

## **SUBMISSION - Inquiry into the business case for the NBN and the experiences of small businesses**

**UPDATED: 19<sup>th</sup> December 2019** – Summary Pages 1 and 2 and additional questions, with analysis, for Senate Estimates starting page 13 to 23.

[https://www.aph.gov.au/Parliamentary\\_Business/Committees/Joint/National\\_Broadband\\_Network/smallbusinessandcase](https://www.aph.gov.au/Parliamentary_Business/Committees/Joint/National_Broadband_Network/smallbusinessandcase)

and

For next NBN Senate Estimates (March 2020?) – Questions to the Minister, NBN Chairman and CEO I would like asked and answered.

and

For all Members of Parliament.

**Summary: 3 minute reading time.**

**Entire document: 38 minute reading time – 25 pages** - including my 2 page letter to the NBN (unanswered) about my MTM NBN Fibre to the Node disaster at the end of this document.

### **Summary**

1. Analysis on NBN revenue impact - up to \$633 Million in 2022 and \$589 million in 2023, and onwards, in lost revenue due to lower take up rates on FTTN in particular, but also HFC and FTTC lower take up rates than FTTP, no Gigabit speed capacity on limited FTTN, and reductions in forecast FTTN Activations - 11% to 10% of its total forecast revenue for 2022 and 2023 – based on data in 2020 NBN Corporate Plan (See analysis below starting Question 4)
2. Analysis (see below starting Question 17) of the list of the most expensive 70 FTTP installations released in Oct 2017 by the NBN indicates impact trivial on number of premises affected and cost to rollout budget in a full fixed line FTTP rollout scenario.
3. \$40 Billion dollar **MTM NBN debt bomb**, \$20 Billion in lost potential revenue and increasing operation/maintenance/decommissioning costs of MTM NBN network to Year 2040, and \$20 billion extra cost, at least, to finally upgrade the MTM NBN fixed line network to full FTTP.
4. Analysis (see below Question 106) indicates it would be more cost effective to upgrade the entire FTTN footprint to FTTP over a 6 year period starting 1 July 2020, resulting in up to an extra \$396 million in combined revenue and lower operating costs per year by Year 6 of the upgrade even after the cost of Interest on the borrowings for the upgrade and \$704 million extra in total revenue and lower operating costs, over that of the interest bill in that 6 year upgrade period.

5. Analysis indicates it would still be more cost effective to immediately rip up and decommission the entire FTTN network back to the local exchange and start again with FTTP with its higher revenue and lower operating costs still covering the extra interest on borrowings.
6. Analysis shows that the NBN, based on its own forecasts for 2022 and 2023, will have 636,000 less users on the copper MTM NBN that it would have had with a full fixed line FTTP NBN network.
7. Analysis (see below Question 117-2) indicates that full fixed line FTTP NBN, had the FTTP rollout continued in 2013, would have easily cross funded the loses of both the satellite and fixed wireless services (~\$330 Million a year, \$9.8 Billion over 30 years) with its extra revenue and lower operating and maintenance costs had the FTTP rollout continued in 2013, removing any need for the Governments anti competition "Broadband Tax" on non NBN fixed line users.
8. Analysis (see below Question 117-3) indicates that full fixed line FTTP NBN, had the FTTP rollout continued in 2013, which would have allowed cheaper Gigabit speed plans and/or reductions in current wholesale charges across all speed tiers and/or reductions in current CVC charges had the FTTP rollout continued in 2013.
9. Analysis (see below Question 117-5) indicates over \$1.6 Billion a year in revenue lost, extra OpEx, and extra CAPEX on the MTM NBN, starting in Year 2022, in comparison to a full fixed line FTTP NBN had the FTTP rollout continued in 2013.
10. The real extra cost (ie net present value) of a full fixed line FTTP NBN, had the FTTP rollout continued in 2013, above that of the copper MTM, is trivial or nonexistent, in relation to the extra revenue generated and lower OpEx and lower CAPEX of \$1.6 Billion a year on a full fixed line FTTP NBN.
11. There needs to be a Royal Commission into the NBN.
12. FTTN impact on my consultancy business as detailed, in part, in a 2 page unanswered letter to NBN Chairman and CEO dated 5<sup>th</sup> February 2019 at the end of this submission.

Yours Sincerely,

Peter Savio

Please note: I have no connection or association now or in the past with the NBN, any of its contractors, any Telecommunications company, or any of its contractors, any service provider or any of its contractors, any political party or any vested interest group, or any media organisation, nor am I privy to any confidential information from the NBN or Government, or any other source.

## Senate Estimate Questions – to the Minister, NBN Chairman and CEO

- Why is it that your own 2013 Strategic Review Scenario 4 (see below) shows for the same \$51 Billion dollar peak funding cost as your current Multi Technology Mix NBN, including ageing and degraded copper on FTTN, we could have had instead at least 63% FTTP and the rest the existing HFC with a very small component of FTTB/FTTC and maybe no FTTN at all?

The table below sets out the relative financial performance of the different scenarios:

Table 0-2: Financial outcomes including Fixed Wireless, Satellite and greenfields (1)

	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 (i.e. de-mobilisation)	Scenario 6: Optimised Multi- Technology Mix
Deployment completed by end	CY24	CY23	CY22	CY21	CY20	CY20
Technology used by scenario in fixed line footprint at the end of rollout						
FTTP	100%	100%	87%	63%	19%	26%
FTTN/dp/B	0%	0%	13%	5%	48%	44%
HFC	0%	0%	0%	32%	33%	30%
Premises with access to download speed (% of fixed line footprint)						
% with 25Mbps by 2016	22%	19%	23%	48%	45%	43%
% with 50Mbps by 2019	57%	56%	67%	87%	87%	91%
% with 100Mbps by 2019 (2)	57%	56%	55-65%	80-85%	60-75%	65-75%
Date of first positive free cashflow (3)	FY25 - ~FY40	FY25-27	FY24-25	FY22	FY22	FY22
Cumulative FY11-21						
Revenue (4)	\$10bn	\$9bn	\$11bn	\$16bn	\$16bn	\$18bn
Operating Expenditure	\$23bn	\$23bn	\$24bn	\$26bn	\$27bn	\$27bn
Capital Expenditure	\$43bn	\$35bn	\$36bn	\$36bn	\$29bn	\$30bn
Peak funding (equity & debt) (5)	~\$73bn	~\$64bn	~\$59bn	~\$51bn	~\$43bn	~\$41bn
Peak funding (all equity)	~\$63bn	~\$54bn	~\$52bn	~\$47bn	~\$40bn	~\$39bn
Cumulative Capital Expenditure FY11-24 (incl. replacement Capex)	\$56bn	\$44bn	\$43bn	\$40bn	\$34bn	\$33bn
IRR (FY10-40) Revenue Trajectory A*	2.5%	4.0%	4.1%	4.7%	4.9%	5.3%
Revenue Trajectory B*	n/a	1.7%	1.9%	2.5%	2.6%	3.1%

- Why has this NBN and this Government wasted at least \$10 Billion dollars on ageing and degraded copper with FTTN, when for the same peak funding as per your own Scenario 4, Australia could have had at least 63% FTTP and no (or very little) FTTN and within a very similar timeframe (by CY 2021)?
- Your MTM model was based on the UK's BT/Openreach model of Fibre To The Cabinet (ie FTTN) – the UK Government under conservative Boris Johnson and Openreach are abandoning copper as fast as they can and rolling out full FTTP. Why isn't the NBN and Government doing the same?
- What is the potential lost revenue per year on the speed limited, ageing and degraded copper FTTN part of the MTM NBN Network once the NBN introduces (affordable?) 250 Mbps and 1000 Mbps speed plans, as it has proposed recently to service providers, on the Gigabit speed capable part of the Network (ie FTTP, HFC?)

