

Chapter Two

The Implementation Study

Background to the Implementation Study

2.1 The background to the commissioning of the Lead Advisor (McKinsey-KPMG) to provide an Implementation Study to the Government was comprehensively detailed in the committee's *Third Report*.¹

2.2 Also detailed in that report was the Government's failure to make publicly available the only interim report provided by the Lead Advisor. It was an interim report the Government received on 14 August 2009, a mere eight weeks after the Lead Advisor's appointment.²

2.3 The Government received the Implementation Study from the Lead Advisor on 5 March 2010.³ Despite repeated calls in Parliament and from industry and other stakeholders, the Government repeatedly refused to publicly release the document until 6 May 2010.⁴

The Implementation Study does not justify the NBN progressing

2.4 The Implementation Study was conducted within very limited parameters. As the Implementation Study itself states,

[e]xplicitly, it does not:

- Evaluate Government's policy objectives;
- Evaluate the decision to implement the NBN via the establishment of NBN Co;
- Undertake a cost-benefit analysis of the macro-economic and social benefits that would result from the implementation of a superfast broadband network.⁵

1 *Third Report*, November 2009, pp 32–34.

2 See *Third Report*, November 2009, p. 34, [3.24]–[3.26].

3 Mr Daryl Quinlivan, Deputy Secretary, Infrastructure, Department of Broadband, Communications and the Digital Economy, *Committee Hansard*, Canberra, 15 April 2010, p. 63

4 The Hon. Lindsay Tanner, Minister for Finance and Deregulation and Senator the Hon. Stephen Conroy, Minister for Broadband, Communications and the Digital Economy, 'Landmark study confirms NBN vision is achievable and affordable', Joint media release, 6 May 2010, www.minister.dbcde.gov.au/media/media_releases/2010/040 (accessed 6 May 2010).

5 McKinsey-KPMG, *Implementation Study for the National Broadband Network*, 5 March 2010, Executive Summary, p. i.

2.5 Because the Implementation Study does not evaluate the merit of the Government's policy objectives (because it was instructed not to), it provides no analysis whatever of whether the NBN is good policy for Australia. It simply does not address whether the NBN project should even proceed.

2.6 The Implementation Study also does not provide a cost-benefit analysis of the NBN. It does not consider, at any point, whether the project represents value for an enormous outlay of Australian taxpayers' money. The Implementation Study is premised on the assumption that the project will be implemented. At no point does it consider whether it should be.

2.7 At no point has there been a cost-benefit analysis of the macro-economic and social benefits that would result from the implementation of a super-fast broadband network in Australia. The Implementation Study explicitly does not undertake that analysis.⁶

2.8 In its *Third Report*, the committee stated:

The committee is appalled that, at the time of reporting, almost eight months after the announcement of the commitment to a massive investment of \$43 billion for the FTTP NBN, the government still refuses to comply with its own legislative requirements that the NBN must undergo a rigorous cost-benefit analysis.⁷

2.9 Almost six months later, nothing has changed. There remains no analysis about whether or not the social and economic policy implications arising from the NBN merit a multi-billion dollar investment. The Implementation Study is not a substitute for that analysis.

2.10 In the absence of a cost-benefit analysis proving to the contrary, the committee believes the NBN is not justifiable policy. Too much public money is at stake to be thrown away without transparent, accountable, independent assessment of the merit of starting, let alone progressing, the project.

2.11 All in all the committee does not accept that the Implementation Study, nor other evidence given to the committee, supports the NBN in its current form.

2.12 The committee believes that there are better ways to provide fast broadband of a capacity and speed required by most Australians at a cost considerably less than the \$26–43 billion suggested by the Implementation Study. The committee believes that by working cooperatively with the industry, a better arrangement could be implemented providing affordable fast broadband at an earlier time than is proposed by the NBN in its current form.

6 McKinsey-KPMG, *Implementation Study for the National Broadband Network*, 5 March 2010, Executive Summary, pp i–ii.

7 *Third Report*, November 2009, p. 66 [6.18].

2.13 Accordingly, the committee recommends that the Government abandon the National Broadband Network project.

Recommendation 1

2.14 That the Government abandon the National Broadband Network project.

2.15 That if, in the alternative, the Government insists on progressing the NBN, it be progressed in accordance with the recommendations contained in the remainder of this report.

Relevance of Implementation Study compromised

2.16 The stated purpose of the Implementation Study was to 'advise Government on how best to implement its stated policy objectives' of building the NBN.⁸ As described above, the underlying premise for the analysis in the Implementation Study was that the NBN project would progress, not the question of whether it should.

2.17 The committee believes that the Implementation Study should only have been commissioned after a thorough cost-benefit analysis of the NBN had been conducted.

2.18 If the results of a thorough cost-benefit analysis had actually justified the massive expenditure that the NBN will involve, then the committee believes that the Implementation Study would have been an important document to commission. However, it needed to be, and should have been, completed prior to the commencement of the roll-out of the network and key decisions on network architecture, product offering and the legislative framework for the NBN being made. That is, the Implementation Study should have been conducted as part of the policy analysis leading up to the 7 April 2009 announcement.

2.19 The committee feels that the Implementation Study is an exercise in retrofitting a justification for the Government's commitment rather than adequately explaining how the NBN can and/or should be implemented.

2.20 Because the Implementation Study was not handed to the Government before 5 March 2010, and then was not made public to industry and key stakeholders before 6 May 2010, any relevance and value of the Implementation Study was fundamentally compromised.

2.21 During the time in which the Implementation Study was not publicly available, NBN Co was making irreversible decisions on network architecture and product offering. To take just one example, NBN Co has already finalised its plans for the roll-out of the NBN in Tasmania which is due to commence providing retail services to Tasmanians within the next two months. Industry stakeholders, future retail customers and telecommunications analysts have had to operate in the dark. The

8 McKinsey-KPMG, *Implementation Study for the National Broadband Network*, 5 March 2010, Executive Summary, p. i.

time for public consultation on this document should have been prior to critical decisions having to be made. The 6 May 2010 release date was too late.

Failure to release the Implementation Study

2.22 As described above, the Government received the Implementation Study on 5 March 2010 but, even in the face of widespread and sustained criticism, refused to make the document public until 6 May 2010.

