Chapter 2

Strategic Review of the NBN

Background

Purpose of the Strategic Review

2.1 While in opposition, Mr Turnbull made frequent claims that the Coalition broadband policy could be implemented for a third to a quarter the cost of the NBN. For example:

> FTTN in Europe and North America has been described to me by those actually building new generation networks as costing between one third and one quarter of FTTP. Given our relatively high labour costs and the fact that FTTN's main virtue is that it reduces the civil works which is mostly labour, the difference in Australia is likely to be even higher.[1]

2.2 And:

> Why can we do it cheaper? Fibre to the node, around the world, costs between 1/4 and 1/3 of fibre to the premises. That is the experience in North America and Europe. And in Australia with very high labour costs the differential would likely be even more.[2]

2.3 Minister Turnbull also repeatedly asserted that the "real" cost of the NBN would be different to the figures in NBN Co's Corporate Plan. For example, he told Tony Jones on *Lateline* in February 2013:[3]

> We're going to do a couple of things. We will do a rigorous cost/benefit and have a rigorous cost/benefit analysis done, but very quickly we will ensure that we get a fully transparent and accurate assessment of what it is really going to cost both in terms of dollars and time to complete the project on the basis of the Government's strategy and then what it will cost in terms of dollars and time to complete it on a variation along the lines we've been proposing and we'll get that up very quickly.

2.4 Launching the Coalition policy on 9 April 2013, Mr Turnbull quantified the expected saving, saying:[4]

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1 The Hon Malcolm Turnbull MP, "At the Risk of Repetition - Delimiter's Questions," (30 November 2012), at: http://www.malcolmturnbull.com.au/media/at-the-risk-of-repetition-delimiters-questions

2 The Hon Malcolm Turnbull MP, "Why the Coalition's NBN plan is superior - and why it will be better for the bush too," (23 July 2012), at: http://www.malcolmturnbull.com.au/media/why-the-coalitions-nbn-plan-is-superior-and-why-it-will-be-better-for-the-b

3 Lateline, "Interview with Malcolm Turnbull," (14 February 2013), at: http://www.abc.net.au/lateline/content/2013/s3690871.htm

4 Joint Press Conference, The Hon. Tony Abbott MP and The Hon. Malcolm Turnbull MP (9 April 2013), at: http://mt.tbone.com.au/homepage-issues/launch-of-coalition-broadband-policy-transcript-of-tony-abbott-and-malcolm-turnbull-press-conference/#sthash.f5XcBUpn.dpuf

> We wouldn't have gone about this this way and there will be billions of dollars that Labor has wasted that we cannot recover but we will save many billions of dollars, at least $60 billion, by taking the approach we have described in this policy.

2.5 The Coalition's Broadband Policy included a table labelled "The Choice at a Glance":[5]

THE CHOICE AT A GLANCE	COALITION NBN	LABOR NBN
Scheduled construction period[17]	2014-2019	promised: 2009-2021 likely: 2009-2025
Capital expenditure[18]	$20.4 billion	promised:$37.4 billion likely: $71 billion
Required funding[19]	$29.5 billion	promised: $44.1 billion likely: $94 billion
Download rates	25-100 mbps by end of 2016 50-100 mbps by end of 2019	25-100 mbps by end of 2021
Plan chosen by most users in 2021[20]	12 mbps	12 mbps
2021 estimated wholesale price/month	$38	$62
2021 estimated retail price/month[21]	$66	$90
Competition in infrastructure?	Yes	No
Disruption at user premises?	No	Yes
Prices can be less than price cap?	Yes	No

2.6 The table asserted the likely required funding for the existing NBN was $94 billion, while estimating required funding for the Coalition plan as $29.5 billion. This inflated estimate for the NBN was achieved by making four assumptions: that real Average Revenue Per User (ARPU) would not grow as forecast; that the number of "mobile only" households would be higher than forecast; that costs would be higher than forecast; and that construction would take longer than forecast.[6]

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5 Liberal Party, 'The Coalition's Plan for Fast Broadband and an Affordable NBN,' (April 2013).

6 Liberal Party, 'The Coalition's Plan for Fast Broadband and an Affordable NBN - Background Papers' (April 2013), pp. 21-29.

2.7 At a hearing of the Joint Committee on the National Broadband Network on 19 April 2013, executives from NBN Co demonstrated that the assumptions underpinning the Coalition's $94 billion claim were false.[7] In particular, they demonstrated that actual costs for the fibre build were falling and that all other costs were within budget. They also demonstrated that the calculation of ARPU increase used by the Coalition was wrong. Finally they noted that the effect of a delay in the rollout would result in a decrease in peak funding, not an increase.

2.8 However, notwithstanding the falsehoods in the Coalition policy, the Committee notes that the peak funding amount of the proposed Coalition plan—$29.5 billion—is approximately "a third" of the inflated $94 billion cost of the NBN, in accordance with previous statements made by Minister Turnbull. This would not have been the case, of course, had the proposed Coalition peak funding amount of $29.5 billion been compared to the $44 billion peak funding figure in NBN Co's 2012-15 Corporate Plan, which—as outlined below—was signed off by the NBN Co Board and independently reviewed by KPMG.

2.9 As mentioned in Chapter 1, the Strategic Review was one of the commitments made in the Coalition's Broadband Policy taken to the 2013 election. In announcing the terms of reference of the review the Minister said:

> Labor's made shocking mistakes. There are billions of dollars that Labor has wasted that we will never be able to recover. This has been a shockingly misconceived exercise…wasteful exercise in public policy. We are endeavouring to recover value for it and get the job completed as quickly and cost-effectively as we can. So we need to know, what is the state of the project right now, accurately…[8]

2.10 A draft of the Strategic Review was provided to Government on 2 December 2013.[9] Following board approval, a final report was provided to the Minister for Communications and the Minister for Finance on 12 December 2013. This final report was released in a heavily redacted form when it was tabled by the Minister for Communications on the same day.[10]

2.11 Prior to its publication, two comments about the potential conclusions of the Strategic Review were made publicly: the first by former NBN Co board member Brad Orgill, and the second by former NBN Co CEO and Executive Director Mike Quigley.

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7 JCNBN Hansard , 19 April 2013. Presentation available at: http://www.nbnco.com.au/about-us/media/news/report-to-parliamentary-joint-committee.html

8 The Hon Malcolm Turnbull MP, Minister for Communications, Doorstop Interview (3 October 2013), at: http://www.malcolmturnbull.com.au/media/announcement-of-new-nbn-board-and-launch-of-nbn-strategic-review

9 Department of Communications, "National Broadband Network," at: http://www.communications.gov.au/broadband/national_broadband_network

10 NBN Co, *Strategic Review* (December 2013), available here: http://www2.nbnco.com.au/about-us/media/news/strategic-review.html/

2.12 In a column in the Australian Financial Review on 4 October 2013, Mr Orgill said:

> Selective data, conservative assumptions and extrapolations out to 2021 could be formulated to argue why the NBN might have comprehensively blown out its costs and not achieved its objective. It would be a continuation of the Coalition's attacks from opposition on NBN management and the board including threatening a Royal Commission of Inquiry.

2.13 On 2 December 2013, in an address to TelSoc, Mr. Quigley said:

> Rates to build the fibre network based on the existing design and architecture were rising. But those rate increases would not have produced a cost increase because we had identified and validated, network and design changes that would have offset those increases. Which is why I find it incomprehensible to hear the suggestion that the increases in LN/DN rates should be built into the forward projections and cost reductions that have already been identified, should not be. Unless, of course, your objective is to try to confirm a pre-conceived position.

Key findings of the Strategic Review – Revised Outlook

2.14 The Strategic Review provided a detailed review of the costs and deployment timing of the existing deployment model for the NBN (called the Revised Outlook). The Revised Outlook asserted that:

- The fibre rollout project will take three years longer to complete than indicated in the Corporate Plan, with a revised end date of June 2024;
- The Revised Outlook for brownfields Premises Passed at June 2014 is 357,000 compared to 1,129,000 in the Corporate Plan;
- Delays in deployment and take-up, lower ARPU and higher levels of non-subscription result in ~$13-14 billion less Revenue to FY21;
- The Capital Expenditure required will increase from $37.4 billion to $55.9 billion;
- The peak funding requirement will be $72.6 billion peaking in FY24 which is $28.5 billion higher than the Corporate Plan ($44.1 billion); and
- The Independent Assessment concluded that it is highly unlikely, in the absence of a government guarantee, that debt funding will be available from a third party financier in the near to mid-term.

2.15 As will be demonstrated below, these assertions were arrived at by the use of variants of the same assumptions used by the Coalition in its April 2013 $94 billion claim: higher unit costs, rollout delays, lower growth in ARPU and fewer premises connected.

2.16 The Strategic Review makes five key findings in relation to the performance to date of NBN Co. These are:[11]

- From a forensic perspective, the Independent Assessment found that no material issues exist within the accounts of NBN Co;
- The Independent Assessment concluded that, although the Corporate Plan is based on detailed and quantitative analysis, it is "extremely optimistic" and very unlikely to be achieved;
- At 30 September 2013, the rollout of the brownfields FTTP network was 48 percent behind the planned Premises Passed in the Corporate Plan, with only 227,483 Premises Passed at that date. Of these premises only 153,977 are serviceable by NBN Co. The greenfields and Fixed Wireless rollouts are also behind Corporate Plan;
- Total Expenditure to 30 June 2013 was 26 percent under the Corporate Plan at that date. Whilst this is an under-spend relative to the Corporate Plan, it is significantly ahead of the expenditure which would have been required in the Corporate Plan to reach the levels of actual rollout achieved; and
- The Independent Assessment found that NBN Co has attracted a committed, motivated, and generally capable group of people who want to do important, meaningful work. It concluded that the culture and leadership of the organisation are widely seen to be a major problem, and that the organisation is currently carrying a level of overhead and headcount predicated on the achievement of the Corporate Plan, which is in excess of current requirements.

2.17 As noted above, the Strategic Review found the Corporate Plan 2012-15 was based on detailed and quantitative analysis. At the hearing of 17 December, Mr Korda provided an explanation for the difference between the Corporate Plan 2012-15 and the Revised Outlook:[12]

> **CHAIR:** Can I confirm that the independent assessment found that the revised outlook analysis is based on a revised and more realistic review. Could you explain to me what that means.
>
> **Mr Korda:** What we found in the corporate plan—I will tie this together—was that, as BCG said, the revenue forecasts were optimistic. I think deployment was optimistic. I think the level of overheads was optimistic. The capex was optimistic. So what you get—I think we said—is a very extremely optimistic corporate plan. We have reviewed each of those line items based on the facts and have taken a realistic and more prudent view of where we are at.

2.18 The Strategic Review also considered five alternative scenarios. These are:

- Scenario 2 – Radically Redesigned FTTP

11 Strategic Review, p. 35.

12 Committee Hansard, 17 December 2013, p. 62.

- Scenario 3 – FTTN short loop, FTTB large MDUs
- Scenario 4 – HFC in HFC footprint
- Scenario 5 – FTTN & HFC
- Scenario 6 – Optimised Multi-Technology Mix

2.19 The Section 2.3 assesses the recommended option, the "Optimised Multi Technology Mix." However, as will be detailed below, scenarios utilising FTTN and HFC depend on assumptions about possible outcomes of negotiations for access to infrastructure and the state of that infrastructure. The assumptions underpinning these scenarios are not as robust as the data available for the all-FTTP scenarios (Scenarios 1 and 2).

Conduct and methodology

2.20 The terms of reference of the Strategic Review required NBN Co to report on:

> - The progress and cost of the rollout and NBN Co's financial and operational status;
> - The estimated time and cost to complete the NBN under a fibre-to-the-premises (FTTP) model (i.e. Government policy prior to 7 September 2013);
> - The estimated cost and time to complete the NBN if variations were made to the current plan such as increased use of fibre-to-the-node (FTTN) in established (brownfield) areas;
> - The economic viability of NBN Co under alternative strategies;
> - The implications of capital costs and principles of cost recovery on wholesale and consumer prices under existing and alternative strategies;
> - Recommendations for organisation restructuring, any amendments to the construction model and a revised NBN Co strategy to achieve Government policy objectives; and
> - Any other matters the Chair deems relevant to the strategic consideration of NBN Co's present situation and future prospects.[13]

2.21 NBN Co tendered for advisory firms to contribute to the Strategic Review. Three firms were appointed on 25 October: Deloitte, KordaMentha and the Boston Consulting Group (BCG). Each performed a different function as part of the review process.[14] KordaMentha contributed to the analysis of the NBN operational and financial performance; BCG reviewed the timing, financials and product offers under alternative models; and Deloitte provided governance and program management

13 The Hon Malcolm Turnbull, Minister for Communications 'Dr Ziggy Switkowski Appointed Executive Chair of NBN Co Strategic Review of NBN Project to Commence' Media Release (3 October 2013); Strategic Review, p. 9.

14 Strategic Review, p. 10.

office services to ensure the Strategic Review met the parameters and deadline for submission set by the Government.

2.22 At the committee's public hearing in Sydney on 17 December 2013, it was revealed that the total cost of preparing the strategic review was in the order of $8 million. This included the cost of the consultancies and NBN Co's internal resources.[15] It was also explained that BCG rather than KordaMentha was used for the revenue estimates "given their international experience." NBN Co could not provide any specific expertise BCG had in relation to Australian revenue modelling.

2.23 The strategic review process was led by NBN Co's Head of Strategy and Transformation, Mr JB Rousselot, and a 'cross-divisional team of internal employees' working closely with the external consultants on the review.[16] NBN Co executives told the committee that approximately 25 people were involved in the review on a dedicated basis, led by Mr Tim Ebbeck, chief commercial officer at NBN Co. During the course of the review, 280 workshops were held involving different groups from within NBN Co.[17]

2.24 During the Supplementary Estimates hearing in November 2013, Dr Switkowski summarised the approach to be used by the strategic review:

> The way this review is structured is that there are two substantial parts, one headed by KordaMentha, which is a forensic analysis of the costs of NBN Co. to date and expectations of a business-as-usual scenario and associated costs; then there is another analysis, which will be informed by BCG, as to the costs and execution issues of an alternative technology path. BCG is commissioned to do a complete analysis of the technical challenges of rollouts around Australia, identifying options that extend from fibre to the premises, fibre to the node, fixed wireless satellite, HFC and 4G wireless. That will all come together and be integrated by the third of the advisory firms, Deloitte, and will then constitute the report that the board will present to the minister.[18]

2.25 For the Revised Outlook, KordaMentha undertook the review of costs and rollout timeframes, while BCG undertook the review of revenue. At the Committee hearing on 17 December, NBN Co explained that this decision was made because the revenue assumptions would be common across all scenarios:

> **CHAIR:** For the independent assessment, why was KordaMentha used for the costs, but BCG for the revenue? There seems to be a split in the way it was designed and I am interested in the thinking behind it.
>
> **Mr Rousselot:** The revenue forecast we had to do was going to be applied to all scenarios going forward—so, not only the revised forecasts but also all the other scenarios we are going to have. That is why we had to have

15 Committee Hansard, 17 December 2013, p. 59.

16 Strategic Review, p. 10.

17 Committee Hansard, 11 December 2013, pp. 7-8.

18 Committee Hansard, Supplementary Estimates, November 2013, p. 123.

> one of the two companies produce the revenue forecast. We selected BCG to do so, given their international experience. The costs of the revised outlook were only relevant to the revised outlook, and that is why those were done by KordaMentha.[19]

2.26 At a doorstop on the day the Strategic Review was announced, the Minister made it very clear the review was to be "owned" by the board and management:[20]

> That is the most urgent priority, and the reason that we've asked the board to do it, or the company to do it, and of course it will be substantially a new board, and there will be a lot of new management there as well no doubt, is that we want the company to own it. You see, in the past, this project has been riddled with politics, and the company has been under pressure to deliver numbers and answers and documents that met the political priority of the previous government.
>
> What I have said to the company is I just want the plain unvarnished facts. We do not want spin. We do not want the company to tell us what they think we might want to hear. We want to know what the real facts are. And then armed with those facts, then we can make decisions about the future of the project and Australians will see the actual factual context in which we're making them. That is terrifically important.
>
> And the reason the company should undertake this is because we want them to own it. See, you can - there's any number of consulting firms you can hire, and the NBN Co's hired most of them over the last four years, but you can hire a consulting firm, they'll come in and write a report. But the directors, the executives may have no sense of ownership of it. They may - it's just something that descended from outside.
>
> It's really important that the directors and the management own this.

Committee analysis – Revised Outlook and Radical Redesign

Preliminary Observations

2.27 The committee notes the heavily redacted nature of the public version of the Strategic Review. In-depth scrutiny of the Strategic Review's findings with regards to delays in FTTP deployment (including construction delays), Fixed Wireless deployment, and financial performance (particularly Direct Operating Expenditure) is compromised by these redactions.[21] Of particular concern to the committee is the redacted information on cost per premises. Cost per premises is used in the Strategic Review as the key benchmark for the comparative analysis of alternative scenarios.

2.28 The Minister for Communications has refused to release to the committee (*in camera*) an unredacted copy of the Strategic Review, on the grounds of public interest

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19 Committee Hansard, 17 December 2013, page 4.

20 The Hon Malcolm Turnbull MP, Minister for Communications, Doorstop Interview (3 October 2013).

21 Strategic Review, pp. 44-66.

immunity. This was set out in a letter of 17 December 2013.[22] However, the committee considers that the Strategic Review underpins a potential Commonwealth investment of more than $40 billion—not including flagged technology upgrades—and should be made available to the Parliament, in accordance with the Minister's many undertakings on transparency and accountability. This will be discussed further in Chapter 4.

2.29 The Committee notes that the Strategic Review states in its Legal Notice:

> Given the required time frame for the Report's completion, NBN Co has relied on the Experts for the matters within their scope of work and has not independently verified or audited the information presented in the Report through the work of the Experts.

2.30 The committee asked NBN Co whether the Strategic Review had been subject to the same independent scrutiny that had been applied to NBN Co's Corporate Plans:

> **CHAIR:** Thanks for that, but what I was asking you was to confirm what was in the legal notice stated in the strategic review—that it has not been independently verified or audited. I am just asking you to confirm that is what the strategic review says.
>
> **Dr Switkowski:** You are asking about our review?
>
> **CHAIR:** Yes, the legal notice.
>
> **Dr Switkowski:** It has not had any further verification.[23]

2.31 At the public hearing on 17 December 2013, the committee put to Dr Switkowski that without the unredacted information, the committee and the public will have to take NBN Co's word that the cost assumptions in the Strategic Review are correct:

> **Senator LUDLAM:** Apart from that, I have never seen so many blacked-out rectangles on an NBN committee. It is almost as though the whole operational security mantra has been imported into telecommunications policy. I know I am being a bit tongue in cheek here, but it is a linchpin of your entire project, those numbers: the remediation costs and any operational expenses for keeping it maintained while it falls apart around you.
>
> **Dr Switkowski:** I agree that those numbers matter. I can only give you an assurance that they have been determined to the best of our ability with considerable debate as to what the range of numbers should be to characterise those costs. They have been incorporated in our models.
>
> **Senator LUDLAM:** So you cannot tell us what they are, but can you tell us how you arrived at them? We can ask this of Telstra in 20 minutes and they will tell us that those numbers are commercially sensitive as well, but you must have landed on a particular number or a range of numbers. How have

22 Available here: http://www.aph.gov.au/DocumentStore.ashx?id=d1798ce3-ddd5-4352-a2c6-f989e6c7bfa1

23 Committee Hansard, 17 December 2013, p.3.

> you done that? Have you concluded negotiations with the companies concerned?
>
> **Dr Switkowski:** Clearly we have not. We have barely started discussions.[24]

2.32 Despite the difficulties presented by the redactions, the committee notes that a number of assumptions in the Strategic Review are transparent, or can be derived from a close reading of the report. The committee has also collected substantial evidence from committee hearings and relevant secondary sources.

2.33 Section 2.2 reviews the Revised Outlook ("Scenario 1") and the Radical Redesign ("Scenario 2"). This is because these two scenarios are both based on an FTTP rollout to the full fixed line footprint. It is also because cost savings identified in Version 13 of the Corporate Plan 2013-16 were included in the Radical Redesign scenario, and had that plan been used as the base case for the Revised Outlook a different conclusion would have been reached. This will be demonstrated below.

Base case used for the Strategic Review

2.34 The Strategic Review notes that:[25]

> For purposes of performance comparison, the Independent Assessment used the August 2012 NBN Co Corporate Plan (referred to as the Corporate Plan), which is the most recent Shareholder approved plan.

2.35 NBN Co released its Corporate Plan 2012-15 on 8 August 2012. This plan noted:

- Wholesale broadband prices are projected to fall over time in both real and nominal terms;
- The Internal Rate of Return (IRR) remains above 7% per annum;
- Total forecast Capital Expenditure to end of the Fibre Construction period increased by 3.9%;
- Construction Commenced or Completed for approximately 758,000 Fibre premises by December 2012; and
- Fibre Construction period extended by 6 months despite 9 month delay in Commencement Date.

2.36 The 2012-15 Corporate Plan also noted that there had been changes to the scope of work since the first Corporate Plan. This included changes to the design reflecting the Telstra definitive agreements and the Optus HFC Agreement, and decreases in construction and equipment costs referred to as "Type 2 Architecture". These efficiencies are the principal reason capital expenditure only changed by 3.9 per cent between the 2012-15 Corporate Plan and NBN Co's 2011-13 Corporate Plan released in December 2010.

2.37 This issue was discussed during the 11 December hearing:

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24 Committee Hansard, 17 December 2013, p. 23.

25 Strategic Review, page 35.

CHAIR: In developing the 2012-15 corporate plan, NBN Co. moved to type 2 architecture. Would you explain the changes from type 1 architecture. I suspect Mr McLaren is the lucky respondent.

Mr McLaren: Yes, absolutely. The type 1 architecture was an initial architecture for the fibre network—this is the passive network, which we commonly also call the local and distribution network. It was an architecture we developed for our initial trials that NBN ran in five cities and commenced in 2011. It used an architecture that essentially relied on what we call stranded fibre—strands of individual fibres that are deployed and individually spliced, so quite a lot of fibre splicing has to go on. It is essentially what the Australian market had been deploying for many years and was an evolution through that. It also used quite a lot of the technology in some of our initial learnings that we had seen overseas. So it was very much an initial deployment, particularly informed by what Verizon were doing in the United States, which was very much an aerial build. We took a lot of the learnings from that company and applied it for those trials.

During that period, we had been looking at other options. We were particularly concerned by the amount of fibre splicing that would be involved with that architecture. As I said, each individual fibre had to be sliced, which was not only time consuming; it was very much a cost and resource issue in terms of getting the number of splices to be able to do it. So we were looking for ways to reduce that burden in the build. The main change with the type 2 architecture was to bring in what we call ribbon fibre. That is where we have 12 fibres in a ribbon and they are all spliced, basically simultaneously, with some new fibre-splicing machines.

CHAIR: There was a significant cost saving for you in that process. You said one of the reasons you looked at this was cost savings.

Mr McLaren: Yes cost savings, as I just mentioned, with the actual splicing itself. We have also been going—

CHAIR: Have you found a way to reduce the cost of the build?

Mr McLaren: Obviously, we were looking at all options to reduce the cost of the build through this time. The cost also came down to how we went through our procurement process at the time. Type 1 was initial work with our suppliers. We went through a more extensive procurement process for type 2 and worked with the whole market, and were able to use the savings that came to that procurement process as well.