Will the lost revenue be in the order of at least \$150 to \$200 million dollars per year?



12. That's a combined total of up to \$633 Million in 2022 and \$589 million in 2023, and onwards, in lost revenue (lower take up rate on FTTN, no Gigabit speed capacity on limited FTTN, and reductions in forecast FTTN Activations, lower HFC and FTTC activations) due to the failed policy decision to abandon a full FTTP fixed line NBN in September 2013 or even the Scenario 4 – majority FTTP option in the 2013 Strategic Review.

Can the Minister or NBN explain the cause of this lost revenue which is about 11% to 10% of its total forecast revenue for 2022 and 2023?

13. Can the Minister and Government explain to the Australian people how losing well over half a Billion dollars a year of revenue (ongoing and likely increasing) can be justified because of its failed copper MTM NBN policy decisions after September 2013?

It's also ironic that the only way it seems, in large part, for the NBN to be cash flow positive in 2023 (\$700 million claimed forecast), and the years beyond perhaps, is because of the extra take up rate revenue and potential Gigabit speed plan revenue generated on the FTTP part of the network, and FTTPs lower operating costs.

14. Can the NBN and Government advise how much lower the FTTN take up rate will go beyond 2023, and the impact on revenue and cash flow, with the introduction and expansion of the 5G broadband network which is clearly a direct threat to this degraded and ageing copper part of the MTM NBN network?
15. Is the revenue generated by these proposed (affordable?) 250 Mbps and 1000 Mbps speed plans, as it has proposed recently to service providers, on the Gigabit capable part of the Network (ie FTTP, HFC?) included in the claimed forecast 2023 \$700 million positive cash flow?
16. Are the proposed (affordable?) 250 Mbps and 1000 Mbps speed plans (with appalling upload speeds however), as it has proposed recently to service providers, on the Gigabit capable part of the Network (ie FTTP, HFC?) a desperate attempt by the NBN and Government to not only increase revenue but also increase Australia's appalling Global download speed ranking which now stands at 64th as of November 2019 – a drop of another 3 places since September 2019?

<https://www.speedtest.net/global-index/australia#fixed>

17. The list (see link below) of the most expensive 70 FTTP installations released in Oct 2017 by the NBN just before the ABC 4 Corners program on the NBN - was that the absolutely most 70 expensive on the entire Brownfield FTTP Activations at that time?

According to the media, 10 each from each State and Territory, except there's none from the ACT, and 11 for QLD and 9 from the NT. The NBN CEO at the time was quoted in the media saying they were the most expensive FTTP installs – so I have assumed they are for this analysis.

<https://www.nbnco.com.au/content/dam/nbnco2/documents/FTTP-20171022.pdf>

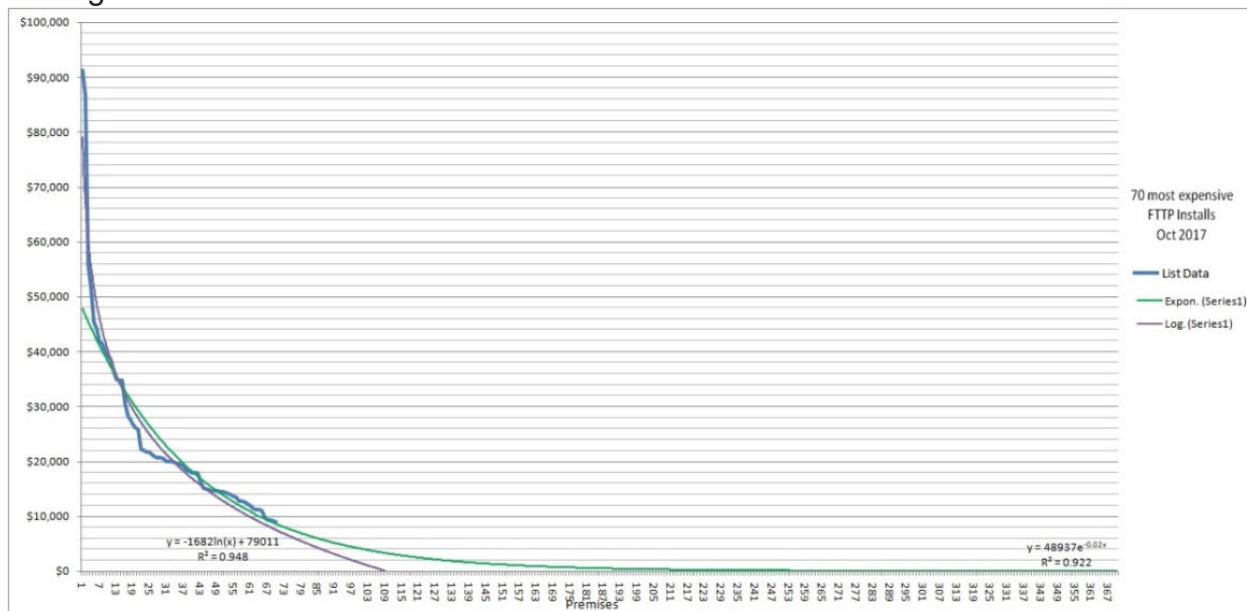
**Note:** There are a number of glaring errors in this NBN compiled list – so one has to

question its accuracy.

18. If the answer is yes to Question 17 then out of exactly how many Brownfield Activations?

Calculations and conclusions, based on the known information - 70 most expensive FTTP installs are: analysis shows (Chart 1) that the trend line rapidly trends to zero extra cost above the claimed \$4,400 FTTP average (assumed worst case scenario that this list of 70 is extra cost above that of the claimed \$4,400 FTTP average).

**Chart 1:** 70 most expensive FTTP Installs Cost vs Number of Premises above claimed average FTTP installation CAPEX



Analysis shows in relation to a scaled up full fixed line FTTP roll out scenario to ~10.3 Million premises the predicted number of premises requiring extra installation costs above the \$4,400 FTTP claimed average is trivial, ~5,500 premises or 0.05% and ~\$28 Million in total cost.

Scaled up to a full fixed line FTTP rollout, to ~10.3 million premises, above average FTTP installs would only contribute about \$2.72 (Two Dollars, Seventy Two Cents) out of the claimed \$4,400 FTTP average CAPEX install cost.

Based on this analysis the 70 most expensive FTTP Installs proves nothing against a full FTTP fixed line rollout either in 2013, 2017, now or in the future.

- 19. Will the NBN release the top **700** most expensive above average Brownfield FTTP installs to date so more analysis can be done?
- 20. Will the NBN release the 70 cheapest Brownfield FTTP installs, it has been asked this before in Senate Estimates, or will it claim again that this is commercial in confidence?
- 21. How many of these 70 FTTP Installs, if any, used aerial lead-ins?
- 22. How many of the 70 premises could have had a full aerial lead-in instead of underground?
- 23. This list of the 70 FTTP installations still falls within the NBN claimed CAPEX average of \$4,400 for FTTP installs across the Brownfield footprint – so what was the point of

publically releasing a list like this?