2.23 At the same time as it was refusing to make the Implementation Study public, the Government was unashamed in publicly acknowledging the central importance of the document to discussions on the NBN. The Hon. Stephen Conroy, Minister for Broadband, Communications and the Digital Economy, stated at a *Communications Day Summit* in Sydney on 20 April 2010:

[The Implementation Study] is a detailed and comprehensive document.

It includes advice among other things on the detailed operating arrangements, network design, financial analysis, the structure of the company and the legislative framework around how the NBN should operate.

It is over 500 pages long and contains 84 recommendations.

It is a significant and important document for the future of this sector.⁹

2.24 The committee has already stated that the Government's failure to release the Implementation Study was a deplorable demonstration of political posturing which failed every criterion of accountable, transparent, evidence-based government and policy.

2.25 It is not only the committee voicing such views. In an opinion piece in the leading industry publication, *Communications Day*, on 28 April 2010, the respected telecommunications expert Mr Kevin Morgan explained how the Government's conduct has put 'sanctions on open debate':

NBN 1.0 [ie the original Request For Proposal process for bids to design and build a Fibre to the Node NBN] was marked by secrecy, a cone of silence excused by probity. That secrecy led to an inevitable policy failure as the government dodged critical issues such as the regulatory settings and possible compensation to Telstra. Now NBN 2.0 [ie the Fibre to the Premises proposal] is being framed in a similar cone of silence with decisions being made without public debate or scrutiny.

The Senate Select Committee has sought to step into the void but its work has been hampered because key parties such as DBCDE, the ACCC and NBN Co have been unwilling or unable to give any real insights into how

9 Senator the Hon. Stephen Conroy, Minister for Broadband, Communications and the Digital Economy, 'Address to CommsDay Summit 2010', Sydney, 20 April 2010, www.minister.dbcde.gov.au/media/speeches/2010/006 (accessed 28 April 2010).

decisions on the NBN have been made or what the real plans are for the future. The reticence of public servants to offer insights either formally or informally is understandable. Unauthorized disclosure of information could attract two years jail under the Crimes Act.

Such sanctions on open debate and the sharing of information may well maintain the integrity of government decision making but they do not create the environment for rational policy formation. The NBN should not merely be open access – it should be planned and built in a wholly open environment where all parties have equal standing and access to information. Anything less threatens further policy failure leaving Australia with a network shaped by little more than political expediency and ambition.¹⁰

Process of decision making: duplication?

2.26 During the course of its inquiry, the committee learned that, despite the cost of the Implementation Study, the conclusions and recommendations made in it are not necessarily being followed.

2.27 It emerged in evidence given to the committee by NBN Co CEO, Mr Michael Quigley, that NBN Co is itself making the final decisions on its product offering and network architecture, and that when making those decisions, NBN Co uses the Implementation Study as a reference tool only. In addition to the Implementation Study, NBN Co has regard to the results of its own processes of public consultation, and any other material it thinks fit.¹¹

2.28 In his oral evidence to the committee, Mr Quigley denied that this was a process of costly duplication:

Mr Quigley—As you would expect, there is a complementarity between the issues that the implementation study was studying and what we are doing.

Senator FISHER—Is complementarity in any respect the same as duplication?

Mr Quigley—No. I would not use the word ‘duplication’.

Senator FISHER—So there is no overlap between the implementation study and the sorts of studies that NBN Co. has been undertaking itself at NBN Co.’s cost—for example, into the network architecture?

...

Mr Quigley—In some of these very complex issues, there is a lot to be gained—a tremendous amount to be gained—by having a very productive debate from two angles. As we know, this is a project in which—

Senator FISHER—So that is not duplication?

10 Mr Kevin Morgan, 'Time for more disclosure on NBN pricing', *Communications Day*, 28 April 2010, p. 6.

11 Mr Michael Quigley, NBN Co Ltd, *Committee Hansard*, Canberra, 15 April 2010, p. 56.

Mr Quigley—It is not duplication.

Senator FISHER—That is value-adding, is it?

Mr Quigley—It is value-adding. If I were in private enterprise, spending on a project of this size, we would not hesitate to spend that sort of money upfront to make sure that the issues were investigated from every angle possible.¹²

Committee view

2.29 While the committee understands the need for 'productive debate' on complex issues such as network architecture, it remains concerned that the Implementation Study does not represent value for money. Given the government's delaying tactics, the committee believes the \$25 million spent on commissioning the Implementation Study would have been better spent obtaining a thorough cost-benefit analysis of the NBN project itself.

Release of the Implementation Study

2.30 The Implementation Study was finally released on 6 May 2010. The timing of the release raised almost more questions than the Implementation Study answered.

2.31 The Government chose to release the Implementation Study at a time that would give parliamentarians and the industry little chance to absorb the document prior to the Budget three day Parliamentary Week and less than one week before this committee – set up by the Senate to specifically inquire into the NBN – was due to report. It is important to remember that the Senate previously agreed to extend the committee's reporting date so as to enable the committee to closely examine the Implementation Study and any Government response to it. Paragraph 2A of the committee's revised terms of reference instructs the committee to:

...examine the findings of the National Broadband Network Implementation Study, the Government's response to the Implementation Study and any subsequent impact of that report for the national Broadband Network policy.¹³

2.32 The decision to release the Implementation Study so close to the committee's intended reporting date of 12 May 2010 compromised the committee's ability to address the Implementation Study in sufficient detail in this report.

2.33 It is quite clear that the timing of the release of the Implementation Study is politically motivated and the committee may well ask why it has taken so long to release this document. The only answer could be that the Government deliberately tried to curtail any in-depth analysis of both the document or any future Government

12 Michael Quigley, NBN Co Ltd, *Committee Hansard*, Canberra, 15 April 2010, p. 56.

13 The paragraph was inserted following the tabling of the committee's *Third Report*, 26 November 2009.

response. That may well be because neither the Implementation Study nor Government announcements to date provide a concrete, detailed business plan outlining the specifics of how, when, and for how much the NBN will be (not 'might be') rolled out in every street in Australia.

Analysis of the Implementation Study

2.34 The Implementation Study is a 534 page analysis of what might be some of the challenges when implementing the NBN. The committee considers that there is no point in rehashing that analysis. In any event, given the timeframe, the committee has not had sufficient opportunity to analyse the document in detail or subject it to public consultation.

2.35 But even from a preliminary analysis of the document, it is evident that some of its most important conclusions, for example regarding the cost of the project and whether Telstra's involvement is necessary, are based on some fairly audacious assumptions and in some crucial areas lack sufficient detail in evidence or analysis to withstand much criticism.

