

## Chapter 4

### The Cost-Benefit Analysis and Review of Regulation

4.1 The terms of reference and panel of experts for the 'independent cost-benefit analysis and review of regulation' were announced by the government on 12 December 2013. The cost-benefit analysis was to 'analyse the economic and social costs and benefits...arising directly from the availability of broadband of differing properties via various technologies, and to make recommendations on the role of government support and a number of other long-term industry matters'.<sup>1</sup>

4.2 The Panel of Experts appointed to conduct the analysis was chaired by Dr Michael Vertigan AC, with Ms Alison Deans, Professor Henry Ergas and Mr Tony Shaw PSM as the other members. The Centre for International Economics (CIE) was engaged as an additional consultant providing advice to the project, and several other consultants were used for specialist advice, editing and peer review. The Department of Communications advised the committee in October 2014 that the total cost of the cost-benefit analysis and regulatory review was \$1,454,989.<sup>2</sup>

4.3 The Panel's report to the Minister was dated 14 August 2014. Volume II, *The costs and benefits of high speed broadband*, was publicly released, with some redactions, on 27 August 2014. Volume I, the *Market and regulatory report*, was released on 1 October 2014. A number of supplementary papers related to the main report were also issued by the Panel between July and October 2014.<sup>3</sup>

4.4 This chapter considers the two parts of the report in their order of release, commencing with Volume II, which was the document widely referred to as the 'Cost-Benefit Analysis'; followed by Volume I, known as the 'Review of Regulation'.

#### Key findings of Volume II: the Cost-Benefit Analysis

4.5 The Cost-Benefit Analysis (CBA) assessed four main scenarios for the period 2015-2040:

- no further rollout from what exists today. This was not considered a realistic scenario, but assessed as a base case for comparison;

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1 The Hon Malcolm Turnbull MP, Minister for Communications, 'Panel of Experts to conduct cost-benefit analysis of broadband & review NBN regulation', Media Release, 12 December 2013.

2 Letter from Mr Drew Clarke, Secretary, Department of Communications to the Committee Chair dated 16 October 2014, document no. 21, at [http://www.aph.gov.au/Parliamentary\\_Business/Committees/Senate/National\\_Broadband\\_Network/NBN/Additional\\_Documents](http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/National_Broadband_Network/NBN/Additional_Documents)

3 The Volume I Regulatory Review drew in particular on a third paper, *Statutory review under section 152EOA of the Competition and Consumer Act 2010*, issued by the Panel of Experts in July 2014. All of the Panel of Experts' reports and related papers are at: [http://www.communications.gov.au/broadband/national\\_broadband\\_network/cost-benefit\\_analysis\\_and\\_review\\_of\\_regulation](http://www.communications.gov.au/broadband/national_broadband_network/cost-benefit_analysis_and_review_of_regulation)

- an unsubsidised rollout on commercial terms by the private sector, using fibre to the node (FTTN) and hybrid fibre coaxial (HFC) services, in areas where these are commercially viable;
- a multi-technology mix (MTM) rollout across all premises, as proposed in the 2013 NBN Strategic Review; and
- a fibre to the premises (FTTP) rollout in the fixed line footprint, supplemented by fixed wireless and satellite for universal coverage, based upon the 'radically redesigned' scenario in the Strategic Review.<sup>4</sup>

4.6 The cost assumptions used for the MTM and FTTP scenarios were based upon those used in the Strategic Review, although subject to some 'refinements' by the Panel of Experts.

4.7 The overall finding of the CBA was that the deployment of high-speed broadband to 93 per cent of Australian premises (the fixed-line footprint) on an unsubsidised, commercial basis would yield the greatest economic benefit to Australia, to the tune of \$24 billion in net present value terms, or \$2430 per household.<sup>5</sup> 'To that extent, ensuring widespread availability of broadband is in the national interest'.<sup>6</sup>

4.8 By contrast, the CBA assessed that deployment of high-speed broadband over fixed wireless and satellite to the remaining 7 per cent of premises would involve a significant net cost:

Providing fixed wireless and satellite services costs nearly \$5 billion but the benefits are only just above 10 per cent of that. The result is a substantial net cost to the community.<sup>7</sup>

4.9 The Panel therefore queried whether the provision of fixed wireless and satellite services to regional and remote areas was justified, given its high cost and limited (\$0.6 billion) benefit, compared to offering a lower level of speed at a reduced cost to the taxpayer.<sup>8</sup>

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4 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, p. 9.

5 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, p. 10.

6 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume I – National Broadband Network Market and Regulatory Report*, August 2014, p. 13.

7 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, p. 11.

8 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume I – National Broadband Network Market and Regulatory Report*, August 2014, p. 59.

4.10 The CBA found that deployment of an MTM NBN which included the non-economic fixed wireless and satellite rollout would remain net positive, but \$6.1 billion less so than an unsubsidised rollout, with a net benefit of \$17.9 billion.<sup>9</sup>

4.11 The Panel employed three methods to measure the value placed by consumers on the higher broadband speeds offered by FTTP:

- estimation of future demand from the take-up to date of NBN Co's higher-speed offerings;
- a technological study of the speeds needed to utilise current and possible future internet applications, and the costs of being unable to do so; and
- a survey of consumers' willingness to pay for different access speeds.

4.12 While acknowledging 'the many uncertainties involved in any analysis of this kind', the Panel described this finding as 'remarkably robust', stating that in 98 per cent of the scenarios tested, MTM had greater net benefit than FTTP.<sup>10</sup>

The FTTP scenario only outperforms the MTM scenario in cases where the following tend to occur together; FTTP costs are low, the discount rate is low, FTTN under-delivers on expected speeds, there is very rapid growth in the demand for high speeds and no upgrades are allowed in the MTM scenario.<sup>11</sup>

4.13 In concluding, the CBA was critical of the taxpayer funds expended on the NBN to date, stating that the private sector 'could have secured virtually all of the benefits of delivering high-speed broadband' to the 93 per cent of premises within the NBN fixed line footprint, and probably managed the rollout more effectively and efficiently.<sup>12</sup>

## **Issues arising from the Cost-Benefit Analysis**

### ***Selection of personnel to conduct the CBA***

4.14 At the launch of the coalition's NBN policy on 9 April 2013, then opposition leader Tony Abbott stated that the coalition would conduct a cost-benefit analysis of the NBN that:

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9 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, p. 11.

10 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume I – National Broadband Network Market and Regulatory Report*, August 2014, pp 13–14.

11 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, p. 13.

12 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume I – National Broadband Network Market and Regulatory Report*, August 2014, pp 59–60.

will be a fully independent review. It may be the Productivity Commission, although we're conscious of the fact that the Productivity Commission has a very heavy workload. It may be Infrastructure Australia.<sup>13</sup>

4.15 In August 2013, then opposition communications spokesman Malcolm Turnbull reiterated that:

We are going to do a rigorous analysis, we will get Infrastructure Australia to do an independent cost benefit analysis. That's all set out in our policy.<sup>14</sup>

4.16 The government did not, however, engage Infrastructure Australia or the Productivity Commission to conduct the cost-benefit analysis, opting instead for a panel of individuals chosen by Minister Turnbull.

4.17 There was widespread criticism of the composition of the Panel of Experts. In particular, Professor Henry Ergas was well known as a strong critic of the NBN. In 2009 Professor Ergas published a paper on the NBN which included wildly inflated predictions of its future costs to consumers, suggesting that prices would reach between \$133 and \$380 per month for consumers.<sup>15</sup>

4.18 Disputing the independent NBN implementation study prepared for the former government in 2010, Professor Ergas offered that he could produce a cost-benefit analysis of the NBN using his own model, 'within a matter of days'.<sup>16</sup>

4.19 At the Coalition's NBN policy launch in 2013, Mr Abbott cited support of the Coalition's policy on the NBN from 'shrewd observers like Henry Ergas' who had described the NBN under Labor as 'currently on the point of collapse'.<sup>17</sup> It was drawn to the committee's attention that Professor Ergas had assisted the election campaign of a Liberal Party Senator—and former member of this committee—at the 2013 election, although Professor Ergas declined to confirm that.<sup>18</sup>

4.20 In a 2004 matter the Australian Competition Tribunal formally recorded the following observations in relation to expert testimony provided by Professor Ergas:

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13 'Tony Abbott and Malcolm Turnbull – Coalition NBN Policy Launch', 9 April 2013, video at <https://www.youtube.com/watch?v=bKbANwmJyWc>, at 31.03.

14 Allie Coyne, 'Turnbull's NBN policy 'detailed enough' to escape costing', *IT News*, 16 August 2013, at <http://www.itnews.com.au/News/353616.turnbulls-nbn-policy-detailed-enough-to-escape-costing.aspx#ixzz3QkAqWw9>

15 Henry Ergas and Alex RW Robson, 'The Social Losses from Inefficient Infrastructure Projects: Recent Australian Experience', in Productivity Commission Roundtable, *Strengthening Evidence-Based Policy in the Australian Federation*, 17-18 August 2009, at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1465226](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1465226)

16 Professor Henry Ergas, *Committee Hansard*, Senate Select Committee on the National Broadband Network (42<sup>nd</sup> parliament), 4 June 2010, p. 4.

17 'Tony Abbott and Malcolm Turnbull – Coalition NBN Policy Launch', 9 April 2013, video at <https://www.youtube.com/watch?v=bKbANwmJyWc>, at 23.05.

18 *Committee Hansard*, 5 May 2014, p. 77; 3 October 2014, p. 55.

[U]seful considerations in determining at what point an expert witness ceases to be impartial and has moved beyond the bounds of legitimacy into advocating for a party...[include] the willingness of an expert to respond to questions whose answers may provide support for a view which is contrary to the interests of the party calling them.

With regard to the latter, we note that on many occasions in the present proceeding two experts in particular, [one of these] being Mr Ergas... appeared reluctant to respond to questions whose answers might have been adverse to the case put by the party calling them. Instead, they provided non responsive answers and deviated to discussions of other issues which supported the case of the applicants...On some occasions, the presiding member asked the experts whether they could answer the question put to them and asked them not to give a long explanation, but to no avail. Such an attitude and conduct of an expert witness leads to a conclusion of partiality and an inability to express an objective expert opinion upon which reliance can be placed.<sup>19</sup>

4.21 Doubts were also cast over the impartiality and independence of several other consultants engaged as part of the CBA process. Mr Kevin Morgan, another well-known critic of the NBN,<sup>20</sup> was engaged as an expert adviser to the Panel. Its peer review team included Professor Jonathan Pincus, also on the public record as a critic of the NBN<sup>21</sup> and a research collaborator of Professor Ergas.<sup>22</sup> Consultants Communications Chambers prepared a study on technical broadband demand in Australia, but were already known as critics of FTTP in the UK. Their work is discussed further below.

