

“Getting there from here”: Improving the Business Case for the NBN
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1. Synopsis:

Australia’s Prime Minister, Malcolm Turnbull, asked what to do about the National Broadband Network (NBN), cited an old Irish joke about asking for directions: “Well, I wouldn’t start from here”. The Federal Government’s NBN initiative, in its various iterations, has now been underway for almost a decade, surviving 5 Prime Ministers and having cost taxpayers tens of billions of dollars. This unprecedented programme aimed to deliver greatly improved broadband to ~25 million people spread across one of the world’s largest landmasses. As at the end of December 2017, NBN services were available to 6.1 million Australian households and businesses, with 3.4 million connected.

However, most consumers purchase lower speed plans of around 25 Megabits per second downstream, hardly “high speed” by international definitions. NBN is being delivered via an array of different technologies, which have differing current performance, operational costs and upgrade paths. Consumer satisfaction is patchy on some of the technologies being deployed by NBN. Financially, the Government Business Enterprise responsible for the NBN rollout, nbn™, has had to borrow the balance of funds it requires from the Government, exceeding the Government’s pledge that its investment in NBN would be capped at A\$29.5Bn.

This short paper takes a pragmatic look at what can be done to optimise the remaining NBN rollout, improve the business case for better broadband for Australians, and, importantly, what planning should be underway to prepare for post-2020 when the NBN, at least in its current guise, is expected to be completed.

2. Relevant background:

By way of background, I am a management consultant with considerable experience in telecommunications. In the period 1999 to 2010 I worked at Telstra in strategic planning and operational roles. Between 2010 and 2016 I was Strategy Director at Crown Fibre Holdings Limited (CFH), now [Crown Infrastructure Partners](#), the NZ Government-owned company created to manage the Government’s Ultra Fast Broadband (UFB) initiative. I am currently a member of the NZ Government’s Ministerial Advisory Group on the digital economy and digital inclusion.

3. About Ultra Fast Broadband in New Zealand

The UFB initiative is a Public Private Partnership whereby the Government aimed to make UFB (Fibre To The Premise/ FTTP) available to 75% of the New Zealand population, later expanded to 87%. The Government through CFH contracted Chorus (formerly the networks arm of Telecom New Zealand) and three Local Fibre Companies (known as LFCs) to deploy and own the UFB network. As at 31 December 2017, UFB is available to just under two-thirds of New Zealanders, with over 1.25 million households and businesses able to connect and 507,000 having done so. Uptake is just over 40%.

UFB is a readily available comparator for the NBN initiative in Australia. Both are Government-backed ambitious programmes to vastly improve national broadband. Both started with a fibre-optic architecture (primarily Gigabit Passive Optical Network/ GPON), and both have a wholesale-only, open access model.

There are, however, some important differences between UFB and NBN:

- NBN policy was for rollout to commence outside major capital cities. UFB policy was to prioritise the fibre rollout to schools, businesses and health centres.
- UFB is a Public Private Partnership whereby the Government invests in both equity and debt into 4 private sector partners, the largest of which is Chorus (formerly the networks arm of Telecom NZ). The Government’s investment acts like a “soft loan” and insulates the private sector operator from the initial high costs of the fibre rollout. By contrast, nbn™ is a Government Business Enterprise with taxpayers funding the full investment required.
- NBN policy restricts “cherry-picking” by other operators. UFB has no such restriction.



- NBN product structure has a “pipe” charge (AVC) and also charges Retail Service Providers (**RSPs**) for bandwidth used (CVC). UFB charges are simply for the access “pipe”.
- UFB does not mandate customer migration. By contrast, NBN requires migration after an 18-month window from network completion has expired.
- Whereas NBN’s Government investment is open-ended, UFB sees the Government invest a known and fixed sum per premise passed with fibre, with commercial remedies such as liquidated damages available if agreed deployment targets are not met.
- NBN aims to cover 100% of the Australian population, including satellite services for remote and rural areas. In New Zealand, rural broadband is managed by a separate “Rural Broadband Initiative”.