2.36 Further, although the Implementation Study highlights a range of issues that will be important in implementing the NBN and the areas in which Government action or decisions by NBN Co will be needed, in many areas it fails to give the specific details of the actions needed. Simple questions like what the specific product offering will be in specified parts of Australia, how much it will cost end users, the extent of Government subsidies, the timetable of the NBN roll-out to different locations, and the feasibility of some of its suggestions and recommendations, are not answered.

2.37 After an initial overview of the Government's commentary on the Implementation Study, the rest of this chapter will highlight the key areas of the Implementation Study that are in need of closer examination and debate. Those areas and concerns cast significant doubt on the Government's claims that the Implementation Study proves the NBN is a viable project which can be built on time and to budget and without NBN Co reaching any agreement with Telstra for the use of Telstra's assets or, more crucially, for the seamless migration of Telstra's millions of fixed-line telephony and broadband customers onto the NBN.¹⁴

Government's media response to the Implementation Study

2.38 The Government released the Implementation Study with a media release, the first page of which was as follows:

The Rudd Government today released the National Broadband Network (NBN) Implementation Study which confirms that high-speed broadband

14 The Hon. Lindsay Tanner, Minister for Finance and Deregulation and Senator the Hon. Stephen Conroy, Minister for Broadband, Communications and the Digital Economy, 'Landmark study confirms NBN vision is achievable and affordable', Joint media release, 6 May 2010, www.minister.dbcde.gov.au/media/media_releases/2010/040 (accessed 6 May 2010).

for all Australians is achievable, and can be built on a financially viable basis with affordable prices for consumers.

The comprehensive report was prepared by McKinsey & Company and KPMG, and has 84 recommendations for the Government about the NBN. These cover the technology, financing, ownership, policy framework, and market structure of this important infrastructure project.

Minister for Broadband, Communications and the Digital Economy, Stephen Conroy said:

'After months of detailed and rigorous analysis, the Implementation Study confirms that the Government's National Broadband Network is achievable, viable and will transform life and business in Australia.'

The Implementation Study also confirms that while infrastructure sharing and other commercial arrangements with existing telecommunications companies can benefit the project, the NBN will be financially viable even without the participation of Telstra.

Key findings and recommendations from the Implementation Study include:

- The NBN will deliver world class broadband infrastructure to all Australians;
- The \$43 billion total capital cost of the NBN is a conservative estimate and there are opportunities to significantly reduce the build cost;
- The peak investment required by Government is estimated at \$26 billion by the end of year 7, of which \$18.3 billion will be required over the next four years;
- Government should retain full ownership of the NBN until the roll-out is complete to ensure that its policy objectives are met – including its competition objectives;
- The fibre component of the NBN should be extended from 90 to 93 per cent and cover the 1.3 million new premises expected to be built by 2017-18;
- Entry level wholesale prices on the fibre should be set at around \$30-35 per month for basic broadband 20Mbps plus voice service, to drive affordable retail prices and better value for money for consumers compared to what is available today;
- Fibre to the premise is widely accepted as the optimal future proof technology with wireless broadband a complementary rather than a substitute technology;
- Next generation wireless and satellite services will deliver peak speeds of at least 12 Mbps (and much higher for many wireless users). Satellite services will deliver average data rates which are more than 20 times higher than most users of these technologies experience today and much higher than average DSL usage today;
- NBN Co can build a strong and financially viable business case with the Study estimating it will be earnings positive by year six and able to pay significant distributions on its equity following completion of the roll-out; and

- The Government can expect a return on its equity investment sufficient to fully cover its cost of funds.¹⁵

Costs of roll-out and the likelihood of take-up

2.39 The Implementation Study projects that the NBN can be rolled out with a peak Government investment of \$26 billion and that the total cost of the NBN 'is affordable within Government's initial cost estimate of \$43 billion'.¹⁶ As a 'conservative' estimate of the total capital costs of building the NBN, the Implementation Study estimates that at the 'high end of plausible expenditure range', the NBN could be built for \$42.8 billion.¹⁷

2.40 The committee is concerned that a number of the assumptions made in the Implementation Study to underpin the cost analysis may not be supported, in which case there could still be significant cost blow-outs and increases in the overall cost of the NBN. Two key assumptions are take-up rates and wholesale pricing.

2.41 Submitters and witnesses providing evidence to the committee did not have the benefit of the Implementation Study during the committee's consultation process and were therefore unable to comment on its analysis. However, a number of analysts have since provided commentary on the Implementation Study in the media. One of those analysts included the telecommunications expert, Mr Kevin Morgan, who had previously provided a written submission to the committee.¹⁸ In an opinion piece in *Communications Day*, Mr Morgan was one of a number of analysts querying the validity of the key assumptions made in the Implementation Study regarding take-up rates:

The NBN Implementation study appears to have been reversed engineered in to the government's original cost estimate – it's a post hoc rationalisation for spending \$43 billion.

...

Under the revised 'business case', private equity through privatisation would not be introduced until at least 15 years into the project, by which time there might be some retained equity and government equity will have been replaced with government guaranteed debt to give a typical 50/50 debt equity ratio.

15 The Hon. Lindsay Tanner, Minister for Finance and Deregulation and Senator the Hon. Stephen Conroy, Minister for Broadband, Communications and the Digital Economy, 'Landmark study confirms NBN vision is achievable and affordable', Joint media release, 6 May 2010, www.minister.dbcde.gov.au/media/media_releases/2010/040 (accessed 6 May 2010).

16 McKinsey-KPMG, *Implementation Study for the National Broadband Network*, 5 March 2010, Executive Summary, pp 8 and 17.

17 McKinsey-KPMG, *Implementation Study for the National Broadband Network*, 5 March 2010, p. 346.

18 Mr Kevin Morgan, *Submission 122*.

With privatisation, the government might get its remaining equity back and if the NBN enjoys, as the study foreshadows, overbuild protection, then private investors will enjoy a monopoly built on free taxpayers' funds.

If the assumption the government will fork out \$26 billion to earn negligible return is bizarre, then the assumption take-up rates will exceed 70% and could approach 90% is heroic.

This compares to FTTH take up rates in the USA and Holland which have levelled off at 30%.

Despite such realities, the study argues the attractions of fibre for RSPs will drive take up to effectively 100% of fixed line households. Bear in mind 20% of Australian households don't have a computer. Nevertheless, the study believes consumers will be won over by RSPs offering retail services built on an entry level 20Mbit wholesale offering.