2.38 NBN Co submitted its 2013-16 Corporate Plan to shareholder Ministers on 3 July 2013. This plan, known as "version 12," confirmed the headline figures for the NBN as set out below, compared to the previous Corporate Plan.[26] Version 12 of the 2013-16 Corporate Plan was subsequently leaked to the Australian Financial Review and is available on its website.[27]

26 NBN Co, *Corporate Plan 2013-16*, p. 13.

27 Available at: http://www.afr.com/rw/2009-2014/AFR/2013/09/24/Photos/9c50d15c-24d1-11e3-b91f-a975a1b9812d_NBN%20Co%202013-16%20Corporate%20Plan%20Draft.pdf

Major Operational & Financial Metrics

Major Operational and Financial Metrics	2012-15 Corporate Plan	2013-16 Corporate Plan	Change
Forecast Return (Unlevered IRR)	7.1%	7.1%	-
Capital Expenditure (Cumulative to FY2021)	$37.4 billion	$37.4 billion	-
Revenues (Cumulative to FY2021)	$23.1 billion	$21.7 billion	$(1.4) billion
Operating Expenditure (Cumulative to FY2021)	$26.4 billion	$26.4 billion	-
Total Peak Funding			
- Peak Equity	$30.4 billion	$30.4 billion	-
- Peak Debt	$13.7 billion	$15.2 billion	+$1.6 billion*

2.39 Prior to its submission to the previous government, the Corporate Plan 2012-15 was independently reviewed by KPMG. The 2013-16 Corporate Plan was also independently reviewed by KPMG. This was confirmed during a November hearing of the Senate Environment and Communications estimates committee. The Secretary of the Department of Communications, Mr Clarke, noted that:

> The department as a matter of course commissioned analysis on corporate plans on an annual basis.[28]

2.40 Mr Robinson, Deputy Secretary for the Department of Communications, added that:

> I think it is a matter of record that, at least for the last couple of years, we commissioned KPMG to provide advice.[29]

2.41 The NBN Co board also commissioned Ernst & Young to review the 2013-16 Corporate Plan. This was confirmed during the same estimates hearing:[30]

> **Senator LUNDY:** Did you engage any advisers for the 2012 to 2016 plan?
>
> **Mr Payne:** For the June draft of the 2013 to 2016 corporate plan the board engaged Ernst & Young to review some of the key assumptions…
>
> **Senator LUNDY:** Did that review provide any advice that the data did not appear to be aligned with the corporate plan assumptions?
>
> **Mr Payne:** I think, overall, it said that the experience to date supported the broad assumptions made in the corporate plan.
>
> **Senator LUNDY:** So the Ernst & Young adviser reviewing the corporate plan for the 2013 to 2016 plan found that all the assumptions were correct.
>
> **Mr Payne:** That was so for the key assumptions that they looked at. They did not look at everything.

28 Estimates Hansard, 19 November 2013, page 146.

29 Estimates Hansard, 19 November 2013, page 146.

30 Estimates Hansard, 19 November 2013, pp. 97-98.

> **Senator LUNDY:** What did they look at? Did they look at the capital expenditure parameters?
>
> **Mr Payne:** I do not have the report with me. They certainly looked at some of the key capital expenditure areas, some of the revenue assumptions and so on.
>
> **Senator LUNDY:** Did that review provide any advice that the actual data did not appear to tally with the corporate plan assumptions on revenue or capital?
>
> **Mr Payne:** No. As I said, overall it supported the assumptions. There were a couple of areas that the report called out that it was very early days and hard to draw too many conclusions from the data to date, but overall—
>
> **Senator LUNDY:** You had an external adviser—and independent adviser—advise that the 2013 to 2016 corporate plan was consistent with the performance of the company.
>
> **Mr Payne:** Certainly on the assumptions, yes.
>
> **Senator LUNDY:** That was before the report was submitted to the government.
>
> **Mr Payne:** Correct.

2.42 Version 12 of the 2013-16 Corporate Plan was received by Government while Telstra remediation was suspended due to asbestos concerns. Subsequently, NBN Co sent shareholder Ministers a letter noting that the duration of the stoppage in remediation work was more prolonged than expected and had put at risk the deployment targets in the 2013-16 Corporate Plan. Shareholder Ministers asked NBN Co to resubmit the plan to take these developments into account. NBN Co prepared a revised Corporate Plan—called 'version 13'—which was submitted to the NBN Co Board in September 2013, after Telstra pit work had recommenced in mid-August 2013. As Mr Payne noted during the 19 November estimates hearing:

> I think the board approved [version 12] for lodgement in June, so it would have gone in at the end of June to the shareholder ministers. At around that time, you may recall, there were some issues particularly around remediation ceasing, and so, I think, the company wrote to the shareholder ministers to say that the short-term targets may need to be revised because there was expected to be a prolonged cessation in remediation. So the shareholder ministers asked us to resubmit the plan with that taken into account; hence the second version in September.[31]

2.43 The "second version" referred to by Mr. Payne—known as 'Version 13'—is the most recent version of the NBN Co Corporate Plan, incorporating the effects of the Telstra stop-work on remediation. NBN Co was asked about this Corporate Plan at the 11 December 2013 hearing:

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31 Estimates Hansard, 19 November 2013, p. 109.

> **CHAIR:** Mr Brown, Mr McLaren, Mr Cooney or even Mr Adcock, was a draft version 13 of NBN Co.'s 2013-16 corporate plan provided to the board for its meeting on 19 and/or 20 September?
>
> **Mr Brown:** Each year, as required under the GBE guidelines, we submit a corporate plan.
>
> **CHAIR:** Thanks. Now could you answer the question I asked? Was a draft version 13—1 and 3, comes after 12 and before 14—of NBN Co.'s 2013-16 corporate plan provided to the board for its meeting on 19 and/or 20 September 2013? Yes or no?
>
> **Mr Brown:** Yes, there was a copy submitted.
>
> **CHAIR:** Version 13?
>
> **Mr Brown:** Can I take that on notice? I am not aware of exactly what version it was.

2.44 To date, NBN Co has not answered this question on notice. However, the committee notes that a Corporate Plan was scheduled for board consideration on 19 or 20 September 2013.

2.45 NBN Co and the Departments of Communications and Finance were asked whether a copy of this plan was submitted to shareholder departments. NBN Co gave the following evidence:[32]

> **CHAIR:** What is the normal practice for NBN Co. communications to shareholder departments when it comes to documents that must be considered by the government?
>
> **Mr Brown:** The normal practice is NBN would put together whatever that document is. I assume in this case we are talking about the corporate plan….normally it would go to the board and, with their agreement, it would be submitted as a draft to our shareholder ministers, consistent with the GBE guidelines.
>
> **CHAIR:** Can you confirm that version 13 of the corporate plan was submitted to the shareholder departments via the portal prior to the considerations. That would tend to suggest that perhaps it was not, but if you could take on notice whether or not version 13 was supplied to the departments before that board meeting. Was this version of the corporate plan approved by the board on 19 or 20 September?
>
> **Mr Brown:** I would need to take that on notice to review the minutes of that board meeting.

2.46 The committee has not received an answer to this question on notice.

2.47 The Department of Communications gave the following evidence:[33]

> **CHAIR:** What is the normal practice for NBN Co. communications to shareholder departments? You may have heard that we had a discussion

32 Committee Hansard, 11 December 2013, p. 20.

33 Committee Hansard, 11 December 2013, p. 65.

> earlier today about this. When it comes to documents that have to be considered by government, do these documents appear on a portal?
>
> **Mr Clarke:** Yes. There is a secure portal arrangement to facilitate the transfer of confidential documents.
>
> **CHAIR:** Is it the case that drafts of these documents are often provided to shareholder departments prior to board consideration to enable shareholder departments to prepare timely advice for government?
>
> **Mr Clarke:** I can—
>
> **CHAIR:** We both know the answer, but you need to say it on the record.
>
> **Mr Clarke:** For board documents it is less common, but for documents that are conveyed between the parties, yes, that is a common practice.
>
> **CHAIR:** So was the draft of version 13 of NBN Co.'s 2013-16 corporate plan submitted to shareholder departments via the portal prior to its consideration by the NBN Co. board on 19 September? It is a simple, factual question. You know it has already been asked. It should be very easy to ascertain.
>
> **Mr Clarke:** I am not going to answer it…. I am choosing to uphold the principle that the communications that are intended between the agency through the department to the government—the nature of them; what was on the table when, which is implicit in your questioning—are a confidential matter.

2.48 The committee notes that NBN Co has yet to answer questions on notice about the status of version 13 of the Corporate Plan, and the Department of Communications has flatly refused to answer questions on whether a copy was provided to Government. The committee further notes that the Minister made reference to the content of version 13 of the Corporate Plan during the NBN Rebooted conference in November 2013:[34]

> Shortly before the election, the NBN Co revised its June 30 2014 premises passed target down to 600,000 brownfield premises.

2.49 In his speech to TelSoc on 2 December 2013, Mr Quigley also made some observations about the content of Version 13 of the Corporate Plan:[35]

> We did have to advise the Government in September that, the issues with the LN/DN construction combined with the remediation stoppage moved the construction end date from June 2021 to December 2021. The effect on the financials of that six month shift in the construction end date was that revenue returned to $23Bn since there was 6 months more revenue, but Opex increased by about half a billion dollars due to the extra six months of operating costs. The Capex spend is spread across a 6 month greater period

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34 Malcolm Turnbull, Rebooting the NBN Project - Speech to CommsDay Conference (18 November 2013), at: http://www.malcolmturnbull.com.au/media/rebooting-the-nbn-project-speech-to-commsday-conference

35 Available here: http://telsoc.org/event/national/2013-12-02/mike_quigley_reflects

> which leaves the total funding and the IRR unchanged. The contingency was also unchanged.
>
> Just to re-emphasise a previous point – our December of 2010 Corporate Plan contained a capex contingency of 10% or about $3.6Bn, the last plan which was submitted in September retained the same level of contingency. If the Management team had any doubt about offsetting the increased LN/DN rates by the cost reductions we had planned, we would have made use of some of that contingency. We had no such doubts.
>
> What is remarkable is how little the financials changed over the 3 years.

2.50 The most recent version of the NBN Co Corporate Plan—the most accurate "base case"—was the 2013-16 Corporate Plan (Version 13) referred to by Mr Payne in his testimony, prepared by NBN Co management and submitted to the board on 20 September 2013. Dr Switkowski was asked why version 13 was not used as the base case during the 17 December 2013 hearing:

> **CHAIR:** He [Mr Robin Payne] said in evidence at estimates that the government asked that the company further review the June draft to incorporate the consequences of the delay due to remediation. Given that version 13 of the corporate plan 2013-16 was the NBN Co.'s response, why wasn't that used as the baseline?
>
> **Dr Switkowski:** We certainly are of the view that the baseline that had to be referred to was the one that was formally in the system and approved, and that any update of the performance of NBN Co. was within the mandate of the current review, and that is what we presented in the [Strategic Review] last week.[36]

2.51 Subsequent to this exchange, Mr Rousselot confirmed for the committee that Versions 12 and 13 of the Corporate Plan 2013-16, as well as other documents, were made available to the Strategic Review team.[37]

Summary of findings—Base Case used for the Strategic Review

- **In July 2013, the NBN Co board submitted to shareholder Ministers the NBN Co Corporate Plan 2013-16 ("version 12"). Former shareholder Ministers requested that "Version 12" be amended to incorporate the effects of Telstra's stop work on remediation. NBN Co prepared a revised Corporate Plan—called 'version 13'—which was submitted to the NBN Co Board on 19 or 20 September 2013.**
- **It is normal practice for NBN Co to provide shareholder departments with the Corporate Plan prior to Board consideration so that timely advice for government may be prepared.**

36 Committee Hansard, 17 December 2013, p. 4.

37 Committee Hansard, 17 December 2013, p. 4.

- **"Version 13" of NBN Co's Corporate Plan 2013-16 represents the most recent and accurate "base case" for the NBN. Despite this, the Strategic Review used the fifteen-month old NBN Co Corporate Plan 2012-15 as the "base case." The reason for this will be examined in the following section.**

Treatment of architecture changes

2.52 In his speech to TelSoc on 2 December 2013, Mr Quigley said:

> With our LN/DN rate increases, we had exactly the same situation. Increases in the LN/DN rates would be offset by other cost reductions. And I am not talking about speculative cost reductions, where you say to yourself: "oh, we need to find $2Bn in savings, somehow". I am talking about things that had already been identified, like smaller diameter cables that had already been designed by cable companies, reduced and more efficient testing, smaller footprint multi-ports that had already been designed, reductions in fibre counts and corrections in planning tools that allowed smaller mandrels and greater fill ratios for ducts. We called these changes our 2.x architecture. At the end of September, NBN Co was on track to implement these cost reductions, as any sensible company would.
>
> So, let me be clear. Rates to build the fibre network based on the existing design and architecture were rising. But those rate increases would not have produced a cost increase because we had identified and validated, network and design changes that would have offset those increases. Which is why I find it incomprehensible to hear the suggestion that the increases in LN/DN rates should be built into the forward projections and cost reductions that have already been identified, should not be.
>
> Unless, of course, your objective is to try to confirm a pre-conceived position.

2.53 On 11 December 2013, an article in the *Australian Financial Review* by Philip Coorey & James Hutchison cited an NBN Co Board paper dated 20 September 2013.[38] The NBN Co Board paper states:

> The COO and CTO teams have undertaken a review of the current network architecture for the access fibre network with the aim of identifying and implementing a set of cost saving design and construction initiatives. Cost savings from these initiatives, together with other productivity initiatives underpin the assumed reduction in the CPP to FY18. This review incorporates a number of in-flight Project Fox initiatives and pragmatic cost saving solutions into a combined revised architecture which will be incorporated into future FSAM designs. The planned changes are as follows:

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38 Philip Coorey & James Hutchison, "Vodafone's Bill Morrow to head NBN," *Australian Financial Review* (11 December 2013), at: http://www.afr.com/p/technology/vodafone_bill_morrow_to_head_nbn_4oosSmqI8qrSPiJw1tjNYJ

- Reduced fibre allocation per premise
- Mandrel sizing and FOND cable diameter correction
- Introduction of small diameter fibre cables
- Removal of PON protection in certain circumstances
- Fibre testing optimisation
- Introduction of the small footprint multiport for underground build.

2.54 Further:

> The proposed architecture savings and cost reduction initiatives represent a combined value of greater than $4.5 billion, which support the assumptions in the Corporate Plan of a reduction in CPP to construct the access fibre network from $1500 in FY14 to $1054 by FY18. The initiatives will continue to be progressed through the COO and CTO teams with a target to finalise an implementation plan for both new and current in-flight designs by the end of September.

2.55 The cost savings identified in Mr Quigley's speech and the 20 September NBN Co board paper—"smaller diameter cables that had already been designed by cable companies, reduced and more efficient testing, smaller footprint multi-ports that had already been designed, reductions in fibre counts and corrections in planning tools that allowed smaller mandrels and greater fill ratios for ducts"—were discussed at length during the 11 December public hearing.[39]

2.56 In relation to the smaller diameter cables:

> **CHAIR:** Has the NBN Co. looked at introducing smaller diameter fibre cables?
>
> **Mr McLaren:** Yes. We are working with our vendors in the fibre supply to obviously look to see improvements with smaller fibre cables.

2.57 In relation to reduced and more efficient testing:

> **CHAIR:** Has NBN Co. ever looked at optimising its fibre testing?
>
> **Mr McLaren:** Yes. As with many of these items, we are always looking to optimise our testing for anything that has a cost in the build.

2.58 In relation to smaller footprint multiports, Mr McLaren noted:

> We have been working with our suppliers to introduce a smaller form. It is not so much that it is smaller, but it is more flexible and able to fit into Telstra's pits more easily. It will allow the work to proceed quickly and there will be not be so much work in remediating those pits. We have introduced that and it is already rolling out, as I understand it, in our fieldwork now, a smaller footprint multiport.

2.59 In relation to corrections in planning tools that allowed smaller mandrels and greater fill ratios for ducts:

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39 Committee Hansard, 11 December 2013, pp. 21-30.

CHAIR: Has a mandrel size change been implemented?

Mr McLaren: Yes.

2.60 In relation to the reduced fibre counts in the second leg:

CHAIR: Has NBN Co. ever looked at reducing the fibre counts in distribution cable from 576 fibres to 433 fibres?

Mr McLaren: Yes, we have been investigating that opportunity. Again, it is an opportunity to have smaller diameter cables, as we talked about.

2.61 In relation to removing the second leg of a distribution loop:

CHAIR: Has NBN Co. ever looked at removing the second leg of a distribution loop in certain FSAMs where the effect can be managed within the terms of the WBA?

Mr McLaren: Yes. In some instances in the current build of our network where that second leg is very difficult and costly, we have made the decision not to build it.

2.62 In relation to the implementation of "Architecture 2.X" more generally, Mr McLaren observed:

Mr McLaren: 2.x is not a big bundle of change. There are incremental changes in many different parts of the network. We mentioned the small footprint multiport. We mentioned techniques, and I think you mentioned the now more efficient [mandrel]. There is testing which we use in our rodding and roping, giving us a more accurate gauge on the available duct space, and we have introduced those changes. So a number of changes are incrementally being introduced into the design process over time.

2.63 The committee notes that by end September 2013, NBN Co was in the process of implementing, or had already implemented, network changes to reflect the move to Architecture 2.x. This is confirmed by Mr McLaren's testimony, the 20 September Board paper and Mr Quigley's speech. These architecture changes resulted in greater than $4.5 billion in capital expenditure savings.

2.64 However, the Strategic Review only identifies $1 billion in cost savings, and reduces these savings by a further 50 per cent:[40]

> The Independent Assessment notes that there are opportunities for cost reductions in the future. Some potential savings have been identified in network design and architecture, primarily in reduced equipment costs, however a business case needs to be prepared. Business cases for ~$1 billion of potential savings have been completed and implementation of some of these improvements is underway. These could be achieved over time, but allowing for the time to introduce these concepts and other risks, it is prudent to adjust the amount by 50 percent.

2.65 This issue was raised in the 17 December 2013 public hearing:

40 Strategic Review, p. 63.

> **CHAIR:** So to reiterate again, the strategic review ignored over $4 billion worth of savings because there was no business case presented notwithstanding the board previously had actually had a submission put up by the company to them and an assumption has been made—which you are not able to assist us with other than saying, 'I agree with it,'—that $500 million of the savings should be dumped—just dumped—because it is prudent.
>
> **Mr Rousselot:** As I said, the analysis that we did of the potential savings was one that looked at it, and talked with people within the company, either in operations or in design, to understand the status of the savings that had been identified.
>
> **CHAIR:** But as for the billion dollars, business cases had been provided for the billion dollars.
>
> **Mr Rousselot:** I do acknowledge that that is the case, yes.
>
> **CHAIR:** And you just halved it?
>
> **Mr Rousselot:** We took a consideration of risk that was still attached to implementing those savings.
>
> **CHAIR:** Mr Quigley, in his speech, seemed to predict this would happen. He said he found it incomprehensible to hear the suggestion that the increases in LNDN rates should be built into the forward projections and that cost reductions that have been already identified should not be 'unless, of course, your objective is to try and confirm a preconceived position'. It is getting pretty hard to disagree with Mr Quigley, Mr Rousselot, if you are ignoring savings deliberately and you are not applying any productivity learnings and savings across the entire project except for two years in four years time. It is getting pretty hard to disagree with Mr Quigley.
>
> **Mr Rousselot:** The level of prudence that we have applied to this particular scenario we have applied to the other scenarios.

2.66 A number of the cost savings identified above appear in the Strategic Review in Scenario 2 ('Radically Redesigned FTTP'). For example, the Strategic Review provides that scenario 2 includes:[41]

> Cost-efficient architecture and materials (a saving of [redacted] per premises passed) including reducing from 3 to 1.2 fibres per premises, increased use of aerial deployment, removal of PON protection, using smaller diameter fibre cables, use of gel-free cables and eliminating the battery back-up for the NTD.

2.67 The committee has put several questions in writing to NBN Co requesting information about why these $4.5 billion in cost savings were excluded from the Revised Outlook, and instead included in the 'Radical Redesign'. In response to a question in writing asking about the $4.5 billion in cost savings identified in the 20 September NBN Co board paper, NBN Co replied:

41 Strategic Review, p. 85.

> As stated at the Senate Committee hearing on 17 December 2013, many working documents including these Board papers were made available to the expert advisers. The advisers have formed the view that some elements of the savings proposed may be realised in a scenario where current FTTP practices are reviewed and optimised significantly – e.g. a "radically redesigned FTTP rollout".[42]

2.68 Similarly, the Strategic Review characterises the "radically redesigned" scenario as follows:[43]

> Based on overseas experience, it is possible to radically redesign the NBN Co FTTP deployment to reduce the Cost Per Premises. The changes to deployment include changes in the delivery model, which in turn result in labour productivity improvements, different and more cost-efficient architecture and materials, and cost-efficient construction techniques. This radically redesigned FTTP deployment is estimated to cost [redacted] build Capital Expenditure per brownfield premises passed, representing savings of [redacted] per premises passed versus the Revised Outlook.

2.69 In an answer to another question on notice, NBN Co stated that:[44]

> The Revised Outlook considered the operational and financial position of the company based on the continuation of current rollout plans. As highlighted in paragraph 3.2.8, these potential efficiencies may be realisable through a step-change and transformation of the organisation.

2.70 And:

> Scenario 2, Radically Redesigned FTTP contemplates NBN Co making significant changes to its FTTP deployment approach to improve NBN Co's productivity and construction techniques. Within this scenario, it is expected that these "radical" changes will increase rollout speed and decrease costs.[45]

2.71 The committee notes that the architecture changes (2.X) resulting in these cost savings were characterised by NBN Co's Chief Technology Officer, Mr McLaren, as 'incremental' improvements that did not represent 'a big bundle of change.' Mr Quigley similarly characterised these improvements as business as usual: "at the end of September, NBN Co was on track to implement these cost reductions, as any sensible company would."

2.72 However, when asked about why these savings were not incorporated into the Revised Outlook, NBN Co characterises them as 'radical' and 'significant' and requiring a 'step-change and transformation of the organisation.'

2.73 The Committee considers that the Revised Outlook and the Radical Redesign scenarios make different assumptions about the future trends for cost per premise

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42 Answer to Questions on Notice, 17 December 2013 Hearing, No. 35.

43 Strategic Review, p. 14.

44 Answer to Questions on Notice, 17 December 2013 Hearing, No. 32.

45 Answer to Questions on Notice, 17 December 2013 Hearing, Nos. 36 and 37.

passed for FTTP. In fact, the so-called "radically redesigned" FTTP scenario represents a better estimate of the costs that would be incurred by an active and interested management than the Revised Outlook. This is supported by the fact that many of the savings based on Architecture 2.x had already been incorporated by previous NBN Co management into the September 2013 Corporate Plan (Version 13).

2.74 The committee considers that the implementation of these architecture changes was business as usual for NBN Co, and the exclusion of the associated savings from capital expenditure assumptions distorts the outcome of the Revised Outlook. The committee also notes that had the Strategic Review used Version 13 of the NBN Co Corporate Plan as the 'base case' for the Revised Outlook, the Revised Outlook would have arrived at a different outcome.

