

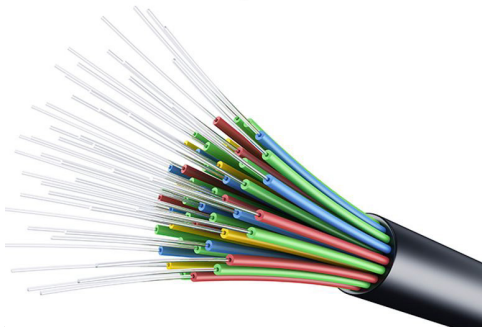
Telco's: Delivering an NBN network to Australians

Ausbil Investment Management Limited
 ABN 26 076 316 473
 AFSL 229722
 Level 27
 225 George Street
 Sydney NSW 2000
 GPO Box 2525
 Sydney NSW 2001
 Phone 61 2 9259 0200
 Fax 61 2 9259 0222

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Looking back

It was an exciting moment when the national broadband network (NBN) was first announced back in April 2009. The nation was promised fast internet with Fibre-to-the-Premises (FTTP) network to be rolled out to 90% of premises over 8 years, then further extended to 93%, with the remainder to be covered by satellite and fixed wireless technology.



Source: <http://biog.iinet.net.au>

The network would future-proof Australia's digital economy, leap-frog other countries on digital innovation, attracting foreign investment and creating significant productivity improvement that should contribute meaningfully to future economic growth. In total, the plan would cost \$44bn.

Building a FTTP network to 93% of the premises in a country like Australia will never be easy. Costs blew-out relatively quickly. A strategic review completed in 2013 estimated that the FTTP network would require \$73bn to complete, and would not be completed until 2024. In comparison, Chorus in New Zealand has managed to reduce the cost of FTTP rollout by 44% from 2013 to 2016, and globally we have seen cases of significant reduction in building costs. One would question, why can't Australia?

Not long after, the original form of NBN was dumped by the Coalition Government and has been replaced by the Multi-Technology Mix (MTM) approach. Effectively, this means the use of multiple different fibre technologies such as FTTP, Fibre-to-the-Node (FTTN), Fibre-to-the-Building (FTTB), Fibre-to-the-Curb (FTTC) and Hybrid Fibre Coaxial (HFC). The new form of NBN is expected to be delivered faster and cheaper. Again, after a few years, the build is taking longer and costing more than promised. We are now looking at completion of the initial build by 2020, with activation of more than eight million homes and businesses to be achieved within peak funding of \$49bn.

NBN: Is this good enough?

As many would have said, the need to make a commercial rate of return on NBN has created a lot of challenges and issues. Effectively, the higher the cost of build, the higher the price of broadband services to the end users. It has ramifications for not only retail service provider (RSP) but for consumers and eventually the nation's digital economy.

The issues surrounding the variable pricing structure on the NBN based on bandwidth (in particular Connectivity Virtual Circuit or CVC charges) has driven up the wholesale cost for RSPs and significantly undermined the profits for the entire industry. On top of that, given the once in a lifetime significant churn event¹, we are seeing irrational new entrants and competitive markets putting further pressure to profitability. This has led to RSPs not purchasing enough capacity to deliver the speed promised.

And, even with that, prices for an entry level NBN broadband service remain high. Complaints against the NBN grew 160% last year according to the Telecommunications Industry Ombudsman annual report. Official complaints submitted were mainly regarding slow speeds, dropouts or no service at all.

Speed tier	Share of connection
12Mbps	29%
25Mbps	55%
50Mbps	4%
100Mbps	12%

Source: ACCC NBN Wholesale Market Indicators Report for period ending 30 September 2017

As indicated on the NBN Wholesale Market Indicators Report published by ACCC quarterly, most customers were buying the lower speed tiers. 84% of all services were connected on 12Mbps and 25Mbps compared to NZ where 90% or more are on 100Mbps. Consumers are buying based on the price they can afford and without realising that the speed could be slower than what they had before especially during peak hours due to RSPs under-provisioning. NBN Co is currently offering discounted pricing on a 50Mbps plan which is encouraging, however more significant permanent price adjustments (particularly CVC) are required to have meaningful a impact.

The other issue to consider is the technology limitation of MTM approach. Put simply, copper loop lines are susceptible to signal attenuation, that is, the signal over the old copper wires can degrade quite quickly the greater is the distance from your house to the node as shown in the 2 charts below. There are technical limitations on the speed achievable due to the copper length. Unfortunately, it wasn't well known by consumers. As we can see, the major service providers have agreed to compensate customers for overcharging for maximum download speeds that they could not receive, particularly on FTTN plans.