4.22 Other previous employees and associates of Professor Ergas engaged on the CBA included Dr Alex Robson, Ms Emma Lanigan, Ms Alexis Hardin and Mr Nigel Pugh. In addition, both Dr Robson and another consultant, Mr David Kennedy, were former staffers of present and former Coalition Communications Ministers Turnbull and Alston, respectively.

4.23 The Department of Communications insisted that the use of this team, in contrast to the public undertakings of the Prime Minister and Minister for Communications, was preferable to using an independent body:

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19 Australian Competition Tribunal, *Re Qantas Airways Limited* [2004] ACompT 9, 12 October 2004, pp 59–60.

20 See, for example, Kevin Morgan: 'Consultants, lawyers, contractors: All aboard the NBN gravy train', *The Australian*, 13 October 2011; Interview with Alan Jones, 2GB radio, 8 November 2012, at <http://www.2gb.com/article/kevin-morgan-nbn>; 'Labor's NBN technology is superior, but at what cost?', ABC Online *The Drum*, 12 April 2013.

21 Jonathan Pincus, 'NBN largesse pushes nation building off the rails', *The Australian*, 20 August 2010.

22 Henry Ergas, 'PM in another fine gold-plated mess', *The Australian* blog, 13 August 2012, at [http://blogs.theaustralian.news.com.au/henryergas/index.php/theaustralian/comments/pm\\_in\\_another\\_fine\\_gold\\_plated\\_mess/](http://blogs.theaustralian.news.com.au/henryergas/index.php/theaustralian/comments/pm_in_another_fine_gold_plated_mess/).

Governments have a range of options in terms of commissioning advice on policy issues. In this case the Government considered an independent expert panel that brought significant relevant background, expertise and experience provided the most independent, robust and transparent process.<sup>23</sup>

4.24 Nevertheless, the inclusion in the CBA team of a long list of known critics of the NBN, associates of Professor Ergas and supporters of the Coalition, casts doubt on the credibility and impartiality of the report. Media analysts and independent experts pointed out the apparent bias in the composition of the Panel of Experts and its team of advisers.

4.25 Telecommunications analyst Chris Coughlan observed that:

It is clear that in commissioning the National Broadband Network reviews the government has carefully selected consultants, analysts and economists that have previously expressed views that support their position.<sup>24</sup>

4.26 IBRS analyst Guy Cranswick described the CBA as 'politically stacked' and the Panel of Experts as 'full of acolytes and sympathisers' with the coalition government.<sup>25</sup>

4.27 Professor Fiona Haines, a specialist in risk and regulation from the University of Melbourne, observed that cost-benefit analyses are only as credible as the values and assumptions upon which they are based:

A small change in assumption can make a big difference to the outcome. A strategic use of a cost benefit analysis can contribute to the problem of policy driving evidence or 'policy-based evidence' as opposed to its more respected cousin, evidence-based policy...

...we are adept at building our rationality around our values, selecting numbers consistent with those values. Under polarised political conditions, expecting a cost benefit analysis to generate a rational basis to bridge disparate values and so enhance our collective future may be a tall order indeed.

Ultimately, the role that can be assigned to a cost benefit analysis is limited. Done well, it can enhance public debate as well as inform political decisions. Done poorly, it merely masks a pre-determined political position.<sup>26</sup>

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- 23 Department of Communications, answers to questions on notice (Questions 543 & 544) following Senate Environment and Communications Legislation Committee, Budget Estimates hearings, May 2014.
- 24 Chris Coughlan, 'Analysing the NBN: Ethics and broadband politics', *Business Spectator*, 10 September 2014.
- 25 Rohan Pearce, 'NBN: Labor condemns 'flawed' Vertigan panel report', *Computerworld*, 27 August 2014.
- 26 Professor Fiona Haines, 'Cost benefit analysis can help or hinder good policy', *The Conversation*, 6 August 2014, at: <http://theconversation.com/cost-benefit-analysis-can-help-or-hinder-good-policy-30147>

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4.28 Professor Graeme Samuel AC, former head of the Australian Competition and Consumer Commission (ACCC), observed that:

Multiple reviews, at vast cost, have been completed, primarily focused on demonstrating that the Labor government's NBN concept was flawed or at least was less economically viable than that of the Coalition. Unfortunately, much of the review analysis has had a political tarnish which diminishes its value in forward planning for this important infrastructure project.<sup>27</sup>

***Cost assumptions: the Panel's revision of the Strategic Review***

4.29 The sources of the cost data used for the CBA were NBN Co's 2013 Strategic Review and the 2014 Fixed Wireless and Satellite Review.<sup>28</sup> The CBA indicated, however, that it had made some 'corrections' to the formulas used to calculate costs in the Strategic Review, although it stated these had a 'relatively minor impact' on the overall results.<sup>29</sup>

4.30 The CBA's final estimates costed an FTTP rollout at \$35.3 billion, as opposed to \$30.6 billion costed by NBN Co in the Strategic Review, a 15.4 per cent increase in net present value. In comparison, the MTM cost was revised upward by only four per cent, from \$23.9 billion to \$24.9 billion. The CBA's calculation of the cost of FTTP relative to MTM rose from \$6.8 billion in the Strategic Review to \$10.4 billion, a 53 per cent increase in the cost of the FTTP scenario relative to MTM. Incredibly, the Panel inflated NBN Co's OpEx assumptions by 180 per cent compared to only 12 per cent for the MTM, despite the low OpEx costs of fibre compared to legacy technologies (see figure 5).

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27 Professor Graeme Samuel AC, 'The National Broadband Network – the prognosis for competition in telecommunications', TelSoc Charles Todd Oration, 5 November 2014, Melbourne, p. 1. Transcript at [http://telsoc.org/sites/default/files/events/pdf/telsoc\\_graeme\\_samuel\\_speech\\_01.pdf](http://telsoc.org/sites/default/files/events/pdf/telsoc_graeme_samuel_speech_01.pdf)

28 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume I – National Broadband Network Market and Regulatory Report*, August 2014, p. 12.

29 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, p. 139.

**Vertigan Panel Review of NBN Co Cost Models: Outcome (MTM vs FTTP)\***

Costs	Multi-Technology Mix				FTTP Scenario				Cost of FTTP (Relative to MTM)			
	NBN Co (\$b, PV)	Panel (\$b, PV)	Change (\$PV)	Change (%)	NBN Co (\$b, PV)	Panel (\$b, PV)	Change (\$PV)	Change (%)	NBN Co (\$b, PV)	Panel (\$b, PV)	Change (\$PV)	Change (%)
Fixed-line opex	1.7	1.9	+ 0.2	+ 12%	0.5	1.4	+ 0.9	+ 180%	+ 6.8	+ 10.4	+ 3.6	+ 53%
Fixed-line capex**	7.5	8.4	+ 0.9	+ 12%	16	19.8	+ 3.8	+ 24%	+ 6.8	+ 10.4	+ 3.6	+ 53%
<b>TOTAL COSTS***</b>	23.9	24.9	+ 1	+ 4%	30.6	35.3	+ 4.7	+ 15%	+ 6.8	+ 10.4	+ 3.6	+ 53%

\* All costs in Tables 5.4 and 5.5 not included here are held constant by Panel

\*\* To end build period

\*\*\* "Total resource costs relative to no investment"

**Figure 5:** Slide tabled by Senator the Hon Stephen Conroy at the committee's public hearing, 3 October 2014, at: <http://www.aph.gov.au/DocumentStore.ashx?id=06b8d407-4361-4a72-ad59-e4e81ed8b888>. Figures drawn from the Cost-Benefit Analysis, Volume II, pp 56-57.

4.31 In evidence to the committee, Professor Henry Ergas stated that:

The essence of it was that what we did, together with the CIE and advisers, was to go through the calculations that had been made as systematically as possible. In part because circumstances had moved on since those calculations were made but also, perhaps, because of the fact that some of the calculations were made for the NBN strategic review, which was undertaken within a very tight time frame, we did find some anomalies and we corrected those anomalies.<sup>30</sup>

4.32 The CBA identified several areas in which the Panel made 'refinements' to the Strategic Review's cost modelling, including in relation to productivity factors. The Panel of Experts assessed that the productivity gains estimated by the Strategic Review in its 'radically redesigned' FTTP scenario had been substantially overestimated, although the details of such analysis were not publicly released:

the Strategic Review assumed very substantial productivity gains during the NBN construction phase for all technologies. These were particularly high for FTTP, incorporating large productivity gains that were in addition to the efficiencies achievable from the Radically Redesigned FTTP network. The panel considered that the productivity gains for all technologies were very ambitious and as a result, conducted an analysis using an alternative set of productivity factors that are more consistent with international estimates of nation-wide network deployment.<sup>31</sup>

4.33 Panel member Mr Tony Shaw stated that:

...essentially our work was involved in examining the productivity gains that were assumed in the strategic review against what information was available to us from overseas experience and international benchmarking. The conclusion we reached was that they could, potentially, be very substantial but perhaps not quite as substantial as had been assumed. There were some adjustments done to reflect that view.<sup>32</sup>

4.34 Despite this, the Panel acknowledged that its international comparisons were of very limited value:

[t]here is very little on an international scale that looks like the approach that was previously adopted. Indeed, there is not terribly much on the international scale that looks exactly like what we are trying to do at the moment either...what was being attempted was really without international parallel.<sup>33</sup>

4.35 In addition to productivity factors, other costs modified related to indirect operating costs, project management and design costs, operational expenditure (OpEx)

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30 Professor Henry Ergas, *Committee Hansard*, 3 October 2014, p. 39.

31 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, p. 138.

32 Mr Anthony Shaw, *Committee Hansard*, 3 October 2014, p. 41.

33 Professor Henry Ergas, *Committee Hansard*, 3 October 2014, p. 47.

assumptions and other minor audit matters. While members of the Panel confirmed that several of these adjustments resulted in higher cost assumptions for FTTP,<sup>34</sup> the specific details of the panel's review of NBN Co's cost assumptions were all redacted in the published CBA.<sup>35</sup>

4.36 Within its overall cost assumptions, the CBA adjusted the Strategic Review's assumptions of OpEx cost in the fixed line footprint for an FTTP scenario upward by 180 per cent, from \$0.5b net present value to \$1.4 billion, compared to a 12 per cent increase in OpEx for MTM, from \$1.7b to \$1.9b.<sup>36</sup> The broad descriptors provided in the published CBA in relation to the panel's assumptions of OpEx suggested that power and truckroll issues were the only revisions made to the Strategic Review calculations. However, the detailed calculations behind these OpEx estimates were redacted from the published CBA.<sup>37</sup>

4.37 In its first interim report, the committee was critical of the assumption in the Strategic Review that the operational cost of rolling out the MTM would be similar to that of a fibre network. In particular, the committee noted caretaker advice provided to the government by NBN Co itself, and evidence given to the committee by various other witnesses, pointing out potentially enormous costs associated with remediation and maintenance of the Telstra copper network for FTTN, as well as the additional costs to NBN Co of managing multiple fixed line networks under MTM.<sup>38</sup> The Strategic Review nonetheless estimated operational costs without access to detailed data on the state of Telstra's copper network, and its specific assumptions about the extent and cost of remediation required to ready the network for FTTN were redacted.