Summary—Treatment of architecture changes

- **By end-September 2013, NBN Co had implemented, or was in the process of implementing, a number of incremental changes to the fibre rollout known as Architecture 2.x. Combined, these changes represented $4.5 billion in capital expenditure savings.**
- **Version 13 of NBN Co's Corporate Plan 2013-16, prepared for Board consideration on 20 September 2013, incorporated these architecture changes and the associated savings to capital expenditure. It also incorporated changes to the deployment schedule from Telstra's stop-work on remediation. Version 13 is the most recent and accurate NBN Co Corporate Plan.**
- **Despite this, the Strategic Review used NBN Co's fifteen-month old 2012-15 Corporate Plan as the 'base case' for the Strategic Review. Only $500 million of the architecture savings were included in the Revised Outlook—the bulk of these savings were incorporated into Scenario 2 rather than the Revised Outlook. This was justified by characterising the changes as 'radical' rather than incremental.**
- **The committee considers that the implementation of these architecture changes was business as usual for NBN Co, and the exclusion of the associated savings from capital expenditure assumptions distorts the outcome of the Revised Outlook by bolstering costs.**

Assumption of brownfield delays

2.75 The Revised Outlook has factored in a delayed roll out schedule compared to the 2012-15 Corporate Plan. This is set out in Exhibits 2-10 and 2-11:

Deployment Schedule—Corporate Plan

Exhibit 2-10: Network deployment rollout timetable – Corporate Plan

Corporate Plan - Rollout Timetable														
Premises Passed Cumulative ('000s)	Jun-11	Jun-12	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20	Jun-21	Jun-22	Jun-23	Jun-24
Brownfields	18	29	286	1,129	2,499	3,862	5,168	6,423	7,610	8,879	10,091	10,091	10,091	10,091
Greenfields	-	10	55	178	413	763	1,111	1,415	1,673	1,904	2,111	2,295	2,477	2,659
Fixed Wireless	-	9	70	124	225	369	374	379	385	391	396	401	405	410
Satellite	165	165	250	250	527	539	547	555	563	571	578	585	592	599
Total[44]	183	213	661	1,681	3,664	5,532	7,200	8,772	10,230	11,744	13,176	13,372	13,566	13,759

Deployment Schedule—Revised Outlook

Exhibit 2-11: Network deployment rollout timetable – Revised Outlook

Revised Outlook Rollout Timetable														
Premises Passed Cumulative ('000s)	Jun-11	Jun-12	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20	Jun-21	Jun-22	Jun-23	Jun-24
Brownfields	18	29	163	357	857	1,727	2,727	3,927	5,127	6,327	7,427	8,477	9,477	10,091
Greenfields	-	4	44	110	192	285	414	564	742	967	1,240	1,581	1,893	2,111
Fixed Wireless	-	1	28	122	260	354	431	508	554	554	554	554	554	554
Satellite	48	48	48	48	48	206	206	206	206	206	306	306	306	306
Total	66	82	283	637	1,357	2,572	3,778	5,205	6,629	8,054	9,527	10,918	12,230	13,062

2.76 Some general observations justifying this assumption are set out in the Strategic Review, although many of these are redacted.[46] These include: "[redacted]; the complexity of the interfaces between NBN Co and the Delivery Partners, the uniqueness of an infrastructure build of this scale and nature in Australia, and the lack of deep project management resources, particularly as the volumes have increased; delays in dealing with Telstra [redacted]; ineffective collaboration between NBN Co and its Delivery Partners in resolving contract, design and construction issues; and disproportionate focus on workforce size and Premises Passed as key drivers of behaviour rather than Premises Activated driven by more effective design and collaboration."

2.77 Version 12 of the 2013-16 Corporate Plan targeted 850,000 brownfields premises passed by 30 June 2014.[47] As set out above, this deployment profile was questioned by previous shareholder Ministers, and the company was asked to develop a new Corporate Plan taking into account the Telstra stop work on pit remediation. NBN Co did so, but the September plan ("version 13") has not been made public.

46 Strategic Review, p. 44.

47 NBN Co, *2013-16 Corporate Plan*, p. 105.

However, as noted above, the Minister made reference to the 30 June 2014 brownfields target in version 13 of the Corporate Plan during the NBN Rebooted conference in November 2013:

> Shortly before the election, the NBN Co revised its June 30 2014 premises passed target down to 600,000 brownfield premises.

2.78 In his speech of 2 December 2013, Mr Quigley noted that the effect of the revised 30 June 2014 target was to shift the construction end date by six months:

> We did have to advise the Government in September that, the issues with the LN/DN construction combined with the remediation stoppage moved the construction end date from June 2021 to December 2021.

2.79 As of 24 August 2013, build contract instructions had been issued for 512,818 brownfields premises.[48] The issue of build contract instructions for the fibre network commences what is referred to in the Strategic Review as the "construction phase."[49] The Strategic Review found that:

> The construction phase is being completed in an average of approximately 216 days (7.1. months), which is in line with the Corporate Plan.[50]

2.80 On this basis, by mid-March 2014 (216 days after 24 August 2013), NBN Co was on track to pass approximately 512,000 premises. This is consistent with a 30 June 2014 target of 600,000 premises passed.

2.81 The interim Statement of Expectations was issued by shareholder Ministers to NBN Co on 24 September 2013.[51] Among other things, it states that:

> In regard to rollout in brownfield areas, NBN Co should continue existing construction where build instructions have been issued to delivery partners. Any further build or remediation instructions should not ordinarily be issued pending further analysis and discussion. Management of existing design work should occur so as to optimise value in the context of the Government's policy for a flexible architecture.

2.82 In other words, permission must be sought from the Minister before build contract instructions can be issued to delivery partners. The practical reality of this constraint was illustrated by Dr Switkowski at the 17 December committee hearing:

> In fact, we have spent time in recent weeks petitioning the government, as we must, to continue to authorise us to go as fast as we possibly can and not be required to keep checking in with the department or whatever with numbers.[52]

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48 NBN Co, *Program Summary Report* (24 August 2013).

49 Strategic Review, p. 48.

50 Strategic Review, p. 48.

51 Available at: http://www.communications.gov.au/__data/assets/pdf_file/0004/186115/130924_NBN_Co.pdf

52 Committee Hansard, 17 December 2013, p. 57.

2.83 The Strategic Review began its work in October/November 2013. In November 2013, when visiting Blacktown with Dr Switkowski, the Minister said:

> [NBN Co has] issued design instructions for more premises, twice as many premises to be passed by June 30 next year, as the NBN Co has passed to date.[53]

2.84 This statement was later clarified by Josh Taylor of ZDNet:

> Turnbull's office clarified that the NBN will have passed 450,000 brownfields premise[s] by the end of June. The NBN has currently passed 237,324 brownfields premises, with 164,501 able to order a service.[54]

2.85 The Strategic Review assumes that only 357,000 premises will be passed by June 2014. This delay, in tandem with workfront assumptions, is then extrapolated across the entire build, pushing the rollout completion date to 2024. According to the Strategic Review, this reduces revenues by approximately $11.6 billion, increases operating expenditure by $5.4 billion, increases interest payments by $7.5 billion and, ultimately, increases the assumed peak funding amount for the fibre rollout by approximately $13 billion. This issue was discussed during the 17 December hearing:

> **Mr Rousselot:** The slower rollout is indeed driving the bulk of the reduction in revenue for the period FY 2011 to FY 2021, which is the number you are referring to. The slower rollout, however, is not based on my assumptions; it is based on the actual track record that we have and the review that has been done since then by KordaMentha, supported by the newly appointed operations team of NBN Co…
>
> **CHAIR:** …But this is an assessment that has been done, based on assumptions about a whole range of things—and we are going to get to them. I just want to make it so we are all going to be talking about the same thing. You say 'the vast bulk', I say that it is more than $11.6 billion, but $11.6 billion is the figure characterised by you, or by the strategic review, as the hit on the revenue base of NBN Co. by the decision—the assumption, the forecast—that you will extend by three years. That is just a fact.
>
> **Mr Rousselot:** If I may, because we look back to FY 2012 plan, there are in fact actuals that cover the period between FY 2012 and now. So this is not an assumption; it is a fact. Yes, there are assumptions being made in terms of from now onwards. So it is a mix of the fact and the track record that we have achieved between when the plan was published and today, and then a forecast made for the period going forward.
>
> **CHAIR:** I note that the strategic review assumes that government equity does not change in the revised outlook. Is that correct?
>
> **Mr Rousselot:** Yes, that is the assumption we have worked under.

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53 Video is available here: http://www.youtube.com/watch?v=7k9Ivsd39yI

54 Josh Taylor, "We will pass more by NBN fibre than Labor did: Turnbull," *ZDNet* (8 November 2013), at: http://www.zdnet.com/au/we-will-pass-more-by-nbn-fibre-than-labor-did-turnbull-7000022966/

CHAIR: So, under your decision to incorporate all of these in the review, this decision to delay the completion date by three years halves the revenues to 2021, and what that means is that NBN Co. has to get more money from private debt markets. Is that right?

Mr Rousselot: Again, you have mentioned 'my decisions'. It is not my decision. It is a forecast that we have made based on the actuals and assumptions that have been made going forward. And, yes, you are correct; this is the impact on the revenue.

CHAIR: Thank you. And more money is needed from the private debt markets because of this assumption that you have made. I am not trying to split hairs. You keep changing between 'decisions', 'assumptions', 'forecasts', 'advice'; I do not mind which of them you pick. This is your document, Mr Rousselot—that has been extensively explained to us by Dr Switkowski—so you cannot keep trying to blame other people. Your name is on it.

Mr Rousselot: I am not blaming other people. I am just stating the fact that, to build the numbers that you are looking at, we have actuals to date and we have forecasts going forward; and your point on the debt is we have assumed, when we look at the revised outlook, that the current funding arrangement with the government would apply, which is a maximum equity contribution of $30.1 billion, $30.5 billion, and any fund that is required in addition, given the re-forecast that is made based on actuals and a revised forecast, we have assumed to be funded through debt.

CHAIR: Okay. So the extra interest that NBN Co. has to pay up until 2024, from 2021 to 2024, in this situation is $7.5 billion, according to your chart on page 38?

Mr Rousselot: I think that is correct.

CHAIR: So your costs are up by $7.5 billion because of the decision. Your revenue is down by $11.5 billion because of your assumption, decision, interpretation, whatever. So what happens to opex if the rollout is slowed by three years?

Mr Rousselot: I believe that the opex vary little during the period. I think the biggest changes—

CHAIR: On page 38 it suggests that it increases by $5.4 billion—that is a lot by my standards; it might be a little by yours.

Mr Rousselot: I understand why you have that. Certain payments that are made that are in fact more representative of the rollout are treated as opex, and I think that is why you have a difference in that number. I will have to check…

CHAIR: …So where we are is that by slowing the rollout by three years you have added a lazy $13 billion to peak funding—it is just mathematics; it is just that that is what happens?

Mr Rousselot: That is the result of the forecast that we have made, yes.

2.86 The 357,000 target was discussed at both the 17 December 2013 hearing of the committee, and the 25 February hearing of the Senate Estimates committee.[55] During the 17 December hearing, graphs were presented which demonstrated the various rollout trajectories of NBN Co (see Appendix 4).[56] Also during this hearing, it was demonstrated that NBN Co was tracking at approximately 5,000 premises per week—considerably in excess of what was required to reach the 357,000 target. In response, Dr Switkowski said:

> This to me illustrates one of the big problems around the commentary with respect to NBN. You, from the outside, have taken a bunch of numbers and challenged our ability to make forecasts when we have all of the data and we understand what is happening out in the field. How does that work? For example, you cannot take 5,000 homes passed per month and not allow for the fact that from the middle of December to the middle of January the industry shuts down. There is 20,000 off your number to start off with. You have got to get down to that level of analysis to form a forward view. What we will not do is come up with numbers that are excessively optimistic, which I assert has characterised previous forecasts. To have people from outside the organisation attempt to reinterpret our forecasts is ludicrous.

2.87 During the 25 February hearing of the Senate Estimates committee, Dr Switkowski confirmed that NBN Co's weekly average was between 4,500 and 5,000 premises per week.[57] He also confirmed Mr Adcock's comment at NBN Co's half yearly results briefing that NBN Co expected this number to be 6,000 premises per week by 30 June 2014—once again, substantially in excess of what was required to reach a target of 357,000:

> **Senator CONROY:** Do you recall the graphs of the various rollout trajectories for NBN Co. that I showed you at the December hearing of the Senate select committee?
>
> **Dr Switkowski:** Generally.
>
> **Senator CONROY:** During that discussion I noted that NBN Co. was passing, on average, about 5,000 premises per week. I also noted that if NBN Co. plateaued at its current level of activity NBN Co. would easily pass more than 400,000 premises by 30 June 2014. I do recall, Dr Switkowski, you took a very dim view of this 5,000 average, given that it included downtime over the Christmas break. What is NBN Co's current weekly average?
>
> **Dr Switkowski:** Somewhere between 4,500 and 5,000 premises passed.
>
> **Senator CONROY:** I also note that Mr Adcock said last night that NBN Co. expects to be doing 6,000 premises by 30 June. Is that correct?

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55 Committee Hansard, 17 December 2013, pp. 7-12; Committee Hansard, Additional Estimates, 25 February 2014, pp. 36-38.

56 Note: the "build instructions issued" gradient on the following graph was plotted assuming 512,000 premises would be reached by 30 June 2014 rather than mid-March 2014.

57 Committee Hansard, Additional Estimates, 25 February 2014, p. 37.

> **Dr Switkowski:** That was the statement that was made, yes.
>
> Senator CONROY: I have been doing some maths of my own. NBN Co's weekly average for brownfield premises—and I think you are roughly indicating this—passed over the past 17 weeks is about the 4,500. If you exclude the two weeks Christmas shutdown where contractors appear to have down[ed] tools, it comes to 5,078, between, as you said, 4,500 and 5,000. If you extrapolate 5,000 premises, which is less than your own chief operating officer is indicating, to 30 June, and there is no Christmas shut down between now and 30 June—that is right, isn't it?
>
> **Dr Switkowski:** Just Easter.
>
> **Senator CONROY:** You are having an Easter shutdown as well?
>
> **Dr Switkowski:** I am just reflecting how the industry operates.
>
> **Senator CONROY:** Fantastic. NBN Co. gets to slightly more than 400,000 premises. Even if you take the 4,500 weekly average and assume a steady linear growth to Mr Adcock's 6,000 per week by 30 June, NBN Co. will still pass more than 400,000 brownfield premises by 30 June. Without you having done the maths and hoping that I am not seriously misleading you at the desk, does that sound about right?
>
> **Dr Switkowski:** Your algebra is certainly right.

2.88 The Strategic Review also makes assumptions about the daily run rate (premises passed per day at the peak of the rollout). The medium term outlook factored in the extension of the design to delivery schedule to 15 months.[58] This was projected to be brought back into the original 12 month schedule in two years.[59] This revision includes an escalation of the daily roll out rate to a peak of 4,800 premises passed, compared to Corporate Plan peaks of more than 5,400 per day for the brownfields deployment.[60] The Revised Outlook's only basis for the lower peak rate is a comment that:

> Based on workforce modelling previously undertaken by NBN Co, and the Independent Assessment, it is not anticipated that construction field labour is a limiting factor in the FTTP deployment. The biggest constraint to the network rollout is the availability of network designers, senior and experienced project managers, in-field supervisors and project control staff to provide leadership and oversee program delivery….
>
> This constraint allows a maximum of 200-300 concurrent workfronts (for example, an FSAM, a set of nodes or HFC in-fill areas) and dictates the highest practical deployment speed achievable.

2.89 The Strategic Review did not address the question of what strategies could be employed to lift this constraint (e.g. training, additional contract resource from Telstra). Nor did the Strategic Review acknowledge that many construction projects in

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58 Strategic Review, p. 47.

59 Answer to Question on Notice, 17 December 2013, No. 15.

60 Strategic Review, page 48; NBN Co, *2012-15 Corporate Plan*, p. 37.

other sectors are approaching completion, releasing additional project management resources. Rather, productivity improvements were "assumed out" of the Revised Outlook and "assumed in" to the Radically Redesigned FTTP. As NBN Co noted in answer to a question in writing:

> Scenario 2, Radically Redesigned FTTP contemplates NBN Co making significant changes to its FTTP deployment approach to improve NBN Co's productivity and construction techniques. Within this scenario, it is expected that these "radical" changes will increase rollout speed and decrease costs.[61]

2.90 The Committee also notes the testimony of NBN Co's Chief Financial Officer, at the JCNBN hearing on 19 April 2013. When asked the financial impact of extending the rollout, Mr Payne replied:[62]

> The biggest impact of a one- or two-year delay will not have much impact on the internal rate of return. With a two-year delay we would probably still expect to see an internal rate of return of around seven per cent. Where it does have a big impact is on the peak funding requirement. Under the existing plan, we have a peak funding requirement of just over $44 billion. If we extended the rollout, it would reduce that peak funding requirement because we are spending capex after a time when we have gone to cash flow positive. That would come down by $2 billion or $3 billion.

2.91 This evidence demonstrates that, by itself, a deployment delay does not necessarily produce an increase in peak funding. The delay must work in tandem with an assumption that shifts the timing of when NBN Co becomes cash flow positive. Put another way, if revenues are not assumed away (beyond 2021) from the delayed deployment schedule, then according to Mr Payne's testimony the result of assumptions of delay in the brownfields deployment schedule would be a *decrease* in peak funding.

2.92 NBN Co was asked in writing following the 17 December public hearing to reconcile Mr Payne's comment with the conclusion of the Strategic Review. At the time of writing the question is unanswered.

2.93 The committee has serious concerns with the delayed deployment forecast of the brownfields fibre build in the Revised Outlook. The June 2014 target of 357,000 premises passed by June 2014 is at odds with NBN Co's weekly average, statements made by the Minister before the Strategic Review concluded its work, and NBN Co's own statements at its half yearly results briefing. Furthermore, the committee notes that NBN Co's fibre deployment speed is conditional upon the political control evident in the interim statement of expectations.

2.94 The revised deployment schedule—and the assumption that $11.6 billion in revenues will be foregone as a result—has another consequence in the Strategic Review. Revenues for the full fibre rollout are stripped out of scenario comparisons,

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61 Answer to Questions on Notice, 17 December 2013 Hearing, No. 36.

62 JCNBN Hansard, 19 April 2013, p. 15.

while the full assumed costs are included. This is visible in the table comparing the financial outcomes of the scenarios (Exhibit 4-6, reproduced below). This table includes revenues to FY2021 (when scenario 6 is assumed to be complete) but capital expenditure to 2024 (when the Revised Outlook assumes that the full fibre rollout will be complete). Incidentally, this is true of delay assumptions for all network elements in the Revised Outlook (more on this below). The committee also notes that the revenues excluded from the Revised Outlook in Exhibit 4-6 are the three years when the Revised Outlook assumes revenues will be the highest—$15 billion over FY2022, FY2023 and FY2024.[63]

Exhibit 4-6 (Strategic Review)

Exhibit 4-6: Financial outcomes (rounded), including Fixed Wireless, Satellite and greenfields (1)

Financial outcomes for Scenarios 1-6	Scenario 1: Revised Outlook	Scenario 2: Radically Redesigned FTTP	Scenario 3: FTTN short loop, FTTB large MDUs	Scenario 4: HFC in HFC footprint	Scenario 5: FTTN & HFC (no demobilisation)	Scenario 6: Optimised Multi-Technology Mix
Date of first positive free cashflow (2)	FY25 - ~FY40	FY25-27	FY24-25	FY22	FY22	FY22
Cumulative FY11-21						
Revenue (3)	$10bn	$9bn	$11bn	$16bn	$16bn	$18bn
Opex	$23bn	$23bn	$24bn	$26bn	$27bn	$27bn
Capex	$43bn	$35bn	$36bn	$36bn	$29bn	$30bn
Peak funding (equity and debt) (4)	~$73bn	~$64bn	~$59bn	~$51bn	~$43bn	~$41bn
Peak funding (all equity)	~$63bn	~$54bn	~$52bn	~$47bn	~$40bn	~$39bn
Cumulative Capex FY11-24 (Incl. replacement capex)	$56bn	$44bn	$43bn	$40bn	$34bn	$33bn
Steady state financial performance (FY28)						
Revenue	$6.6-7.5bn	$6.6-7.5bn	$6.5-7.4bn	$6.4-7.4bn	$6.2-7.0bn	$6.3-7.2bn
Opex	$2.4bn	$2.4bn	$2.5bn	$2.5bn	$2.6bn	$2.6bn
EBITDA	$4.1-5.1bn	$4.1-5.1bn	$4.0-4.9bn	$3.9-4.8bn	$3.6-4.4bn	$3.7-4.6bn
Capex	$1.9bn	$1.1bn	$1.1bn	$1.1bn	$1.0bn	$1.0bn
IRR (FY10-40) – Revenue Trajectory A*	2.5%	4.0%	4.1%	4.7%	4.9%	5.3%
IRR (FY10-40) – Revenue Trajectory B*	n/a	1.7%	1.9%	2.5%	2.6%	3.1%

2.95 The committee considers that the 30 June 2014 target—and the revised deployment schedule—has been "lowballed" to achieve political objectives. This includes setting a target so low that NBN Co could not fail to meet it—and in fact would have to reduce its weekly run rate to avoid exceeding it. It also provides support for the claimed three year rollout extension, which is assumed to reduce revenues by approximately $11.6 billion, increase operating expenditure by $5.4 billion, increase interest payments by $7.5 billion and, ultimately, increase the assumed peak funding amount in the Revised Outlook by approximately $13 billion. The committee also notes that a 'lowball' target also provides a platform for NBN Co

63 Strategic Review, Exhibit 2-21, p. 56.

and Government to trumpet exceeding this target in July 2014. As Dr Switkowski noted at the February estimates hearing:

> I hope to be in front of the committee after June explaining how we did better than the early forecasts.[64]

Summary—Assumption of brownfield delays

- **The Revised Outlook assumes that NBN Co will pass 357,000 brownfields premises by 30 June 2014, compared to 600,000 in the Corporate Plan (version 13). This assumption—in concert with conservative estimates of premises passed at peak rollout—is reflected in the revised deployment schedule, which assumes the fibre network will not be complete until 2024.**
- **The 30 June 2014 target is at odds with NBN Co's current run rate, the number of build instructions issued by NBN Co by August 2013, and the Strategic Review's own finding that the construction phase is being completed in line with Corporate Plan timing assumptions. The committee notes also that NBN Co's speed of fibre deployment has been brought under direct political control. These factors cast doubt on the revised deployment schedule in the Revised Outlook, and the assumed consequences of this assumption.**
- **The committee considers that the 30 June 2014 target has been "lowballed" to achieve political objectives. This includes setting a target so low that NBN Co could not fail to meet it. It also provides support for the claimed three year rollout extension, which delivers the following financial impacts:**
  - **revenues are decreased by approximately $11.6 billion;**
  - **operating expenditure is increased by $5.4 billion;**
  - **interest payments are increased by $7.5 billion; and**
  - **the assumed peak funding amount is increased by approximately $13 billion.**

64 Committee Hansard, Additional Estimates, 25 February 2014, p. 37.

Cost per premises assumptions – brownfields[65]

2.96 NBN Co's Chief Financial Officer gave the following evidence at the November hearing of the Senate Environment and Communications Estimates Committee in relation to the cost per premises passed of the NBN fibre build:[66]

> **Senator LUNDY:** I understand that in April NBN Co. advised the Joint Committee on the NBN that the current cost of building the local network and distribution network falls between $1,100 and $1,400 per premise. Is that correct?
>
> **Mr Payne:** At the time we presented that to the joint committee, that was our best estimate of the costs of completing the areas that we were building in at that time. So that was our best estimate at that point in time.
>
> **Senator LUNDY:** Has it changed since that point in time?
>
> **Mr Payne:** Since that point in time we have done a number of things. We have obviously started in more areas and have had some contract renegotiations. Looking today at our estimate of completion on premises we are doing now, it would be a bit higher than that.
>
> **Senator LUNDY:** How much is a bit higher?
>
> **Mr Payne:** I think it is between about $1,450 and $1,500.