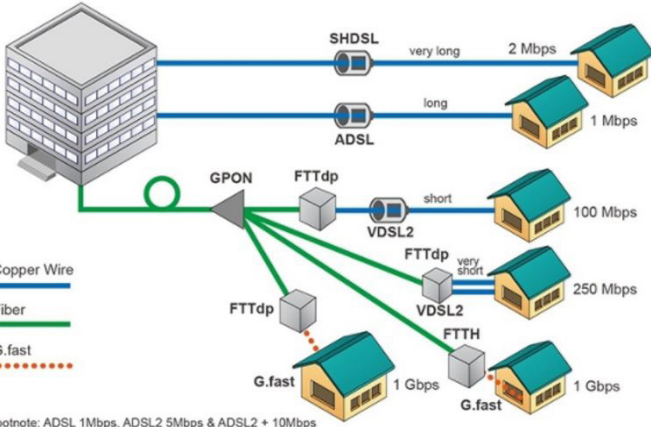
1. Note that Telstra is mandated to switch off the copper network within 18 months of the NBN network being available in your area, meaning switch to NBN or there'll be no home phone or internet service.



Source: <http://www.smh.com.au>

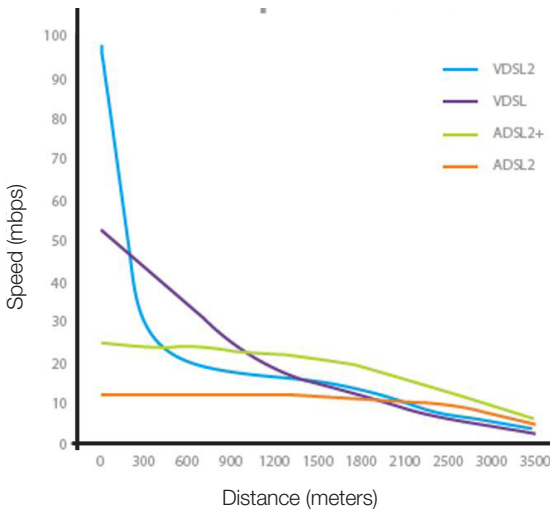
Proportion of premises covered by each technology

Technology	Corporate plan 2018-21		Base case	
	End of initial build (FY20) (M)	End of initial build (% of Total)	End of initial build (FY20) (M)	End of initial build (% of Total)
FTTP	1.8 - 2.2	16 - 19	1.9	17
FTTN/B/C	5.1 - 6.3	44 - 54	5.6	48
HFC	2.6 - 3.2	22 - 28	3.1	27
Fixed Wireless and Satellite	0.9 - 1.0	8	1.0	8
Total Australia	11.6	100	11.6	100



Source: <http://www.datacenterjournal.com/protecting-highway-cloud>

FTTC Speed Chart



Source: <https://nbnmyths.wordpress.com/why-not-fun>

Based on the NBN corporate plan, a significant number of premises are expected to be covered by FTTP and FTTC which are likely to have the speed limitation issue.

There's an upgrade path but the question is when will that happen? Fortunately for FTTC and FTTP networks, NBN Co is looking to deploy 'G.fast' broadband technology in 2018 which has the ability to deliver speeds of up to 1Gbps over copper lines. And, potentially up to 10Gbps using NG-PON2 technology in the future. Unfortunately, it is more uncertain for FTTP, whilst technologies continue to evolve, current G.fast or NG-PON2 technologies only work for short copper length. Will it be too late by the time the FTTP network is available for upgrades that we are falling so far behind the other nations? The high prices and unreliable speeds of current NBN (especially FTTP network) creates the best environment for wireless network disruption. The improvement in wireless network technologies in terms of speed and capacity is exponential with 5G expected to reach theoretical speed of 10Gbps, much faster than FTTP network even if the actual 5G speed is much lower than 10Gbps due to contention and other signal disruptions.

NBN is probably one of the most important pieces of infrastructure for the nation, the economic return from NBN should be viewed beyond the input prices. The benefits a robust broadband infrastructure will bring to the nation are likely to be beyond our imagination with the driving force of the Fourth Industrial Revolution. A robust digital economy would improve the quality of life for all Australians and contribute meaningfully to GDP. One just needs to look at how quickly the blockchain technology is evolving to see how quickly we could be falling behind. Blockchain has the potential to revolutionise almost every industry. Everyone has the opportunity to make an income by being connected and participate with this powerful technology. It has the potential to remove inequality. We need fast internet. Be a disruptor or get disrupted.

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For further information please contact



Shanelle Hoong
Equities Analyst
02 9259 0278



Mark Knight
Head of Distribution
on 02 9259 0226

Ausbil Investment Management Limited
ABN 26 076 316 473
AFSL 229722

Level 27
Grosvenor Place
225 George Street
Sydney NSW 2000
GPO Box 2525
Sydney NSW 2001
Phone 61 2 9259 0200
Fax 61 2 9259 0222