24. Why did the NBN release such a small list of 70? (70 out of ~0.8 million Brownfield FTTP Activations at the time or 0.009%)
25. Will the NBN release a list of the 70 most expensive HFC installations? If not why not?
26. Will the NBN release a list of the 70 most expensive FTTN Node installations and the average and median of all FTTN Node installations? If not why not?
27. Will the NBN release a list of the 70 most expensive salaries within the NBN, or would it be worried it might knowingly and deliberately give the Public and media a false and misleading impression about the cost of salaries within the whole NBN?
28. How many new or full replacement underground HFC lead-ins (eg from the street to the home) have the NBN done to date, and predicted at the end of the rollout?
29. How many HFC lead-ins are aerial?
30. What is the average cost of all these new underground HFC lead-ins including connections and terminations?
31. How many new or full replacement HFC lead-ins have been installed in Multi Dwelling Units to date, and predicted at the end of the rollout?
32. What is the average cost of new aerial HFC lead-ins including connections and terminations?
33. What is the average cost component of an underground fibre lead-in in Brownfield FTTP areas?
34. What is the average cost component of an aerial fibre lead-in in Brownfield FTTP areas?
35. Are the processes of installing new HFC lead-ins and Brownfield Fibre FTTP lead-ins similar or the same in terms of digging up driveways and gardens and the installation of conduit?
36. How many complaints about the process of installation of new HFC lead-ins (underground and aerial) have the NBN (and its construction partners) received in existing or new HFC areas by year?
37. How many complaints about the process of installation of new FTTP lead-ins (underground and aerial) have the NBN (and its construction partners) received since 2009 by year?
38. What are the current and predicted, after rollout completion, per Activation and per RTC, average annual operating and maintenance costs of each fixed line MTM Technology type (ie FTTN, FTTC, HFC and FTTP both Brownfield and Greenfield)?
39. What is the estimate by the NBN once the MTM rollout is complete of the extra cost of operation and maintenance of the MTM NBN Network per year, in comparison to a full FTTP fixed line NBN?



40. What is the extra cost to all Service Providers, as a total, per year, for having to maintain complex computer systems, complex technical systems and extra staff, to manage their operations in relation to providing fixed line MTM NBN services to consumers, which would not be required under a simple full fixed line FTTP NBN?
41. What is the current and expected annual electricity cost by June 2020 for all those ~27,000 FTTN nodes across Australia?
42. What is the current and expected annual electricity cost by June 2020 for all those ~2,800 micro nodes across Australia?
43. How many aerial lead-in FTTP deployments in Brownfield and Greenfields areas has the NBN done by year?
44. Where have aerial FTTP rollouts been used? eg Urban, semi rural, rural?
45. What is the average cost of these aerial FTTP Brownfield deployments?
46. What is the median cost of FTTP installations in Brownfield areas?
47. What are the median costs of HFC, FTTN and FTTC installations?
48. Asbestos pits – has the NBN identified all old pits that contain asbestos across Australia that it now utilises?
49. Does the NBN have a maintenance and/or replacement programs for these dangerous Asbestos pits, particularly in FTTN and HFC areas?
50. If Yes to Question 49 what is the annual cost?
51. Does the NBN have any maintenance program to identify and replace dangerous broken (Asbestos?) pit lids, particularly in FTTN and HFC areas, that would have been dealt with under a full FTTP rollout?



Photo Date: 27<sup>th</sup> Oct 2019  
-33.6387068, 150.2898311



Photo Date: 6<sup>th</sup> November 2019  
-33.635066, 150.286723



52. Graffiti cleaning of FTTN Cabinets - Is there a program to monitor and clean these ugly MTM NBN nodes of Graffiti? If not why not? What are the current and predicted future annual costs? How much paint is the NBN using per year to cover this graffiti?



Date of Photos: 20<sup>th</sup> Oct 2019

-33.637547, 150.293209   -33.641031, 150.287872   -33.639469, 150.286491

53. What are the current annual costs of replacing damaged or destroyed Nodes?
54. How many Nodes to date have been damaged or destroyed beyond operational use and by what cause by year?
55. What is the actual or expected operational lifetime of the FTTN backup batteries?
56. What is the cost per node to replace the FTTN Backup batteries including disposal of the old batteries?
57. What is the average capital cost to install and make service ready a micro node?
58. How often per year, and how much does it cost, for a “truck roll” to physically inspect a FTTN Node for any reason (eg maintenance, door alarm going off)?
59. How often per year, and how much does it cost, for a “truck roll” to physically inspect a Micro Node for any reason?
60. How often per year, and how much does it cost, for a “truck roll” to physically inspect a FTTP Patch Cabinet for any reason?
61. What was the cost of the HFC rollout hiatus in terms of lost revenue?
62. What was the cost of the HFC rollout hiatus for repairs and upgrades?
63. What is the total cost of all repairs and upgrades for HFC to date and expected by the end of the HFC rollout?
64. What has been the cost of the pit refurbishment program (ie Pits made fit for purpose) across Australia for this MTM NBN that was originally to be paid for by Telstra under the original FTTP NBN?
65. What is the current to date and expected at end of rollout capital and/or maintenance costs of repairing, upgrading and replacing copper, Nodes etc, including any associated earthworks, on the FTTN part of the network per year?
66. What is the current to date and expected at end of rollout capital and/or maintenance costs of repairing, upgrading and replacing cable, including any associated earthworks, on the HFC part of the network per year?

67. What is the current to date and expected at end of rollout capital and/or maintenance costs of repairing, upgrading and replacing Fibre, copper, DPU's etc, including any associated earthworks, on the FTTC part of the network per year?
68. What is the current to date and expected at end of rollout capital and/or maintenance costs of repairing, upgrading and replacing fibre, including any associated earthworks, on the FTTP part of the network per year?
69. What is the 2022 and 2023 predicted revenue and operational/maintenance expenditure per RTC and per Activation specific to the FTTN part of the network?
70. What is the 2022 and 2023 predicted revenue and operational/maintenance expenditure per RTC and per Activation specific to the FTTP (Brownfield) part of the network?
71. What has been to date, and the expected by end of rollout, the additional total cost on the FTTN part of the network to bring users up to the minimum speed of 25 Mbps (eg installation of micro nodes or replacing aged copper with more copper, or transferring to Fixed Wireless or Satellite service)?
72. What is the cost to remove and decommission a FTTN node, remove the concrete base, remove and make safe the power, and restore the ground surface and recycle and or dispose the cabinet and equipment inside it including the batteries, and associated backend work (eg at the exchange)?
73. What is the cost to remove and decommission a micro node, remove and make safe the power, and restore the ground surface and recycle and or dispose the cabinet and equipment inside it and associated backend work (eg at the exchange)?
74. How many FTTN nodes have been relocated after installation and what has been the total cost?
75. What is the percentage of activations of NBN Speed Plans (eg 12, 25, 50, 100, >100) by MTM Technology type to date and predicted in 2022 and 2023?
76. In the 2020-2023 Corporate Plan it shows on page 51 a predicted reduction of \$200 Million in "Other Opex" between 2021 and 2023, what is the cause of this reduction?
77. How many of the installed FTTC DPU's will be G.fast capable and to what maximum possible download speed on average at the end of the NBN rollout June 2020 – both raw numbers and as a percentage of the total FTTC footprint?
78. What will the cost be to upgrade/replace FTTC DPU's that are not G.fast capable?
79. What is the average copper line distance on the existing FTTC footprint from the FTTC DPU to the premises Termination Outlet?
80. When will the HFC part of the NBN be fully 1000 Mbps symmetrical speed capable and how much will this have cost to upgrade to achieve that, including all hardware & software upgrades?
81. What are the current ARPU per Activation on each of the fixed line MTM Technologies, FTTN/B, HFC, FTTC, FTTP(B), FTTP(G), and predicted by 2023?