2.97 On 29 November 2013, the Department of Finance was asked whether they were aware of any cost increases beyond this amount:

> **Senator CONROY:** You said you were watching the testimony earlier. You would have seen Dr Switkowski claim there was a material blow-out in costs in one part of the bill. In your weekly meetings with NBN Co. are you familiar with any information to that end? And I think the gentleman behind you indicated you had a weekly meeting, Ms Mason. Mr Robinson indicated he was not at the weekly meetings, so I can only ask you.
>
> **Ms Mason:** I am not necessarily at the weekly meetings either. I am not aware of any particular cost blow-outs.[67]

2.98 The 20 September NBN Co Board paper states in relation to costs per premises passed:

> The assumption of $1500 in FY14 is consistent with our July 2013 cost per premises reporting which estimates the following:

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65 There are two key cost measures in the Local Network and Distribution Network (LNDN) in the FTTP build. These are cost per premises passed (CPPP) and cost per premises connected (CPPC). The cost per premises passed refers to the LNDN between the Fibre Access Node (FAN) to the multiport in the pit or pole in the street outside a premises. The cost per premises connected refers to the connection from the multiport to the customer premises equipment (Network Termination Device, or NTD) inside the premises. A description of these network elements is provided in Appendix 3.

66 Available here: http://www.nbnco.com.au/content/dam/nbnco/media-releases/2013/report-to-parliamentary-joint-committee.pdf

67 Committee Hansard, 29 November 2013, p. 46.

- The Estimate at Completion (EAC) for 152 FSAMs with a Fixed Price Lump Sum (FPLS) is currently tracking at $1335 per premises
- The EAC for 50 FSAMs issued under "fast-track" construction projects is tracking at $1487 per premises
- The impact of the Syntheo and Silcar contract changes is currently being modelled in detail, and is likely to increase costs by between $50 and $100 per premises across the total number of premises.

2.99 However, the Revised Outlook in the Strategic Review assumes:[68]

> A 78 percent increase in the average Cost Per Premises for LNDN (including provision) from $1,123 to 1,997 per premises.

2.100 Increased costs for premises passed are set out in Exhibits 2-26 and 2-27.[69] Although some general commentary is provided to justify these price increases (pp. 62-65), the exact unit costs and the applicable assumptions behind these increases are redacted.

Cost per Premises Passed (Revised Outlook)

Exhibit 2-27: Revised brownfields Cost Per Premises comparison

2.101 The Strategic Review extrapolates the higher cost per premises passed assumption of $1,997 out to the new rollout end date of 2024, without a single

68 Strategic Review, p. 60.

69 Strategic Review, pp. 62-64.

efficiency saving for three years, and only 2.5 percent in two of the remaining seven years.[70] This was established at the 17 December hearing:

> **CHAIR:** Does the revised outlook assume that the $1,997 figure is reflected all the way up until the end of the tanked rollout completion date in 2024? In other words, you have extrapolated it right through the rest of the build?
>
> **Mr Rousselot:** I believe that it is an average, what you see there, and my understanding is that the way the hypothesis is built is that, at some point, we introduced an element of cost saving that will allow us to save money towards the outer years of the rollout.

2.102 It is an axiom of construction projects that efficiencies are gained as the construction ramps up and learnings are applied. The Strategic Review makes this point on page 78:

> Costs also tend to reduce over time, due both to cost erosion and to scale and learning effects. For example, Verizon's Cost Per Premises fell from ~US$2,600 to ~US$1,600 between 2004 and 2006

2.103 Similarly, the 20 September NBN Co Board paper noted:

> The draft Corporate Plan v13.0 assumes that the cost per premises to construct the access fibre network will reduce from $1,500 per premises in FY14 to $1,054 from FY18 to the end of the construction period.

2.104 Remarkably, however, in the case of the Revised Outlook, the Strategic Review states:[71]

> It is considered likely that the Delivery Partners will become more efficient as they are provided with more consistent work flow, experience less interference in the design process, and are better managed through clearer delegated authority within NBN Co. These efficiencies are required to make the modules profitable for the Delivery Partners. Therefore, it is anticipated that any efficiency gains will primarily benefit the Delivery Partners and the revised figures have only included limited efficiency gains for NBN Co (2.5 percent per annum for FY17 and FY18 only).

2.105 In other words, the Strategic Review cedes virtually all cost savings from efficiency gains to NBN Co's delivery partners. This assumption was discussed during the 17 December 2013 hearing:[72]

> **CHAIR:** I am just reading your figures. You keep the average of $1,997 through almost the entire build but you give yourself an efficiency benefit only in year 2018, in four years' time. Okay. I think there is a graph about to come up from the joint parliamentary committee hearing in April which demonstrates—as you would expect and, I think, you indicate in the report—that, with all large infrastructure projects, the costs come down

70 Committee Hansard, 17 December 2013, p. 33.

71 Strategic Review, p. 63.

72 Committee Hansard, 17 December 2013,, pp. 33-34.

over time as you learn and become more efficient. The strategic review makes a similar observation on page 78:

Costs also tend to reduce over time, due both to cost erosion and to scale and learning effects. For example, Verizon's Cost Per Premises fell from ~US$2,600 to ~US$1,600 between 2004 and 2006…

I just wanted to be clear. Verizon achieved a near 40 per cent reduction in cost per premises over two years for its fibre build, from learning and experience. In NBN Co's case, in your strategic review, in your future forecast, NBN only achieves an efficiency gain in the year 2018, four years from today. So, putting aside that you are pretending you have learnt nothing from the last three years—and even I would agree that NBN would have learnt plenty in the last three years—how can Verizon be so smart and you guys be so dumb?

Mr Rousselot: Those are your words. The assumptions that we built here were ones where we wanted to be prudent. If you look at our estimates at completion, currently, it is still going up. So today we are not yet capable of truly, accurately forecasting the cost that we will end up having to pay for those types of assets.

CHAIR: But, seriously, you have actually forecast costs still to be going up at the end of 10 years for a project that everybody else in the world has been able to get a 40 per cent saving in two years.

Mr Rousselot: Again, the rationale for those costs going up is not only the productivity improvements but also the effect of inflation, cost increases and things like this.

CHAIR: Don't Verizon have the same challenges to overcome? They didn't have inflation to overcome in the United States? I admit it has been low, but—

Mr Rousselot: I do not know enough about Verizon's—

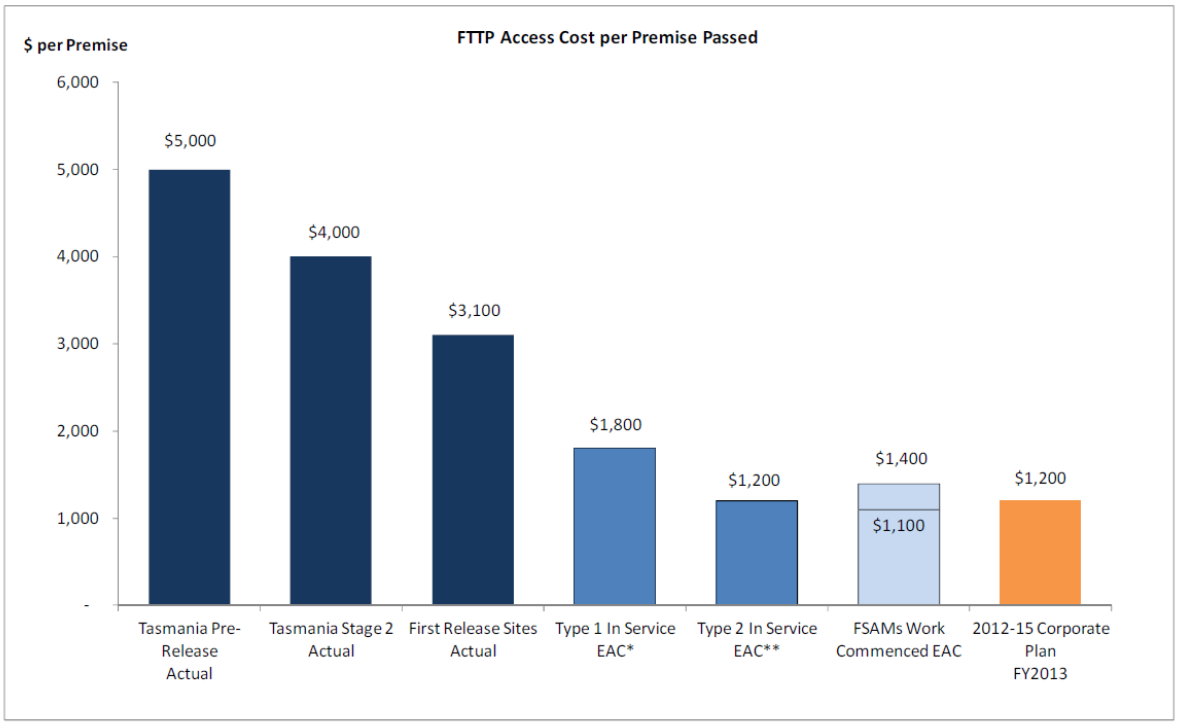
CHAIR: So everybody else in the world can make an efficiency saving but, for the purpose of pumping up a re-baseline figure, you have no productivity gains built in—other than in two years—in four years' time.

2.106 The graph referred to in the Chair's testimony was tabled at the April hearing of the JCNBN.[73] Reproduced below, it exhibits the efficiencies that NBN Co has already realised in the past three years of the fibre build:

73 See: http://www.nbnco.com.au/content/dam/nbnco/media-releases/2013/report-to-parliamentary-joint-committee.pdf

NBN Co Cost Per Premises Passed (April 2013)

Exhibit 1-4: FTTP Access Cost per Premise Passed ($ per Premise) (Nominal Dollars)



Source: NBN Co, 2012-15 Corporate Plan

Note:* Fibre Serving Area Modules (FSAMs) in service: Estimate at Completion using Type 1 design.

** FSAMs in service: Estimate at Completion using Type 2 design.

All Cost per Premise estimates are rounded to nearest $100. Actual costs are based on information available at 31 March 2013.

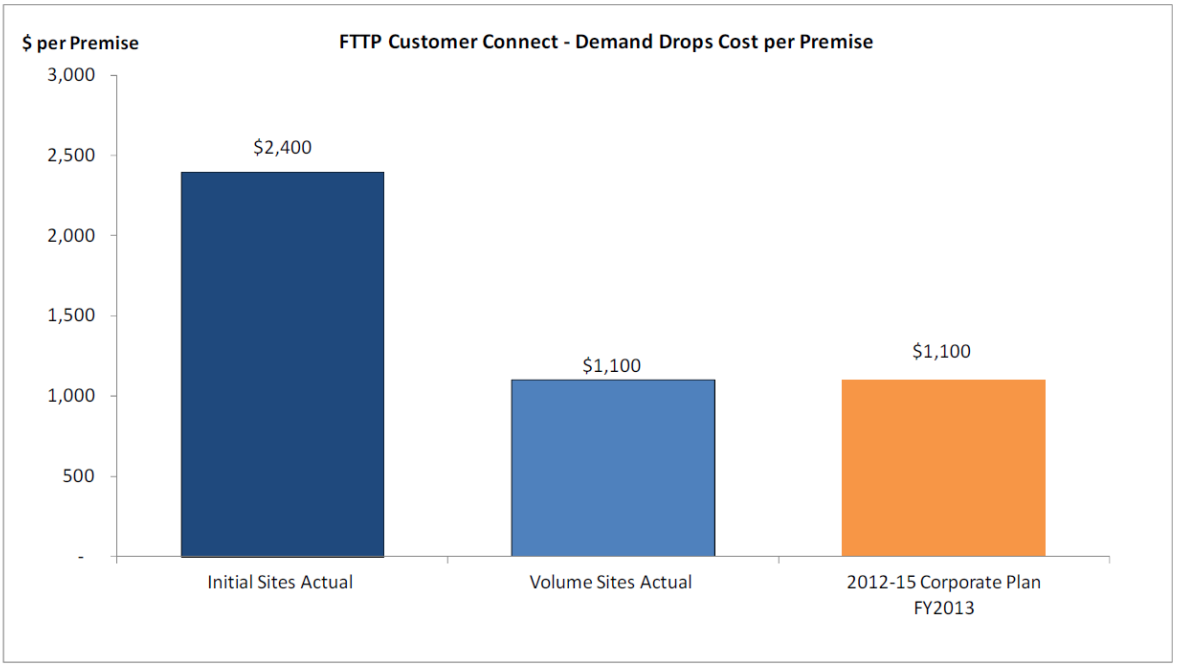
2.107 During the April 2013 JCNBN hearing, the cost per premises connected was also discussed. As set out below, NBN Co was already realising efficiencies in connecting premises. Former NBN Co CEO Mike Quigley made the point that:[74]

> We did a number of initial sites—several thousand—on a different model and the cost of those was $2,400. We got some learnings from that, we changed the model and now we are proceeding into volume. That is, once again, several thousand. This is a blend, by the way, of SDUs and MDUs—single dwelling units and multi-dwelling units. The volume actuals we are getting are around $1,100, which is in fact right on our corporate plan estimate of $1,100.

74 JCNBN Hansard, 19 April 2013, page 7.

NBN Co Cost Per Premises Connected (April 2013)

Exhibit 1-6: FTTP Customer Connect – Demand Drops Cost per Premise Single Dwelling Units ($ per Premise) (Nominal Dollars)



Source: NBN Co, 2012-15 Corporate Plan

2.108 However, the Revised Outlook in the Strategic Review assumes:

> A 50 percent increase in the Cost Per Premises for Connections from $1,398 to 2,100 per premises.

2.109 Once again, the Strategic Review has extrapolated the higher cost per premises connected assumption of $2,100 right to the end of the reforecast rollout end date in 2024, with marginal efficiencies of 2.5 per cent included for FY17 and FY18 only.[75] The Strategic Review states that this reflects "the intrinsic complexity of the project."[76]

2.110 The Strategic Review assumes that the consequence of higher unit costs in the fibre rollout—in concert with assumptions that NBN Co will benefit from no reasonable build efficiencies over the 10 year reforecast build period—is an increase of $14.4 billion in capital expenditure. This is visible in Exhibit 2-25 of the Strategic Review, reproduced below.

75 Strategic Review, p. 65.

76 Strategic Review, p. 65.

Revised Capital Expenditure Assumptions—Brownfields

Exhibit 2-25: Detailed Capex comparison between the Corporate Plan and the Revised Outlook

Capital Expenditure[51]	Actual LTD Sept-13 ($billion)	Corporate Plan			Revised Outlook		
		$/ premises	Premises Passed ('000s)	FY21 Capex ($billion)	$/ premises	Premises Passed ('000s)	FY24 Capex ($billion)
FTTP							
Brownfields LNDN	-	1,054	10,091	10.6	1,997	10,091	20.1
Brownfields LNDN Provision	-	70	10,091	0.7	-	-	-
Total LNDN	0.7	1,123	10,091	11.3	1,997	10,091	20.1
Brownfields Connections	0.1	1,398	7,002	9.8	2,100	7,002	14.7
Greenfields	0.3	1,591	2,111	3.4	1,591	2,111	3.4
Total FTTP	1.1			24.5			38.2
Transit/Backhaul	0.7	-	-	2.8	-	-	3
Fixed Wireless	0.3	3,291	396	1.3	[redacted]	[redacted]	[redacted]
ISS	0.1	2,117	48	0.1	2,550	48	0.1
LTSS	0.5	3,161	578	1.8	[redacted]	[redacted]	[redacted]
OSS/BSS (IT)	0.7	-	-	0.9	-	-	1.6
Common	0.3	-	-	0.7	-	-	0.7
PM & Design	-	-	-	1.2	-	-	1.7
Replacement	-	-	-	0.4	-	-	0.2
Total Capex excluding Contingency	3.7			33.7			51
Capex Contingency	-	-	-	3.6	-	-	5.0[52]
Total Capex	3.7			37.4			55.9

2.111 The Strategic Review makes a number of additional capital expenditure assumptions about the brownfields fibre rollout:

- An increase in the BSS/OSS and other IT Capital Expenditure costs of $0.7 billion;
- A $0.5 billion increase in other Capital Expenditure as a result of increased capitalised labour over the revised deployment schedule; and
- An increase of $1.4 billion required to maintain a 10 percent contingency.

2.112 It is not possible to assess the IT and labour capital expenditure assumptions on the information provided in the Strategic Review. However, the committee notes that the $1.4 billion increase in contingency—to maintain the contingency at 10 percent of the total assumed capital expenditure amount—is a direct result of increasing other capital expenditure assumptions. The increased capital expenditure assumed in the long term satellite program will be examined below.

Summary—Brownfields Cost per premises assumptions

- **On 19 November 2013, NBN Co's Chief Financial Officer Mr Robin Payne confirmed that the brownfields cost per premise was "between about $1,450 and $1,500." An NBN Co Board paper dated 20 September confirmed that the brownfields cost per premise passed of $1,500 was consistent with July 2013 Estimates at Completion. In November 2013, Department of Finance personnel indicated that they were aware of no cost increases.**
- **The Strategic Review assumes that the brownfields cost per premise passed has increased by 78 percent to $1,997 and the brownfields cost per premise connected has increased by 50 percent to $2,100. Unit price increases and assumptions are redacted. The Strategic Review extrapolates these assumptions out to the new forecast end date of 2024, without a single efficiency saving for three years, and only 2.5 percent in two of the remaining seven years.**
- **The Strategic Review assumes that the combined result of these assumptions is to increase capital expenditure in the Revised Outlook by $14.4 billion.**
- **The $1.4 billion increase to maintain a 10 per cent contingency is a direct result of other assumptions that increase capital expenditure.**

Capital Expenditure Assumptions – Satellite

2.113 The Revised Outlook assumes approximately $2.4 billion additional capital expenditure for the Fixed Wireless and Long Term Satellite components of the network. This is visible by subtracting the unredacted figures from the total capital expenditure in Exhibit 2-25.[77] The Strategic Review notes that this is due to an assumed increase in the cost per premises for fixed wireless, and an increase in the total cost of satellite, but the amounts of these increases are redacted.[78]

2.114 The Revised Outlook also includes 100,000 additional premises passed in the satellite footprint than in the Corporate Plan, as of June 2021:[79]

77 Strategic Review, p. 61.

78 Strategic Review, p. 61.

79 The Strategic Review takes the novel approach of defining the premises passed by a satellite service as the number of customers that can actually be connected.

Exhibit 2-11: Network deployment rollout timetable – Revised Outlook

Revised Outlook Rollout Timetable														
Premises Passed Cumulative ('000s)	Jun-11	Jun-12	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20	Jun-21	Jun-22	Jun-23	Jun-24
Brownfields	18	29	163	357	857	1,727	2,727	3,927	5,127	6,327	7,427	8,477	9,477	10,091
Greenfields	-	4	44	110	192	285	414	564	742	967	1,240	1,581	1,893	2,111
Fixed Wireless	-	1	28	122	260	354	431	508	554	554	554	554	554	554
Satellite	48	48	48	48	48	206	206	206	206	206	306	306	306	306
Total	66	82	283	637	1,357	2,572	3,778	5,205	6,629	8,054	9,527	10,918	12,230	13,062

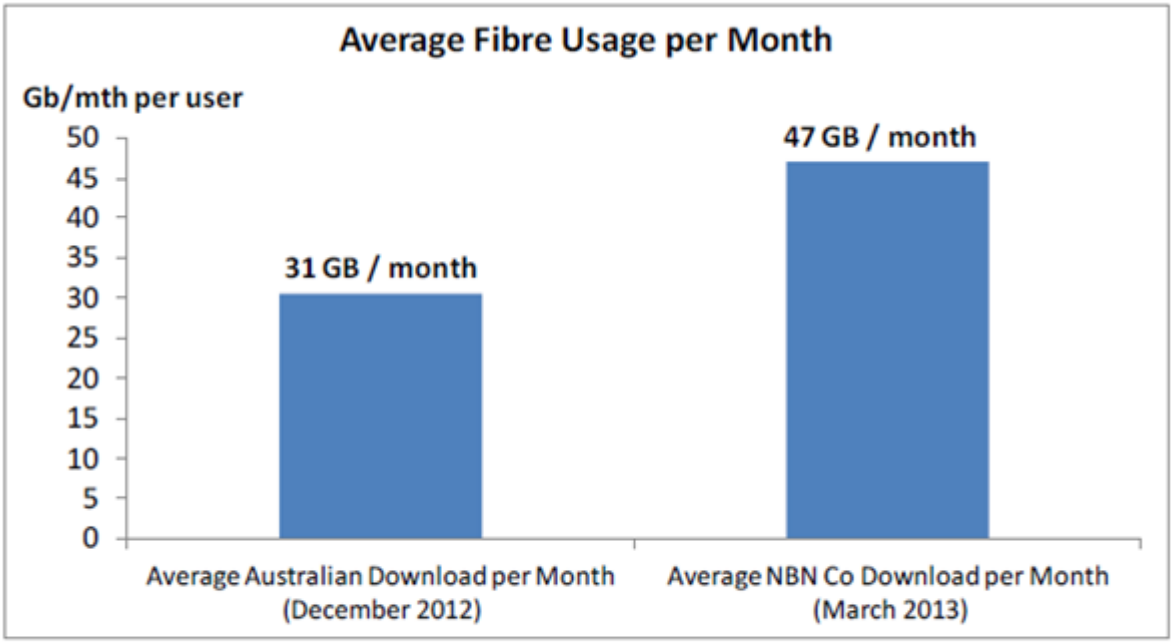
2.115 The Strategic Review includes no direct explanation as to the addition of this satellite. The only reference is contained on page 66:

> Whilst the majority of the costs of the two long term satellites are known, there are some elements that are yet to be finalised. There are also risks including the following:
>
> - There is no clear understanding of the requirement for further capacity which may be needed if the demand for the LTSS exceeds that outlined in the Corporate Plan; and
> - Further Satellite capacity may be the only viable solution if fibre and Fixed Wireless coverage is less than the 97 percent included in the Corporate Plan.

2.116 The committee does not contest that additional bandwidth will be required in the satellite footprint. This is one assumption in the Strategic Review that actually reflects the reality of broadband usage: when Australians are offered access to more bandwidth, they use it. This is visible in the experience NBN Co has had with the Interim Satellite Service, which eclipsed its subscriber cap and capacity limits earlier than expected, just as it is visible in the fibre network, where Australians with access to fibre are consuming data at rates that are approximately 50% higher than the Australian average of 31 GB/month.[80] The committee expects a similar result once the two long term satellites are launched in 2015 and Australians living in rural and remote parts of the country have access to high-quality broadband for the first time.

80 NBN Co, *Corporate Plan 2013-16*, p. 16.

Data Usage on NBN Co fibre Vs Australian average



Source: ABS - 8153.0 - Internet Activity, Australia, December 2012. NBN Co Data 31 March 2013.

2.117 The third satellite was included in the Revised Outlook without direct explanation, and prior to the completion of the Fixed Wireless and Satellite Review announced in the Strategic Review. This distorts comparisons with the Corporate Plan. Once again, by assuming that the third satellite is launched and operational by FY 2021, the Strategic Review can factor in the capital expenditure of a third satellite into the Revised Outlook, but include in scenario comparisons no revenues from the additional 100,000 customers.

Summary—Satellite Capital Expenditure Assumptions

- **The Revised Outlook includes an additional satellite without direct explanation.**
- **The committee does not contest that additional bandwidth will be required in the satellite footprint. This is one assumption in the Strategic Review that actually reflects the reality of broadband usage: when Australians are offered access to more bandwidth, they use it.**
- **The assumed launch of the third satellite by end-FY2021 distorts scenario comparisons by including in the Revised Outlook the capital expenditure for the satellite, but excluding revenues from additional satellite customers.**

Assumptions of greenfields delay

2.118 The number of greenfields premises to be passed in the Corporate Plan is determined by assumptions of construction activity. As the Strategic Review notes:

> For the first five years, the Corporate Plan has assumed that premises growth is based on the Australian Bureau of Statistics (ABS) and industry trends; thereafter it is aligned with ABS household population growth.[81]

2.119 As set out in Exhibit 2-10, the Corporate Plan provided for 2,111,000 greenfields premises to be passed by FY2021 and 2,659,000 greenfields premises to be passed by 2024.