[The Implementation Study recommends that NBN Co charge an entry level \$30-35 wholesale access price]. But this \$30-35 wholesale access price could well more than double with retail mark-ups: so will consumers—especially those who just want the equivalent of a standard telephone service—be keen to migrate when they only pay \$30 per month for access now?

True, that a 20 Mbit wholesale product has far greater functionality. That's the key to winning over the RSPs who then will then migrate customers over to the NBN but given RSPs can already offer 8-20 Mbit ADSL 2 on near fully depreciated DSLAMs for an access fee of \$15 over copper in metro areas will they rush to the NBN? They will be foregoing a \$15 per month margin.

In summary there is little to support the penetration rates suggested by the study—other than the implicit threat of overbuild protection. This means the study is effectively predicated on a de facto monopoly which raise significant competition policy concerns.¹⁹

2.42 Mr Grahame Lynch, founder of *Communications Day*, also provided a damning next-day analysis of the Implementation Study's assumptions about wholesale access charges and take-up rates, commenting that:

...when interpreting the government spin about affordability and seven year break-even points and the like, it's worth remembering these forecasts are [far] from inevitable and derived from some contentious beliefs and assumptions.²⁰

19 Mr Kevin Morgan, 'So what can you buy for \$43b?', *Communications Day*, 7 May 2010, pp 6–7.

20 Mr Grahame Lynch, 'Implementation Study's bullish forecasts rest on heroic assumptions about price, uptake', *Communications Day*, 7 May 2010, p. 5.

2.43 Mr Lynch's analysis identified two forecasts that he believes 'are not so inevitable' but which seem to underpin the Implementation Study's overall positive projections. The first was an assumption about wholesale pricing:

The study, rightly, identifies that retail service providers will not happily migrate from ULL and LSS based services to fibre unless there is an economic advantage for them in doing so. As a result, it makes great play on preserving current copper pricing for entry-level pricing, but it also makes the heroic assumption that overall retail "conditioning" costs for such elements as active equipment and backhaul will fall in the NBN environment. Indeed, it quantifies this so-called "indifference" premium between copper and fibre at around \$12-24 per month. I'm not so sure.

The study explicitly models a wholesale ARPU for NBN Co at \$35-38 – a blend of such varying tariffs as a \$25-30 "voice only" tariff, a \$33-38 tariff for voice, "basic broadband" and IPTV, and, intriguingly, a \$60 tariff for small business.

\$38 NBN ARPU: Given the NBN is explicitly designed as a replacement to the Telstra Wholesale 'network' business, I note that, today, Telstra Wholesale's average monthly ARPU for broadband services is \$24.12, its monthly ARPU for voice services is just under \$22—this includes the gamut from fully conditioned 'ready for resale' services through to \$2.50 LSS and \$16 ULL offerings. Of course, not all access providers are equal. One of the largest ones I know of is believed to spend as little as \$8 per service to Telstra for network provision, largely because it is geared towards LSS-derived broadband services in its product mix. Wholesale prices for HSPA services are less competitive, but come in at between \$12 and \$40 or so depending on data usage.

The study recommends all variety of incentives to induce RSPs to migrate across such as discount offers, free connections and the like, but of course these add to overall project cost and need to run the gamut of competition law. And most significantly it recommends that NBN Co should be able to discriminate on the basis of the type of end user such as a mobile base station, a school or a business. Should that eventuate that would certainly provide ATUG with a new crusade!

At the end of the day, I'm not so sure that the NBN study's proposed 'entry-level' pricing is entry level enough, nor that the small business market will take enthusiastically to \$60 wholesale buy prices for services that are today 'end-user' agnostic.²¹

2.44 The second 'shaky assumption' identified by Mr Lynch regarded take-up:

The study undertakes a great deal of examination of various scenarios for rates of return and the like, but provides little clarity on how many activations it thinks the NBN will gain. One chart models what three scenarios – low demand at 70% take-up of "fixed broadband", 80% 'mid

21 Mr Grahame Lynch, 'Implementation Study's bullish forecasts rest on heroic assumptions about price, uptake', *Communications Day*, 7 May 2010, pp 4–5.

level' and 90% 'high demand' but it isn't clear if this applies to NBN or the entire fixed market. Another chart is more detailed, implying that by 2015, there will be just 31-35% takeup among the homes passed (about half), rising to 54-63% by its completion date and then 75-90% by 2035. 6-12% increases in takeup on an annual basis are projected in another section. But confusingly, another reference in the document provide a slightly contradictory tone - for example, a detailed explanation on the relative merits of fibre and wireless costs makes the startling observation that NBN takeup is expected to be lower in the wireless areas because of competition from DSL and 3G!

Elsewhere the report also assumes that NBN Co will be able to increase wholesale prices by between 0-2% a year throughout the project, a highly contentious assumption given that prices have generally been decreasing by greater amounts in recent times.

The study seems to believe that the advent of fibre will stimulate fixed network usage because of its greater functionalities, and also because it will clearly provide speed and competition advantages in markets with a lack of DSLAM deployment or with low speeds because of loop lengths and pairgain.

But some of its supporting arguments are dubious to say the least, for example it believes the NBN will gain take-up advantages over comparable projects overseas because of the "pride" Australians will feel in it. Hmmm.

PSTN DECLINES, THE UNCONNECTED: The bullish estimates of uptake also would seemed to be belied by a few other inconvenient truths: overall PSTN revenues are declining by over 7% a year and at an accelerating rate, even fixed Internet revenue is flat. Some 30% of internet connections are now wireless and increasing at a double digit annual rate, while at the other end, 28% of households don't have Internet access. Don't expect that latter figure to change too fast, some 22% of households don't have a computer either! Overall household expenditure on communications as a percentage of income has remained incredibly stable across decades and the wireless sector is becoming more and more adroit at staking its claim on it.

The report adopts another contradictory tone on the wireless front: it predicts that wireless broadband growth will slow down partly because providers will not be willing to invest in additional backhaul capacity. At the same time it says that backhaul capacity will become cheaper for fixed carriers and assist the decision to migrate to fibre, even though both would seem to face exactly the same growth issues! Similar leaps on logic are detected in the report's consideration of video - it rightly considers at some length the difficulty of monetising the NBN through video services as a result of the sunk cost advantages of incumbent broadcast networks, but then elsewhere drops a gratuitous reference to the advantage of fibre over wireless in providing next generation HDTV!²²

22 Mr Grahame Lynch, 'Implementation Study's bullish forecasts rest on heroic assumptions about price, uptake', *Communications Day*, 7 May 2010, pp 4-5.