82. Is the cost of the ~100,000 “complex installations” still to be made NBN ready, beyond the end of the June 2020 expected end of rollout, included in the \$51 Billion MTM project cost?
83. How many TCP upgrades to full FTTP have been done and what is the total cost to date for consumers and the projected cost to end of June 2020?
84. What is the extra revenue generated by these TCP upgrades beyond that of the original MTM technology the consumer had, by year to date, and predicted to 2023?
85. Can the NBN and Minister explain why on the latest ACCC report November 2019 “*NBN and ADSL plan speeds delivered during busy hours by technology*” FTTN rates 8.2% lower than FTTP?
86. Can the Government advise the cost to productivity across Australia of the ageing and slow copper FTTN MTM NBN network and the lost opportunity costs to Year 2040 of not rolling out a full fixed line FTTP NBN Network?
87. Can the Government advise the cost to GDP of the ageing and slow copper FTTN MTM NBN network to Year 2040 and of not rolling out a full fixed line FTTP NBN Network?
88. What was the cost of the NBN commissioned report: Speed Check: Calibrating Australia’s broadband speeds?
89. Why does this NBN, Minister and Government continue to claim the MTM NBN is on budget and on time when in fact it is at least \$22 Billion over budget and at least 4 years behind schedule?

Australia was told in 2013 the MTM NBN would cost no more than \$29 Billion and be finished by September 2016 and you have revised your budget and timeframes for completion on multiple occasions, at least 5 times, since 2013.

<https://www.minister.communications.gov.au/minister/mitch-fifield/transcripts/four-corners-interview-geoff-thompson-commonwealth-parliamentary>

<https://www.malcolmturnbull.com.au/media/the-nbn-and-bill-shortens-fantasy-economics>

The “*Fantasy Targets*’ and “*Fantasy Economics*’ are your own.

90. Can the NBN advise, between September 2013 and 30<sup>th</sup> June 2018, almost 5 years, how many FTTC premises were activated?
91. Can the NBN advise, between September 2013 and 30<sup>th</sup> June 2016, almost 3 years, how many HFC premises were activated?
92. Can the NBN advise, between September 2013 and 30<sup>th</sup> June 2016, almost 3 years, how many FTTN premises were activated?

93. Can the Minister and Government confirm the following statement:

*"I want our NBN rolled out within three years"*

Tony Abbott - A letter to Australians, 7 September, 2013

<https://www.heraldsun.com.au/archive/federal-election/tony-abbott8217s-letter-to-the-people-of-australia/news-story/bd3056e87ba06dd58120b903f719d258>

94. Does the Minister and Government stand by the claim in their Vertigan Report that the majority of Australians would not need any more than 15 Mbps download speed until 2023?
95. Does this Government still believe reliable, low maintenance, future proof, high speed, World standard and essential for business FTTP Broadband, in Australia, is *"essentially a video entertainment system"*?
96. Is this Government still *"..absolutely confident that 25 megs is going to be enough, more than enough, for the average household."*?
97. Is this Government still determined to *"Destroy the NBN"* as it stated in 2010 when in Opposition?
98. In my opinion, the decision to change to a largely copper based Multi Technology Mix NBN was done for political reasons, not technical and certainly not economic, and is possibly the worst, most reprehensible and reckless policy decision, outside of War, any Australian Government has taken.

Can this Government advise how much tax payer's money it is going to take to fix their mistakes and how long it's going to take?

In my opinion, this Government, since September 2013, has created a \$40 Billion dollar **MTM NBN debt bomb**, \$20 Billion in lost potential revenue and increasing operation/maintenance/decommissioning costs due to an increasing aging *"5 minutes to midnight"* copper FTTN/HFC/FTTC MTM NBN network to Year 2040, and \$20 billion extra cost, at least, to finally upgrade the MTM NBN fixed line network to full FTTP.

Ironically it's this copper MTM NBN that's ultimately going to cost \$91+ Billion and not the original full fixed line FTTP NBN.

99. Can the Minister and Government explain how \$91+ Billion ultimately spent, revenue lost and ever increasing operating costs on the MTM NBN is:

*"cheaper and more affordably"*

<https://www.youtube.com/watch?v=WJwJWYSapmY&feature=youtu.be&t=279>

than even its own projected full fixed line FTTP peak funding rollout costs in its 2013 Strategic Review of \$73 Billion (Scenario 1) or \$64 Billion (Scenario 2), or even \$51 Billion (Scenario 4 – 63% FTTP and no FTTN) or more to the point based on, in large part NBN's publically available data to date, and independent projected cash flow analysis and rollout schedule, a projected, including full fixed line FTTP, rollout peak funding of \$58 Billion (FY 2022, with completion 2<sup>nd</sup> Qtr 2022), with higher revenues by well over \$500+ million a year, and much lower operating and maintenance costs, had the FTTP rollout continued

from 2013 and be a true NBN that would actually be fit for purpose?

100. Can the Government confirm the following statement made back in 2013 about their Technology Choice Program?

*"I can tell you that the typical distance from one of these nodes, the average distance would be around 500 metres. And I can only give you the example from the UK the cost of getting fibre on demand is around £1500 which I think would work out at around \$3000. So it is not \$5000."*

[https://www.youtube.com/watch?v=ceG\\_WPJvxMU&feature=youtu.be&t=366](https://www.youtube.com/watch?v=ceG_WPJvxMU&feature=youtu.be&t=366)

101. Why did the NBN Chairman, NBN CEO and subsequently the so called NBN "Escalations team" fail to reply to my questions and very serious issues I documented about my FTTN disaster in a letter dated 5<sup>th</sup> February 2019? (see below) - which includes some of the questions listed above? - all I got was an email acknowledgement (12<sup>th</sup> February 2019) of receipt of my letter including advice the NBN Escalation team (not my service provider) would be in contact shortly, but I've heard nothing else since from the NBN.

102. Will this Parliament call for a Royal Commission into the NBN project?

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**ADDITIONAL QUESTIONS FOR SENATE ESTIMATES - Questions to the Minister, NBN Chairman and CEO I would like asked and answered.**

103. 90% of the Australia Population fits into a size less than 80,000 km<sup>2</sup>.

The size of New Zealand is 268,021 km<sup>2</sup>.

The size of England is 130,395 km<sup>2</sup>.

The size of the UK is 242,495 km<sup>2</sup>.

Therefore 90% of the Australian population fits over 3 times into the size of New Zealand, over 1.5 times into the size of England and over 3 times into the size of the UK.

Why does the NBN and Government continue to provide excuses, for not rolling out full Fibre to the Premises, by comparing the size of Australia as a whole to the size of New Zealand, which is rolling out full fibre FTTP via its UFB upgrade?