Deployment Schedule—Corporate Plan

Exhibit 2-10: Network deployment rollout timetable – Corporate Plan

Corporate Plan - Rollout Timetable														
Premises Passed Cumulative ('000s)	Jun-11	Jun-12	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20	Jun-21	Jun-22	Jun-23	Jun-24
Brownfields	18	29	286	1,129	2,499	3,862	5,168	6,423	7,610	8,879	10,091	10,091	10,091	10,091
Greenfields	-	10	55	178	413	763	1,111	1,415	1,673	1,904	2,111	2,295	2,477	2,659
Fixed Wireless	-	9	70	124	225	369	374	379	385	391	396	401	405	410
Satellite	165	165	250	250	527	539	547	555	563	571	578	585	592	599
Total[44]	**183**	**213**	**661**	**1,681**	**3,664**	**5,532**	**7,200**	**8,772**	**10,230**	**11,744**	**13,176**	**13,372**	**13,566**	**13,759**

2.120 Exhibit 2-11 provides the same detail for the Revised Outlook. The revised deployment schedule for greenfields assumes that:

- 871,000 greenfields premises will be delayed until after FY2021; and
- 548,000 fewer greenfields premises will be passed in FY2024 under the Revised Outlook than under the Corporate Plan.

81 Strategic Review, p. 49.

Revised Greenfields Deployment Schedule (Strategic Review)

Exhibit 2-11: Network deployment rollout timetable – Revised Outlook

Revised Outlook Rollout Timetable														
Premises Passed Cumulative ('000s)	Jun-11	Jun-12	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20	Jun-21	Jun-22	Jun-23	Jun-24
Brownfields	18	29	163	357	857	1,727	2,727	3,927	5,127	6,327	7,427	8,477	9,477	10,091
Greenfields	-	4	44	110	192	285	414	564	742	967	1,240	1,581	1,893	2,111
Fixed Wireless	-	1	28	122	260	354	431	508	554	554	554	554	554	554
Satellite	48	48	48	48	48	206	206	206	206	206	306	306	306	306
Total	66	82	283	637	1,357	2,572	3,778	5,205	6,629	8,054	9,527	10,918	12,230	13,062

2.121 This assumption of delay in the greenfields rollout produces the same effect in Exhibit 4-6 as it does for other network elements: costs for passing and connecting 871,000 greenfields premises are included in the Revised Outlook for scenario comparisons, but revenues from the additional connections are not.

2.122 Mr Rousselot was asked about this issue at the hearing on 17 December 2013. He replied:

> I believe that what it considers is the delay in the rollout, which is impacting both the brownfield and the greenfield sites, and therefore pushes out the date at which we are able to pass these greenfield sites.[82]

2.123 This answer reflects a misunderstanding of the project. The number of greenfields premises to be passed is determined principally by construction activity, not deployment speed.

2.124 The Strategic Review explains that the delayed greenfields rollout schedule is due in part to the revised brownfields schedule.[83] This is because new developments of less than 100 lots are only completed by NBN Co if they are in-fill.[84] An answer to a question on notice also states:[85]

> A further discount to the deployment rate was applied to the "new developments" figures to reflect that applications made to date have been lower than forecast. It also reflects a higher than anticipated proportion of 'new developments' being 'in-fill' rather than greenfield developments with more than 100 dwellings. A reduction was made to 2.111 million premises to reflect a proportion of the 'non-residential/business GNAFs' included in the original Corporate Plan figure of 2.659 million premises.

2.125 While the issue of in-fill could explain the difference between the greenfields premises passed at Corporate Plan completion in FY2021 (2,111,000), and the

82 Committee Hansard, 17 December 2013, p. 53.

83 Committee Hansard, 17 December 2013, p. 53.

84 Committee Hansard, 17 December 2013, p. 53.

85 Answer to Questions on Notice, 17 December 2013 Hearing, No. 16.

Revised Outlook expectation in 2021 (1,240,000), it does not explain the difference in the number of fixed line premises in 2024 between the Corporate Plan and the Revised Outlook.

2.126 The committee remains concerned about this issue. In an answer to another question on notice, NBN Co noted that "the Revised Outlook forecast for greenfields was used for all Scenarios, including the MTM."[86] As noted above, greenfields deployment is based on assumptions about premises growth, assumptions which are based on ABS data. The MTM scenario assumes that by the end of the rollout in CY2020, 1,089,000 greenfields premises will be passed in the fixed line footprint.[87] This is a difference of nearly one million premises compared to the Corporate Plan. This can be seen in Exhibit 4-2, which demonstrates that by CY2020 there are 11.18 million premises in the fixed line footprint—the corresponding number in the 2012-15 Corporate Plan (by FY2021) is 12.2 million premises.[88] However, NBN Co does not indicate in the Strategic Review—or in answers to questions put in writing—that it has significantly revised its forecasts for the number of premises that will be constructed by CY2020. The committee will continue to seek clarification from NBN Co on this issue.

86 Answers to Questions on Notice, 17 December 2013 Hearing, No. 47.

87 Answers to Questions on Notice, 17 December 2013 Hearing, No. 47.

88 NBN Co, *2012-15 Corporate Plan*, p. 72 (Exhibit 9-2).

MTM rollout at assumed completion

Exhibit 4-2: Optimised Multi-Technology Mix rollout

Optimised multi-technology mix rollout						
	End of CY16			End of rollout (CY20)		
Technology	Premises ('000s)	% of all premises	% of all premises in relevant footprint	Premises ('000s)	% of all premises	% of all premises in relevant footprint
FTTP	1,330	12%	13%	2,890	24%	26%
FTTN	550	5%	5%	3,620	30%	32%
FTTdp/B	-	-	-	1,380	11%	12%
HFC	2,610	23%	25%	3,270	28%	30%
Not passed	5,980	53%	57%	-	-	-
Total fixed line footprint	**10,480**	**93%**	**100%**	**11,180**	**93%**	**100%**
FTTN (remote footprint)	-	-	-	100	1%	10%
Fixed Wireless	450	4%	57%	430	3%	53%
Satellite	340	3%	43%	320	3%	37%
Total remote footprint	**790**	**7%**	**100%**	**850**	**7%**	**100%**
Total (Australia)	**11,270**	**100%**		**12,030**	**100%**	

Summary—Assumption of greenfield delays

- **The Revised Outlook assumes that approximately 871,000 greenfields premises will be passed by NBN Co after FY2021.**
- **This has the effect of including the costs for the 871,000 greenfields premises passed between FY2021 and FY2024 in scenario comparisons, but none of the revenues.**
- **The committee will seek further clarification from NBN Co on the accuracy of the greenfields deployment schedule assumed in the Revised Outlook and alternative scenarios.**

Revenue assumptions

2.127 Section 2.5.1 of the Strategic Review outlines revised revenue assumptions. As stated above, these revenue assumptions were prepared by BCG for application across all scenarios. The Strategic Review notes that the Corporate Plan forecast cumulative revenue of $23.1 billion from FY11-21. It further notes that the two primary drivers of revenue are the number of connected premises (pace of network deployment) and end-customer choice on speed and data usage.

2.128 The Revised Outlook makes a number of assumptions which trim revenue growth for FTTP. These will be analysed shortly. However, as noted above, the key

assumption made in the Strategic Review to strip out FTTP revenue prior to FY2021 is the delayed deployment schedule. The Strategic Review states:

> As outlined in the Network deployment Revised Outlook, deployment will take approximately three years longer than indicated in the Corporate Plan. This delay will reduce the cumulative Revenue from FY11- 21 by ~$11.6 billion (falling from ~$23.1 billion to ~$11.5 billion). Other factors as set out below will reduce cumulative Revenue by a further ~$1.8-2.1 billion to FY21, resulting in total cumulative Revenue for FY11-21 of ~$9.4-9.7 billion.[89]

2.129 The "other factors" noted in this passage—responsible for a reduction of approximately $2 billion in the Revised Outlook to FY2021—include a greater rate of decline in residential ARPU than is included in the Corporate Plan; fewer residential premises connecting to the NBN; lower average prices for business premises; lower revenue from the Government sector (it is argued that these premises are included in the business segment); and reduced revenue from lower take-up and prices for the multicast service.[90]

2.130 The Strategic Review also states:[91]

> During the period to FY21, the impact of the rollout delay is significantly greater than the impact of changes to ARPU and other factors. However, post FY21 the revised assumptions (particularly in relation to residential ARPU growth), will have a significant impact on Revenue because of lower ARPU and lower long-term growth forecast.

2.131 In other words, when deployment delays are washed out of the model, the "other factors"—which include reduced revenue assumptions for residential and business customers than set out in the Corporate Plan—are the reason the Revised Outlook assumes significantly reduced revenues for the FTTP build compared to the Corporate Plan. This is visible in the 'steady state' comparison provided in Exhibit 4-6, which assumes that in FY2028 NBN Co revenues are between $6.6 and $7.5 billion—up to $3.2 billion, or 32 percent, less than assumed in the 2012-15 Corporate Plan.

2.132 The initial prices to be charged for NBN Co wholesale products were detailed in the Corporate Plan, as was the expectation that the wholesale prices would decline in real and nominal terms.[92] The maximum price that can be charged by NBN Co is covered by the Special Access Undertaking which has been accepted by the ACCC.

89 Strategic Review, p. 58.

90 Strategic Review, pp. 58-59.

91 Strategic Review, p. 59.

92

Exhibit 4-6 (Strategic Review)

Exhibit 4-6: Financial outcomes (rounded), including Fixed Wireless, Satellite and greenfields (1)

Financial outcomes for Scenarios 1-6	Scenario 1: Revised Outlook	Scenario 2: Radically Redesigned FTTP	Scenario 3: FTTN short loop, FTTB large MDUs	Scenario 4: HFC in HFC footprint	Scenario 5: FTTN & HFC (no demobilisation)	Scenario 6: Optimised Multi-Technology Mix
Date of first positive free cashflow (2)	FY25 - ~FY40	FY25-27	FY24-25	FY22	FY22	FY22
Cumulative FY11-21						
Revenue (3)	$10bn	$9bn	$11bn	$16bn	$16bn	$18bn
Opex	$23bn	$23bn	$24bn	$26bn	$27bn	$27bn
Capex	$43bn	$35bn	$36bn	$36bn	$29bn	$30bn
Peak funding (equity and debt) (4)	~$73bn	~$64bn	~$59bn	~$51bn	~$43bn	~$41bn
Peak funding (all equity)	~$63bn	~$54bn	~$52bn	~$47bn	~$40bn	~$39bn
Cumulative Capex FY11-24 (Incl. replacement capex)	$56bn	$44bn	$43bn	$40bn	$34bn	$33bn
Steady state financial performance (FY28)						
Revenue	$6.6-7.5bn	$6.6-7.5bn	$6.5-7.4bn	$6.4-7.4bn	$6.2-7.0bn	$6.3-7.2bn
Opex	$2.4bn	$2.4bn	$2.5bn	$2.5bn	$2.6bn	$2.6bn
EBITDA	$4.1-5.1bn	$4.1-5.1bn	$4.0-4.9bn	$3.9-4.8bn	$3.6-4.4bn	$3.7-4.6bn
Capex	$1.9bn	$1.1bn	$1.1bn	$1.1bn	$1.0bn	$1.0bn
IRR (FY10-40) – Revenue Trajectory A*	2.5%	4.0%	4.1%	4.7%	4.9%	5.3%
IRR (FY10-40) – Revenue Trajectory B*	n/a	1.7%	1.9%	2.5%	2.6%	3.1%

Exhibit 8-1 (NBN Co Corporate Plan 2012-15)

Exhibit 8-1: Revenue Plan – Forecast Summary

Revenue													
June YE	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2028	FY2040
Premises Passed or Covered ('000s Premises)													
FTTP Premises	18	39	341	1,307	2,912	4,625	6,279	7,838	9,283	10,783	12,202	13,467	15,435
Fixed Wireless & Satellite Premise	165	174	320	374	752	907	921	934	948	961	974	1,055	1,181
Total Premises Passed	**183**	**213**	**661**	**1,681**	**3,664**	**5,532**	**7,200**	**8,772**	**10,230**	**11,744**	**13,176**	**14,522**	**16,616**
Premises Connected ('000s Premises)													
FTTP Premises	1	4	54	487	1,515	3,036	4,341	5,594	6,695	7,607	8,513	10,010	11,464
Fixed Wireless & Satellite Premise	0	10	38	64	100	145	161	191	206	219	232	303	399
Total Premises Connected	**1**	**14**	**92**	**551**	**1,615**	**3,181**	**4,502**	**5,785**	**6,901**	**7,827**	**8,745**	**10,313**	**11,863**
Gross Revenue ($M)	**-**	**2**	**18**	**120**	**529**	**1,346**	**2,281**	**3,221**	**4,200**	**5,167**	**6,175**	**9,769**	**14,597**

Source: NBN Co

2.133 The committee has already examined the basis for the assumed delay in the deployment schedule, and the revenue consequences of that assumption. There are three key reasons why the committee considers that the revenue assumptions underpinning the 'other factors' are overly pessimistic for the full fibre build:

- Existing take up and usage of NBN Co fibre products compares favourably to Corporate Plan assumptions;

- The Strategic Review does not consider at any point the value of, or high demand for, uploads for small business customers. Failure to consider broadband quality beyond download speeds is a systemic fault in the Strategic Review; and
- A 'steady state' comparison of a full FTTP build exhibits a marginal difference in revenues to the MTM, despite the vast difference in product sets. This will be examined in section 3.3, below.

2.134 Before going to these points, the committee notes that some of the "other factors" reflect current Government policy and have been "imported" into the Revised Outlook. For example, one factor—which assumes a revenue reduction of $200 to $300 million by FY2021, and presumably more after FY2021—is in part due to an assumption of infrastructure-based competition in MDUs, which was not countenanced in the NBN Co Corporate Plan or the policy platform of the previous government.[93] Another—that "more of the business market will be serviced by third-party fibre providers than is assumed in the Corporate Plan"—was a risk identified in NBN Co's advice to Government during the caretaker period when discussing the lower revenue potential of FTTN:[94]

> Lack of product enhancements designed for the business market (TC-2, TC-3, etc) will curtail the revenue in this segment, and may result in business customers sourcing connectivity from 3rd party networks rather than utilise a restricted FTTN service or pay for a NBN Co fibre on demand link.

2.135 The initial prices to be charged for NBN Co wholesale products were detailed in the Corporate Plan, as was the expectation that the wholesale prices would decline in real and nominal terms.[95] The maximum price that can be charged by NBN Co is covered by the Special Access Undertaking which has been accepted by the ACCC.[96]

2.136 The 2012-15 Corporate Plan also provides an extensive comparison of retail pricing on the NBN and comparisons to plans already in the market. These demonstrate the prices are broadly comparable with ADSL prices.[97] There are a range of plans at the 12/1 mbps tier currently available on the NBN starting from $29.95 a month with no additional line rental—Skymesh and Harbour ISP are two examples. Prices for 100mbps products are also broadly comparable to existing ADSL and HFC prices—for example, Exetel currently offers a 100/40mbps service, with 100GB of

93 Strategic Review, p. 58.

94 Strategic Review, p. 59; NBN Co Caretaker Advice, p. 118. The Caretaker Advice is discussed at length below.

95 NBN Co, *Corporate Plan* 2012-15, Section 8.2.6.

96 ACCC 'Final decision on the SAU lodged by NBN Co on 19 November 2013' (13 December 2013).

97 NBN Co, *Corporate Plan 2012-15*, Exhibits 7-8, 7-9 and 7-10.

data, for $69.95 a month.[98] Similarly, iinet offers a 100/40mbps service, with 200GB of data, for $79.95 a month.[99]

2.137 Exhibit 2-23 of the Strategic Review demonstrates that the current take-up of higher speed tiers is ahead of Corporate Plan expectations:

Exhibit 2-23

Exhibit 2-23: Take-up rate of NBN Co services relative to Corporate Plan

Take-up rate relative to Corporate Plan: brownfields and greenfields				
	Actual (Sept-13)		Corporate Plan	
	All active FSAMs [2]	All FSAMs active before 31 December 2012 [2]	Corporate Plan to Sept-13	Corporate Plan for 2016
Overall take-up rate of premises [1]	19% of 291,030	42%	20% of 504,708	66%
Mix of speed plans of those taking up services				
12/1Mbps plan	45%	49%	49%	42%
25/5-10Mbps plan	27%	23%	28%	26%
50/20Mbps plan	5%	4%	5%	5%
100/40Mbps plan	23%	24%	18%	23%
250/100Mbps plan	n/a	n/a	n/a	4%

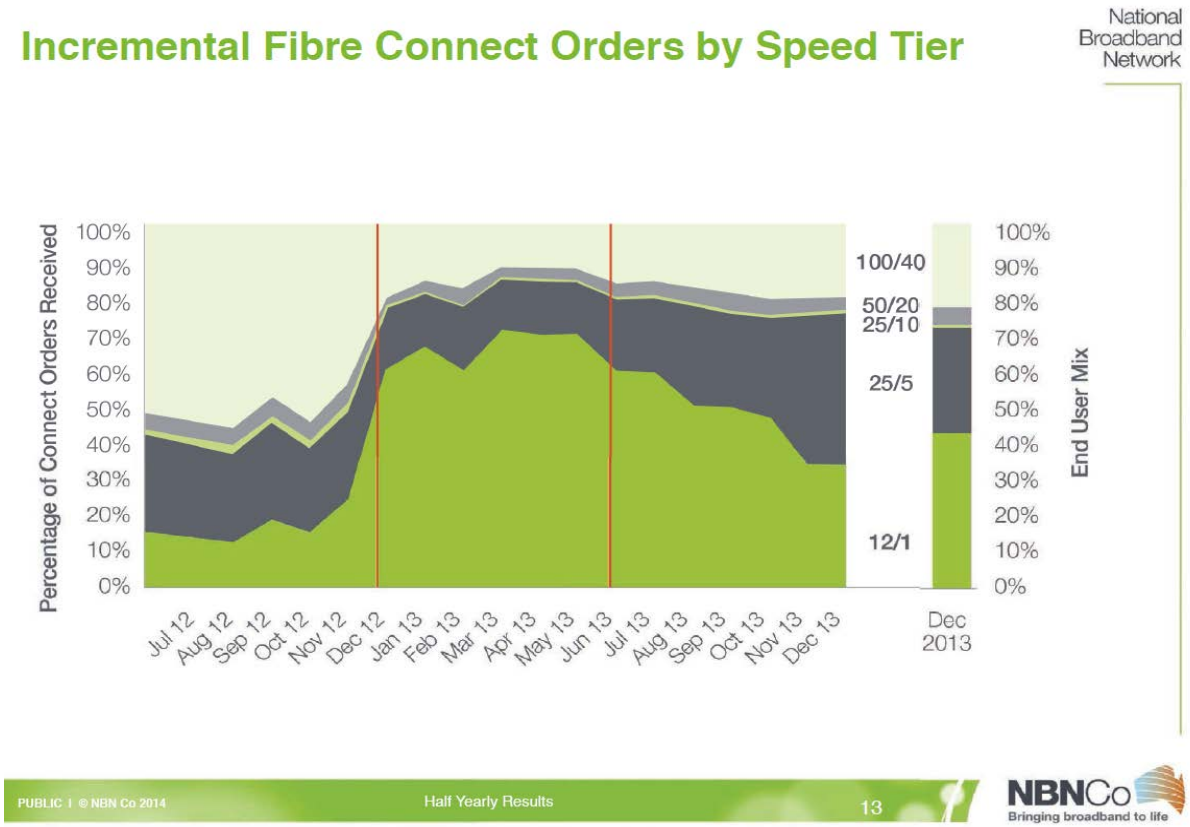
2.138 Similar evidence was presented by NBN Co during its half yearly results briefing on 21 February 2014:[100]

98 See: http://www.exetel.com.au/resi_nbn.php

99 See: https://www.iinet.net.au/internet/broadband/nbn/plans

100 NBN Co, Half Yearly Results Briefing, p. 13, at: http://www2.nbnco.com.au/content/dam/nbnco/documents/Half-Year-Results-Presentation-PDF.pdf

AVC Profile



2.139 The committee also notes the following testimony on fibre take up rates from the May 2013 Senate Estimates hearing:[101]

> **CHAIR:** How does this [take up] compare internationally?
>
> **Mr Quigley:** From all the benchmark we have seen this is really quite dramatic. Mr Steffens came across from BT, so he knows the European scene reasonably well. How would you describe it?
>
> **Mr Steffens:** We continue to benchmark financially on a regular basis. We met with a colleague only last week from the supply side who is talking to many operators across the world. Fifteen per cent is often seen as a very good take-up, and we are substantially above that.
>
> **Senator Conroy:** I think the NBN executives are being far too bashful. I should add to the answer substantially. The take-up rate for fibre connected for 12 months or more is about 35 per cent. For areas connected for six months or more it is around 30 per cent. Compare this to, say, ADSL when it was introduced in 2006, where the ABS found that 28 per cent of households had broadband six years after its introduction. In other words, NBN Co. has achieved with fibre in six months what it took six years to do with ADSL and HFC.

101 Committee Hansard, Budget Estimates 2013, p. 152.

2.140 The submission to the Committee by iiNet contained examples of small businesses utilising the higher speed services.[102] This submission emphasised the importance of uploads, one of the key advantages of FTTP over FTTN:

> The performance of data uploading features strongly in a variety of case studies of iiNet small business customers, attached below. In all cases, upload performance is the key to their purchasing decision. Nowhere in the strategic review is there any consideration of upload performance to the small business sector of the economy, or at all. Any business utilizing broadband will confirm that upload performance is 'mission critical' and yet little attention has been given to this issue, which is strategically important to the Australian digital economy.

2.141 A number of small businesses provided similar testimony to the committee. For example, during the 11 March hearing, Mr Edgar Adams, Editor of the Central Coast Business Review, noted:[103]

> Also, if I just may mention, we are not just talking about downloading. It is the uploading that is the big issue in the case of a lot of the businesses. It took an hour last week for my magazine to be uploaded, at 50 megabits, to the printer.

2.142 Similarly, Ms Michelle Allen, CEO of a small business called Webstuff.biz, noted:[104]

> As a company that is employing people under 30—we employ six and my company is growing but the internet is holding us back. One of things we also do with a lot of our clients is encourage our Central Coast clients to market outside the Central Coast—that is, selling products online. These clients are all having problems and a lot of our clients have to get us files by post or USB. They drive their files to our office, and this happens on a weekly basis, because we have a massive client list. It is very difficult as a business to be innovative and we are encouraged to be—for example, last year I came up with an innovative idea to create a software package for cafes so they can order lunches and things online. We made this 3D model and, when we started looking at the feasibility to roll this product out, we realised that no-one would be able to render the 3D models of the food online because of the internet connections.

2.143 Ms Allen continued:[105]

> I have got a client who has got a rocking horse business and he creates the most amazing world-class rocking horses that are hand carved. He ships these things and 95 per cent are sent out of the Central Coast. It is a small

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102 iinet submission (Sub. 11), available at: http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/National_Broadband_Network/NBN/Submissions

103 Committee Hansard, 11 March 2014, p. 7.

104 Committee Hansard, 11 March 2014, p. 12.

105 Committee Hansard, 11 March 2014, p. 12.

> work-at-home business but he has got to send really large photos to his potential customers. He has to bank up his emails and send them out at night time because he is in Matcham, which is not far from Erina, and the internet connection is slow. His productivity is slow, and this is just money that should be in our region.