2.45 Even in November, in its *Third Report*, the committee was voicing similar concerns about wireless take-up rates. In that report, the committee noted its considerable concern that take-up rates on fibre may not reach ubiquity given the increasing preference of Australian consumers for wireless solutions.

The latest figures [on wireless uptake from the Australian Bureau of Statistics, June 2009] demonstrate a remarkable continuation of the increase in wireless broadband uptake, growing from 1.298 million in December 2008 to 1.961 million in June 2009 ... The committee is concerned that the government's requirement for FTTP technology to underpin the NBN ignores this trend in wireless broadband uptake, impacting the ability of the network to meet future demand.²³

2.46 The Implementation Study's answer to these concerns was:

Rather than substituting for fixed-line broadband connections, as has been widely assumed, most mobile broadband connections are for users who also have a fixed-line connection at home. This suggests that mobile broadband is a complement rather than just a substitute for fixed broadband.

Moreover, research in multiple markets consistently suggests that between 70 and 90 percent of mobile subscriptions are not substitutive. Less than a third of Australian broadband households today are mobile only, according to Telsyte research. That number is estimated at between 20 and 25 percent in the US, 24 percent in the UK, and 9 percent in France.

This suggests that less than 200,000 of the nearly 664,000 mobile broadband accounts added in the six months to June 2009 were added by mobile-only users. The 470,000 remaining were complementary—purchased not by people replacing their fixed broadband accounts but supplementing them.²⁴

2.47 The Implementation Study concluded from that analysis that:

Mobile broadband growth does not directly substitute fixed-line services; they are complementary in many cases, and address different user bases.²⁵

Committee view

2.48 The committee believes that no credible case has been made for the NBN in its current form and agrees with respected independent analysts that there are too many questions left unanswered and too many gaps in the case in favour of the NBN for the committee to support the NBN in its current form.

23 *Third Report*, November 2009, p. 18 (footnotes omitted).

24 McKinsey-KPMG, *Implementation Study for the National Broadband Network*, 5 March 2010, p. 233.

25 McKinsey-KPMG, *Implementation Study for the National Broadband Network*, 5 March 2010, p. 233.

2.49 As already discussed above, the absence of any realistic cost-benefit analysis leads the committee to conclude that the current proposal is unlikely ever to be built and that there are no sound facts supporting the position that the NBN in its current form could ever operate other than as a highly subsidised Government-owned instrumentality relying on on-going taxpayer support for its very existence.

2.50 The committee believes that competition between parallel networks of Telstra, Optus, Vodafone and others will mean that the NBN will be unable to attract customers at prices suggested in the Implementation Study when currently, services for very fast Broadband are available (without NBN) and will continue to be available at prices considerably less than NBN Co's suggested wholesale price.

2.51 The committee is also worried that estimations of the take-up of FTTH of 70–90 per cent take-up of fixed-line broadband services, and 6–12 per cent increases in take-up on an annual basis, are unrealistic. Assumptions that the NBN Co will be able to increase wholesale prices between 0–2 per cent a year throughout the project are highly contentious given that prices have generally been decreasing by greater amounts in recent times.

2.52 The suggestion that the NBN will gain take-up advantages over comparable projects overseas because of 'pride' Australians will feel in the new network is just ludicrous and immature.

2.53 The suggestion that take-up rates will exceed 70 per cent and could approach 90 per cent is heroic compared with FTTH take-up rates in USA and the Netherlands which have levelled off at 30 per cent.

2.54 Similarly, suggestions in the Implementation Study that the \$30–35 wholesale access price is irrelevant when one considers that it could double with retail mark-ups so that consumers who want an equivalent of a standard telephone service will be unlikely to migrate when they only pay \$30 per month now for the access. Given that Retail Service Providers can already offer 8–20 Mb ADSL2 for an access fee of \$15 over copper in metropolitan areas, it is difficult to see the majority of those customers rushing to NBN.

2.55 The committee agrees with the following analysis from Professor Henry Ergas:

The assumptions, notably about take-up, have already received extensive comment. It hardly needs to be said that there are many uncertainties involved in projecting demand for fixed network high-speed service. Whether the Study has paid enough attention to the emergence of mobility as a dominant feature in consumer preference (as highlighted by the strong demand for the Kindle, the iPhone and even more so the iPad) is especially questionable. Its views about the long-term progress of data rates over wireless are at odds with other studies, and make its conclusions about the demand for NBN Co's service seem unduly optimistic.

Additionally, it is surprising, to say the least, that the Study projects very high levels of penetration for the NBN even in a scenario in which Telstra competes with the NBN using both its copper and HFC networks. While the Study claims that the economics of the copper network would force Telstra to progressively decommission copper, this part of its assessment shows a scant knowledge of the operating costs of the Australian copper network. It also seems to ignore the HFC network and the scope not only to upgrade it, but to extend its reach in areas where unit revenues are high and incremental expansion costs low. The likely effect would be not only a fall in NBN Co's market share but also in its unit revenues. If the Study did not take that possibility into account, it is seriously deficient; if it did, its failure to release the relevant results is unfortunate.²⁶

2.56 The committee does not believe the analysis in the Implementation Study justifies the conclusion reached and remains concerned that the increasing trends towards wireless will continue unabated and will compromise the assumptions of take-up rates which underpin the Implementation Study's assessment of the commercial viability of the NBN. Wireless take-up rates and the increasing preference of consumers for mobile devices such as the iPhone and the Kindle all suggest a trend away from fixed-line infrastructure. The committee remains concerned that rapid advances in technology could overtake the completion of the build of the NBN which would make the NBN a financially and technologically risky undertaking. The Implementation Study does not appear to have adequately (or at all) addressed this issue.

Services to the final 10 per cent

2.57 To date there has been very little analysis and certainty about how the final ten percent of premises (those outside the original 90 per cent fibre footprint area) would be serviced under the NBN. More specifically there has been very scant detail about the quality and speeds of service to these premises, access prices for them, and likely arrangements for government subsidies to make the broadband services affordable to remote and regional Australians.