4.38 In respect of the CBA, Professor Ergas advised the committee that:

The issue of the state of the copper network was examined in the strategic review, and the strategic review came to what it thought was a plausible assessment of the state of the copper network...their assessment I think was a reasonable assessment, and was consistent with all the information that is available about the state of the copper network, including a very substantial investment that has been made in rehabilitating the copper network...<sup>39</sup>

4.39 In a 2012 study BIS Shrapnel calculated maintenance costs of the copper telecommunications network in Australia at up to \$1 billion of a total \$2 billion

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34 *Committee Hansard*, 3 October 2014, pp 50–51.

35 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, Appendix F, pp 137–154.

36 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, pp 56–57.

37 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, pp 142–143.

38 Senate Select Committee on the National Broadband Network, *Interim Report*, March 2014, pp 76–86.

39 Professor Henry Ergas, *Committee Hansard*, 3 October 2014, p. 51.

telecommunications infrastructure maintenance cost per year, over the fifteen years to 2027. BIS Shrapnel's study, based on direct surveying of contractors as well as its own analysis of information available from Telstra, concluded that a fibre NBN rollout could save \$600-700 million of those costs annually, once rolled out. Costs of maintaining copper arose from its vulnerability to issues such as wet weather and natural disasters, as well as the ageing status of the network, which meant maintenance cost was likely to rise over time. While a fibre network must also be maintained, BIS Shrapnel estimated such costs to be in the vicinity of \$200-300 million per year.<sup>40</sup>

4.40 In the United States, Verizon explained its abandonment of copper in favour of fibre as a move to improve profit margins for the company, because of the significance of copper repair and maintenance expenses:

Verizon says the reliability of fiber makes maintaining older copper wire networks pointless.

'The bigger benefit is we are transforming the cost structure of our copper business because the copper fails two to three times more than fiber, which means we have two to three more times we have a tech and a truck rolling out to that copper connection. So we are eliminating that'...<sup>41</sup>

4.41 The CBA acknowledged that FTTN would have higher operational costs than FTTP over the longer term.<sup>42</sup> Nevertheless, in its 'sensitivity testing' of OpEx, the Panel upwardly revised the Strategic Review's assumptions about the costs of rectifying faults on a brand-new fibre network, while revising downward the costs of maintaining fibre, copper and HFC networks under the MTM model.<sup>43</sup>

4.42 The committee's first interim report pointed out the failure of the Strategic Review to account for the cost implications of increased complexity arising from operating multiple technologies in an MTM rollout, a matter which had been flagged by NBN Co in caretaker advice given to the government in 2013. The Strategic Review simply relied on the assumption that the costs of complexity would be offset

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40 BIS Shrapnel, *Maintenance in Australia 2012-2027*, as cited in Stephanie McDonald, 'FTTP could save \$700m a year in maintenance', *Computerworld*, 20 August 2012, at <http://www.computerworld.com.au/article/433877/fttp-could-save-700m-year-maintenance/>; and Spandas Lui, 'NBN to save up to AU\$700m in copper maintenance costs', *ZDNet*, 20 August 2012, at <http://www.zdnet.com/article/nbn-to-save-up-to-au700m-in-copper-maintenance-costs/>.

41 Phillip Dampier, 'Verizon Declares Copper Dead: Quietly Moving Copper Customers to FiOS Network', *Stop the Cap*, 20 August 2012, at <http://stopthecap.com/2012/08/20/verizon-declares-copper-dead-quietly-moving-copper-customers-to-fios-network/>

42 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, pp 58, 112.

43 *Committee Hansard*, 3 October 2014, p. 52.

by other cost reductions in MTM, without making public any detailed analysis in support of that assumption.<sup>44</sup>

4.43 The Panel of Experts lowered even further the Strategic Review's estimate of corporate overheads for MTM:

All we are doing is seeing how sensitive results are if you make some variations to these parameter values. That is simply all we are doing. The person reading the report can make their own decision on what they think is appropriate.<sup>45</sup>

4.44 In its 2014-17 corporate plan, NBN Co acknowledged the challenge for the organisation of adapting its operational and business support systems (OSS/BSS) to deal with multiple technologies:

In preparing for the MTM approach, it will be necessary to upgrade or replace some of NBN Co's foundation IT capabilities and systems. For OSS/BSS, the new operating model will necessitate a more effective governance and planning process to align construction, IT and business change and modifying existing OSS/BSS systems and associated operational processes to support FTTx, Copper, HFC, Fixed Wireless and Satellite services. For example, this might include provision of data from Telstra and Optus for HFC Cable Networks to address master data, adding modules to configure and enable layer 2 integration, modifying systems to handle change, fault and order management integration with Telstra and/or Optus and finally in-sourcing HFC inventory, activations, design, network management and assurance services onto NBN Co OSS/BSS (over time).<sup>46</sup>

4.45 In December 2014 the Chief Executive Officer of NBN Co, Mr Bill Morrow, confirmed to the committee that the increased complexity of managing multiple networks was a factor in the company's ongoing financial considerations, particularly in relation to OSS/BSS costs. Mr Morrow declined to quantify the additional IT and other costs involved, indicating that this was ongoing work which would be reflected in future three-year corporate plans, but he maintained that they were 'within the overarching cost structure to make [MTM] a more economical approach'.<sup>47</sup>

***Cost assumptions: rollout timeframe for FTTP vs MTM***

4.46 In May 2014, Dr Vertigan told the committee that the Panel of Experts would explore 'scenarios about how fast each of these rollouts occur...there are different speeds of rollout, it is not just a single scenario'.<sup>48</sup>

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44 Senate Select Committee on the National Broadband Network, *Interim Report*, March 2014, pp 91–93.

45 Mr Tony Shaw, *Committee Hansard*, 3 October 2014, p. 52.

46 NBN Co Limited, *Corporate Plan 2014-17*, 11 November 2014, p. 24.

47 Mr Bill Morrow, *Committee Hansard*, 2 December 2014, pp 50–51.

48 *Committee Hansard*, 5 May 2014, p. 68.

4.47 In later discussion with the committee, however, the Panel indicated that it did not factor in efficiency gains to its assumptions of rollout time for FTTP:

**Senator CONROY:**...Do efficiency and productivity gains result in a cheaper network that is quicker to deploy? Do these efficiency gains affect the build speed as well as the cost?

**Mr Pearce:** I think in the models, as we used them, the efficiency improvements did not affect the timing.

**Senator CONROY:** So even if they made the roll-out faster you did not think that that affected the timing.

**Mr Pearce:** No. If we reduced efficiencies, for example, we did not make the timing slower compared with what it was as set out in the strategic review. We used the same timing.

**Senator CONROY:** I am a bit confused here, so please bear with me. If you came to the conclusion that efficiency and productivity gains resulted in a cheaper network, you then did not factor that into the deployment schedule timing end date.

**Mr Pearce:** No, we used the same deployment schedule as in the strategic review.

**Senator CONROY:** How can you separate them out? If they introduced better digging equipment and if they introduced smaller cable sizes that made it easier to shove them down pipes, those are cost savings but also, on the most reasonable assessments, suggest that you have a faster build, as well.<sup>49</sup>

4.48 The CBA's conclusion, noted above, that the productivity gains identified in the Strategic Review had been overestimated, meant that it did not accept any case for re-assessing the rollout timeframes set out in that document. This was despite the controversial decision of the Strategic Review to translate the significant efficiencies of a 'radically redesigned' FTTP over its baseline FTTP scenario (described by the CBA Panel of Experts as 'very substantial' productivity and efficiency gains) into only a six-month reduction in rollout time.<sup>50</sup>

4.49 Professor Ergas advised the committee that the Panel had undertaken sensitivity tests modelling a faster rollout schedule, but that this did not alter the comparative conclusions of the CBA.<sup>51</sup> The CBA stated that 'accelerating the deployment of FTTP to match that in the MTM would likely entail substantial cost increases'.<sup>52</sup> However, the analysis did not take account of recent developments in improving the speed (and lowering the cost) of FTTP rollout, such as those demonstrated in NBN Co's Melton trial, discussed above in chapter 2. The Expert

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49 *Committee Hansard*, 3 October 2014, pp 40–41.

50 See *Committee Hansard*, 3 October 2014, p. 42.

51 Professor Henry Ergas, *Committee Hansard*, 3 October 2014, p. 41

52 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, p. 9.

Panel's Professor Henry Ergas described the Melton results as 'anecdotal' and not worthy of the same consideration as the findings of the Strategic Review.<sup>53</sup>

4.50 Instead, the CBA uncritically accepted the Strategic Review's timeframe of 2023 for completion of a (radically redesigned) FTTP rollout. The CBA appeared to indicate in places that the FTTP rollout was assumed to complete even later, in 2024.<sup>54</sup> Under questioning by the committee, the Panel of Experts stated that it had not adjusted the Strategic Review's projected timings, but that the CBA had adjusted calendar years in the Strategic Review (CY2023) into financial years for the CBA (FY2023/24).<sup>55</sup> This was a curious anomaly given that the Strategic Review had indeed used financial year projections for its scenarios including FTTP, and that there was no similar issue in the CBA with respect to MTM rollout timing. The basis and impact of this discrepancy in the CBA remains unclear.<sup>56</sup>

4.51 Meanwhile, the CBA assumed a 'perfect' MTM rollout completed by 2020, based on the Strategic Review scenarios, which had redacted all the detailed information about NBN Co's implementation schedule for the MTM. The Panel of Experts pointed out that it commenced its work soon after the completion of the Strategic Review, relied upon NBN Co's rollout predictions at that time and did not make use of evidence apparent in 2014 impacting upon the rollout speed and timing of the MTM rollout.<sup>57</sup>

4.52 As Mr Shaw told the committee:

...to the extent that there has been information that has come to light since the cost estimates on which we built this cost-benefit analysis, then clearly that can have an effect. But, in undertaking any such analysis, you have to essentially freeze time and take a snapshot of the costs and benefits at that point of time. In undertaking this work, we have essentially taken what the NBN Co's strategic plan produced; and, to the extent that there are changes in a year or two years...then the model could be re-run and be adjusted to reflect those values.<sup>58</sup>

4.53 A number of issues affecting the progress of NBN's MTM rollout were discussed above in chapter 2. These included delay in the completion of NBN Co's negotiations with Telstra and Optus to facilitate access to the copper and HFC networks; delays in the completion of FTTN and fibre to the building (FTTB) pilots

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53 Professor Henry Ergas, *Committee Hansard*, 3 October 2014, p. 46.