2.144 Councillor Hillary Morris of Gosford City Council noted that this problem is not isolated to Australians running small businesses from home; it extends to employees of larger companies who work from home:[106]

> I know of a woman who works for an international company that is based in California. There are 50 employees who all work from home; she is a translator and works on translating brochures, information, pamphlets et cetera for many organisations. The company has people in Europe, Thailand, the Philippines, India and America, and she works from a home office in Tascott. She has two wireless modems and mobile phone hotspots that she has to implement to download and upload her work, and often, when she is having videoconferencing or is trying to download files to be able to quote on work, she experiences a meltdown and cannot download her information or, if she does download it, it takes a long time.

2.145 During the 11 March committee hearing, a local year 11 student, Mr Nick Patsianas, asked the committee if he could have the opportunity to speak about this issue.[107] He noted the importance of uploads to education outside the classroom:

> Video is the next thing. In school we learn in a classroom, but we also learn out of the classroom, and video is a great way of doing that. At our school, we are looking into a video platform to directly tie video from the internet to our learning. There is a guy on YouTube I know, he goes by the name of Eddie Wu, and he records all his lessons—every single lesson. I am not sure if he has access to the NBN or not, but uploading every single lesson he records would take a very long time on an ADSL connection. But, if he is on the NBN, he would be able to do that easily. Heaps of students watch him. I watch him; he has helped me so much.

2.146 At the Additional Estimates Hearing on 25 February, Dr Switkowski said:[108]

> **Dr Switkowski:** I think if you were a small business doing software development and moving large files between locations, hundreds of megabytes per second can be very useful. For example, if you were doing special effects in 3D movies, which some enterprises in Australia do in support of Hollywood studios, they would need that kind of bandwidth and usually have options for getting it, not waiting for NBN to provide a reticulated retail network to do it. There will be others where the information is very data rich. Large quantities of MRI scans et cetera that move from point to point will require lots of bandwidth. Again, those institutions, by and large, have put in place physical infrastructure that

106 Committee Hansard, 11 March 2014, p. 5.

107 Committee Hansard, 11 March 2014, p. 40.

108 Committee Hansard, Additional Estimates 2014, pp. 65-66.

> provides it today, as do universities. I think the difficulty is that there are applications and organisations that use lots of bandwidth, including big businesses. They have made their own provision, as they always do. In terms of the retail and domestic market, it really is hard in any practical sense to describe the activities of a family, even with hyperactive teenagers, that would get anywhere near 100 megabytes per second any time soon.

2.147 As set out above, in the Half Yearly Results briefing NBN Co provided data that showed over 20 percent of NBN Co's fibre customers select a 100 Mbps service. This trend has been visible for many years. Despite this, the CEO of NBN Co continues to assert that Australian households—which include multiple small businesses, people who work for large businesses but work from home, and students who require video to continue their education outside the classroom—have no use for this service. Moreover, the CEO of NBN Co continues to focus only on download speeds as key measure of broadband quality. The same narrow focus is evident in the Strategic Review.

2.148 NBN Co was asked questions in writing to justify the revenue assumptions set out in the Strategic Review.[109] At the time of writing answers to these questions had not been provided. The significance of these factors to the NBN Co business model was canvassed during the public hearing on 28 November 2013.[110] The Committee also asked NBN Co for financial scenarios that included the impact of the three factors—reduced unit revenue, increased costs and a longer deployment period—if each was conducted separately. NBN Co has replied:

> The information referred to above was not prepared in these terms at the time of the Strategic Review and is not available.[111]

Summary—Revenue Assumptions (Revised Outlook)

- **The committee considers that the revenue assumptions in the Revised Outlook are overly pessimistic.**
- **These revenue assumptions do not reflect existing take up and usage of NBN Co fibre products. These assumptions also ignore demand for broadband quality, and particularly uploads, in the residential and small business market. The committee notes that failure to consider broadband quality beyond download speeds is a systemic fault in the Strategic Review.**

109 Questions in writing are available on the Committee website at: http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/National_Broadband_Network/NBN/Additional_Documents

110 Committee Hansard, 28 November 2013, pp. 2-4.

111 Answer to Questions on Notice, 17 December Hearing, No. 28.

- **The committee considers that these assumptions remove revenue benefits from the superior product set available on FTTP, compared to other technologies.**

Assumptions of price increases

2.149 Section 4.4.3 of the Strategic Review sets out an 'illustrative' analysis of retail and wholesale pricing. This section states that in order to achieve an internal rate of return (IRR) of 7.1% for the Revised Outlook, prices would need to increase by 50-80 percent. This is then converted to a retail price increase of $27-$43 per month:[112]

> The required minimum price increase to deliver a 7.1 percent IRR are also illustrated with the impact on a 50/20Mbps service, assuming a current cost to consumers of ~$75-95 per month. The prices here are used for illustrative purposes only.
>
> - The Revised Outlook would requires [sic] price increases of 50-80 percent (e.g. $27-43 more per month for a 50/20 Mbps service on top of the illustrative ~$75-95 today).

2.150 The committee notes that the price increases are hypothesised on recovering an inflated peak funding amount (approximately $73 billion) that is based on the assumptions detailed above—deployment delays and revenue consequences, a third satellite, inflated capital expenditure with no build efficiencies, et cetera. The committee also notes that these hypothetical price increases are based in part on assumptions of ARPU declines in the Revised Outlook.[113]

2.151 The committee also notes that the 'illustrative' examples provided are based upon a 50/20Mbps service. The selection of this speed tier to illustrate these hypothetical price increases is odd. In statements to Parliament, the Minister has characterised this service as representative of a 'typical household.' For example, on 12 December 2013, the Minister said that the Strategic Review confirms that:

> Costs are so high that they will add $43 per month to a typical household's broadband bill.[114]

2.152 Putting to one side the fact that the Minister has quoted the highest end of the hypothetical range ($27-$43), as set out above, the 50/20mbps plan is chosen by only 5 percent of retail customers. The committee is also reminded of Mr Abbott's statement at the launch of the Coalition broadband policy that:

> We are absolutely confident that 25 megs is going to be enough, more than enough, for the average household.[115]

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112 Strategic Review, pp. 68-69.

113 Strategic Review, p. 58.

114 House of Representatives Hansard, 12 December 2013.

115 Joint Press Conference, The Hon. Tony Abbott MP and The Hon. Malcolm Turnbull MP (9 April 2013), at: http://mt.tbone.com.au/homepage-issues/launch-of-coalition-broadband-policy-transcript-of-tony-abbott-and-malcolm-turnbull-press-conference/#sthash.f5XcBUpn.dpuf

Summary of findings—Revised Outlook **The Revised Outlook:**	**Effect on NBN financials (to new forecast end date)**
• excludes 'business as usual' architecture savings signed off by previous NBN Co management, and characterises them as 'radical' for inclusion in Scenario 2	**CapEx + ~$4 billion**
• assumes a delay in the revised deployment schedule that is at odds with NBN Co's current run rate, reflects deliberately conservative estimates of premises passed at peak rollout, and cannot be disentangled from political control of the speed of network deployment	**OpEx + ~$5.4 billion** **Interest + ~$7.5 billion** **Revenues – ~$11.6 billion** **……...** **Peak funding + ~$13 billion**
• includes assumptions on (redacted) higher unit costs for the fibre build that are at odds with recent evidence from NBN Co and the Department of Finance, and are extrapolated out to 2024 without a single efficiency saving for three years, and only 2.5 percent in two of the remaining seven years	**CapEx + ~$14.4 billion**
• includes a third satellite without direct explanation, with launch assumed at such a time (FY2021) to include costs but exclude revenues from scenario comparisons	**CapEx + ~$?**
• makes overly pessimistic revenue assumptions that do not reflect existing strong demand for NBN services, or the high data usage patterns of Australians using the NBN; ignore demand for important elements of broadband quality, particularly reliability and upload speeds; and remove revenue benefits from the superior product set available on FTTP, compared to other technologies	**Revenues – ~$2 billion**

The Strategic Review also includes apples-and-oranges scenario comparisons that include costs and revenues for the MTM build at assumed completion, and costs for the Revised Outlook out to 2024, but exclude revenues for the Revised Outlook beyond 2021.

Committee Analysis – Multi Technology Mix

Overview

2.153 The Strategic Review was required to consider alternatives to the current FTTP model to fulfil the requirements of three parts of the terms of reference, being:

> - The estimated cost and time to complete the NBN if variations were made to the current plan such as increased use of fibre-to-the-node (FTTN) in established (brownfield) areas
> - The economic viability of NBN Co under alternative strategies
> - The implications of capital costs and principles of cost recovery on wholesale and consumer prices under existing and alternative strategies[116]

2.154 In examining alternative strategies for the NBN, the review undertook a comparative evaluation of a number of scenarios. Four scenarios were considered as alternatives to a full FTTP roll out in the fixed line footprint. These are:

- Scenario 3: FTTN short loop/FTTB large MDUs;
- Scenario 4: HFC in HFC footprint;
- Scenario 5: FTTN and HFC (no demobilisation); and
- Scenario 6: Optimised Multi-Technology Mix.[117]

2.155 The Strategic Review provided a summary of Scenario 6, the Optimised Multi-Technology Mix (MTM) approach:

> There are many ways for NBN Co to deliver a multi-technology approach. In this scenario, NBN Co selects which technologies will be rolled out on an area-by-area basis, in a way that minimises peak funding and maximises long term economics, while delivering 50Mbps to a significant proportion (~90 percent) of the fixed line footprint by end of CY19 (covering all areas, both broadband-served and –underserved). The technology selection by area takes into account:
>
> - The earliest available technology that provides a certain speed for that area;
> - The relative cost position (build Capital Expenditure, ongoing Capital Expenditure and
> - Operating Expenditure) of the various technologies;
> - The constructability in relation to neighbouring areas;
> - The implications on future revenue realisation; and
> - The potential future upgrade path.[118]

116 Strategic Review, p. 9.

117 Strategic Review, p. 15.

118 Strategic Review, p. 15.

2.156 The Strategic Review recommended scenario six as the preferred scenario, explaining:

> NBN Co recommends that it develops an optimised multi-technology approach to rolling out the NBN that balances fast deployment of 50Mbps broadband with better economics, to the highest number of Australians.[119]

A further argument the review advanced in favour of the optimised multi-technology mix approach is that it would provide NBN with:

> …the flexibility to adapt over time. It allows NBN Co to adjust its technology mix dynamically to leverage future technological improvements across all types of networks (copper, fibre and HFC) and to reflect changes in customer demands.[120]

2.157 The committee reiterates its concerns about the heavily redacted nature of the public version of the Strategic Review. As noted, the Strategic Review underpins a potential Commonwealth investment of more than $40 billion—not including flagged technology upgrades—and should be made available to the Parliament, in accordance with the Minister's many undertakings on transparency and accountability. During the public hearing on 17 December 2013, the committee put to Dr Switkowski the stark difference between the Strategic Review and committee experience in previous Parliaments:

> **Senator LUDLAM:** But we are being asked to accept the entire basis for this project being financially and commercially viable on the basis of a couple of blacked-out rectangles.
>
> **Dr Switkowski:** Might I say that this is a step ahead of anything else you might have been asked to comment upon.
>
> **Senator LUDLAM:** No, it is not. I have been working on these committees for five years now and we have been provided with full financials to the company, apart from one period where the background material for the expert panel was not provided to anybody, including the Senate, in 2009.
>
> **Dr Switkowski:** I stand corrected.[121]

2.158 This section considers the detail of the MTM approach, including an evaluation of the assumptions therein. The assertions regarding cost of upgrades and the related methodology issues will also be examined. First, however, the Committee notes that NBN Co provided detailed analysis of the implementation of the Coalition broadband policy during the caretaker period. The following section analyses the circumstances leading to the provision of this advice.

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119 Strategic Review, p. 18.

120 Strategic Review, p. 19.

121 Committee Hansard, 17 December 2013, p. 23.

Caretaker advice

2.159 At the public hearing on 11 December 2013, the Secretary of the Department of Communications, Mr Drew Clarke, explained the process for the preparation of briefing material for a returning Government or an incoming Government:[122]

> **Mr Clarke:** Once the official caretaker period commences, the department starts preparing what is colloquially known as the 'red book' and the 'blue book', the two incoming government briefs for the alternative election outcomes. Given that we had in front of us at that time an extensive policy statement by the then opposition, we requested advice from the company on issues that would need to be considered, should the company find itself in a position of having to implement that policy. So we wrote, we asked questions and we received documents, and the department incorporated the advice that it received, looked at it, made judgements and incorporated that advice in our preparation of the incoming government brief—the blue book in this case.

2.160 Further information about the "advice from the company on issues that would need to be considered, should the company find itself in a position of having to implement that policy" was outlined during the same hearing:

> **Senator SMITH:** I want to go back the question that I was asking before. What date did the letter come from the department to NBN Co. requesting material to support it in its preparation of the blue book or the red book?
>
> **Mr Cooney:** I will have to take the exact date on notice. It was shortly into the caretaker period.

2.161 The answer to this question on notice stated that:[123]

> The request from the department was dated 5 August 2013.

2.162 Mr Cooney confirmed at the 11 December hearing that NBN Co did not commence the preparation of the caretaker advice until 6 August 2013:

> **Senator SMITH:** So despite the fact that the election for a long time was going to be held on 14 September, NBN Co. did not do any work or prepare any materials for a request that you knew would come from the department to prepare material for a blue or red book?
>
> **Mr Cooney:** No. We began the process that you are talking about on the day after we received that request. Individual people were aware of different options and were looking into those just as part of working within the industry, true. But any preparation in response to the request from DBCDE came after that.

2.163 An answer to a question on notice described the nature of the written advice that NBN Co supplied to the Department of Communications during the caretaker period.[124] This document states:

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122 Committee Hansard, 11 December 2013, p. 3.

123 Answer to Questions on Notice, 11 December 2013, No 1.

> At the commencement of the caretaker period on 5 August 2013, DBCDE requested that NBN Co provide information on a series of topics. This information was provided progressively to DBCDE from 14 August 2013. Following this, the dispersed information that had already been provided progressively to DBCDE was collated into one Board paper for presentation to the Board at its meeting on September 20, 2013.

2.164 On 29 November 2013, a document obtained by Fairfax described as "NBN Co's internal analysis for the incoming Abbott government" was cited in an article in the Sydney Morning Herald called "Confidential briefing: NBN unlikely to meet Coalition's deadline."[125] The full document was later published on the Delimiter website.[126] The document is 163 pages long, exhibits "FOUO: Board" in the footer, and contains NBN Co's full analysis of the issues involved with implementation of the Coalition broadband policy. On page 56 it states:

> This Information Paper has been prepared at the request of the Shareholder Departments for their Incoming Government Briefs (**IGBs**).

2.165 The committee considers that this document (or collection of documents) is NBN Co's input into the 'blue book' developed by NBN Co and "provided progressively to DBCDE from 14 August 2013."

2.166 In an interview on Channel 9 on 29 November 2013, Minister Turnbull stated in relation to the leaked document that:

> What they've got is, they've got a document which was prepared at the Labor Government's request more than six months ago by the NBN Co management….this document is A: out of date, B: it is defending a failed project. It has no credibility, absolutely none.[127]

2.167 The Committee understands that the Delimiter website invited Turnbull to retract his comment on national television that the document had been created six months ago for the Labor Government. The website reports that "Turnbull's spokesperson has not responded to a request for the Minister to retract the comment."[128]

2.168 As the Department of Communications has refused access to the Incoming Government Brief, and the Minister has not accepted invitations to provide it himself, the Committee is unable to ascertain how much of the NBN Co advice was included

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124 Answer to Questions on Notice, 29 November 2013, No 14.

125 David Braue, "Confidential briefing: NBN unlikely to meet Coalition's deadline," *Sydney Morning Herald* (29 November 2013), at: http://www.smh.com.au/it-pro/government-it/confidential-briefing-nbn-unlikely-to-meet-coalitions-deadline-20131128-hv3tp.html

126 Available here: http://delimiter.com.au/nbndocs/Assessment%20of%20Coalition%20Policy.pdf

127 Video available here: http://www.youtube.com/watch?v=UgNyQjp9Xto

128 Renai LeMay, "NBN Co internal FTTN analysis: Turnbull refuses to retract inaccurate claim," *Delimiter* (4 December 2013), at: http://delimiter.com.au/2013/12/04/nbn-co-internal-fttn-analysis-turnbull-refuses-retract-inaccurate-claim/

in the Incoming Government Brief.[129] However, noting the importance of the National Broadband Network within the communications portfolio, and the serious issues with implementing a key Coalition policy identified in the NBN Co caretaker advice, it is the Committee's view that the Departments of Communications and Finance had a clear duty to include in the Incoming Government Brief all substantial information contained in the caretaker advice from NBN Co dealing with the implementation of the Coalition broadband policy.

Summary of findings—Caretaker Advice

- **On 5 August 2013, the Department of Communications wrote to NBN Co requesting advice from the company on issues that would need to be considered to implement the Coalition broadband policy. NBN Co commenced developing this material on 6 August 2013, and provided its advice progressively to the Department from 14 August 2013.**
- **NBN Co's advice to the Department was later collated into one Board paper for consideration on 20 September 2013. The collated advice from NBN Co to the Department was leaked in November 2013, and is available on the Fairfax and Delimiter websites.**
- **The committee considers that all substantial information from this advice dealing with the issues/problems of implementing the Coalition broadband policy was included in the Incoming Government Brief.**

Methodology

2.169 A significant deficiency in the comparative evaluation used in the Strategic Review is a primary focus on cost per premises. The Strategic Review notes that:

> The key measure of rollout cost is Cost Per Premises. This is not a tightly defined measure, however, international benchmarks provide useful comparisons for consideration by NBN Co.[130]

2.170 To the extent that service capability was considered, the Strategic Review only focussed on download speeds. Other characteristics of broadband quality—such as latency and jitter—were not considered. In particular, the Strategic Review is silent on the upload speeds of alternative technologies. As noted above, this is systemic fault in the Strategic Review. As iinet noted in its submission:[131]

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129 Renai Lemay 'Turnbull Blue Book application fails' *Delimiter* (10 February 2014), at: http://delimiter.com.au/2014/02/10/turnbull-blue-book-access-application-fails/; The Hon Malcolm Turnbull MP, Minister for Communications, House of Representatives Hansard, 18 November 2013.

130 Strategic Review pp. 13-14.

131 Iinet submission (Sub. 11), p. 3.

> The performance of data uploading features strongly in a variety of case studies of iiNet small business customers, attached below. In all cases, upload performance is the key to their purchasing decision. Nowhere in the strategic review is there any consideration of upload performance to the small business sector of the economy, or at all. Any business utilizing broadband will confirm that upload performance is 'mission critical' and yet little attention has been given to this issue, which is strategically important to the Australian digital economy.
>
> Businesses considering on-line services or applications are hampered by the ability of their target market (consumers) to access those services, if their broadband performance is limited. Without an addressable market, Australian on-line service development will progress slowly.
>
> The importance of broadband performance to both sides of the on-line, supply and demand dynamic is ignored in the strategic review, just as it has been in the political debate, over recent years.
>
> Almost all discussion has been centred on download speeds for domestic broadband users – the demand-side. This is why the arguments over the comparative download speeds of competing technologies has absolutely failed the Australian community. Without a supply-side review, focused on service creation and delivery, Australian consumers will have little reason to acquire high performance services.

2.171 The committee also has concerns with elements of the MTM approach which reflect incumbent rollout strategies. For example, the Strategic Review states that FTTP should be built in brownfields areas:

> where it is the most economical choice: either because of high revenue potential (especially in business areas) or because of the high cost associated with deploying FTTN/dp.[132]

2.172 Similarly, the Strategic Review assumes that:

> FTTN is concentrated in areas with relatively short-loop lengths and (relative to FTTP) lower revenue potential.[133]

2.173 The MTM openly advocates deploying higher quality technologies (FTTP) in areas with high revenue potential and cheaper technologies in areas with lower revenue potential.

2.174 The committee rejects a strategy that tailors deployment technologies on the basis of the socioeconomic profile of a rollout area. This is appropriately the prerogative of private enterprise, and reflects to a large extent the existing distribution of privately-funded broadband infrastructure in Australia. It is not an appropriate rollout strategy for a taxpayer-owned company charged with correcting market imbalances by providing high-quality broadband to all Australians.

2.175 A similar approach is evident in the Fibre on Demand product expected to be offered on the MTM. The Strategic Review is mostly silent on this product—noting only that there are policy issues to be resolved. However, the potential pricing of this product—which uses taxpayer investment to subsidise the fibre link from the Fibre

132 Strategic Review, p. 97.

133 Strategic Review, p. 97.

Access Node (FAN) to the FTTN Node—was discussed as the 12 March public hearing:[134]

> **Senator CONROY:** Are you aware that Openreach has recently increased the prices for fibre on demand in the UK? From 1 May this year it will cost somewhere between A$4,100 and A$13,200 in the first year to buy this service, not including usage. Are you aware of those—
>
> **Dr Switkowski:** I had not heard the details—
>
> **Senator CONROY:** Let me take you through it so that you are fully aware. Mr Turnbull keeps telling you to look at BT. For a premise less than 200 metres from the node it will cost 300 pounds—that is about A$550—for the upgrade, plus 750 pounds or A$1,380 to connect, plus 1,188 pounds or about A$2,200 for the annual rental charge. That is for 200 metres. For a premise two kilometres from the node it is 6,000 pounds or about A$11,000 for the upgrade, plus 750 pounds to connect, which is A$1,300, and 1,188 pounds or A$2,200 for the annual rental charge.

2.176 Dr Switkowski noted subsequently:

> I think BT Openreach is not a bad reference point for much of what we are thinking about.

2.177 One of the contributors to the Central Coast Broadband Alliance submission, Ms Da Costa, noted that:[135]

> Large business can afford the cost of connecting from the node, but small business - where most Australians are employed - cannot.

2.178 This issue was discussed further at the 11 March committee hearing:[136]

> **Senator CONROY:** Gosford have got it for free but you guys may have to pay thousands and thousands of dollars just to get it connected. Is that fair? Can you afford that sort of impost?
>
> **Dr da Costa:** I do not think businesses can. As the executive officer of the chamber of commerce, I am chasing people who are struggling to pay their chamber of commerce membership fees—and that is a few hundred dollars, not thousands of dollars to connect. So I think it is an equity issue. If some businesses get cheap infrastructure and, because of the toss of a coin, others simply have an inequitable access and an extra business cost, that is not a level playing field in the business world. What we are after is a level playing field. We are after a level playing field that increases productivity, increases employment and, with respect to Austen, as a regional area within Australia, we want to have more capacity for people to work here, closer to home. I have spent several years commuting four hours a day to Sydney. If you have staff who do not have to spend four hours a day commuting, they are happier. Happier staff are more productive staff. A work-life balance is

134 Committee Hansard, 12 March 2014, p. 23.

135 Central Coast Broadband Alliance Submission (Sub. 6).

136 Committee Hansard, 11 March 2014, p. 14.

> not just a feel good thing; it is a true business decision. What will happen to Erina is that people will try to cram into Gosford and that will overload the infrastructure system there. We want to spread out the business community on the Central Coast and we need equality of access to infrastructure.

2.179 As set out above, demand for broadband quality—and particularly upload speed—is visible in the residential market as well as the business market. This reflects rising average data usage trends, but also small businesses in residential premises, Australians working for large businesses from home, and the increasing bandwidth demands of health and education services being delivered to—and from—the home. This demand is evident before other factors—such as entertainment—are taken into account. The MTM, however, reflects the views of the CEO of NBN Co that these bandwidth demands are limited to businesses which will make 'their own provision, as they always do.'[137]

2.180 The committee considers that access to high quality broadband—and particularly the upload speeds made available over FTTP—will be rendered prohibitive to many Australian households and small businesses by the user-pays approach advocated by the current Government, and reflected in the MTM. This will entrench widespread inequality in access to infrastructure for Australian households and small businesses.