<https://www.gizmodo.com.au/2017/10/nbn-says-comparisons-with-nzs-ultra-fast-broadband-are-apples-and-oranges/>

<https://www.nbnco.com.au/blog/the-nbn-project/australia-and-new-zealand-broadband-comparing-apples-with-oranges>

*"..Australia is a massive country and is roughly 30 times the size of New Zealand"*

104. Can the NBN advise how many FTTP connections (or any other fixed line MTM technology) it has made in the 35% of Australia that is desert?
105. Can the NBN advise how many FTTP connections (or any other fixed line MTM technology) it has made in the 70% of Australia that is classified as desert and arid?
106. Analysis indicates that the 4.7 Million FTTN/B RTC network, expected at the end of the rollout June 2020, could be upgraded to full FTTP starting immediately (and then continue over the next 6 years) as it would be more cost effective to borrow the estimated cost of \$14.6 Billion to upgrade, offset by the greater revenue return on FTTP (82% take up rate forecast by 2022 as per the NBN's 2020 Corporate Plan, FTTP ability for Gigabit speed plans, and lower operating costs in comparison to FTTN/B only 70% take up rate, no ability for Gigabit plans and higher operating costs), to pay for the cost of the interest bill for that \$14.6 Billion and generate up to \$396 million in extra revenue and lower operating costs per year from year 6 of the upgrade and onwards, and \$704 million in total combined extra revenue and lower operating costs, over that of the interest bill in that 6 year upgrade period.

Analysis also indicates, based in part on the NBN's own appalling FTTN/B take up rates and consequent revenue forecasts in its 2020 Corporate Plan, it would also literally still be more cost effective to rip up and scrap the entire 4.7 million RTC FTTN network, starting 1 July 2020, all the way back to the local exchange, including ripping out the fibre from the Node to the local exchange, and start again with FTTP from the local exchange at the current claimed FTTP CAPEX of \$4,400 per premise, up to a total replacement cost of \$20.7 Billion over 6.5 years of replacement. The extra revenue, lower operating and maintenance costs, of FTTP would still be greater than the cost of interest on a \$20.7 billion loan.

When will the Government and NBN realise that FTTN, in particular, is a colossal ongoing mistake and begin upgrading FTTN to FTTP when it's more cost effective, based on, in large part, the forecasts in their own 2020 Corporate Plan and other public NBN data, to immediately replace low revenue, high operating and maintenance costs of copper FTTN and instead rollout FTTP even over a short time frame of 6 years (ie by the end of 2026)?

107. Does the NBN and Government understand the catastrophic financial consequences of its own forecasts in its 2020 NBN Corporate Plan particularly in relation to the appallingly low predicted take up rate on FTTN (70%) in comparison to FTTP (82%) for Years 2022 and 2023 and onwards?

Analysis shows that the copper MTM NBN, based on the NBN's own forecasts for 2022 and 2023, will have 636,000 less users than it would have had with a full fixed line FTTP NBN network as of 2022 and beyond.

108. I refer the Minister to the following SMH article on the MTM NBN and video streaming

*"He said the data vindicated the Coalition's multi-technology mix model that replaced the original plan of the former Labor government, which would have delivered high-speed fibre connections with fibre connections directly to 93 per cent of the population."*

<https://www.smh.com.au/politics/federal/video-streaming-drives-25-per-cent-surge-in-nbn-downloads-20191201-p53fs5.html>



How can download data on video streaming vindicate the copper MTM NBN when it will have 636,000 less users than a FTTP NBN, have \$633 Million less in revenue in 2022 and \$589 million less revenue in 2023 in comparison to a full fixed line FTTP NBN, currently has no Gigabit speed capacity on more than three quarters of the fixed line network which further reduces revenue, has significantly higher operating and maintenance costs, will cost tens of Billions of dollars to upgrade and the average download speed actually fell between September and October 2019?

This Government since 2013, and the past 2 and current Communication Ministers, have an obsession with broadband being useful only for video streaming and have no understanding of the business needs for reliable and high speed broadband, including for small business.

109. In the 2020 Corporate Plan page 48 in Years 2022 and 2023 there is a forecast of \$1.4 Billion on "*Capital Expenditure*". Nowhere in the NBN Corporate Plan does it provide any sort of breakdown of this Capital Expenditure.

Is any of this "*Capital Expenditure*" spent on starting the upgrading of copper technologies to full FTTP or is it just maintaining and patching up the existing aging and degraded copper MTM NBN technologies?

110. Why is the NBN using the predicted \$700 million claimed positive cash flow in 2023 to pay down Debt Funding when it would make economic sense to use that money instead to start upgrading the FTTN/B part of the MTM network to FTTP with FTTP's much higher predicted revenues (ie take up rate) as per your own 2020 Corporate Plan?

Analysis indicates approximately 225,000 premises could be upgraded from FTTN/B to FTTP with that \$700 Million in Year 2023 and the increase in revenue and reductions in Operating/Maintenance costs combined would be more than the cost to service the \$700 Million in debt funding even at 3.96% PA.

<https://www.itnews.com.au/news/nbn-co-to-get-three-more-years-to-repay-195bn-govt-loan-511824>

111. In August 2012 analyst firm BIS Shrapnel estimated for a full fixed line FTTP NBN:

*"The National Broadband Network (NBN) can shave up to AU\$700 million per year off its telecommunications infrastructure maintenance costs once fibre replaces the copper network"*

*"...according to BIS Shrapnel's "Maintenance in Australia 2012 to 2017" report, the NBN will dramatically lower maintenance costs for the country's telecommunications infrastructure, bringing in long-term benefits.*

*BIS Shrapnel senior manager of infrastructure and mining Adrian Hart has labelled the NBN a "game changer for maintenance in the telecoms sector".*

*"While it will allow for much higher levels of voice and data traffic, the technological superiority of optic fibre over Australia's ageing fixed-line copper network is estimated to reduce industry maintenance costs by between AU\$600 million to AU\$700 million per annum once fully deployed," he said in a statement.*

"We didn't do a specific scenario on FTTN, but if you do have a FTTN network, you will have to maintain a workforce to deal with the fibre and the last portion of copper," Hark said. "You'll never completely remove yourself from the copper issue."

<https://www.zdnet.com/article/nbn-to-save-up-to-au700m-in-copper-maintenance-costs/>

Can the NBN and Minister confirm exactly what their ageing and degraded copper specific MTM NBN maintenance costs are per year and the total cost since September 2013?

Is the copper maintenance cost somewhere in the order of \$250 to \$700 Million per year?

112. Isn't the Minister's and Government's proposed slugging of non NBN fixed line users with this NBN "Broadband Tax" (up to ~\$38 Million per year from up to 450,000 non NBN Broadband users) an admission of the financial failure of this copper MTM NBN?

<https://www.sbs.com.au/news/nbn-levy-is-a-broadband-tax-labor-mp>

Analysis indicates that full fixed line FTTP NBN which would have easily cross funded the loses of both the satellite and fixed wireless services (~\$330 Million a year, \$9.8 Billion over 30 years) with its extra revenue and lower operating and maintenance costs had the FTTP rollout continued in 2013.

113. Australia's broadband ranking in comparison to the rest of the World is pathetically low (64<sup>th</sup> as of November 2019) <https://www.speedtest.net/global-index/australia#fixed>

and is due to the slow speed copper MTM NBN and the fact only ~20% of the fixed line network is currently capable of Gigabit speed which is only on FTTP part of the MTM NBN.

If the entire fixed line NBN was FTTP a likely scenario for average download speed, including uptake of high speed plans less than those overseas, could be as follows in Table 1 (Scenario as of June 2019), providing affordable high speed plans were also introduced, which was more likely on a full fixed line FTTP network due to higher uptake revenue and lower operating and lower maintenance costs of FTTP.