54 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, pp 44–45.

55 Panel of Experts, answer to question on notice (Question 8) following the committee's public hearing on 3 October 2014.

56 Department of Communications answer to question on notice (Question 214) from Senate Environment and Communications Legislation Committee Supplementary Budget Estimates, November 2014.

57 Professor Henry Ergas, *Committee Hansard*, 3 October 2014, p. 44.

58 Mr Tony Shaw, *Committee Hansard*, 3 October 2014, p. 45.

and product offerings; and the ongoing uncertainties demonstrated in the deficiencies of the 2014-17 NBN Co corporate plan. Notably, the CBA also appeared to mirror the Strategic Review's compound error in failing to take into account the potential time (as well as cost) implications of the need to remediate the Telstra copper network, a question to which no clear answers had been made available to the committee or the public at the time of this report.

***Benefit assumptions: a narrow approach***

4.54 The present Parliamentary Secretary to the Minister for Communications, Mr Paul Fletcher MP, told parliament in 2010 that a credible cost-benefit analysis must quantify the benefits of a FTTP NBN:

Let us see the systematic and careful quantification of those benefits. How many hospitals? How many scans? How many students will be educated? What will be the cost savings? Let us see those details...<sup>59</sup>

4.55 During the preparation of the CBA, Dr Vertigan advised the committee that potentially significant benefits to business and society available through high-speed, high-quality broadband had emerged strongly in the Panel's consultations with stakeholders. These included cloud computing, end-to-end connectivity and the 'internet of things', as well as public-interest applications such as e-health and education.<sup>60</sup> Dr Vertigan said that beyond willingness to pay:

The other side of the benefits of broadband are really the intangibles, the externalities, that relate. We have spent quite a bit of time and we have the Centre for International Economics spending a great deal of time trying to establish where the other benefits are, from broadband. So we are far from ignoring it. This is an area such as commerce and the economy—information access, reduced rural exclusion and those sorts of things, public safety in terms of disaster response, culture, remote connections and education. There are a whole range of externalities where there are positive benefits of faster broadband: employment, equality and exclusion, wellbeing, the benefits of VoIP, HD video et cetera, online government services and a great many benefits in health and care. We are trying to model all of these things to try to understand where those benefits are. Whilst it is slightly off to the side, the highest bandwidth example that has been provided to us is where a young music student in the country has got past the point of the music teacher that is available in the country area. Do they have to move to the city? Do they have to travel to the city? No; in fact, very high bandwidth provides the opportunity for music tuition from an expert teacher in the city to deal with a student in the country.

We have been trying to explore all sorts of places where these other benefits exist that are not the ones that come from your normal willingness to pay

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59 Mr Paul Fletcher MP, *House of Representatives Hansard*, 26 October 2010, p. 1565.

60 *Committee Hansard*, 5 May 2014, p. 76.

and because you are doing your daily downloads and uploads on your home computer. There is a much wider set of benefits.<sup>61</sup>

4.56 When released, however, the CBA revealed that no study had been undertaken to determine business willingness to pay, nor broader public benefit. Instead, the CBA took a narrow approach to its assessment of the NBN's benefits, considering them almost exclusively within a framework of 'willingness to pay' at the household level.

4.57 The Panel observed that '[t]here is very little information available on demand for high-speed broadband by Australian businesses'. The CBA nonetheless chose not to commission any research or modelling in this regard, instead relying on an assumption that '[b]usiness' benefits from high-speed broadband are likely to move in line with consumers' WTP' to posit a flat 50 per cent premium on its calculations of household WTP as a measure of benefit to business.<sup>62</sup>

4.58 With regard to public benefit, the CBA determined that public sector benefits and externalities accounted for only 5 per cent and one per cent, respectively, of the total benefits of high-speed broadband.<sup>63</sup> In an appendix to its main report, the CBA noted public and external benefits (externalities) that 'may be realised through the use of broadband applications':

- improved education: improvements in education lead to increased productivity, only part of this is captured privately through higher wages;
- general environmental benefits;
- health benefits;
- public safety;
- reduced pollution;
- reduced traffic and associated costs: costs include those associated with infrastructure, congestion, accidents, noise and air pollution; and
- social inclusion benefits.<sup>64</sup>

4.59 The CBA concluded that 'most of those benefits listed do not warrant separate consideration in this CBA'. The CBA further claimed that most of those benefits which did warrant consideration, were not relevant to a comparison between MTM and FTTP.<sup>65</sup>

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61 *Committee Hansard*, 5 May 2014, p. 78.

62 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, p. 78.

63 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, p. 80.

64 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, p. 121.

65 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, p. 122.

4.60 The CBA concluded that 'non-private benefits from high-speed broadband, particularly extremely high-speed broadband, are likely to be limited', and catered for these by applying a flat premium of five per cent on to its estimates of private willingness to pay. The Panel stated that it:

takes the view implicitly that ubiquity does not bring additional public benefits. For example, it may be argued that if rollout covers 100 per cent of households then the government may be able to shift delivery of services to a more efficient method. In our view this is unlikely to occur in practice.<sup>66</sup>

4.61 In its submission to the committee, iiNet observed that '[t]he cost benefit analysis has no specific benefits to analyze, only costs... discussions are still mired in the operational issues of costs, timetables and technology, rather than national benefits'.<sup>67</sup> iiNet argued strongly for a more holistic consideration of the national objectives of high-speed broadband, including national productivity, job creation, export opportunities, regional and industry development, improved competition, and improved social outcomes.

4.62 As the committee's first interim report pointed out, numerous other witnesses and submitters to the committee have also emphasised the need to look beyond limited measures of household payment and television downloads, to the larger national economic and social benefits of a properly future-proof national broadband network.<sup>68</sup> The evidence given by witnesses on the NSW Central Coast in March 2014, cited in the first interim report and elsewhere in this report, provided the committee with striking real-world examples of small businesses and regional communities identifying significant economic and social benefits that could only be unlocked through access to world-class broadband.<sup>69</sup>

4.63 Submissions have continuously been made to this committee since its inception from local and regional communities emphasising the economic and social value that a quality NBN infrastructure could unlock. Among many examples, the Northern Melbourne Regional Australia Development Committee, representing government, business and community groups in seven municipalities, highlighted 'the critical nature of high speed broadband to the future of our region', with the shift to a knowledge economy essential to an area with a shrinking manufacturing employment base, and the 'huge' potential benefits of growing a regional digital economy and opportunities for improved education and health through IT.<sup>70</sup> The Wagga Wagga City Council identified a universal FTTP rollout as not only a generator of much-

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66 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, pp 80–81.

67 iiNet, *Submission 11*, p. 1.

68 Senate Select Committee on the National Broadband Network, *Interim Report*, March 2014, pp 63–65.

69 See *Committee Hansard*, 11 March 2014.

70 Northern Melbourne Regional Development Australia, *Submission 90*.

needed productivity benefit, but as 'a means of narrowing the social inequity' between regional and metropolitan Australia.<sup>71</sup> The ACT government emphasised that 'a world-class digital economy requires a world-class high speed broadband', elaborating on Canberra's digital strategy to realise significant and tangible benefits for business and the community.<sup>72</sup>

4.64 The Warren Blackwood Alliance of Councils, representing the shires of Manjimup, Bridgetown-Greenbushes and Nannup in Western Australia, recommended that decision-making on the NBN 'assess the long term implications of focusing primarily on the initial cost as opposed to the long term benefit of providing the best service possible'.<sup>73</sup>

4.65 Aside from the publicly-available evidence from media reports, community statements and parliamentary testimony, the CBA dismissed other compelling evidence in this regard, such as the widely-acclaimed *Building the Benefits of Broadband* study undertaken by Alcatel-Lucent in New Zealand in 2012, which determined that investment in FTTP would add more than \$5 billion to that country's GDP over a 20-year rollout period. The study identified known applications across health, education, business and the dairy sector which would increase efficiency and productivity through teleworking, high-definition video conferencing, on-line training, online doctors' visits, remote patient monitoring, remote classes, online herd management, cloud computing and others. Alcatel-Lucent reported that the combined consumer surplus of the applications considered in the study would reach nearly \$33 billion in New Zealand's economy over the 20-year period, and would continue to grow year-on-year.<sup>74</sup>

4.66 The CBA briefly noted the Alcatel-Lucent study but dismissed its relevance, as it was based on methodology different from the Communications Chambers work and, in the Panel's (un-elaborated) view, was 'likely to overestimate the benefits of the NBN to businesses'.<sup>75</sup>

***Benefit assumptions: willingness to pay***

4.67 As noted above, the CBA stated that its future household willingness to pay metric was calculated based on three factors: take-up rates of NBN products to date, a technological study of future broadband need prepared by Communications Chambers, and a 'choice modelling survey' of broadband demand conducted by the Institute for Choice.

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71 Wagga Wagga City Council, *Submission* 83.

72 ACT Government, *Submission* 93.

73 The Warren Blackwood Alliance of Councils Inc, *Submission* 77.

74 Alcatel-Lucent, 'Building the benefits of high-speed broadband for New Zealanders', Media release, 21 February 2012, at <http://www.alcatel-lucent.com/press/2012/002592>

75 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, p. 78.

4.68 While actual take-up rates on the NBN to date would appear to be the most concrete of these factors, the CBA's narrative and outcomes indicated that real world NBN take-up data assumed little importance in its predictions of future demand. The CBA stated that it used NBN Co take-up data from December 2013, at which time less than 100,000 households were utilising NBN fibre, discounting this element of its modelling as representing a 'relatively small number of customers' and likely to be influenced by 'selection bias' in relation to potentially disproportionate take-up of higher speeds by early adopters.<sup>76</sup>

4.69 By July 2014, when the CBA was concluded, more than 150,000 customers were connected to NBN fibre services, but this updated information was not considered by the CBA.<sup>77</sup> Rather, the CBA prioritised the results of a hypothetical choice survey of just over 3000 participants, and a controversial modelling of future 'need' built on a range of highly contested technical and demand assumptions.

4.70 From an industry perspective, Chief Executive Officer of iiNet, Mr David Buckingham, told the media in August 2014 that 70 per cent of iiNet's 40,000 NBN customers were already using speeds of more than 12Mbps, and 30 per cent had taken up offered speeds of 100Mbps.<sup>78</sup>

4.71 In its 2014-17 corporate plan, NBN Co itself highlighted the continued growth in broadband data usage in Australia, observing that '[t]raffic volumes and demand for faster services continued to rise', average data usage per user on fixed line connections rose by 44 per cent between June 2013 and June 2014, and by 2013 38 per cent of Australian households owned four or more internet-connected devices.<sup>79</sup>

4.72 In December 2014, NBN Co reported to the committee that as at the end of October approximately 38 per cent of NBN users were on the 12/1 speed tier, 39 per cent on the 25/10 speed, four per cent on the 50/20 tier; and 19 per cent on the 100/40.<sup>80</sup> In other words, already 62 per cent of NBN users are selecting speed tiers higher than the demand projected by the CBA—15mbps by 2023!