Summary—MTM Methodology

- **The MTM advocates deploying higher quality technologies (FTTP) in areas with high revenue potential, and cheaper technologies in areas with lower revenue potential. This is not an appropriate rollout strategy for a taxpayer-owned company charged with correcting market imbalances by providing high-quality broadband to all Australians.**
- **Failure to consider broadband quality beyond download speeds is a systemic fault in the Strategic Review. This manifests itself in the methodology evident in the MTM.**
- **The proposed Fibre on Demand product—based on BT Openreach prices—will be too expensive for many small businesses and will entrench widespread inequality in access to infrastructure for Australian households and small businesses.**

MTM Assumptions

2.181 The financial model for the MTM was built using primarily international benchmarks and estimates, rather than empirical field data. Key parameters for implementation of the MTM model include:

- The cost, if any, to acquire Telstra's copper from pillars to premises;

137 Committee Hansard, Additional Estimates 2014, p. 66.

- The cost of building or acquiring IT systems to manage the copper assets;
- The cost of remediating the copper assets including removal of bridge taps and rectification of poorly maintained joints;
- The cost of maintaining the copper network;
- The cost, if any, of acquiring the HFC networks;
- The cost of integrating the HFC networks into the transit architecture of NBN Co;
- The cost of maintaining the HFC;
- The cost to upgrade the HFC to increase upload speeds and reduce contention on download speeds;
- The cost to add an additional 700,000 premises to the HFC networks; and
- The cost of connecting HFC to MDUs.

The FTTN deployment recommended by NBN Co requires access to the Telstra's copper customer access network (CAN). The caretaker advice developed by NBN Co on the state of the copper plant made the following points in regard to network remediation and maintenance of the CAN:[138]

138 NBN Co, Caretaker Advice, p. 101.

Network remediation

In order to rollout a VDSL2 network and achieve minimum targets speeds of 25 Mbps by 2016 and upgrading to 50 Mbps for 90% of the fixed line footprint[19] (as per the Coalition policy), significant network remediation will need to occur in the copper plant including:

- The replacement or repair of ***low quality copper*** lines, caused for example by poor joints. The extent of low quality lines in the copper plant is unknown.
- The removal of "***bridge taps***" that cause impedance mismatches and reduce the performance of VDSL2 to levels comparable with ADSL. Bridge taps may be used to provide telecommunications services to 4.5% of Australia[20].
- The upgrade of the copper network where "***pair gain***" copper-sharing technologies are used to extend the distance and efficiency of copper networks. These networks are not compatible with VDSL2 and will act as blockers for deployment. Upgrades could be performed through the rollout of FTTP technology or through upgrading the copper and using FTTN technologies. The most appropriate upgrade technology will depend on the size of the area requiring an upgrade (see *Technology Upgrade Paths for FTTN*). Pair gain systems may be used to provide telecommunications services to 4.5% of Australia.
- The upgrade of the network where ***line conditioning*** equipment is used, such as loading coils and digital repeaters. This equipment is not compatible with VDSL2 and will act as blockers for deployment. Line conditioning equipment may be used to provide telecommunications services to 3% of Australia.
- The removal of sources of ***interference*** that may significantly impact the performance of VDSL2 in some locations and on some copper lines.

Once the network is remediated, ongoing maintenance of the copper network will require different field workforce, systems and processes compared to fibre maintenance. This is likely to increase OPEX costs. For example, based on Telstra's 2012 Annual Report, the Telstra Operations business unit spent $3.75 billion in FY12, of which an estimated $1 billion per annum is on the operations and maintenance of the copper network (noting that this amount is subject to due diligence with Telstra).

2.182 The caretaker advice further noted:[139]

Remediation

The extent of remediation that is required to meet an FTTN speed target of 50Mbps is unknown in the Australian environment. As a result the expected cost for copper remediation will be very difficult to estimate (by either NBN Co or Telstra). The degree to which Telstra can be required or incentivised to upgrade the copper network to overcome many of these limitations is uncertain. As a result network remediation costs will be a large uncertainty in any business model or commercial deal. The allocation of this risk will be difficult to negotiate.

2.183 The caretaker advice was corroborated by a number of witnesses who gave testimony to the Committee, including the Communications Electrical and Plumbing Union (CEPU), the Electrical Trades Union (ETU) and Central Coast Telecommunications Services (CCTS). Each of these witnesses represented workforces with direct experience of the copper plant in the field.

2.184 Mr Shane Murphy of the CEPU stated during the 28 November hearing that:[140]

> Telstra fieldworkers and contractors who we represent have been regularly reporting to the union for many years now the exact state of the Telstra

139 NBN Co, Caretaker Advice, p. 43.

140 Committee Hansard, 28 November 2013, p. 44.

> copper network right across the country. Workers' frustrations have boiled over as Telstra has driven a culture of quantity over quality. Since the privatisation of Telstra, maintenance budgets have been continually slashed year in year out, thousands of skilled workers have been made redundant and the end-result is that we are left with plastic bag joint and ring bark cable right across the nation.
>
> Telstra has been consistently pushing workers to simply get the customer services up and running, bandaiding the network and moving the employee or contractor quickly onto the next job. This has resulted in thousands upon thousands of plastic bags and ring bark cables lying bare in the pits and manholes across the country in every major city and regional and remote country town. In every street or road in this country where there is a Telstra pit or manhole, it will either have a plastic bag joint or a ring bark cable lying bare in the pit.
>
> I will bring you one example. Just at the weekend in Sydney I happened to be travelling through a fairly highly-populated area in north-western Sydney along Parsonage Road at Castle Hill past a number of businesses and residential customers. I noticed that there was Telstra worker from Victoria working in Sydney due to the number of customers off the air up there and I stopped to have a quick chat. In the space of 300 metres of this road at Castle Hill where the Victorian linesman was working, in five different pits were three plastic bags and two ring bark cables. This was all in the space of about 200 or 300 metres—and we did not walk the whole street. Some of those photos are provided for the committee today.
>
> This provides the committee with a sample of just how bad it is out there, and Telstra relies upon statistics to continually hide the real problem of how bad the Telstra copper network is. The union relies upon actual evidence provided by workers such as CNI reports, photographs and videos taken by workers at the jobsites around the country. The union currently has a collection of thousands of photos and videos showing the true state of the Telstra copper network. These have been collected now for some time and the collection is still growing by the day. Today the CEPU provides this committee with a good sample of photos recently taken on a job by Telstra fieldworkers across various states and territories, and I will come to this slideshow shortly.

2.185 As noted, the CEPU provided an extensive range of pictures of the copper plant during this hearing, taken by technicians working in the field. These are available on the committee website.[141] A selection of these photographs is reproduced below.

141 See: http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/National_Broadband_Network/NBN/Additional_Documents

2.186 The CEPU was also asked how widespread these conditions were in the copper network:[142]

> **Senator LUDLAM:** Would you want to hazard a guess as to what proportion of the pits are in that kind of condition? Parts of this network are decades old.
>
> **Mr Murphy:** I would say 75 to 80 per cent of the network is in that condition.

142 Committee Hansard, 28 November 2013, p. 48.

2.187 At the committee hearing in Perth on 29 January 2014, CEPU representatives showed the committee similar photos demonstrating the problems with the Telstra copper network, including some of the more innovative solutions which had been used by technicians:

2.188 Similarly, at the committee's 4 February 2014 public hearing in Hobart, union representatives supplied evidence demonstrating the degradation in parts of the Telstra copper network in Tasmania:

2.189 Mr Richter, from Central Coast Telecommunications Services (CCTS), provided the following comments at the 11 March hearing about the copper network in general and in the Central Coast in particular:[143]

> **Mr Richter:** As you know, the copper network is in a fairly sad state. It obviously needs this remediation work from Telstra for it to achieve what the fibre to the node needs to do. That is why they are going through and remaking the joints so you have that continuity. There is a lot of bad network out there, there is no question about that.
>
> **Senator O'NEILL:** When you say 'out there' do you mean on the Central Coast?
>
> **Mr Richter:** The Central Coast is particularly bad, probably one of the worst. It is just the nature of the beast—it is an old area.

2.190 Telstra representatives denied claims put to the committee by the CEPU that the network was in poor repair. Further, from the outset, the new management of NBN Co was publicly sanguine about the state of the copper network, despite being in negotiations with Telstra to acquire it. At the 19 November estimates hearing, Dr Switkowski stated:[144]

> **Dr Switkowski:** …as best as I can tell, the copper network continues to perform robustly and, without knowing the numbers, Telstra must have millions of broadband customers using ADSL on copper delivering speeds of up to—I do not know—10 megabits per second. Yes, there are pair gain systems in the network and they are an issue—a relatively small proportion of the 10 million plus lines. So this suggests to me that the network is still robust and the concerns that are expressed about the network maybe not being the basis for the next generation broadband platform, I think, are misinformed.
>
> **Senator LUNDY:** That is certainly what Telstra are saying in their advocacy at the conference that has been going on for the last couple of days. They are talking up their copper network like never before…given that they are currently in negotiations with NBN Co. about accessing it. I guess we would expect that from Telstra; I must say I did not expect it from you.

2.191 Similarly, at the 29 November hearing of the committee:[145]

> **Senator LUDLAM:** If you did not see the testimony, I will not labour the point, but it will definitely be worth you reviewing it, given that you are about to take over responsibility for the network. I do not think it is at all a safe assumption that those recommendations were adhered to. In fact, since privatisation it appears that maintenance of the copper network is in substantial disrepair.

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143 Committee Hansard, 11 March 2014, p. 62.

144 Committee Hansard, Supplementary Estimates 2013, pp. 103-04.

145 Committee Hansard, 29 November, pp. 23-24

> **Dr Switkowski:** Senator Ludlam, but is it not the case—and here I ask the question without knowing what could possibly be the answer—in the last few years there are millions of ADSL customers and services in Australia. If I had to hazard a guess, there would be five million or six million running over the copper network, delivering speeds in the several- to 10-megabit-per-second range, with customer satisfaction and customer problem report levels at what would be called normal levels that have not moved around a lot since probably the end of my tenure at Telstra. That leads me to conclude that the network is in reasonable condition. Also I have learnt since Senate estimates, as I have talked to people in the industry, that work continues around trying to establish the condition of the copper network around the country, and various RSPs have in the past worked together to determine initially generally a heat map of the performance of the copper network and then specifically down to individual lines what the fault rates are in order to perhaps better guides Telstra in their remediation plans. So I am sort of encouraged by that level of attention to the performance of the network and presume it can be sustained at a sufficiently good quality to take us to the next level with VDSL.

2.192 At Supplementary Estimates in November 2013, Dr Switkowski advised that no assessment of the state of the Telstra network had been done prior to the Strategic Review beginning work:[146]

> **Senator LUNDY:** In that work have you ever assessed in what percentage of cases the copper network would not be suitable for fibre to the node?
>
> **Dr Switkowski:** It is a question in front of us. We have most recently started the process of working with Telstra on a pilot approach that will give us more information about fibre to the node on the copper network and how to scale it. That may well reveal whether there are unanticipated issues with the network.
>
> **Senator LUNDY:** I will come to that, but you did not actually answer my question which was: have you done any assessment prior to the considerations of the strategic review?
>
> **Dr Switkowski:** No, not that I am aware of.

2.193 The Strategic Review provides redacted assumptions about the extent and cost of remediation that will be required to ready the copper customer access network (CAN) for VDSL deployment.[147] Without these figures, it is of course not possible for the committee to evaluate the appropriateness of these assumptions. However, the committee notes that the figures provided are no more than estimates. This is confirmed by the Strategic Review:[148]

> The Strategic Review did not have access to detailed or specific data on the quality of Telstra's copper network, so field tests and detailed network

146 Committee Hansard, Supplementary Estimates 2013, p. 102.

147 Strategic Review, pp. 86-87.

148 Strategic Review, pp. 86.

> inventory data will be needed to make an accurate estimate of remediation costs as a next step beyond this Review.

2.194 The committee notes that some of the assumptions that are transparent in the Strategic Review are problematic and, in some cases, not supported by other evidence. For example, the Strategic Review states: [149]

> Experts and experience at 'VDSL operators' BT and KPN indicate that little to no remediation has been necessary in high-speed VDSL deployments including vectoring deployments. Their experience indicates that if analogue voice works satisfactorily, VDSL will also work satisfactorily in most cases, as the analogue voice signal is more sensitive to noise and poor copper quality than digitised signals such as VDSL.

2.195 The only stated evidence for this claim is unsourced, anecdotal comments from BT and KPN. This was reinforced by an answer to a question in writing which noted that:

> Information from BT and KPN was supplied in confidence. Both operators stated remediation was almost never required, but quantitative evidence was not released.[150]

2.196 By contrast, the ACMA provided the following evidence on this issue in response to a Question on Notice:[151]

> Copper twisted pair cables which are intended for telephony services operate optimally at lower frequencies and experience greater signal loss as frequencies increase….Voice services (300Hz to 3400Hz) are low in frequency, compared to ADSL2+ services (25kHz to 2.2MHz), and VDSL2 (138kHz to 30MHz) are higher again. For a given thickness and length of copper, services using higher frequency signals will experience greater degradation compared to lower frequency signals.

2.197 It also appears that NBN Co has no information on high frequency fault rates, which explains why the Strategic Review is silent on this matter. In an answer to a question on notice, NBN Co said: [152]

> NBN Co does not have any information on the fault rates from "high frequency interference" on Telstra's copper network. Telstra would be best placed to answer this question.

2.198 The caretaker advice prepared by NBN Co points to the substantial costs associated with remediation and maintenance of the copper network, and the consequent increases in operating expenditure. The committee has heard similar evidence from witnesses representing the workforce in the field. The committee notes that the FTTN footprint proposed in the MTM (approximately 41 percent) is smaller

149 Strategic Review, pp. 86.

150 Answer to Question on Notice, 17 December 2013, No. 39.

151 Answer to Questions on Notice, 28 November 2013, No.7).

152 Answer to Question on Notice, Supplementary Estimates 2013, No. 182.

than the footprint proposed in the Coalition policy (approximately 71 percent). This would affect the quantum of increased operating expenditure, but not the key point of the caretaker advice: operating expenditure for the MTM will be significantly higher than for a new fibre build.

2.199 Exhibit 4-6 sets out the difference in operating expenditure between the Revised Outlook and the MTM (see below). The $2.4 billion operating expenditure for the full fibre build in Exhibit 4-6 is the same amount assumed in the NBN Co 2012-15 Corporate Plan. However, the Strategic Review assumes operating expenditures for the MTM that are only marginally higher—$200 million more in FY2028.

Operating Expenditure in the 'Steady State'

Exhibit 4-6: Financial outcomes (rounded), including Fixed Wireless, Satellite and greenfields (1)

Financial outcomes for Scenarios 1-6	Scenario 1: Revised Outlook	Scenario 2: Radically Redesigned FTTP	Scenario 3: FTTN short loop, FTTB large MDUs	Scenario 4: HFC in HFC footprint	Scenario 5: FTTN & HFC (no demobilisation)	Scenario 6: Optimised Multi-Technology Mix
Date of first positive free cashflow (2)	FY25 - ~FY40	FY25-27	FY24-25	FY22	FY22	FY22
Cumulative FY11-21						
Revenue (3)	$10bn	$9bn	$11bn	$16bn	$16bn	$18bn
Opex	$23bn	$23bn	$24bn	$26bn	$27bn	$27bn
Capex	$43bn	$35bn	$36bn	$36bn	$29bn	$30bn
Peak funding (equity and debt) (4)	~$73bn	~$64bn	~$59bn	~$51bn	~$43bn	~$41bn
Peak funding (all equity)	~$63bn	~$54bn	~$52bn	~$47bn	~$40bn	~$39bn
Cumulative Capex FY11-24 (Incl. replacement capex)	$56bn	$44bn	$43bn	$40bn	$34bn	$33bn
Steady state financial performance (FY28)						
Revenue	$6.6-7.5bn	$6.6-7.5bn	$6.5-7.4bn	$6.4-7.4bn	$6.2-7.0bn	$6.3-7.2bn
Opex	$2.4bn	$2.4bn	$2.5bn	$2.5bn	$2.6bn	$2.6bn
EBITDA	$4.1-5.1bn	$4.1-5.1bn	$4.0-4.9bn	$3.9-4.8bn	$3.6-4.4bn	$3.7-4.6bn
Capex	$1.9bn	$1.1bn	$1.1bn	$1.1bn	$1.0bn	$1.0bn
IRR (FY10-40) – Revenue Trajectory A*	2.5%	4.0%	4.1%	4.7%	4.9%	5.3%
IRR (FY10-40) – Revenue Trajectory B*	n/a	1.7%	1.9%	2.5%	2.6%	3.1%

Operating Expenditure in the Corporate Plan

Exhibit 9-2: Forecast Summary Financials (Nominal Dollars)

Summary Financials

June YE	Total (FY2011 to Dec 2020)	Total (FY2011 to FY2021)	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2028	FY2040
Total Premises Passed - Fibre ('000s)	**11,492**	**12,202**	**18**	**39**	**341**	**1,307**	**2,912**	**4,625**	**6,279**	**7,838**	**9,283**	**10,783**	**12,202**	**13,467**	**15,435**
Total Connected - Fibre ('000s)	**8,060**	**8,513**	**1**	**4**	**54**	**487**	**1,515**	**3,036**	**4,341**	**5,594**	**6,695**	**7,607**	**8,513**	**10,010**	**11,464**
Premises Covered - Fixed Wireless & Satellite ('000s)	**968**	**974**	**165**	**174**	**320**	**374**	**752**	**907**	**921**	**934**	**948**	**961**	**974**	**1,055**	**1,181**
Total Connected - Fixed Wireless & Satellite ('000s)	**226**	**232**	**0**	**10**	**38**	**64**	**100**	**145**	**161**	**191**	**206**	**219**	**232**	**303**	**399**
Total Connected ('000s)	**8,286**	**8,745**	**1**	**14**	**92**	**551**	**1,615**	**3,181**	**4,502**	**5,785**	**6,901**	**7,827**	**8,745**	**10,313**	**11,863**
Total Revenue	**19,970**	**23,058**	**-**	**2**	**18**	**120**	**529**	**1,346**	**2,281**	**3,221**	**4,200**	**5,167**	**6,175**	**9,769**	**14,597**
Total Operating Expenditure	(24,819)	(26,394)	(337)	(521)	(1,093)	(1,777)	(2,903)	(3,628)	(3,394)	(3,351)	(3,201)	(3,037)	(3,151)	(2,437)	(3,351)
EBITDA	**(4,849)**	**(3,337)**	**(337)**	**(519)**	**(1,076)**	**(1,657)**	**(2,375)**	**(2,282)**	**(1,113)**	**(130)**	**999**	**2,130**	**3,024**	**7,332**	**11,246**
EBITDA Margin	(24)%	(14)%	NM	NM	NM	NM	(449)%	(170)%	(49)%	(4)%	24%	41%	49%	75%	77%
EBIT	(13,328)	(12,650)	(356)	(589)	(1,328)	(2,070)	(3,015)	(3,190)	(2,224)	(1,410)	(415)	591	1,355	5,544	9,499
Net Cash Interest (Funding Costs)	(2,099)	(2,580)	33	60	55	72	83	(1)	(176)	(344)	(615)	(786)	(961)	(188)	1,215
EBT	**(15,427)**	**(15,230)**	**(323)**	**(529)**	**(1,273)**	**(1,998)**	**(2,932)**	**(3,191)**	**(2,400)**	**(1,754)**	**(1,030)**	**(194)**	**394**	**5,356**	**10,715**
Total Capital Expenditure	(35,681)	(37,358)	(463)	(888)	(3,191)	(3,946)	(5,016)	(4,920)	(4,224)	(3,986)	(3,760)	(3,610)	(3,355)	(1,536)	(2,939)
Movement in Working Capital	(30)	(80)	38	193	495	241	98	(251)	(284)	(311)	(103)	(94)	(99)	(90)	(61)
Cash Tax	-	-	-	-	-	-	-	-	-	-	-	-	-	(1,607)	(3,214)
Levered Free Cash Flow	**(42,659)**	**(43,354)**	**(729)**	**(1,155)**	**(3,717)**	**(5,290)**	**(7,211)**	**(7,454)**	**(5,797)**	**(4,772)**	**(3,479)**	**(2,360)**	**(1,391)**	**3,911**	**6,248**
Government Funding			1,362	2,832	7,504	13,623	20,287	25,047	28,949	30,400	30,400	30,400	30,400	19,297	-
Debt Funding			-	-	-	-	523	2,008	3,816	6,619	10,023	12,267	13,653	1,678	-
Total Funding			**1,362**	**2,832**	**7,504**	**13,623**	**20,810**	**27,055**	**32,765**	**37,019**	**40,423**	**42,667**	**44,053**	**20,975**	**-**
Debt / EBITDA			0.0 x	0.0 x	0.0 x	0.0 x	(0.2)x	(0.9)x	(3.4)x	(50.9)x	10.0 x	5.8 x	4.5 x	0.2 x	0.0 x
Debt / Total Funding			0.0%	0.0%	0.0%	0.0%	2.5%	7.4%	11.6%	17.9%	24.8%	28.8%	31.0%	8.0%	NM

Summary—MTM Assumptions

- **The financial model for the MTM was built using primarily international benchmarks and estimates, rather than empirical field data.**
- **The caretaker advice prepared by NBN Co points to the substantial costs associated with remediation and maintenance of the copper network. The committee has heard similar evidence from witnesses representing the workforce in the field.**
- **Operating expenditure is expected to be significantly higher for the MTM than for a new fibre network. However, the Strategic Review assumes that operating expenditure for the MTM will be similar to what is required for a new fibre build.**

Revenue Assumptions

2.200 The caretaker advice provided evidence on the sort of "field tests" that would be required to adequately assess the quality of broadband that would be achievable over the copper plant:

> In addition to the factors mentioned above, experience from today's copper network shows that the peak speeds achievable can change over time as the environmental and interference conditions change. As a result, it may not be possible to offer the same products to all end users: for example some end users may be able to access faster speeds compared to other end users.
>
> In order to estimate achievable VDSL2 bit rates for premises across Australia, access to Telstra's cable plant records and fault records would be needed. However, it is likely that the copper plant will need to be assessed on a line-by-line basis as the network is rolled out.

2.201 This was corroborated by Mr Adcock at the 19 November estimates hearing:[153]

> **Senator LUNDY:** I understand from presentations by Alcatel Lucent that deployment of VDSL requires every copper pair to be tested. I understand that that testing has to be done at the pillar location and will need to be done before there is a decision to use the copper. Is that your understanding of it? I know the copper varies enormously in quality and in its configuration, but is NBN Co. going to insist on getting a status report on those copper pairs before it commits to a costing around a fibre-to-the-node network?...
>
> **Mr Adcock:** The current thinking is that there would be testing done. Whether it informs the strategic review or whether the strategic review makes some assumptions to then be tested, I think, is the way that I would frame it at this point. It is an unknown. But your point about testing the copper pair for VDSL is valid.