**Table 1: Scenario for average download speed on full fixed line FTTP NBN (as of June 2019, based on 5.5 Million Active NBN users)**

SPEED TIER Mbps	% USING	Speed Split	Activations
100	14%	14.00	770,000
50	39%	19.50	2,145,000
25	18%	4.50	990,000
12	17%	2.04	935,000
<b>250</b>	<b>2%</b>	5.00	110,000
<b>500</b>	<b>4%</b>	20.00	220,000
<b>1000</b>	<b>6%</b>	60.00	330,000
	<b>100%</b>	<b>125.04</b>	<b>Mbps Average</b>

This would make Australia as of November 2019 ~13<sup>th</sup> fastest in the World in download speed. (Note: the actual average fixed line broadband speed may be somewhat lower due to the fact some users are still on legacy ADSL or cable services)

Can the Minister and NBN confirm the real reason Australia ranks so poorly on the Global Speedtest by Ookla download rankings is solely due to the decision in 2013 to stop the full Gigabit capable FTTP fixed line NBN and replace it with an inferior and much slower speed copper based MTM based technologies, which currently have no Gigabit speed capability including almost half the fixed line network on FTTN which will never have any Gigabit speed capability and the current high wholesale cost of Gigabit speed plans?

114. The NBN states in its 2020 Corporate Plan “*We are well advanced in planning for ‘nbn™ 3.0’*” – what is this plan, what will it do, when does implementation start, how much will it cost, and how will it be paid for?
115. What actual plans, budget and timeframe does the NBN and Government have for upgrading the copper MTM NBN beyond the end of the claimed rollout 30<sup>th</sup> June 2020?
116. Why is the NBN and Government considering any upgrades beyond the end of the rollout (30<sup>th</sup> June 2020) when its Cost-Benefit Analysis back in 2014 assumed there would no upgrades until at the earliest from 2040?

A Senate Review into the Governments so called Cost Benefit Analysis (Vertigan Report 2014) indicated:

*“The Cost-Benefit Analysis...assumed that the current mix of technologies assumed for the MTM in the Strategic Review will be in place for the next 25 years—until 2040—and included no costs in the main scenario for future upgrades”*

[https://www.aph.gov.au/Parliamentary\\_Business/Committees/Senate/National\\_Broadband\\_Network/NBN/Second%20Interim%20Report/c04](https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/National_Broadband_Network/NBN/Second%20Interim%20Report/c04)

117. An independent line item analysis indicates a specific to MTM NBN an extra Operational Expenditure (OpEx) cost of at least \$676 million a year that would not be incurred on a full fixed line FTTP NBN.

Also the leaked report in relation to the Optus overbuild published by Fairfax and mentioned in the Conversation website states:

<https://www.smh.com.au/politics/federal/leaked-nbn-budget-blowout-documents-threaten-to-embarrass-malcolm-turnbull-20151125-gl7fso.html>

<https://www.scribd.com/doc/291057120/Leaked-NBN-document>

<http://theconversation.com/what-will-the-nbn-really-cost-51562>

*“In fact, the leaked nbn co document mentioned earlier shows that the operational costs of FTTN network are 67% more than for FTTP, and the operational costs of HFC are 25% more”.*

Therefore this calculates out to an additional at least ~\$760+ Million a year extra Operational Expenditure (OpEx) specific to the MTM NBN that would not be incurred on a full fixed line FTTP NBN. This tends to verify the independent analysis.

Analysis done by Richard Ferrers of Monash University in May 2016 states on the basis of a 3.7 million FTTN RTC:

*“..for every year that FTTN remains in operation, over \$1B is sacrificed through foregone revenue and lower operating costs”* (in comparison to a FTTP NBN).

<http://telsoc.org/ajtde/2016-06-v4-n2/a55>

On a 4.7 million FTTN RTC footprint predicted by the NBN in 2022 and 2023 this equates to at least \$1.27 Billion in lost revenue and extra OpEx.

Therefore, as per Table 2, it's most likely, the revenue lost and extra Operational Expenditure of the MTM NBN, starting 2022, in comparison to a full fixed line FTTP NBN, had the FTTP rollout continued in 2013, is at least in the order of ~\$1.35 Billion more a year. This analysis uses the NBNs own figures for revenue lost on FTTN uptake as per the 2020 Corporate Plan and extra OpEx costs as per the leaked Optus overbuild report.

**Table 2: Lost revenue & extra OpEx on MTM NBN in comparison with FTTP NBN**

	Lost Revenue Low Take-up Rate on FTTN, also FTTC, HFC (\$Million)	Lost Revenue No Gigabit on FTTN (\$Million)	Extra OpEx Costs MTM (\$Million)	TOTAL (\$Million)
Year 2022	\$433	\$200	\$760	\$1,393
Year 2023	\$389	\$200	\$760	\$1,349

That ~\$1.35 Billion a year on a full FTTP NBN, had the FTTP rollout continued in 2013, could have paid for, as one of many possible scenarios:

1. The additional \$7 Billion Debt Funding interest costs for a full fixed line FTTP (\$58 Billion peak funding) as detailed in Question 99 @3.96% PA = \$277 Million per Year.
2. The cost of cross funding the losses on the Fixed Wireless and Satellite services as per Question 112 = \$330 million per year, removing the need to tax those non NBN fixed line users (ie the Governments proposed “Broadband Tax”) or forcing the tax payer or NBN users to make up the short fall.
3. Making Gigabit Plans more affordable to encourage a greater take-up rate of much higher speed plans and significantly boosting Australia’s ranking on the Ookla Global Speed test in accordance with Table 1, \$643 Million per year, reducing the wholesale charge of true Gigabit (1000 down, 400 up Mbps) speed plans by up to \$83 per month for the 330,000 Gigabit users as per Table 1 in Question 113 OR a multitude of combinations of all speeds tiers wholesale charges being lowered and making all NBN plans cheaper AND/OR reducing CVC charges and congestion.
4. ~\$100 million a year (and increasing each year) to expand the FTTP footprint into the most accessible Fixed Wireless areas, approximately 10,000 premises per year @\$10,000 average CAPEX per premise, further boosting revenue and reducing OpEx, and reducing congestion on existing Fixed Wireless towers and/or reducing the number of Fixed Wireless towers by up to 37 a year.

5. In Question 109 I identified:

*“In the 2020 Corporate Plan page 48 in Years 2022 and 2023 there is a forecast of \$1.4 Billion on “Capital Expenditure”. Nowhere in the NBN Corporate Plan does it provide any sort of breakdown of this Capital Expenditure”.*

Analysis indicates, however, aside from capital expenditure (CAPEX) required for: Common Capex, Satellite, Fixed Wireless, Transit and FTTP, there may be at least \$250 million per year in capital expenditure specific to copper based MTM technologies out of that \$1.4 Billion that would not be required on a full fixed line FTTP NBN, starting in year 2022.

Therefore it’s possible this amount would also be available to further reduce wholesale charges, CVC charges, pay down debt funding, or additional Fixed Wireless to FTTP upgrades.

Therefore it’s likely over ~\$1.6 Billion a year, starting in Year 2022, in revenue lost, extra OpEx, and extra CAPEX will be incurred on the ageing and degraded copper MTM NBN that would not be revenue lost or a cost incurred on a full fixed line FTTP NBN, had the FTTP rollout continued in 2013.