*The household 'choice' modelled by CHOICE*

4.73 In May 2014, Dr Vertigan advised the committee that the Institute of Choice study was 'providing 2½ thousand people with a set of plans about what might be available to them, what they would be willing to pay and what they would take up'.<sup>81</sup>

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76 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, p. 108

77 See answer to question on notice (Question 222) from Senate Environment and Communications Legislation Committee, Supplementary Budget Estimates hearing, 20 November 2014.

78 David Ramli & Paul Smith, 'NBN: the never-ending story', *The Australian Financial Review*, 28 August 2014.

79 NBN Co Limited, *Corporate Plan 2014-17*, 11 November 2014, p. 10.

80 Mr John Simon, *Committee Hansard*, 2 December 2014, p. 53.

81 Dr Michael Vertigan, *Committee Hansard*, 5 May 2014, p. 71.

4.74 The options provided to the 3,312 participants in the Choice study, as set out in the CBA, were not reflective of actual plans and costs available on the market.<sup>82</sup> The Department of Communications maintained that this was normal for a choice modelling study, which would offer options 'outside the range of combinations available in the market' in order to generate a demand curve.<sup>83</sup>

4.75 The 'informed' group of participants in the Choice study were 'informed' with information based on Communications Chambers' modelling of the bandwidth required for different types of internet activities.<sup>84</sup> This included information asserting, among other things, that 5 Mbps is all that is required for 'streaming HD TV, downloading HDTV, downloading 4K TV and streamed gaming.'<sup>85</sup> The Cost-Benefit Analysis stated that a result of the Choice study was that the 'informed' group—the group that was fed information from Communications Chambers prior to conducting the survey—was 'more likely to choose cheaper lower speed packages as the price of the top plan (100 Mbps down/40 up) increases'.<sup>86</sup>

***Benefit assumptions: future bandwidth speed and demand***

4.76 The third, significant element of the CBA's 'willingness to pay' metric, the Communications Chambers modelling of future projected bandwidth speeds and demand for Australian users of the NBN,<sup>87</sup> proved one of the most controversial aspects of the CBA, and was widely questioned and criticised by experts in the field following the report's release.

4.77 In a detailed response to the CBA's conclusions Dr Mark Gregory, Senior Lecturer in the School of Electrical and Computer Engineering at RMIT, was scathing. He described the model relied upon by the CBA to predict demand, prepared by the UK-based Communications Chambers, as 'a reworking of material prepared some time ago for a UK audience' which did 'not adequately reflect current knowledge of how the internet will change and grow in the decades ahead'.<sup>88</sup>

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82 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, p. 172.

83 Department of Communications, answer to question on notice (Question 223) following Senate Committee on Environment and Communications, Estimates hearings, November 2014.

84 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, p. 166.

85 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, Chart H.1, p. 167.

86 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, p. 73.

87 Robert Kenny & Tom Broughton, *Domestic bandwidth requirements in Australia: A forecast for the period 2013-2023*, Communications Chambers, 26 May 2014, at <https://www.documentcloud.org/documents/1280165-forecasting-australian-per-household-bandwidth.html>

88 Mark Gregory, 'What the NBN cost-benefit review doesn't tell you', *Business Spectator*, 3 September 2014, p. 3.

The CBA is entirely based on the material provided in Section 2.2 and no alternative data sets are provided or used, which is unusual and places too high a reliance on data provided by an organisation that does not hide its scepticism of the need for fibre, ensconced in its belief that internet growth will be glacial over the next decade thanks to improved data compression techniques and that consumer expectations will be adequately met by existing applications.

Section 2.2 appears to be a snapshot in time, one that occurred about five years ago and the data refined to match the data set. The problem is that there is no qualitative and quantitative evidence that the data set is accurate, we are simply told to accept it as it is.<sup>89</sup>

4.78 Emeritus Professor Rod Tucker of the University of Melbourne was also highly critical of the findings of the Communications Chambers study, notably that by 2023 the median Australian household would require a broadband download speed of just 15Mbps.<sup>90</sup> Professor Tucker found that the data projections in the CBA were 'completely at odds' with both the data on actual usage in Australia, and international trends. He noted that 'Kazakhstan currently enjoys higher average download speeds than Communications Chambers thinks Australia will need in 2023'.<sup>91</sup> By way of comparison Professor Tucker outlined his own, conservative extrapolations of current data on actual usage, which resulted in an expectation that Australian average download demand in 2023 would be at least 34Mbps.

4.79 NBN expert Mr Malcolm Alder, author of the original NBN implementation study in 2010, pointed out that changing attitudes among the young, as the future consumers of broadband services, were an important factor ignored in the CBA's projections. 'I would be wary of thinking that the extreme price sensitivity that the cost-benefit analysis talks about today regarding spending on broadband will necessarily be the same in five and 10 years' time'.<sup>92</sup>

4.80 It was also noted that Communications Chambers had a well-known history as a sceptic about FTTP in the UK,<sup>93</sup> and a critic of Labor's NBN model in Australia, whose reports had been relied upon by Minister Turnbull in support of the Coalition's

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89 Mark Gregory, 'What the NBN cost-benefit review doesn't tell you', *Business Spectator*, 3 September 2014, p. 4.

90 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, p. 34.

91 Emeritus Professor Rod Tucker, 'Broadband projections fail reality test', *The Conversation*, 8 September 2014, at <http://theconversation.com/broadband-projections-fail-reality-test-31341>.

92 Paul Smith & Joanna Heath, 'NBN cost-benefit analysis slammed', *Australian Financial Review*, 28 August 2014.

93 See, for example, Robert Kenny and Charles Kenny, 'Superfast Broadband: Is it really worth a subsidy?' November 2010, at [http://charleskenny.blogs.com/files/overselling\\_fibre\\_1127.pdf](http://charleskenny.blogs.com/files/overselling_fibre_1127.pdf); Robert Kenny, written evidence to UK House of Lords Select Committee on Communications, Inquiry into Superfast Broadband, 23 March 2012, pp 387–393.

NBN policy.<sup>94</sup> The Strategic Review also cited Communications Chambers' previous UK study, upon which its work for the CBA appears to be based, in support of its own findings with regard to future demand.<sup>95</sup> The Panel of Experts was aware of this history and advised the committee that it knowingly engaged Communications Chambers with a view to developing an Australian version of its UK model.<sup>96</sup>

4.81 Mr Morrow himself described Communications Chambers' projections as 'curious', adding that he expected data to massively increase in coming years, and suspected that the Panel of Experts was 'looking at a snapshot in time versus the prediction of what is to come'.<sup>97</sup> iiNet CEO Mr David Buckingham observed that his customers were choosing the NBN for its speed offerings, and that 'I don't think 15 megabits per second in 2023 will be enough'.<sup>98</sup>

4.82 Critics noted that Communications Chambers' narrow approach, and the CBA's reliance on its findings, ignored very different results reached in other studies done within Australia and globally on this subject. For example, in June 2014, the Eindhoven University of Technology and Dutch consultancy Dialogic forecast that in 2020, sufficient subscription speeds for the average user would be approximately 165Mbps downstream and 20Mbps upstream.<sup>99</sup> In 2006, Swinburne University researchers Warren Harrop and Grenville Armitage forecast that 'with a family of five, all consuming high quality HD content at the same time, our base bandwidth requirement ranges from 58Mbit/sec to 113Mbit/sec' and on alternate modelling could be as high as a gigabit per second.<sup>100</sup> Even CISCO, on the conservative side, forecast that by 2018 in the Asia Pacific, the average fixed broadband speed would grow 2.7-fold, from 18Mbps to 48Mbps.<sup>101</sup>

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94 [www.malcolmturnbull.com.au/blogs/some-of-the-questions-on-fibre-to-the-home-gillard-and-conroy-won't-address-but-a-cost-benefit-analysis-would](http://www.malcolmturnbull.com.au/blogs/some-of-the-questions-on-fibre-to-the-home-gillard-and-conroy-won't-address-but-a-cost-benefit-analysis-would)

95 NBN Co Limited, *Strategic Review*, December 2013, pp 78–79.

96 Department of Communications, answer to question on notice (Question 221), Senate Environment and Communications Legislation Committee Supplementary Estimates, November 2014.

97 Adam Bender, 'Vertigan broadband demand forecast leaves NBN co CEO 'curious'', *Computerworld*, 28 August 2014, at [http://www.computerworld.com.au/article/553475/vertigan\\_broadband\\_demand\\_forecast\\_leaves\\_nbn\\_co\\_ceo\\_curious/](http://www.computerworld.com.au/article/553475/vertigan_broadband_demand_forecast_leaves_nbn_co_ceo_curious/)

98 David Ramli & Paul Smith, 'NBN: the never-ending story', *The Australian Financial Review*, 28 August 2014.

99 [http://cable-europe.eu.apache11.hostbasket.com/content/uploads/2014/06/140624\\_Dialogic-Fast-Forward-How-the-speed-of-the-internet-will-develop-between-now-and-2020\\_FINAL.pdf](http://cable-europe.eu.apache11.hostbasket.com/content/uploads/2014/06/140624_Dialogic-Fast-Forward-How-the-speed-of-the-internet-will-develop-between-now-and-2020_FINAL.pdf)

100 <http://caia.swin.edu.au/pubs/ATNAC06/Harropm.pdf>

101 [http://www.cisco.com/web/solutions/sp/vni/vni\\_forecast\\_highlights/index.html](http://www.cisco.com/web/solutions/sp/vni/vni_forecast_highlights/index.html)

4.83 Telecommunications analyst Chris Coughlan saw it as 'clear that the approach and assumptions made skewed the data-speed requirements to the lower side'.<sup>102</sup>

4.84 Mr Coughlan noted that in its estimate of assumption of only incremental increase, the Communications Chambers analysis (and consequently the CBA) relied heavily on an assumption of increased efficiency in video coding. However, he described this as a flawed assumption, as 'it would require a new more efficient video coding standard and this [is] not expected for at least another 10 years'.<sup>103</sup>

4.85 Professor Haines has argued that cost-benefit analyses require difficult and complex calculations, particularly in the NBN context:

In terms of benefits, the problem of 'we don't know what we don't know' is highlighted. For the NBN, we do not know what technological innovation may arise during its lifetime. Whatever model ends up being implemented, we don't have the luxury of trying different models to see which yields a better outcome before we make a decision.<sup>104</sup>

4.86 Associate Professor Kai Riemer of Sydney University went further, querying the usefulness of this kind of CBA modelling in an area of such significant and rapid technology change. He was quoted as observing that:

The cost-benefit analysis runs for around 25 years to 2040. If you go 25 years back to 1989, it's essentially pre-world wide web. So if you asked someone to imagine what this new internet thing could do and run a cost-benefit analysis of it you'd be in no position to possibly imagine the kinds of services and business models that the internet has changed in our society, businesses and lives.<sup>105</sup>

4.87 Chris Coughlan ruminated along similar lines: ten years ago 'Facebook was only just getting started, Netflix had not yet begun streaming content and Apple had just opened its iTunes online store'. He argued that an unbiased CBA would have taken account of its very real limitations in predicting the applications that might be in use in the future, and used recent increases to extrapolate the growth of speed requirements into the future. 'However, this approach would not necessarily deliver the client's desired outcome'.<sup>106</sup>

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102 Chris Coughlan, 'Analysing the NBN: Ethics and broadband politics', *Business Spectator*, 10 September 2014.

