that do have testing systems provide information in a different format and not always readily usable by Telstra field staff, with the result that Telstra has to roll a truck and continue to have verbal interactions with the wholesale customer during the process. This is clearly much less efficient than Telstra having an automated management system for FTTN that tunes lines for best performance, provides information on screen for help desks interacting with customers, and for field staff on the job, and avoids the need for many truck rolls.

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Modelling assumes polyethylene distribution cable is used and is based on most common node locations.