The remaining sections of this paper provide some brief suggestions on optimising the remaining NBN rollout.

4. Putting more fibre in the diet

Given virtually everyone acknowledges FTTP is the optimal technology, NBN deployment should attempt to “put more fibre in the diet”. This should endeavour to build FTTP where possible, with Fibre To The Curb as a fallback rather than the preferred option.

There are several ways this could be achieved, such as the following:

- NBN could choose to roll FTTP in brownfields areas where the cost difference between FTTP and alternatives is marginal, for example within 10%. This should take account of the likely cost of a future upgrade to fibre, discounted by a percentage (say 50%) as some of these costs might be met by parties other than nbntm. It should also take to account likely lower opex costs (including lower power requirements and fewer faults) on FTTP compared with alternatives. By contrast, the current approach seems to be to deploy “anything but FTTP”, with even some greenfields areas receiving new copper for Fibre To The Node (**FTTN**).
- NBN could support a 3rd-party funding top-up for FTTP. Under this approach, NBN would allow, indeed even encourage 3rd parties (such as Local Councils, State Govts, NGOs, property developers, bodies corporate for Multi Dwelling Units, etc.) to “top up” funding to support FTTP. By contrast, today projects like [“Ten Gigabit Adelaide”](#) appear to be going around NBN altogether, while several Local Councils has also considered building their own high speed broadband networks.
- Standardising, lowering and making more transparent the costing to upgrade to FTTP. The current NBN “Technology Choice” programmes allows members of the public to apply for an upgrade to FTTP. However, the process is slow and convoluted, with “Price On Application” costing which tend to deter most seeking an upgrade. At present both the cost of applying to get a quote for the upgrade, and the cost of the upgrade itself appear to be issues.
- Prioritising FTTP rather than remediation of other technologies in the areas where nbntm receives the most complaints, for example FTTN areas where not many customers can get 100 Megabits per second speeds.

5. Further steps to reduce the cost profile

NBN has actively deprioritised deployment of FTTP in brownfields areas. As a result, FTTP deployment costs have remained high. By contrast, countries where FTTP is being deployed extensively, such as New Zealand, have seen deployment costs declining sharply over time as economies of scale are achieved, deployment techniques improved and deployment standards evolve. FTTP is a major telecommunications technology architecture worldwide. Costs are falling all the time, but NBN, and therefore Australia, is not benefiting from this.

There are myriad regulatory, policy & commercial options to improve FTTP which have not been fully explored in Australia. Some options would be:



- To work with NBN to progressively retire the Telstra Hybrid Fibre Coax (**HFC**) network in favour of FTTP. Now that Foxtel is using satellite rather than HFC for its content, there seem few reasons to retain HFC. Deployment of HFC in many Australian metropolitan areas is aerial, meaning that decommissioning HFC can allow aerial deployment of FTTP. This is a cheap, fast and non-visually polluting way to deploy FTTP at scale.
- To ask the Council of Australian Governments (COAG) to work on a national set of deployment standards for FTTP. At present, deployment standards are fragmented across jurisdictions, and this is a contributing factor towards the high apparent cost of deploying FTTP in Australia.
- To ask COAG to support opening up access to poles & ducts which are owned by parties other than Telstra. (The existing contract between Telstra and NBN allows for use of Telstra ducts, but there are other ducted networks and duct access is a source of delay for NBN.)
- To prioritise rollout towards States or local municipalities which offer a "dig once" policy, whereby complementary works such as electricity, water, roading and footpaths mandate rolling of FTTP whenever works are underway. "Dig once" policies have been used in several American states, and [may soon cover](#) the whole of the USA. Noting that fibre will continue to be rolled out in Australia well beyond 2020, such a policy can provide advantages well beyond the current NBN deployment.
- To improve NBN contracting, offering more attractive contract terms with more certainty, based on (over-) achievement of performance milestones. This would support contractors in innovating to improve their deployment run rate and reduce costs. This already appears to be happening with FTTN, but has all but ceased for FTTP.