2.202 In a submission to the committee, well-known blogger and the creator of the independent rollout tracker myNBN.info site, jxeeno, expressed his concern with the MTM approach, arguing that it will limit network capability based on locality.[154] He explained that the FTTN/dp/B and the HFC networks have problems which mean that network speeds cannot be guaranteed. For example, the FTTN/dp/B network, relying as it does on the existing Telstra copper network, is highly susceptible to environmental factors such as water ingress and signal interference.[155]

2.203 Similar evidence was given by Shane Murphy of the CEPU at the 28 November hearing:[156]

> It does not matter what state—whether it is Perth, Sydney, Adelaide or Melbourne. Look at the spike immediately after a drop of rain comes along or there has been a bit of rain and then there is a bit of humid weather, because we are at that time of year now. If you check the ACMA report, you will see the spike automatically go bang. For example, Sydney alone had two or three days of rain. Yes, it was heavy at times. It was not consistently heavy all day, but there were some heavy showers. There were definitely some storms. Normally Sydney runs at 2,000 or 2,500 [services down]. It was actually at 14,000 last week. It is now at 10,000, and climbing again by the day. That gives you an example of just how bad it is. It is okay for Mr Switkowski to say, yes, they see a spike in calls when there is a bit of rain around. The proof is in the pudding of why exactly that is occurring. It is because the copper can no longer withstand the water.

2.204 As noted above, the 'steady state' comparison of a full FTTP build with the MTM contained in Exhibit 4-6 exhibits a marginal difference in revenues to the MTM. Although the Strategic Review discusses 'illustrative' upgrade paths and

153 Committee Hansard, Supplementary Estimates 2013, p. 104.

154 Submission 12, p. 4.

155 Submission 12, p. 4.

156 Committee Hansard, 28 November 2013, p. 48.

'hypothetical' upgrade timing, no upgrade costs for the MTM are included in the financial metrics set out in Exhibit 4-6.[157]

Exhibit 4-6 (Strategic Review)

Exhibit 4-6: Financial outcomes (rounded), including Fixed Wireless, Satellite and greenfields (1)

Financial outcomes for Scenarios 1-6	Scenario 1: Revised Outlook	Scenario 2: Radically Redesigned FTTP	Scenario 3: FTTN short loop, FTTB large MDUs	Scenario 4: HFC in HFC footprint	Scenario 5: FTTN & HFC (no demobilisation)	Scenario 6: Optimised Multi-Technology Mix
Date of first positive free cashflow (2)	FY25 - ~FY40	FY25-27	FY24-25	FY22	FY22	FY22
Cumulative FY11-21						
Revenue (3)	$10bn	$9bn	$11bn	$16bn	$16bn	$18bn
Opex	$23bn	$23bn	$24bn	$26bn	$27bn	$27bn
Capex	$43bn	$35bn	$36bn	$36bn	$29bn	$30bn
Peak funding (equity and debt) (4)	~$73bn	~$64bn	~$59bn	~$51bn	~$43bn	~$41bn
Peak funding (all equity)	~$63bn	~$54bn	~$52bn	~$47bn	~$40bn	~$39bn
Cumulative Capex FY11-24 (Incl. replacement capex)	$56bn	$44bn	$43bn	$40bn	$34bn	$33bn
Steady state financial performance (FY28)						
Revenue	$6.6-7.5bn	$6.6-7.5bn	$6.5-7.4bn	$6.4-7.4bn	$6.2-7.0bn	$6.3-7.2bn
Opex	$2.4bn	$2.4bn	$2.5bn	$2.5bn	$2.6bn	$2.6bn
EBITDA	$4.1-5.1bn	$4.1-5.1bn	$4.0-4.9bn	$3.9-4.8bn	$3.6-4.4bn	$3.7-4.6bn
Capex	$1.9bn	$1.1bn	$1.1bn	$1.1bn	$1.0bn	$1.0bn
IRR (FY10-40) – Revenue Trajectory A*	2.5%	4.0%	4.1%	4.7%	4.9%	5.3%
IRR (FY10-40) – Revenue Trajectory B*	n/a	1.7%	1.9%	2.5%	2.6%	3.1%

2.205 In the caretaker advice, NBN Co assessed the impact on product offerings that would result from a move to an alternative FTTN architecture.[158] The advice states:

157 Strategic Review, p. 102.

158 NBN Co Caretaker Advice, p. 118.

Product capabilities

Relative to FTTP-based services, prices for FTTN services would likely to be lower. This would reflect their limited speeds and product capabilities. Accordingly revenue from a FTTN product set is likely to be constrained.

- If, as noted above, pricing is limited to the $24 and $27 tiers, ARPU from the AVC component (assuming NBN Co's existing fibre AVC mix) would fall ~10%.
- If an "Open FTTN" tier was available at >$27, and this was selected by the current proportion of users on tiers above 25/5, AVC ARPU would fall ~2% (again based on the current fibre AVC mix).
- Further, NBN Co may have limited opportunity to grow ARPU due to the lack of faster speed tiers to which customers could migrate over time.
- Lack of product enhancements designed for the business market (TC-2, TC-3, etc) will curtail the revenue in this segment, and may result in business customers sourcing connectivity from 3rd party networks rather than utilise a restricted FTTN service or pay for a NBN Co fibre on demand link.
- Revenue from multicast may be constrained due to the diminished end-user value proposition.

2.206 NBN Co assessed that these impacts could reduce NBN Co revenue by as much as 30 percent:[159]

Revenue Scenarios ($m)	FY21 Corporate Plan (v12.0-Aug12)	FTTN Case - High	Impact %	FTTN Case - Low	Impact %
AVC + UNI	$3,238	$2,961	-9%	$2,840	-12%
CVC	$1,582	$1,424	-10%	$1,186	-25%
Business (TC-1, TC-2 and TC-3)	$745	$0	-100%	$0	-100%
Multicast	$475	$238	-50%	$119	-75%
Total NBN Revenue	**$6,250**	**$4,833**	**-23%**	**$4,477**	**-30%**

2.207 The caretaker advice based its financial analysis on the broadband policy the Coalition took to the election. The committee notes that this policy assumed a much larger FTTN footprint than assumed in the Strategic Review (approximately 71 percent of premises in the policy compared to approximately 41 percent in the Strategic Review). This would affect the quantum of the revenue declines, but not the key point made in the caretaker advice: that the 'limited speeds and product capabilities' available on FTTN would result in reduced revenues compared to a full fibre rollout in the fixed line footprint.

2.208 In this context, the committee notes statements made by the CEO of NBN Co in regard to 'guaranteed' access speeds for end-users. Media reports have noted that the Minister for Communications promised prior to the federal election minimum download speeds of 25 Mbps by 2016.[160] The Department of Communications states the Government's aim in relation to the NBN is:

159 NBN Co Caretaker Advice, p. 119.

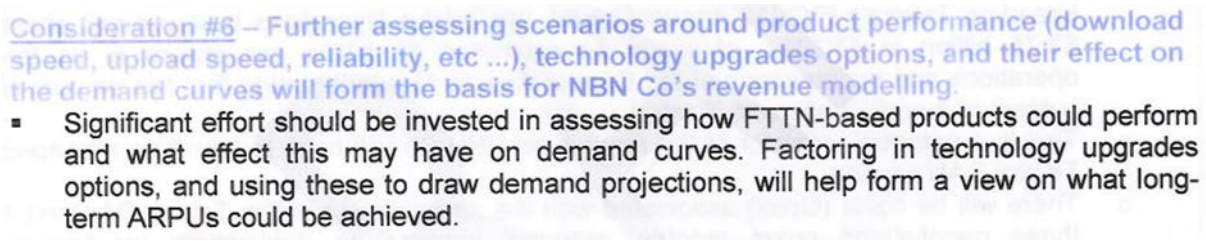
160 Josh Taylor, "No guarantees on NBN download speeds: Switkowski," (17 December 2013), at: http://www.zdnet.com/au/no-guarantees-on-nbn-download-speeds-switkowski-7000024364/

> …that all households and businesses should have access to broadband with download data rates of between 25 and 100 megabits per second (Mbps). At the completion of the rollout, the Government expects download data rates between 50 and 100 Mbps to be available to at least ninety per cent of Australians in the fixed line footprint.[161]

2.209 However, in evidence to the committee at the public hearing on 17 December 2013, Dr Switkowski refused to make any guarantee about minimum download speeds delivered by the MTM approach:[162]

> **CHAIR:** I understand the limitations of the technology you have chosen and you would be foolhardy to try and promise you can deliver on those speeds. I think you accept that.
>
> **Dr Switkowski:** I think you are adding a colour that is not intended. The conclusions of this review are summarised in this document and they use words like 'in a certain year a certain percentage of our customers will have access to, for example, 25 megabits per second'. That is a perfectly accurate conclusion supported by very full analyses. I stand by it.

2.210 As set out in the caretaker advice and testimony from Mr Adcock, NBN Co will need to conduct extensive—line by line—field tests before the speeds and broadband quality that can be obtained in the fixed line footprint under an MTM scenario will be known. The speeds and quality that may be offered—particularly over the copper CAN—are too variable for this to be known at this point in time. Nor will the CEO of NBN Co provide any guarantees. This issue was flagged in NBN Co's caretaker advice to the Department in August 2013:[163]


Consideration #6 – Further assessing scenarios around product performance (download speed, upload speed, reliability, etc ...), technology upgrades options, and their effect on the demand curves will form the basis for NBN Co's revenue modelling.

- Significant effort should be invested in assessing how FTTN-based products could perform and what effect this may have on demand curves. Factoring in technology upgrades options, and using these to draw demand projections, will help form a view on what long-term ARPUs could be achieved.

2.211 The committee notes that the Strategic Review—in the absence of concrete performance data—assumes revenues for the MTM that are only marginally less than the revenues for a full fibre rollout—$6.3 to $7.2 billion versus $6.6 to $7.5 billion in FY2028.[164]

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161 Department of Communications, "National Broadband Network," at: http://www.communications.gov.au/broadband/national_broadband_network

162 Committee Hansard, 17 December 2013, p. 7.

163 NBN Co Caretaker Advice, p. 61.

164 Strategic Review, Exhibit 4-6, p. 102.

Summary—Revenue Assumptions (MTM)

- **The caretaker advice from NBN Co to Government notes that 'limited speeds and product capabilities' available on FTTN would result in reduced revenues compared to a full fibre rollout in the fixed line footprint.**
- **NBN Co will need to conduct extensive—line by line—field tests before the speeds and broadband quality that can be obtained in the (non-FTTP) MTM fixed line footprint will be known empirically. Even then, quality is likely to be variable, particularly in the FTTN footprint.**
- **The Strategic Review assumes revenues for the MTM that are similar to those for a full fibre rollout, despite the vast difference in broadband quality and product sets.**

Complexity Creates Cost

2.212 In its submission, iiNet provided a view of the MTM approach from its perspective as an RSP. iiNet noted that:

> The NBN was initially designed to provide a national, standardised, uniform interface to a single provider. More than 90% of all services were planned to be delivered over FTTH technology. This simplified design promised a beneficial reduction in the complexity and cost of operating on-line services over the NBN.[165]

2.213 In relation to the MTM, iinet observed:

> A multi-technology approach introduces the likelihood that HFC, VDSL and any other non-fibre based access services will require additional investment in business-to-business (B2B) interfaces, multiple points of interconnect (POIs) with multiple entities, rather than a single interface to a single, wholesale network provider.
>
> The number of POIs in the initial project was considered a barrier to the NBN, for sub-scale companies, iiNet believes that the multi-technology approach will only exacerbate that issue, which, it is reported, encouraged some owners to exit the industry.

2.214 NBN Co's caretaker advice notes that increased complexity from operating multiple fixed line networks will not be limited to RSPs. It will drive increased costs for NBN Co in:

- systems support:[166]

> NBN Co's systems support (OSS/BSS) will be impacted by a change in the technology mix from FTTP/wireless/satellite to additionally include FTTN.

- operating small pockets of FTTP within FTTN footprints:[167]

165 Submission 11, p. 4.

166 NBN Co Caretaker Advice, p. 143.

> Operating small pockets of FTTP within the FTTN network will increase rollout costs, operational costs and increase the complexity of the network rollout and operations. This includes managing the different products and services that can be offered over the two networks

- business processes, people and IT system capabilities:[168]

> Widespread changes across business processes, people and IT system capabilities would likely require a phased approach to business capability delivery. Management of the intersection of competing programmes of activities (FTTN capability development vs. Satellite capability development vs. scaling FTTP service activations) may provide significant resource and configuration challenges, especially within highly contended applications.

2.215 Further, the MTM introduces significant complexities in the provision of voice services over VDSL and HFC. The caretaker advice was clear in this regard.[169] These complexities extend to copper cutover and migration, which is made considerably more complex over FTTN than is the case with the existing migration to FTTP. The caretaker advice notes:[170]

> NBN Co notes that it is unprecedented for a non-incumbent company to supply voice or FTTN broadband services over an incumbent operator's network. Hence, consideration needs to be given to the copper cutover and migration process for an FTTN network.
>
> Given the steps involved, as described below, NBN Co is of the view that that the Coalition's approach to cutover is complex, and has very high risks.

2.216 NBN Co concludes that additional complexity will result in "material" additions to capital and operating expenditure for NBN Co:[171]

> Delivery of IT capabilities to address systems impacts will have both material CAPEX and OPEX costs. The increase in CAPEX cost is driven by the extensive nature of changes required to the existing application portfolio, as well as the development of new applications. The OPEX costs are driven by the need for application support & maintenance as well as the need to support additional functionality in a more complex environment.

2.217 The committee notes that NBN Co's caretaker advice was developed under the Coalition's pre-election policy (which did not include the addition of HFC to NBN Co's operations environment). The committee considers that the addition of HFC networks will drive even greater complexity costs than flagged in NBN Co's caretaker advice. Indeed, the Strategic Review indicates that it is the intention to pursue copper disconnection in the areas covered by HFC as well:

> As discussed in section 3.2.4, the scenario analysis for the Strategic Review has assumed voice will be provided via CPE that uses VoIP. It assumes that, as for FTTP areas, Telstra will continue to maintain and operate the existing copper plant only insofar as required to maintain special services

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167 Ibid, p. 84.

168 Ibid, p. 145.

169 Ibid, pp. 127-130.

170 Ibid, p. 79.

171 Ibid, p. 145.

> (discussed in section 3.2.5), and that a similar disconnection and migration framework applies to Telstra and Optus as exists today in relation to disconnection and migration to FTTP.[172]

2.218 The Strategic Review factors in no additional operating expenditure to accommodate a more complex operations and technology environment, despite Mr Korda's observation—noted above—that "the level of overheads [in the Corporate Plan] was optimistic."[173] Rather:[174]

> Operating costs in network operations are usually expected to increase in order to support a more complex technology environment. However NBN Co's level of Operating Expenditure in the Corporate Plan is significant. Benchmarks with comparable multi-network wholesale telecommunications companies suggest there is substantial cost reduction potential in both ongoing operating and overhead costs for NBN Co. The Strategic Review therefore assesses that cost increases due to increased complexity can be more than offset by potential cost reductions.

Summary—Complexity Creates Cost

- **The caretaker advice from NBN Co flags "material" capital and operating expenditure increases from a more complex technology environment. Increased complexity is likely to increase costs for RSPs as well.**
- **The caretaker advice did not consider the addition of HFC networks to NBN Co's operations environment. The committee expects this will further increase complexity costs under the MTM.**
- **The Strategic Review has assumed no additional operating expenditure to accommodate a more complex technology environment, arguing that these costs will be offset by "potential cost reductions."**

Upgrade Costs

2.219 The Strategic Review asserts that under the MTM model at least 65 percent of premises in the fixed line footprint will have access to download speeds of 100mbps by CY20.[175] The Strategic Review also provides an estimate of Net Present Value (NPV) savings of an upgrade approach versus building FTTP today. Once again, consideration of upload speeds or other elements of broadband quality is completely absent from the analysis.

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172 Strategic Review, p. 90.

173 See section 2.1.2.

174 Strategic Review, p. 83.

175 Strategic Review, p. 99.

2.220 Section 4.3.2 of the Strategic Review analyses the upgrade paths of the technologies employed in the MTM scenario. The Strategic Review states that all scenarios 'provide clear upgrade paths to higher speeds and better quality of service for all premises served.'[176] Upgrade paths are provided in Exhibit 4-4. These are described as 'illustrative.' 'Hypothetical upgrade timing' is also provided.

2.221 The Strategic Review acknowledges that the MTM will need to be upgraded, although not 'before CY2023':[177]

> It is not possible to predict the future evolution of demand for broadband speed. However, a recent study commissioned by the Broadband Stakeholder Group in the UK[92] assessed that the need for download speeds would be ~20Mbps in CY23 for the median UK household and ~40Mbps for the top one percent of households. This suggests upgrades to the Optimised Multi-Technology Mix scenario would not be needed before CY23.

2.222 No explicit costs for these upgrades are provided for the MTM model in the Strategic Review.

2.223 The Gigabit-Capable Passive Optical Network (GPON) architecture employed by NBN Co in the current FTTP rollout is already capable of delivering high quality, reliable broadband including symmetrical gigabit speeds and dedicated information rates.[178] Further, NBN Co Corporate Plans present a 30 year business case (to 2040). NBN Co explains:[179]

> Retaining the same end point for the long range explicit forecasting (30 June 2040) will allow 'like-for-like' comparisons as subsequent Corporate Plans are produced.

2.224 By contrast, the outlook for the MTM presented in the Strategic Review is short to medium term. No explicit costs for necessary upgrades are provided. The committee considers that the full cost of the MTM will only be known once flagged upgrade costs are included in the model.

Summary—Upgrade Costs

- **The Strategic Review acknowledges that the MTM will need to be upgraded, but provides no costs for these flagged upgrades.**
- **The committee considers that the full cost of the MTM will only be known once these upgrade costs are included in the model.**

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176 Ibid.

177 Ibid, p. 101.

178 Once FTTP is deployed, future upgrades can be achieved relatively cheaply by upgrading active network equipment. The fibre architecture of the NBN allows for further upgrades (e.g. 10 gigabits, or 10,000mbps) to be offered in the future. See Answers to Questions on Notice, Additional Estimates 2013), No 306, at: http://www.aph.gov.au/~/media/Estimates/Live/ec_ctte/estimates/add_1213/bcde/nbn_274-308.ashx

179 NBN Co 2012-15 Corporate Plan, p. 72.

Concluding Remarks and Recommendations—Strategic Review

2.225 The committee considers that the assumptions and conclusions set out in the Strategic Review are unreliable in the case of all examined scenarios.

2.226 The Revised Outlook provides a different perspective to NBN Co's Corporate Plan on the costs, revenues and timeframe of a full FTTP build in the fixed line footprint. The Committee's concerns with the Revised Outlook include:

- the exclusion from the Revised Outlook of 'business as usual' architecture savings signed off by previous NBN Co management, and their characterisation as 'radical' for inclusion in Scenario 2;
- an assumption of a delay in the revised deployment schedule that is at odds with NBN Co's current run rate, reflects deliberately conservative estimates of premises passed at peak rollout, cannot be disentangled from political control of the speed of network deployment, and has the assumed effect of stripping out $11.6 billion in revenues;
- assumptions on (redacted) higher unit costs for the fibre build that are at odds with recent evidence from NBN Co and the Department of Finance;
- higher unit costs that are extrapolated out to 2024 without normal and reasonable allowances for build efficiencies;
- the addition of a third satellite in the Revised Outlook, without direct explanation, with launch assumed at such a time (FY2021) to include costs but exclude revenues from scenario comparisons;
- overly pessimistic revenue assumptions that:
    - do not reflect existing strong demand for NBN services, or the high data usage patterns of Australians using the NBN;
    - ignore demand for important elements of broadband quality, particularly reliability and upload speeds;
    - have the effect of removing the revenue benefits that would result from the superior product set available on FTTP, compared to other technologies; and
- apples-and-oranges scenario comparisons that include costs and revenues for the Multi-Technology Mix (MTM) build at assumed completion, and costs for the Revised Outlook out to 2024, but exclude revenues for the Revised Outlook beyond 2021.

2.227 The Committee has equally strong concerns about the reliability of assumptions underpinning the MTM, the recommended option. These include:

- the financial model for the MTM was built using mostly international benchmarks and estimates, rather than field data;
- operating expenditure for the MTM is expected to be significantly higher than for a fibre network. The caretaker advice prepared by NBN Co points to the substantial costs associated with remediation and maintenance of the copper

network. The committee has heard similar evidence from witnesses representing the workforce in the field. Material operational costs are also expected from a more complex technology environment. Despite this, the Strategic Review assumes that operating expenditure for the MTM will be similar to what is required for a new fibre build;

- the 'limited speeds and product capabilities' available on FTTN are expected to result in reduced revenues compared to a full fibre rollout in the fixed line footprint. Further, NBN Co will need to conduct extensive field tests before the speeds and broadband quality in the (non-FTTP) MTM fixed line footprint will be known empirically. Despite this, the Strategic Review assumes revenues for the MTM that are similar to those for a full fibre rollout, despite the vast difference in broadband quality and product sets;
- the Strategic Review acknowledges that the MTM will need to be upgraded, but provides no costs for these flagged upgrades. The full cost of the MTM will only be known once these upgrade costs are included in the model.

2.228 NBN Co's previous Corporate Plans have been developed over a period of many months, in some cases longer, and have been subject to independent oversight and verification. For example, the 2013-16 Corporate Plan—finalised in late June 2013—was independently reviewed by both Ernst and Young and KPMG before it was signed off by the NBN Co Board and submitted to Shareholder Ministers for approval. By contrast, the Strategic Review—which presents a different view of the information set out in the NBN Co Corporate Plan—was the result of "five weeks of intensive work on the part of lots and lots of people" and was subject to no independent external oversight.

2.229 The committee rejects the rollout strategy advocated by the current Government and reflected in the MTM. In particular:

- the deployment of higher-quality broadband (FTTP) to high value suburbs, and the deployment of inferior broadband (FTTN) to low value suburbs is an inappropriate use of taxpayers' money. As a Government Business Enterprise, NBN Co should not have a rollout strategy that favours one suburb over another;
- the proposed Fibre on Demand product is expected to be too expensive for many residences and small businesses. This will create competitive disadvantages for individuals and small businesses outside the fibre footprint, and will entrench broadband inequality in Australia.

2.230 The Committee considers these rollout strategies reflect a fundamental misunderstanding of broadband quality—particularly uploads—and demand for this quality and reliability in the residential and small business market. Failure to consider that broadband quality and capability goes beyond download speeds is systemic in the Strategic Review. The Strategic Review also fails to consider the value of widespread access to this infrastructure to the digital economy.

2.231 The Committee concludes that the Strategic Review does not comprise a sufficient information base for the NBN Co Board or the Minister to adopt an alternative deployment path for the NBN.

2.232 The Committee is aware of management concerns with building stability with its supply partners. As a consequence, NBN Co should be directed to continue the FTTP roll out at the maximum rate possible while the further analysis is undertaken by NBN Co, the Departments and the Minister. NBN Co should be allowed to proceed without political interference in the roll out.

Recommendation 1

NBN Co should submit a revised Strategic Review that provides transparent assumptions and corrects deficiencies and distortions. The revised Strategic Review should provide details of only two scenarios:

- **An optimised FTTP rollout that adopts the technology changes and other management initiatives outlined in Scenario 2, together with a plan to address identified industry capacity constraints; and**
- **A revised Multi-Technology Mix that is based on actual costs for FTTN and HFC derived from discussions with Telstra, Optus and vendors. This scenario should also include all costs to undertake the flagged upgrades to 100 Mbps by 2023, 250 Mbps by 2028 and 1000 Mbps by 2030.**

The revised scenarios should include consideration of broadband quality beyond just download speeds, and the demand for attributes like upload speeds and reliability in the residential and small business market.

Prior to submission, the Strategic Review should be scrutinised and verified by an independent advisor engaged by the Department of Communications and the Department of Finance.

Recommendation 2

NBN Co should continue to accelerate the roll-out of the FTTP network while further analysis is undertaken.

NBN Co should be allowed to proceed free from political interference.