103 Chris Coughlan, 'Analysing the NBN: Ethics and broadband politics', *Business Spectator*, 10 September 2014.

104 Professor Fiona Haines, 'Cost benefit analysis can help or hinder good policy', *The Conversation*, 6 August 2014, at: <http://theconversation.com/cost-benefit-analysis-can-help-or-hinder-good-policy-30147>

105 David Ramli & Paul Smith, 'NBN: the never-ending story', *The Australian Financial Review*, 28 August 2014.

106 Chris Coughlan, 'Analysing the NBN: Ethics and broadband politics', *Business Spectator*, 10 September 2014.

4.88 As a result of its uncritical reliance on the Communications Chambers study, Professor Tucker believed the Vertigan report's projections to have 'serious flaws', concluding that:

The Vertigan report includes a sensitivity analysis that shows an FTTP network can provide a better net cost-benefit outcome than a FTTN network if the growth in bandwidth demand is higher than used in their analysis. If they had used realistic data for growth in demand, their cost-benefit analysis may well have shown that a FTTP network will provide Australia with the best long-term value for money.<sup>107</sup>

*Future speed: performance matters*

4.89 Dr Gregory also took issue with the CBA's technical analysis of future broadband speeds, arguing that it misled readers by suggesting that FTTP, FTTN and HFC all provided similar capabilities. The assumed speeds for each technology 'appear to come from an earlier report [that] was savaged by technologists at the time'.<sup>108</sup>

4.90 Dr Gregory noted *inter alia* that:

FTTP connections provide the advertised speed while FTTN connections provide 'up to' the advertised speed and often less than 25 per cent of FTTN connections will achieve a speed between 75 and 100 per cent of the advertised speed.

4.91 Moreover, in Dr Gregory's view:

One significant concern is that a life cycle cost and performance analysis was not carried out by a team of engineering experts and the data from the analysis is used to provide information that is either missing, sketchy or incorrect.<sup>109</sup>

4.92 Dr Gregory observed that the effects of congestion on performance and customer satisfaction were not adequately translated into the model:

The relationships between total network and link capacity, traffic class management, upload speeds and symmetric transmission requirements are not adequately covered in the CBA. Neither are the operational and maintenance costs, new applications and consumer expectations.

While it's natural for the CBA to be based on assumptions regarding how customers use the internet each day – how much data they consume and what applications they use – it's equally important to include the technical risk variables and assumptions.

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107 Emeritus Professor Rod Tucker, 'Broadband projections fail reality test', *The Conversation*, 8 September 2014, at <http://theconversation.com/broadband-projections-fail-reality-test-31341>.

108 Mark Gregory, 'What the NBN cost-benefit review doesn't tell you', *Business Spectator*, 3 September 2014, p. 4.

109 Mark Gregory, 'What the NBN cost-benefit review doesn't tell you', *Business Spectator*, 3 September 2014, pp 2-3.

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...The accuracy of these underlying assumptions is vital and more than one data set should be used to build and analyse the technical model prior to it being included in the CBA.<sup>110</sup>

4.93 Dr Gregory also drew attention to the assumption in the CBA that the speeds for FTTN, HFC and FTTP would remain constant between now and 2040, an 'audacious assumption that technologies should remain static for 26 years' which he described as 'nonsense'. Dr Gregory cited numerous studies providing very different projections of future bandwidth capability and demand, which were ignored by the CBA. He noted further that FTTP would provide infrastructure with a 50-80 year life to cope with future technology and speed upgrades, while VDSL2 and HFC would be fit for purpose for 5-10 years at most.<sup>111</sup>

4.94 Reflecting upon the evident deficiencies of the CBA's speed and demand modelling, Dr Gregory was left to conclude that:

The CBA provides the outcome it was designed to deliver despite its failure to adopt a reasonable underlying technical model and data set. The failure to include a life cycle cost and performance analysis effectively negates the opportunity for informed debate around the merits or otherwise of the CBA's outcomes.

Participants in the NBN debate wanted to see a detailed and accurate analysis of the NBN that was based on credible and justifiable data and assumptions, but unfortunately this important opportunity has been lost.<sup>112</sup>

4.95 The CBA acknowledged that 'the FTTP scenario has the highest benefits once it is fully rolled out', even under the CBA's constrained 'willingness to pay' analysis.<sup>113</sup> The CBA nonetheless declined to quantify that benefit and dismissed its significance based on its assessment of the longer rollout timeframe for FTTP compared to MTM.<sup>114</sup>

#### ***Failure to cost the upgrade path from MTM***

4.96 One of the Panel's 'key findings' was that the MTM approach was more 'future-proof' than an FTTP rollout, because MTM 'can be upgraded should demand

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110 Mark Gregory, 'What the NBN cost-benefit review doesn't tell you', *Business Spectator*, 3 September 2014, p. 3.

111 Mark Gregory, 'What the NBN cost-benefit review doesn't tell you', *Business Spectator*, 3 September 2014, p. 7.

112 Mark Gregory, 'What the NBN cost-benefit review doesn't tell you', *Business Spectator*, 3 September 2014, p. 7.

113 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, p. 60.

114 Department of Communications, answer to question on notice (Question 215), Environment and Communications Legislation Committee, Supplementary Budget Estimates hearings, November 2014.

growth prove much greater than expected', while the costs of FTTP, once expended, are 'irreversibly sunk'.<sup>115</sup>

4.97 But despite its reliance on upgradeability as a key factor in the attractiveness of MTM, and despite an assurance to the committee from Dr Vertigan that the costs and consequential benefits of future upgrade would be included in the study,<sup>116</sup> the CBA's assumption that Australians would not demand the high-speed broadband offered by FTTP meant that it did not factor in any costs at all for the future upgrading of MTM to FTTP over the timeframes of the study, to 2040.

4.98 The committee discussed the reasoning behind this with members of the Panel at its 3 October 2014 hearing:

**Senator CONROY:** Slide 1: perhaps I can just check, because this is one thing that has confused me. In your MTM model have you factored in any upgrade to FTTP in the future?

**Prof. Ergas:** We have a very significant component of FTTP in the MTM.

**Senator CONROY:** No, but to move beyond FTTN or even HFC—you have no costs in there for if someone suddenly decides that data growth is greater, then Robert Kenny thinks we need to upgrade—

**Prof. Ergas:** That is not quite right.

**Senator CONROY:** I am trying to understand it. Between now and 2040, have you put in upgrade costs to fibre to the premises?

**Prof. Ergas:** No. Essentially what happens is we deploy MTM, and MTM remains in place over the modelling period. We then look at a scenario in which you accelerate the transition to FTTP, and that is probably set out in our discussion of sensitivities as a sensitivity where willingness to pay rises more rapidly than we expect in the base case.

**Senator CONROY:** But in your main model it is not.

**Prof. Ergas:** Exactly.

**Senator CONROY:** It is in one of your sensitivity analyses, as it should be—

**Prof. Ergas:** Yes.

**Senator CONROY:** but in the main case there is no upgrade costs to FTTP.

**Prof. Ergas:** No.<sup>117</sup>

4.99 In short, the CBA did not envisage any upgrade requirement before 2025, and even then only in a case of unexpectedly high growth in demand. If and when upgrade

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115 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume I – National Broadband Network Market and Regulatory Report*, August 2014, pp 10, 14.

116 *Committee Hansard*, 5 May 2014, p. 69.

117 *Committee Hansard*, 3 October 2014, p. 53.

may be required, the CBA 'conservatively assumes that 20 per cent of the cost of FTTP can be avoided in an upgrade from FTTN to FTTP because of the investment already made in FTTN'.<sup>118</sup>

### **Key findings of Volume I: the Review of Regulation**

4.100 The Panel's approach to regulation was driven by its critical analysis of the taxpayer funds spent to date on the NBN, as noted above. The CBA concluded that the government-led approach (whether delivering an FTTP or MTM rollout) was less efficient and effective than leaving high-speed broadband to the market, supported where necessary by direct subsidies. The Panel also stated that its approach to the regulatory issues was founded upon its finding in the CBA that 'there are substantial gains to maintaining an environment in which a range of technologies can contend'.<sup>119</sup>

4.101 In its Review of Regulation, the Panel focused on seeking an environment of maximum competition and contestability, in which regulation's only roles were to provide a foundation for that competitive environment, or to provide an alternative where market forces alone could not meet consumers' needs.

4.102 The Review of Regulation emphasised the risks of monopoly power in telecommunications networks, while recognising that practical constraints such as geography and existing regulatory structures may create the need for gradual transition. It concluded that:

Overall, the panel considers that an approach of delivering the NBN through a single entity (where NBN Co has comprehensive responsibility for planning, constructing, operating and commercialising high-speed broadband services across all platforms) will inevitably foreclose opportunities for diversity, innovation, competition and choice in the long term. Entrenching an infrastructure monopoly imposes too great a risk on consumers, government and taxpayers and is unlikely to meet the objective of timely and cost-effective deployment.

The panel believes these risks need to be mitigated through structural and regulatory changes that encourage competitive entry in the construction and ongoing delivery of broadband infrastructure.<sup>120</sup>

4.103 Despite the overall conclusion of the Panel's earlier Statutory Review that there was a high level of satisfaction among stakeholders with the present legislative

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118 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume II – The costs and benefits of high-speed broadband*, August 2014, p. 13.

119 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume I – National Broadband Network Market and Regulatory Report*, August 2014, p. 15.

120 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume I – National Broadband Network Market and Regulatory Report*, August 2014, p. 16.

framework and its operation,<sup>121</sup> the Review of Regulation was far-reaching in its 19 recommendations for change to the NBN's regulatory framework.

4.104 The Review recommended the removal of 'unnecessary constraints on competition' as a first step, including winding back the current protections for NBN Co as a monopoly provider of superfast carriage services in Parts 7 and 8 of the *Telecommunications Act*.