**Table 3: Lost revenue, extra OpEx, extra CAPEX on copper MTM NBN in comparison with FTTP NBN**

	Lost Revenue Low Take-up Rate on FTTN, also FTTC, HFC (\$Million)	Lost Revenue No Gigabit on FTTN (\$Million)	Extra OpEx Costs MTM (\$Million)	Extra CAPEX Costs MTM (\$Million)	TOTAL (\$Million)
Year 2022	\$433	\$200	\$760	\$250	\$1,643
Year 2023	\$389	\$200	\$760	\$250	\$1,599

Can the Minister and Government explain to the people of Australia how losing ~\$1.6 Billion a year in revenue, extra OpEx costs and extra CAPEX costs incurred on the copper MTM NBN is *“cheaper and more affordably”* than a full fixed line FTTP NBN, had the FTTP rollout continued in 2013?

118. The Australian Financial Review (AFR) reported on the 2<sup>nd</sup> September 2014 that:

*“The cost-benefit analysis for the first time allows comparison of the cost of the two alternatives in the strategic review on net present value rather than on a simple cumulative basis. It states that the FTTP scenario costs only \$6.8 billion more than the MTM”*

<https://www.afr.com/politics/federal/limitations-in-the-nbn-cost-benefit-review-20140902-jdmn4>

and in the Cost Benefit Analysis (CBA):

*“Using NBN Co assumptions from the Strategic Review, the cost difference between the FTTP scenario and the MTM scenario is \$6.8 billion (in present value terms)”*

<https://www.communications.gov.au/file/3901/download?token=YFx0m078>

The CBA panel in August 2014 revised this up to \$10.4 Billion net present value cost difference.

Can the Minister and Government explain to the people of Australia why they went down the path of a copper based MTM when their own analysis of the real extra cost (ie net present value) of a full fixed line FTTP NBN is claimed to be only in the range of \$6.8 Billion and \$10.4 Billion?

This extra cost is trivial in relation to the extra revenue generated and lower OpEx and lower CAPEX of \$1.6 Billion a year, and the increased benefits to business and all Australians and to GDP, on a full fixed line FTTP NBN had the FTTP rollout continued in 2013. Considering the MTM cost and schedule blowouts, lower revenue forecasts, extra CAPEX to bring the HFC component up to some level of service, all in the Billions of Dollars since the Strategic Review and the CBA, the MTM NBN is unlikely to have any cost benefit, of any kind, over a full FTTP rollout at all, at any time since 2013.

119. Also in the AFR Article it states in relation to the CBA;

*“The technical model asserts there is no application that needs the whole 100 Mbps service”*

Why then is this NBN and this Government proposing 1000 Mbps (1 Gbps) speed plans?

120. A comparison (Table 4) of claimed full fixed line FTTP scenarios indicates all but 1 would be cash flow positive above that of the extra interest cost incurred, the year after claimed project end dates, using the current 3.96% fixed debt funding rate and a debt funding rate based on the 3 interest rate cuts since the end of 2016 of 3.21%.

**Table 4: Full fixed line FTTP scenarios, debt funding cost and cash flow**

Claimed Year Complete	Peak Funding (\$Millions)	3.96% Extra Interest Cost Per Year	Extra Revenue & Lower OpEx & CAPEX on FTTP Per Year	FTTP Cashflow +/-	
				Per Year after Year complete	NBN Type
2020	\$51,000	\$0	N/A	N/A	MTM
2022	\$58,000	\$277	\$1,600	\$1,323	My FTTP NBN Peak funding
2023	\$64,000	\$515	\$1,600	\$1,085	Scenario 2 - IT Strategic Review FTTP NBN
2024	\$73,000	\$871	\$1,600	\$729	Scenario 1 - IT Strategic Review FTTP NBN
2028	\$81,000	\$1,188	\$1,600	\$412	The mythical \$81 Billion FTTP NBN
2028	\$94,000	\$1,703	\$1,600	-\$103	The mythical \$94 Billion FTTP NBN

Claimed Year Complete	Claimed Peak Funding (\$Millions)	3.21% Extra Interest Cost Per Year	Extra Revenue & Lower OpEx & CAPEX on FTTP Per Year	FTTP Cashflow +/-	
				Per Year after Year complete	NBN Type
2020	\$51,000	\$0	N/A	N/A	MTM
2022	\$58,000	\$225	\$1,600	\$1,375	My FTTP NBN Peak funding
2023	\$64,000	\$417	\$1,600	\$1,183	Scenario 2 - IT Strategic Review FTTP NBN
2024	\$73,000	\$706	\$1,600	\$894	Scenario 1 - IT Strategic Review FTTP NBN
2028	\$81,000	\$963	\$1,600	\$637	The mythical \$81 Billion FTTP NBN
2028	\$94,000	\$1,380	\$1,600	\$220	The mythical \$94 Billion FTTP NBN



121. Does the Government and NBN now have a defined operating cost for each access technology in its multi-technology mix including FTTN and FTTP?

<https://www.itnews.com.au/news/nbn-co-says-its-still-too-early-for-mtm-operating-costs-444005>

122. Will the NBN and Government now update the “Disruption costs by Technology” Table 6.20 in the CBA to reflect the actual true disruption costs by technology, including the higher fault rates on copper MTM Technologies (HFC, FTTC, FTTN) in comparison to FTTP, and the cost to users in lost wages, time off work, failed appointments with NBN technicians not turning up, the cost in lost time spent with service provider support centres, and the cost to service providers themselves?

<https://www.zdnet.com/article/full-fibre-the-least-faulty-nbn-technology/>

*“When translated to faults per 100 active premises, the technology in the order of most faults to least are: HFC, FttC, FttN, fixed wireless, FttB, satellite, and FttP”*

**Table 6.20: Disruption costs by technology**

Technology	Disruption cost per premises	Relative to FTTP
	\$/premises/once-off	Per cent
FTTP	329	0.0
FTTN	200	-39.2
HFC	278	-15.6
Fixed wireless/satellite	272	-17.3

Source: NBN Co, Institute for Choice, Department of Communications, CIE estimates.

123. Can the NBN and Government identify the surplus cash from revenues and/or savings on OpEx and CAPEX on the MTM NBN over the next 10 to 15 years to upgrade all the copper based MTM technologies FTTN, HFC and FTTC to FTTP?

Isn't the reality of the Governments failed decision to go down the path of a copper based MTM NBN going to mean the tax payers of Australia will have to pay for the necessary upgrades to full FTTP over the next 10 to 15 years?

124. In the Governments and NBNs report “*Speed Check: Calibrating Australia’s broadband speeds*” it lists Australia as being 13<sup>th</sup> in comparable Countries once the MTM rollout is complete (Exhibit 9). What this report fails to mention is Australia is currently the only country whose fixed line download speed, in this list of 13, is substantial lower than its mobile download speed. The other 12 Countries fixed line speeds both download and upload are substantially higher than their mobile download and upload speeds.

The report also lists Australia as ranking 17<sup>th</sup> using data representative of entire population. What this report fails to mention is Australia is currently the only country whose fixed line download speed, in this list of 17, is substantial lower than its mobile download

speed. The other 16 Countries fixed line speeds both download and upload are substantially higher than their mobile download and upload speeds.

The report also lists Australia as ranking 22<sup>nd</sup> using representative broadband user data. What this report fails to mention is Australia is currently the only country, along with Turkey, whose fixed line download speed, in this list of 22, is substantial lower than its mobile download speed. The other 20 Countries fixed line speeds both download and upload are substantially higher than their mobile download and upload speeds.