2.58 The Implementation Study outlines some details on these matters, but there remains little certainty about exactly what will be done, and what the prices will be, until the Government makes its response to the Study.

2.59 In the interim, however, one point is clear: those in the last ten percent will receive a significantly inferior service. The Implementation Study proposes that the NBN be built in a way which departs from the Government's stated objectives of providing broadband services of 12 Mbps to all Australians, with 90 per cent to receive services of up to 100 Mbps. The Implementation Study concludes that providing broadband speeds of 'at least' 12 Mbps would be 'prohibitively' expensive

26 Professor Henry Ergas, 'A critique of the NBN Implementation Study', *Communications Day*, 10 May 2010, p. 7.

and would take the cost of the NBN beyond the \$43 billion target figure. The Implementation Study therefore redefines the target speeds for wireless and satellite in terms of 'peak' as opposed to 'committed' speeds, something which will see end users on the urban fringes or in regional and remote areas outside the fibre footprint with substantially inferior services to those end-users serviced by fibre:

The Implementation Study believes that Government's objective of delivering at least 12 Mbps should be defined in terms of peak data rates to be enabled in the final 10 percent due to the prohibitively high cost of delivering average data rates of 12 Mbps.²⁷

2.60 A further point to note is the extent to which the Implementation Study's proposals for servicing the final ten percent – to the extent it provides any concrete certainty on the matter – have a striking similarity with the coalition's previous OPEL project.²⁸ Mr Grahame Lynch provided a particularly insightful commentary on the matter in another opinion piece in *Communications Day*:

The NBN Implementation Study, for the first time, provides some substantial detail on how the NBN might look for the final 10% – or perhaps 7% – who will not get access to a Layer 2 only FTTH network. And, somewhat bemusingly, it contains a recommendation for a direct return to the original Opel Networks idea. It remains to be seen if minister Conroy will be happy with that one!

The study seems to have taken the original \$43b cost projection and worked backwards: basically asking how much extra fibre you can get for your bucks under that scenario. The answer: an extra 3% over the original 90% based on the quite interesting finding that is cheaper to activate fibre than wireless for the 3% of premises at that level of population density.

For the next 4%, a terrestrial wireless network will be the go and according to the study's writers, the best solution there is not to have NBN Co build one but to tender out to private enterprise. Yes, this is a direct return to the former government's wireless tender policy that led to the aborted appointment of Optus-Elders JV Opel Networks to build a rural WiMAX network. NBN Co should only build this network

as a last resort, suggests the study.

The final 3% would gain access to two KA-band satellites, which would also be used to fill in black spots in the wireless footprint – serving about 350,000 households in total. For obvious lead time reasons, such a solution would not be available for some years, so the study also proposes that NBN

27 McKinsey-KPMG, *Implementation Study for the National Broadband Network*, 5 March 2010, p. 275.

28 The committee's *Third Report* discussed the OPEL proposal in further detail, and also stated the committee's concern that, if it had been allowed to proceed, the OPEL solution would have almost been fully deployed back in November 2009 seeing 1.5 million premises in Australia receiving upgraded wireless solutions from those that they presently have: *Third Report*, November 2009, p. 26.

Co should aggregate existing satellite demand and bid for interim capacity from an existing supplier.

The study acknowledges that getting wireless and satellite tech to hit the 12Mbps mark creates a massive cost challenge. Even with an external antenna, a household would have to be located within 7km radius of a wireless base station to get the required speed. It also talks of a 12Mbps peak data rate, which seems somewhat of a comedown from the 12Mbps average which was implied in earlier announcements.

The idea behind tendering out to the private sector is the hope that one of Telstra, Optus or VHA will come to the party with their existing rural tower and backhaul networks and save the NBN some money. The successful tenderer would be able to offer both wholesale and retail services side-by-side, but perhaps with some top-ups or mandates to ensure universal service provision where retail competition is not present. The study provides a number of tips as to how such a tender should be designed, presumably with the controversy over Opel in mind.

\$5.3B FOR THE LAST 10%: All up, the study estimates that its hybrid fibre/wireless/satellite solution for the last 10% will cost up to \$5.3 billion, not including backhaul costs which add another few billion to the mix. This is not an insignificant investment and questions do need to be asked as to its efficacy. A KA-band satellite solution, for example, is estimated to cost \$11,000 per premises, largely because of the need to deploy a second satellite for redundancy and the tremendous insurance premiums associated with satellite launches. And that wouldn't deliver an ample 12Mbps per user throughput, indeed the study suggests something like 300-400kbps is more likely.

Elsewhere in the study, KPMG and McKinsey suggest a solution for urban areas which could also draw on its rural wireless idea.

The study says that NBN Co should consider using the existing HFC networks – which cover around one-quarter of the proposed NBN footprint – to provide high-speed broadband services ahead of fibre deployment. It's an interesting idea, made all the more compelling by the fact that neither Telstra or Optus consider their HFC networks to be core infrastructure and also by the fact that technological developments in the HFC space would see those networks more than capable of providing NBN-style speeds well into the future. With some caveats, the study recommends that NBN Co be given the option to acquire an HFC network. Which begs a question - if it is good enough to get one of Telstra, Optus or VHA to tender for and provide a wireless service in the bush, why not so the same in the inner cities for HFC? It could certainly save quite a lot of wasted overbuild capital and take some of the tension out of the whole 'urban planning' challenge that the NBN will face.²⁹

29 Mr Grahame Lynch, 'Implementation Study shines light on the remaining 10%...is Opel 2.0 on the way?', *Communications Day*, 7 May 2010, pp 5–6.

2.61 In the absence of further information, the committee questions whether the evidence provided by the Implementation Study on wireless and satellite solutions are well thought out. The wireless solution proposed by the Implementation Study sets the onus on the Government to undertake a request for tender process to determine a commercial provider to establish a wireless solution in the last ten per cent, and in the absence of there being any suitable tender, that NBN Co provide these services itself. The committee is concerned that years after the cancellation of the Coalition's OPEL proposal, regional and remote Australians are still years away from receiving adequate services – wireless or otherwise.

Roll-out timetable: prospect of delay and cost implications

Implementation Study recommends delaying roll-out

2.62 The committee was surprised to read, in the Implementation Study, a recommendation that the roll-out be slowed down in order to improve the NBN Co's returns over time 'if costs are higher or take-up lower' than expected.³⁰

2.63 The committee believes any extension of the eight-year roll-out timetable is unjustifiable. The committee believes that, given the investment the Government is committing, such a detrimental impact on Australian taxpayers left to wait for broadband services would be deplorable.