6. Use price elasticity to maximise ARPU and create "abundant" broadband

nbn[™] is clearly well aware of issues in its pricing structure, having repeatedly tweaked its "CVC" (bandwidth) charges. However, the existence of the CVC price of any magnitude will naturally retard bandwidth usage. This creates a network characterised by scarcity not abundance.

If CVC cannot be reduced below A\$10, another option is to reduce "AVC" (the monthly access charge). A revised price structure where AVC for 100/40 is reduced could encourage higher speed take-up, perhaps in conjunction with further CVC repricing. This could be modelled in selected areas as a campaign, and could be deployed across the FTTP, FTTN/B/C and HFC networks.

RSPs in my experience care about the total they are paying in access charges. The mix between pipe (AVC) and bandwidth (CVC) charges is less relevant to them than the total bill. Ideally, the CVC should be abolished altogether, as it is clearly holding NBN back from delivering abundant broadband even in FTTP areas where it is feasible.

New Zealand's experience is instructive. In 2014, with the UFB network growing scale, most customers were purchasing low-end 30 Megabits per second plans. While an improvement over the ADSL2+ plans which they largely replaced, these were not a great deal different from copper broadband, and many customers also had the choice of new VDSL plans after Chorus made this widely available over copper. Chorus and the LFCs responded by cutting the price of 100 Megabits per second UFB plans and introducing 200 Megabits per second plans. These started to flow through to retail offers by 2015, and then a rapid transformation commenced as major RSPs changed their default fibre plan from 30 to 100 Megabits per second. Plans offering 1 Gigabit per second were added in 2016.



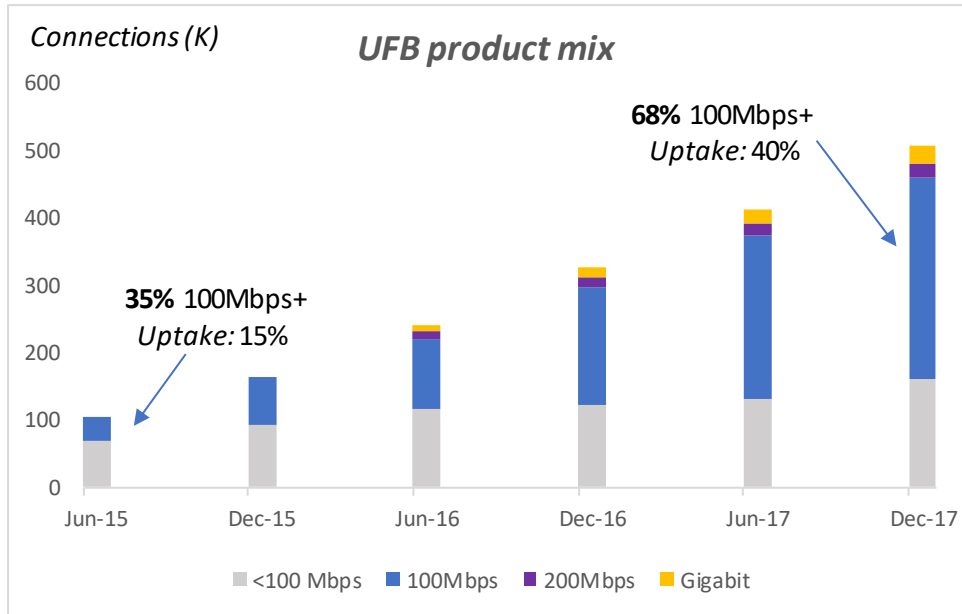


Figure 1: NZ UFB uptake by speed tier
Source: Crown Infrastructure Partners annual reports, Wollemi analysis.

By 2017, fibre uptake was developing apace, with consumer demand for 100 Megabits per second and higher speeds accelerating. This proved that consumers value high-quality broadband, and are willing to pay a little more for it. In the process, this returned the New Zealand telecommunications industry to revenue growth for the first time since the Global Financial Crisis. It has also led to ~2.6% growth in Average Revenue Per User (ARPU) on New Zealand fibre networks, over the last 2 year as per the table below.