4.105 Significantly, the Review of Regulation also recommended that the government move toward disaggregating NBN Co itself into competing entities based on each of the constituent technologies of the broadband rollout:

Disaggregation would improve the prospects for infrastructure competition now and in the future, encourage private investment and bring specialist skills to bear in managing each of these networks. Rather than duplicate fixed costs, the approach the panel recommends would secure the maximum leverage from existing assets whose costs are sunk, using those assets as the basis for actual and potential competition. It would prevent assets consumers have paid for (including the copper in HFC areas) from being prematurely scrapped, instead harnessing those assets for the benefit of end-users. Over time, this approach should reduce financial risks to taxpayers, facilitate a transition to private funding and improve the chance of efficient and timely network deployment.<sup>122</sup>

4.106 While the full privatisation of NBN Co was not recommended for immediate consideration, the Review recommended that the HFC network be privatised if possible, and stated that 'the objective of eventual [full] privatisation should inform, and be consistent with, implementation of the panel's recommendations'.<sup>123</sup>

4.107 With regard to pricing, the Review of Regulation was critical of uniform wholesale pricing arrangements. The Review recommended instead, alongside the disaggregation of NBN Co, a gradual transition to 'cost-effective wholesale pricing', supplemented by direct subsidies to vulnerable consumers.<sup>124</sup> This could be funded either (preferably) from consolidated revenue, or from a broad-based industry levy

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121 *Statutory review under section 152EOA of the Competition and Consumer Act 2010*, July 2014. at: [http://www.communications.gov.au/broadband/national\\_broadband\\_network/cost-benefit\\_analysis\\_and\\_review\\_of\\_regulation/panel\\_reports\\_to\\_government](http://www.communications.gov.au/broadband/national_broadband_network/cost-benefit_analysis_and_review_of_regulation/panel_reports_to_government), p. 6.

122 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume I – National Broadband Network Market and Regulatory Report*, August 2014, pp 17–18.

123 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume I – National Broadband Network Market and Regulatory Report*, August 2014, p. 23.

124 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume I – National Broadband Network Market and Regulatory Report*, August 2014, p. 20. The Panel noted that a gradual transition to such a model would require working out how NBN Co and its wholesale price caps would function within a more competitive market. The Panel also stated (at p. 22) that if NBN Co were not disaggregated, such a mechanism should not be immediately pursued, but that cross-subsidies within NBN Co should be quantified and made transparent in annual reporting.

covering both voice and broadband services, similar to the current arrangements for the Universal Service Obligation.

4.108 Other key recommendations of the Review of Regulation included that:

- NBN Co's service objectives and obligations, currently expressed in the shareholder Ministers' Statement of Expectations (SoE) to the company, be specified in legislation;
- such legislation include an obligation as an 'infrastructure provider of last resort' on NBN Co (or potentially, in future, another entity) to provide certainty of service to end-users, once connected;
- legislative obligations be placed on developers of new real estate to make broadband services available to a requisite standard, whether through NBN Co or another entity, and to meet the costs of the necessary infrastructure; and
- there be a legislative requirement for review of the national broadband standard every six to 10 years, by an independent body such as the Productivity Commission.

4.109 Finally, the Review addressed the institutional arrangements for the sector, describing Australia as 'anomalous by international standards' in placing responsibility for infrastructure regulation in a competition and consumer authority (the ACCC). The Review recommended that these functions be removed from the ACCC and vested in a new specialist regulator.<sup>125</sup> This issue is discussed further in chapter 6.

### **Issues arising from the Review of Regulation**

4.110 In evidence to the committee the Department of Communications advised that the industry reaction to the Vertigan panel's regulatory recommendations had been mixed, but that industry was on the record as 'largely supportive of the broader [existing] NBN model'.<sup>126</sup>

4.111 The Competitive Carriers' Coalition (CCC) issued a statement critical of what it described as the Review's recommendations 'to emulate 1970s US telephone industry policy to promote investment in 21<sup>st</sup> century broadband networks', and rejected the recommendations for the disaggregation and privatisation of NBN Co. In a scathing analysis, the CCC stated that:

Most of the Vertigan recommendations represent nothing more than rehashed, discredited theoretical arguments promoted by opponents of regulatory reform and the NBN.

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125 Panel of Experts, *Independent cost-benefit analysis of broadband and review of regulation: Volume I – National Broadband Network Market and Regulatory Report*, August 2014, pp 23–24..

126 Mr Drew Clarke, Secretary, Department of Communications, *Committee Hansard*, 3 October 2014, p. 32.

The inquiry has been an expensive distraction that has done little more than create uncertainty and disquiet across the industry during a crucial period of the transition to a new broadband network.

The time for historical revisionism and point scoring is long gone. The priority for the Government should be speeding up the structural separation of Telstra, the building of the NBN and the reduction of prices for basic services to all Australians, which remain disgracefully high – among the highest in the developed world.<sup>127</sup>

4.112 The Department of Communications advised the committee that Telstra and Vodafone agreed that it would be too disruptive to introduce the regulatory changes proposed in the Review of Regulation in the short term, although Vodafone believed that the Review provided a useful framework to resolve longer term regulatory issues.<sup>128</sup>

4.113 Optus, similarly, believed there was merit in longer-term reconsideration of key regulatory issues for the sector, but recognised that in the short-term, broader public policy objectives needed to be prioritised:

It would also be a bit of leap into the dark to embrace such fundamental policy objectives without being more certain of the NBN being delivered and more certain of what it will deliver within the current communications policy framework.

No matter what one thinks about how it will be delivered, it has to be recognised the NBN has cemented some bi-partisan consensus.

There is support for two very important instruments to deliver consumer choice and the potential for more effective service-level competition. These are structural separation and ubiquitous national broadband infrastructure that is not controlled by the dominant incumbent.<sup>129</sup>

### ***Competition policy and the TPG threat***

4.114 The approach of the Review of Regulation to competition issues, and the government's response to it, was particularly relevant in light of the competitive 'cherry picking' challenge posed to NBN Co by TPG in metropolitan apartment blocks. Discussing that issue with the committee in September 2014, Mr Morrow said:

I think TPG by itself is manageable for us to stay within the model prescribed by the government and objectives prescribed by the board. However, if TPG are allowed to do this, it begs the question of whether there are other larger carriers that are allowed to do this and, if those larger

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127 Competitive Carriers' Coalition Inc, 'Vertigan Recommendations Should Be Binned', Media Release, 2 October 2014, at <http://www.ccc.asn.au/vertigan-recommendations-should-be-binned/w1/i1001527/>.

128 Mr Drew Clarke, Secretary, Department of Communications, *Committee Hansard*, 3 October 2014, p. 32.

129 Mr David Epstein, Vice-President Corporate and Regulatory Affairs, Optus, speech to CommsDay Melbourne Congress, 7 October 2014, at <https://media.optus.com.au/wp-content/uploads/2014/10/Speech-Notes-CommsDay-Melbourne-07-October-2014-2.pdf>, p. 3.

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carriers come in and this becomes a material deployment issue, then the model for NBN is clearly in jeopardy.<sup>130</sup>

4.115 In April 2014 a complaint was made to the ACCC regarding TPG's marketing of these (FTTB) services, in light of the NBN 'level playing field' provisions of the *Telecommunications Act 1997*, as amended in 2011. The ACCC announced on 11 September 2014 that it had determined that TPG's activities were not in breach of the Act, due to a provision in the legislation that allowed broadband operators to extend their networks within one kilometre of their previously-existing network footprint. The ACCC stated that it would therefore take no action against TPG, but would conduct a declaration inquiry into whether such networks should be the subject of access regulation.<sup>131</sup>

### **Government response to the Cost-Benefit Analysis and Review of Regulation**

4.116 In the government's initial response to the CBA, Minister Turnbull described it as a 'methodical, rigorous and comprehensive approach to answering the fundamental economic questions about high-speed broadband'. He welcomed the conclusions that 'strongly support' the Coalition government's MTM model.<sup>132</sup>

4.117 The Minister nevertheless made clear that the government did not intend to act upon the CBA's finding that a completely unsubsidised NBN was the most cost-effective model. The minister stated that a private sector approach supplemented by a direct government subsidy, 'insofar as it was ever an option is long past', and reaffirmed the government's commitment to a subsidised network to provide universal coverage:

It's clear if you're going to have any sort of equity in terms of access to telecommunications in rural and regional Australia there will have to be some form of subsidy.<sup>133</sup>

4.118 Responding to the Review of Regulation upon its release in October 2014, the minister said that:

The Government welcomes the work of the Vertigan panel and its reminder of the value of increased competition and greater private sector investment in infrastructure.

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130 Mr Bill Morrow, *Committee Hansard*, 26 September 2015, p. 52.

131 Australian Competition and Consumer Commission, 'ACCC not to take action to block TPG's Fibre to the Basement network rollout', Media Release, 11 September 2014, at <https://www.accc.gov.au/media-release/accc-not-to-take-action-to-block-tpgs-fibre-to-the-basement-network-rollout>.

132 The Hon Malcolm Turnbull MP, Minister for Communications, 'Cost-Benefit Analysis: Multi-technology NBN delivers \$16 billion more', Media Release, 27 August 2014, at [http://www.minister.communications.gov.au/malcolm\\_turnbull/news/cost-benefit-analysis-multi-technology-nbn-delivers-16-billion-more](http://www.minister.communications.gov.au/malcolm_turnbull/news/cost-benefit-analysis-multi-technology-nbn-delivers-16-billion-more).

133 Joanna Heath and David Ramli, 'Dump rural NBN for extra \$6b benefits, analysis says', *Australian Financial Review*, 27 August 2014.

The panel's final report provides a roadmap that if carefully implemented over time will reduce risks currently borne by taxpayers and lead to a more efficient and sustainable structure of market regulation.<sup>134</sup>

4.119 At the same time, the minister was mindful of risks to the NBN rollout, to the stability of the project and 'large losses for taxpayers and the Budget that would result from implementation of some of the panel's recommendations'. The government therefore announced that while disaggregation of NBN Co after completion of the network would not be ruled out, 'now is not the time'.<sup>135</sup>

4.120 The minister stated that the government would, however, implement certain other measures in response to the Panel's recommendations, such as 'consulting industry on a carrier licence condition to ensure maintenance of the level playing field' for NBN, and examining reforms toward 'levelling the playing field' between NBN Co and the private sector in relation to broadband deployment in greenfields developments.<sup>136</sup> This has resulted in a \$600 developer charge (for SDUs) and a \$300 connection charge. The committee expects that this \$900 charge will be passed on to new home owners.