Can NBN be rolled out in eight-years in practice?

2.64 The Implementation Study outlines a range of issues that will impact on the successful roll-out of the NBN and whether it is feasible to achieve under budget and within the projected eight-year timeframe. Some of the most significant identified are:

- The enormity of the task required in terms of number of premises needing to be visited per workday (estimated at 5000)³¹ and the labour intensiveness of the roll-out;
- Regulatory matters such as infrastructure sharing and access arrangements; and
- Development and landowner consent requirements, in particular for multi-dwelling units which represent 1/3 of Australian premises.

2.65 The committee's concern is that there are potentially major problems in all of these areas that could have significant implications for whether the NBN will actually be built within the eight-year roll-out.

30 McKinsey-KPMG, *Implementation Study for the National Broadband Network*, 5 March 2010, p. 361.

31 McKinsey-KPMG, *Implementation Study for the National Broadband Network*, 5 March 2010, Executive Summary, p. 9.

2.66 To take just a few, the Implementation Study notes that there may be substantial delay and increased cost caused by development and landowner consent requirements and disputes with local governments, but these do not appear to have been sufficiently taken into account in the modelling:

...given the large range of local authorities within the fibre footprint, it would not be surprising if disputes arose in some areas. In the absence of voluntary agreement, NBN Co would need to rely upon the regime contained in Schedule 3 of the *Telecommunications Act 1997*.

The cost implications of delay or prevention of network roll-out in various areas could be substantial.³²

2.67 The committee believes such landowner and development consent obstacles are likely to arise, and indeed were raised by submitters during its public hearings in April 2010.³³ The Implementation Study does not detail how significant any cost or delay implications could be if and when such consent obstacles arise.

2.68 Further, the committee is concerned with the potential for significant obstacles relating to workforce numbers and training to impede the network's roll-out, also compromising the eight-year roll-out timetable. The Implementation Study identifies the enormity of the NBN roll-out task, stating:

Recognising that the implementation task is enormous, a pragmatic approach is needed. Up to 250,000 kilometres of access network and backhaul fibre must be buried or strung overhead, along most roads across the country. Up to 5,000 customer visits per workday could be required over the 8-year roll-out.³⁴

2.69 However, whilst acknowledging the nature of the task, there is only a limited, separate consideration in the Implementation Study of whether there is currently an adequate workforce, or sufficient training and safety standards, or what might be the implications for delay and cost blow-outs if these matters prove challenging. Again, the committee's concern is that these issues will substantially affect the feasibility of the roll-out. The committee discusses the matter in further detail in chapter 7 below.

2.70 Finally, in terms of the fraught area of access rights to bodies corporate, the Implementation Study notes that there may be significant difficulties in adequately servicing multi-dwelling units but does not provide any certainty for how the issue will be addressed in practice. Given approximately one third of Australians live in multi-dwelling units, the committee is particularly concerned with this impediment.

32 McKinsey-KPMG, *Implementation Study for the National Broadband Network*, 5 March 2010, p. 362.

33 See chapter 3 below.

34 McKinsey-KPMG, *Implementation Study for the National Broadband Network*, 5 March 2010, Executive Summary, p. 9.

2.71 The authors of the Implementation Study did not have the benefit of any extensive trialling of fibre-optic roll-out across different geographic environments to be able to determine the likelihood of impediments to the roll-out eventuating. The committee is hopeful that, following the trials currently being conducted by NBN Co,³⁵ a detailed, roll-out plan addressing the issues will be developed. In the meantime, however, the committee remains deeply concerned that it is unlikely the NBN can be rolled out within the allotted eight-year timeframe. The committee is therefore deeply concerned about what might be the implications of a delayed roll-out to premises which will wait many more years for superfast broadband facilities to arrive.

Commercial viability

2.72 The committee has not sought to test the accuracy of calculations made in the Implementation Study or the economic validity of their premises. The committee firmly believes these must be properly analysed in the interests of transparency and accountability. In any case, they are critical to the accuracy of the Government's claims that the NBN provides value for money and a sufficient return on the Government's initial investment of at least \$26 billion in building the network.

2.73 The committee notes the following analysis of Professor Henry Ergas which appeared in the media in the few days between the release of the Implementation Study and the presentation of this report:

There are also a number of seeming errors in the analysis. For example, the Study uses the Modified Internal Rate of Return (MIRR) instead of the Internal Rate of Return (IRR). However, neither the MIRR nor the IRR is relevant to deciding whether to go ahead with a project; what is relevant is whether the project has a positive NPV.

Moreover, that NPV needs to be assessed at different levels of the assumed cost of capital, as well as for different revenue and cost scenarios; the Study neither estimates the project NPV nor sets out the sensitivity tests around it. This in itself seriously reduces the value of the Study.

Even more surprisingly, at a number of points in the Study, costs are discounted to the present at 9 per cent, which is higher than the bond rate which the Study (incorrectly) takes as the cost of finance (a point discussed below). The effect is to reduce the present value of costs. It can be perfectly correct to discount costs and benefits at different rates, but this is subject to two constraints: the differences must reflect differences in systematic risk; and the weighted sum of the rates should equal the discount rate for net income under the project. Neither of these conditions seems to be met in this case.

The most serious problems with the Study lie in the conclusions that have been drawn from it. In particular, the Study does not show that the project is commercially viable; on the contrary, all it shows is that under the

35 See chapter 3.

assumptions the Study team made, the project's internal rate of return is slightly higher than the bond rate. This raises two obvious difficulties.

NOT COMMERCIAL: First, the bond rate is far below a commercial rate of return. As the Study acknowledges, a commercial rate of return would be several percentage points above the bond rate: the Study itself suggests a range for that required commercial return that goes to 12.4 per cent. The Study also acknowledges that the Competitive Neutrality provisions enshrined in the Competition Principles Agreement require that capital used in the project be costed at that commercial rate. And readers will not need to be reminded that the government repeatedly claimed that such a commercial rate would be earned by the project. Those claims are comprehensively refuted by the Study.