Can the Minister and NBN confirm this is due to speed limited, old and degrading, high maintenance, few real upgrade options or at huge expense especially on FTTN, copper MTM Technologies the Government decided to use back in 2013?

125. What is the expected cost to the NBNs budget of the ½ price discounts for new eligible RSP customers and discounts for MDU customers?

<https://www.itnews.com.au/news/nbn-co-offers-holdouts-half-price-internet-for-a-year-535764>

126. Are these discounts due to the low take up rates on copper MTM Technologies in comparison to FTTP?

127. What are the outcomes of the HFC gigabit trials and how much has this trial cost? (page 11 - 2020 NBN Corporate Plan).

128. What is the anticipated total cost of the ~100,000 “complex installations” still to be made NBN ready, beyond the end of the June 2020 expected end of rollout?

129. Where are these ~100,000 “complex installations mostly located (eg City, Urban, Rural?) and in what MTM Technology type areas?

130. Does the NBN have a breakdown of the likely MTM Technology type to be used for these ~100,000 “complex installations?

131. What is the expected completion date and/or rollout timeframe for these ~100,000 “complex installations?

132. Are these ~100,000 “complex installations” included in the NBN’s RTC and Activation forecasts for years 2020 to 2023 in the NBN’s 2020 Corporate Plan?

133. Now that the MTM NBN rollout is nearing completion will the Government release unredacted versions of their:

(a) 2013 NBN Strategic Review

(b) Independent cost-benefit analysis of broadband and review of regulation Volume II?

134. The NBN is incapable of answering basic simple questions.

My own personal experience. Prior to me selecting a service provider and NBN Plan back in February 2017 I asked the NBN in writing (email) what my copper line distance to the Node was so I had some information to decide what speed plan I could actually get on the copper line as I am aware of the limitations of VDSL technology. The NBN stated they did not provide that sort of information and to ask my service provider (I also asked my then service provider the same question and they refused to answer my question saying they did not provide that sort of information and ask the NBN).

I also asked the NBN (via email) ~20 months after my area went RTC if the ADSL/VDSL coexistence period had ended and had the throttling of the VDSL system been removed and power tuned up. The NBN again did not give a simple Yes or No answer but gave some vague answer based on the download speed I was getting stating the coexistence must have ended, which didn't answer the question at all. I still don't know if coexistence has been removed.

Why is the NBN incapable of answering very simple basic questions? Is this because of the NBNs and the Governments concerns about the limitations of copper based FTTN and they think users shouldn't know?

135. Is the Government and NBN aware of recent UK research of the electromagnetic effect of VDSL causing pollution of the Radio Frequency (RF) spectrum?

<https://www.ofcom.org.uk/research-and-data/tv-radio-and-on-demand/radio-research/spectrum-assurance-analysis-of-bt-openreach-vdsl>

*"Ofcom tests indicate that wires used for VDSL emit an electromagnetic disturbance at levels capable of affecting HF radio reception"*

*"Over the past five years Ofcom has received an average of six complaints a year"*

Has the NBN or Government received any complaints about RF interference caused by their MTM VDSL technologies? If so how many and what impact has the NBN's and Governments VDSL technology had?

136. Has the heatwave or bushfires in Australia impacted on any NBN infrastructure in particular FTTN?

137. Has the Government considered upgrading to wet string instead of using aging and degraded copper for VDSL on FTTN?

It would probably give about the same reliability and again be *"sooner, cheaper and more affordably"*

<https://www.revk.uk/2017/12/its-official-adsl-works-over-wet-string.html>

*"As a bonus, fit tin cans to both ends and you get voice as well as broadband on the same wet string!"*

Needless to say, in my opinion, that sums up this Governments copper MTM NBN perfectly and its disastrous politically motivated policy decision and direction to stop the full fibre rollout in September 2013.

Mr Stephen Rue  
Chief Executive Officer  
NBN Co  
100 Arthur St,  
North Sydney NSW 2060

Mr Ziggy Switkowski  
Chairman  
NBN Co  
100 Arthur St,  
North Sydney NSW 2060

5<sup>th</sup> February 2019

**Complaint: FTTN disaster**

Dear Mr Rue and Mr Switkowski

For the last 2 years I've suffered this unreliable piece of copper FTTN disaster your organisation and current Federal Government have imposed on me. I have had many dropouts, many multi hour outages both internet and phone.

I have a business to run and your FTTN disaster is impacting on my business.

Multiple complaints to my service provider Telstra, particularly during 2018, including writing to the CEO of Telstra with a long detailed record of dropouts, hasn't resolved the issues.

Another multi hour dropout occurred on Monday 28<sup>th</sup> January 2019 starting at 12:43 PM, that also affected others in my street. I wasted another hour with my service providers support centre. There was another Internet and phone dropout later in the evening.

Another Internet dropout occurred on Friday 1<sup>st</sup> February 2019 at 11:11 AM.

After these outage events I often have days of consistent slow in particular upload speeds (30-50% of what I normally get) that are not congestion related. This has occurred again after the 1<sup>st</sup> February 2019 dropout and I have tested 2 modems with the same result.

My previous ADSL2+ was much more reliable by at least an order of magnitude.

The Telstra 6 down/1 up broadband backup on their NBN Smart Modem is more reliable than your FTTN disaster.

All the internet cabling and your FTTN lead in cable within my property have been checked by a registered cabler at my cost. Multiple modems have been replaced and tested.

**I have had enough.**

So – here is your choice and my offer:

1. NBN Co replaces its FTTN disaster to my premises with a full FTTP installation to my premises.
2. I will make a co-contribution of \$3,500 (Three Thousand Five Hundred Dollars) to NBN Co for the installation cost of FTTP to my premises and not a cent more.
3. I will not pay any TCP application fee.
4. If NBN Co fails to take up my offer then I will cancel my NBN broadband service for good and use in the interim 4G broadband (Optus for example offer a 4G broadband service with 500 GB data allowance per month at less cost than my current 100-40 NBN plan) and then when available I will take up a 5G broadband plan.

Optus, as you are no doubt aware, has already started rolling out 5G broadband in some areas of NSW, and even if that takes a decade to arrive at Blackheath its better than this FTTN disaster. While my broadband in the interim may also be slower I have no doubts it will be much more reliable than this FTTN disaster.

I'm not paying an estimated based on distance \$10-15,000 for a TCP upgrade to full fibre when 93% of Australian Businesses and Homes should have received FTTP for, by my estimate, an average of \$3,500 per premise had the FTTP rollout continued in 2013.

Why is it that your own 2013 Strategic Review Scenario 4 showed for the same \$51 Billion dollar cost as your current Multi Technology Mix disaster with FTTN we could have had instead at least 63% FTTP and the rest the existing HFC with a very small component of FTTB/FTTC and maybe no FTTN at all?

Why has the NBN and this Government wasted \$Billions on FTTN when for the same peak funding as per Scenario 4 we could have had FTTP instead of FTTN?

Your MTM model was based on the UK's BT/Openreach model of FTTC – the UK Government and Openreach are now abandoning copper as fast as they can and rolling out full FTTP. Why isn't the NBN doing the same?

Your Multi Technology Mix including FTTN is a disaster for me, my business, a disaster for small business and a disaster for Australia.

I require all return correspondence in writing (email is acceptable).

Yours Sincerely,

<signed>

Peter Savio