4.121 In relation to other issues, the Minister said the government would 'consider the panel's broader report in a rigorous and methodical manner' and consult with stakeholders prior to making a comprehensive response, before the end of 2014.<sup>137</sup>

4.122 The government's formal response to the CBA and Review of Regulation was released on 11 December 2014, in the form of a report on telecommunications regulatory and structural reform.<sup>138</sup> Speaking to the report, Minister Turnbull and Finance Minister Cormann described it as 'a roadmap for reform in the telecommunications sector which will see several restrictive aspects of existing market

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134 The Hon Malcolm Turnbull MP, 'Vertigan panel lays out path to less telecommunications regulation', 1 October 2014, at <http://www.malcolmturnbull.com.au/media/vertigan-panel-lays-out-path-to-less-telecommunications-regulation>

135 The Hon Malcolm Turnbull MP, 'Vertigan panel lays out path to less telecommunications regulation', 1 October 2014, at <http://www.malcolmturnbull.com.au/media/vertigan-panel-lays-out-path-to-less-telecommunications-regulation>

136 The Hon Malcolm Turnbull MP, 'Vertigan panel lays out path to less telecommunications regulation', 1 October 2014, at <http://www.malcolmturnbull.com.au/media/vertigan-panel-lays-out-path-to-less-telecommunications-regulation>

137 The Hon Malcolm Turnbull MP, 'Vertigan panel lays out path to less telecommunications regulation', 1 October 2014, at <http://www.malcolmturnbull.com.au/media/vertigan-panel-lays-out-path-to-less-telecommunications-regulation>

138 Australian Government, *Telecommunications Regulatory and Structural Reform*, December 2014, at [http://www.communications.gov.au/\\_data/assets/pdf\\_file/0020/243902/-Telecommunications\\_Regulatory\\_and\\_Structural\\_Reform\\_Paper\\_-\\_11\\_December\\_...pdf](http://www.communications.gov.au/_data/assets/pdf_file/0020/243902/-Telecommunications_Regulatory_and_Structural_Reform_Paper_-_11_December_...pdf)

regulation gradually replaced with more competition-friendly settings...introduced in a way which does not delay or derail the NBN'.<sup>139</sup>

4.123 The report flagged implementation of the following key reforms during an initial 'transition period' to the end of 2016:

- a new carrier licence condition from 1 January 2015 (for two years), requiring that networks competing with NBN Co for residential services provide wholesale access on a non-discriminatory, structurally separated basis, at a price of no more than \$27 per month for a 25/5mbps service;
- an up-front charge from NBN Co to developers of new housing developments, recouping part of the costs of broadband installation and allowing private contractors and operators to compete, to take effect from 1 March 2015;
- the development of additional rules for managing competing VDSL2 networks;
- a request to NBN Co that it move to replace its current uniform national wholesale prices with wholesale price caps;
- a review of the telecommunications-specific anticompetitive conduct regime in Part XIB of the *Competition and Consumer Act 2010*, during the second half of 2015;
- assessment of NBN Co's internal cross-subsidies by the Bureau of Communications Research, with a view to recommending a model for replacing them with a more transparent subsidy regime from 1 January 2017; and
- separation of the accounts and potentially also the IT (OSS/BSS) systems of NBN Co's business units for each different technology, by 1 July 2015, to 'keep options open' for future restructuring or disaggregation of NBN Co.<sup>140</sup>

4.124 Subject to the success of these transitional steps, the government announced its intention that a new regulatory framework for the telecommunications sector would commence from 1 January 2017, providing for a more competitive environment with structural separation of all competing providers, competitively neutral arrangements for funding NBN Co's fixed wireless and satellite services, and legislation mandating NBN Co as the broadband infrastructure provider of last resort.<sup>141</sup>

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139 The Hon Malcolm Turnbull MP, Minister for Communications, 'Reform of telecommunications regulation', Joint media release with Senator the Hon Mathias Cormann, Minister for Finance, 11 December 2014.

140 Australian Government, *Telecommunications Regulatory and Structural Reform*, December 2014, pp 5–7, at [http://www.communications.gov.au/\\_data/assets/pdf\\_file/0020/243902/-Telecommunications\\_Regulatory\\_and\\_Structural\\_Reform\\_Paper\\_-\\_11\\_December\\_...pdf](http://www.communications.gov.au/_data/assets/pdf_file/0020/243902/-Telecommunications_Regulatory_and_Structural_Reform_Paper_-_11_December_...pdf)

141 Australian Government, *Telecommunications Regulatory and Structural Reform*, December 2014, p. 7, at [http://www.communications.gov.au/\\_data/assets/pdf\\_file/0020/243902/-Telecommunications\\_Regulatory\\_and\\_Structural\\_Reform\\_Paper\\_-\\_11\\_December\\_...pdf](http://www.communications.gov.au/_data/assets/pdf_file/0020/243902/-Telecommunications_Regulatory_and_Structural_Reform_Paper_-_11_December_...pdf)

4.125 Finally, the government response noted the existing legislative requirement for a Productivity Commission review prior to the eventual privatisation of NBN Co and stated that 'the government considers that this review is the appropriate vehicle to revisit a number of the Vertigan panel's recommendations'.<sup>142</sup>

4.126 On 11 December 2014, the same date as it released its broader response to the Review of Regulation, the government issued a policy paper on telecommunications infrastructure in new developments, with an invitation for comment by 15 January 2015.<sup>143</sup> The paper proposed that a deployment charge of \$600 for single-dwelling units and \$400 for multi-dwelling units would be levied on developers of new housing developments, plus a connection charge of \$300 be levied on RSPs, 'which it is anticipated [RSPs] will pass through to end-users'. Where NBN Co did not already have backhaul in place to connect a new development, additional charges would be levied on developers comprising \$500 of the first \$1000 required to install it, and 100 per cent of the cost beyond the first \$1000.<sup>144</sup> These charges were to commence in relation to new development applications received from 1 March 2015, although a few days before that date the government announced that implementation of the connection (and presumably backhaul) charge would be delayed to 1 July 2015.

4.127 The promised new carrier licence condition commenced on 1 January 2015, with the immediate effect of requiring TPG to revise its FTTB broadband service. TPG announced the temporary withdrawal of the service, saying it had had insufficient time to fulfil the licence conditions, but re-launched its FTTB product on 19 February 2015, with the required offering of wholesale access on a non-discriminatory basis (the condition allowed companies until 1 July 2015 to complete full structural separation).

4.128 Noting the speed of TPG's resumption of competition with the NBN, and a resulting \$10 per month increase in the cost of services to new customers, one commentator observed that the new arrangements 'achieved very little other than to add to the telecommunications industry chaos'.<sup>145</sup>

4.129 Minister Turnbull announced later in January 2015 that the government would introduce an industry levy on companies which competed directly with the NBN, to contribute to the cross-subsidy for rural areas. The Minister said that this would not increase present NBN wholesale costs, but would be clearly identified within the

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142 Australian Government, *Telecommunications Regulatory and Structural Reform*, December 2014, pp 5–6, at [http://www.communications.gov.au/\\_data/assets/pdf\\_file/0020/243902/-Telecommunications\\_Regulatory\\_and\\_Structural\\_Reform\\_Paper\\_-\\_11\\_December\\_....pdf](http://www.communications.gov.au/_data/assets/pdf_file/0020/243902/-Telecommunications_Regulatory_and_Structural_Reform_Paper_-_11_December_....pdf)

143 [http://www.communications.gov.au/broadband/telecommunications\\_regulatory\\_reform](http://www.communications.gov.au/broadband/telecommunications_regulatory_reform)

144 Australian Government, *Telecommunications infrastructure in new developments: Policy update for comment*, December 2014, p. 5.

145 Mark Gregory, 'TPG back on its fibre horse', *Business Spectator*, 20 February 2015.

existing NBN wholesale charge (in which it had always been a hidden component), with an equivalent levy imposed upon competitors.<sup>146</sup>

### Committee view

4.130 The Cost-Benefit Analysis is a deeply flawed and overtly political document. It is not credible and is not a reliable basis upon which to make decisions about the NBN.

4.131 In opposition, Mr Turnbull promised an independent cost-benefit analysis. Three weeks before the 2013 election he promised that Infrastructure Australia would do this work:

We are going to do a rigorous analysis, we will get Infrastructure Australia to do an independent cost benefit analysis.<sup>147</sup>

4.132 Instead, the CBA was prepared by a hand-picked team selected by the Communications Minister, comprising former Liberal Party staff and some of the most vociferous critics of the NBN, with predictable results.

4.133 It is an axiom of the telecommunications industry that FTTP networks are capital intensive but have low ongoing maintenance and operations costs compared to legacy networks. By contrast, legacy networks have lower capital costs, but much higher maintenance and operations costs. The committee considers that a genuine appraisal of these costs out to 2040 would not have delivered the outcome the Government wanted from the CBA. This is why the Vertigan Panel arbitrarily 'amended' NBN Co's operating expense assumptions for FTTP—increasing them by **180 per cent** compared to 12 per cent for other MTM technologies.

4.134 The Cost-Benefit Analysis:

- included an absurdly pessimistic quantification of technical household demand—15 mbps by 2023— that relied on a study conducted by a UK firm known for its (uniquely) pessimistic view of future broadband demand, rather than demand forecasts from reputable firms (e.g. CISCO);
- assumed that the current mix of technologies assumed for the MTM in the Strategic Review will be in place for the next 25 years—until 2040—and included no costs in the main scenario for future upgrades;
- relied on suspect projections by Communications Chambers, a small Choice modelling survey corrupted by Communications Chambers misinformation, and a limited sample of households on NBN fibre, instead of the substantial sample of households on the NBN (150,000+) demonstrating *actual* willingness to pay (62 per cent of whom are already ordering speed tiers of 25 mbps or above); and

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146 Joanna Heath and David Ramli, 'Competing telcos must pay levy to bring broadband to the bush, says Malcolm Turnbull', *Australian Financial Review*, 21 January 2015.

147 Allie Coyne, 'Turnbull's NBN policy "detailed enough" to escape costing', *IT news*, 16 August 2013, at <http://www.itnews.com.au/News/353616,turnbulls-nbn-policy-detailed-enough-to-escape-costing.aspx>

- adopted a narrow, private 'willingness to pay' metric which underpinned 95 per cent of the analysis, which failed to account for business demand or the many, well documented benefits to business and the public from world-class future broadband.

4.135 On the Market and Regulatory Review, for the sake of brevity, the committee considers the comments of the Competitive Carriers Coalition (CCC) adequately convey the committee's view. The CCC noted at the publication of the Market and Regulatory Review that the Vertigan recommendations should be 'binned', saying:

Most of the Vertigan recommendations represent nothing more than rehashed, discredited theoretical arguments promoted by opponents of regulatory reform and the NBN.

The inquiry has been an expensive distraction that has done little more than create uncertainty and disquiet across the industry during a crucial period of the transition to a new broadband network.

The time for historical revisionism and point scoring is long gone.<sup>148</sup>

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148 Competitive Carriers' Coalition Inc, 'Vertigan Recommendations Should Be Binned', Media Release, 2 October 2014, at <http://www.ccc.asn.au/vertigan-recommendations-should-be-binned/w1/i1001527/>.