Second, the bond rate is not even the cost of finance to the public sector. Here the Study errs by ignoring the Department of Finance's own Handbook of Cost Benefit Appraisal which says that "the Government's borrowing rate does not reflect the true opportunity cost of the use of capital funds", a point also stressed by the Productivity Commission in its comprehensive study of the choice of discount rates for public sector investments. Rather, the cost of finance to a project must be grossed up to take account of the systematic risk of the project. (Additionally, and also ignored by the Study, where there are losses that will be financed by taxpayers, the net loss must be grossed up by marginal deadweight cost of taxation). This would yield a cost of public funds for the project close to or even above the private sector pre-tax WACC. Regardless of the precise level of that rate, it is clearly far above the Study's estimate of the project IRR. It is disappointing that the Study does not get this right, as it has a significant bearing on its conclusions and as the correct approach would be obvious to any practitioner in this field.

NO BENEFIT ANALYSIS: That the project fails to cover its capital costs, properly estimated, does not mean it is undesirable. That assessment would require a comparison of the project's properly estimated costs to the properly estimated benefits. The Study is not intended to undertake such a comparison and does not. However, what can be concluded from the Study is that if cost-coverage is the relevant criterion, the project fails, probably by some 10 to 15 billion dollars.

The government, in releasing the report, has suggested that its findings mean that the substantial funding the project requires will not be a drain on the Budget. Even were this claim correct, and for the reasons given above it should not be, it is obviously wrong to suggest that the funds used in this project do not detract from other uses of resources. This project will not be funded by manna from heaven; rather, it will be funded by the taxpayer, who will bear the very significant costs and risks involved. There is therefore no doubt that discontinuing the project would yield large savings that could be used for other purposes; obviously, there is the question of whether those savings would be justified. This question the government

could only have answered if a proper cost-benefit appraisal had been undertaken.³⁶

2.74 At a minimum, the passage quoted above rings alarm bells about the commercial viability of NBN Co and the desirability of the NBN project as a whole. The committee believes these issues must be subject to further analysis and public consultation.

Recommendation 2

2.75 That the Government require the Department of Finance and Deregulation (the DoFD) to calculate the net present value of the NBN, using the data and assumptions contained in the Implementation Study, and based on a calculation of the weighted average cost of capital in accordance with the usual principles applied by the DoFD in relation to public capital expenditure.

Unresolved matters of concern

2.76 In relation to a number of highly significant aspects of the NBN, the Implementation Study outlines key issues but does not provide certainty as to how these challenges will be solved.

2.77 The committee is of the view that many of these issues will have a serious impact on the Government and NBN Co's ability to implement the NBN and that they do not support the Lead Advisor's overall recommendation that the NBN can be implemented within the eight-year time period and within the initial funding envelope.

2.78 Uncertainty surrounds such critical questions as:

- (a) the future of the Universal Services Obligation under the new NBN;
- (b) arrangements for infrastructure that is dependent on copper-based services such as traffic lights;
- (c) exactly which premises are within, and which are outside, the NBN fibre footprint;
- (d) the sufficiency of existing resources (including workforces) to cope with a roll-out of this size;
- (e) the final specifications for installation and deployment of the network;
- (f) product specifications such as average speeds (as opposed to theoretical peak or maximum speeds) that consumers will be able to obtain on each of the different technologies;
- (g) arrangements for migration of customers, particularly for those consumers currently locked into phone, internet and pay TV plans and

36 Professor Henry Ergas, 'A critique of the NBN Implementation Study', *Communications Day*, 10 May 2010, pp 7–8.

what will be the financial consequences for them of a switch to the NBN;

- (h) the specific content of safeguards that need to be built into the governing legislative framework for NBN Co to ensure that, subsequent to privatisation, all Australians continue to receive adequate broadband services;
- (i) the long-term plans for pricing (both wholesale and retail) on the network; and
- (j) the physical impact that the roll-out of the NBN will have on each premises.

2.79 In the absence of answers in the Implementation Study, there remain no concrete plans for how the NBN will be implemented. For that the public and stakeholders will have to wait for the Government's response which could be at best a couple of months away. More probably, the consumer will need to wait until NBN Co actually provides its product, price and service offerings down the streets in the coming years.

Recommendation 3

2.80 That the Government provide a comprehensive response to the Implementation Study as soon as possible.

2.81 That the response clearly articulate in detail:

- **a mandate for NBN Co and when, how and where that mandate will be formally recorded;**
- **the proposed funding arrangements for NBN Co, including a statement of all intended future equity contributions to NBN Co or NBN Co subsidiaries, the quantum and timing of each, and the arrangements the Government will make to formalise its funding agreement with NBN Co;**
- **a business plan for the NBN, where necessary developed in consultation with NBN Co, and including a cost-benefit analysis;**
- **the proposed timetable for the roll-out of the NBN to all Australian premises, including the type of services that will be available in particular, identified locations;**
- **the future of the Universal Service Obligation and how services will be guaranteed and funded for regional and remote Australian premises.**

Further work of the committee

Need for committee to consult on the Implementation Study

2.82 As already described, in the very short period between the release of the Implementation Study on 6 May 2010 and the presentation of this report on 18 May 2010, the committee has not been in a position to fully digest the contents of the Study, or stakeholder and public concerns about it. Given that the Government does not intend to provide a response until after its consultation process has been undertaken, the committee has, for obvious reasons, also not been in a position to examine, as expressly included in the committee's terms of reference, the Government's response to the Implementation Study.

2.83 However, the committee's preliminary assessment of the Implementation Study, and the reaction of expert analysts in the press, indicate that significant doubts remain about some of the critical assumptions underpinning the Implementation Study's most important and rash conclusions.

2.84 The committee believes that, given the results of its preliminary assessment of the Implementation Study and the amount of taxpayer money that is at stake for this enormous project, it is appropriate that the NBN project remain the subject of scrutiny and reporting requirements. The committee also notes that given the Government's conduct of the NBN to date, conduct which has seen it withhold critical information from key stakeholders and the public and continually time announcements for political gain as opposed to transparency and accountability, this is a Government project which must be held subject to continued scrutiny of a Senate committee.

Details of further hearings and submissions process

2.85 As outlined in chapter 1 of this report, on 12 May 2010, the Senate agreed to extend the final reporting date for the committee to 17 June 2010. The extension was granted to enable the committee to consider and report on the Implementation Study.

2.86 The committee invites submissions, the deadline for which is 27 May 2010.

2.87 The committee will also conduct public hearings on the Implementation Study.

2.88 Further information is available on the committee's website at: www.aph.gov.au/Senate/committee/broadband_ctte/index.htm.