UFB Plan (Mbps down/ up)		30/10	100/20	200	Gigabit	ARPU
As at 30 June 2015	Price	\$ 37.50	\$ 55.00	n/a	n/a	\$ 41.62
As at 30 June 2015	Share of mix (estimate)	76.5%	23.5%	0%	0%	
As at 30 Jun 2017	Price	\$ 40.50	\$ 43.00	\$ 55.00	\$ 65.00	\$ 43.78
As at 30 Jun 2017	Share of mix (estimate)	32%	59%	4%	5%	
	ARPU uplift					5.2%

Table 1: ARPU uplift on NZ UFB, 2014 to 2017 (residential & small business connections, wholesale prices, NZ\$)
Source: Crown Infrastructure Partners, Wollemi analysis.

Importantly, working to better understand the price elasticity of broadband can also stimulate uptake, leading to higher revenues. In this regard, as nbn[™] has no legacy revenues to defend, it is more like a LFC than Chorus. The 3 LFCs have benefited from using price elasticity to increase ARPU while increasing revenues. Since the price changes flowed through in FY2015, UFB uptake in New Zealand has increased from 15% to 40%, and some cities such as Tauranga and Hamilton which are serviced by the LFCs are higher still.

In short, NZ Ultra Fast Broadband has created a “virtuous cycle” where retail competition is fierce and consumers can expect attractive offers for high speed products. Margins for RSPs are low for undifferentiated offers, but this is leading RSPs to add other option such as entertainment content, mobile and energy services.

nbn[™], the Government and the telecommunications/ ICT industry can also undertake further steps to educate the market in the benefits of taking up higher speed plans. Particularly for businesses, there are important productivity benefits to be gained from better broadband, and it is questionable whether these are being derived at present.



7. Increase Retail Service Provider competition

Thanks to an ACC decision, NBN operates over 120 Points of Interconnect (**POIs**). In order to retail NBN services nationwide, a RSP must provision backhaul to all of these locations. This is a costly exercise, and has led to the top 4 RSPs controlling virtually the whole NBN market.

In New Zealand, the original policy structure was for a POI located in each of the original 33 towns and cities covered by the rollout. The Government has since agreed it is comfortable for Chorus and the LFCs to backhaul at their own expense from a small town to a larger POI. This has become the main model by which smaller towns are served with fibre. This helps keep backhaul costs for smaller RSPs down, and allows Chorus and the LFCs to increase uptake in such locations. In the Australian context, a similarly more permissive approach would promote competition and service in smaller towns.

In New Zealand, the top 5 RSPs serving fibre sell only around 85% of all services, and there are over 90 RSPs in all. This is creating healthy competition which is good for consumers.

8. Future-proofing for beyond 2020

It is a reasonable assumption that at least some of NBN's non-FTTP networks will be upgraded after the current rollout finishes at the end of 2020.

As a result, designing in an upgrade path will add value to nbn[™]'s assets and make upgrades easier, cheaper and faster. Thus, fixed networks such as FTTN, FTTC and FTTB (and even HFC) should be designed for a potential FTTP future. These steps would be positive for NBN's future value if it is privatised in the 2020s.

Examples of architectural decisions which can be made with an eye on future FTTP deployment include duct width, fibre count, and design of nodes and cabinets.

9. Biting the bullet on write-down

There has been some debate in Australia about whether the Government should write down the value of its investments in NBN. A write-down would allow a reduction in the "Initial Cost Recovery Account" (ICRA), which is the amount of its early investment which nbn[™] is currently under-recovering. At present, the ICRA will have to be fully funded in future years, including the amount "under-recovered" in the early years. According to the ACCC's last advice on the topic in mid-2017, the ICRA stood at ~A\$9.5Bn in mid-2016. It will certainly have grown since that date.

If a write-down proceeds, the Average Revenue Per User nbn[™] needs to recover its costs can be reduced. At present, nbn[™] expects to see ARPU grow from A\$43/ month to \$49/ month by 2020, and ~\$60 by 2030. This is unlikely to be achieved.

A write-down would substantially help NBN achieve "abundant broadband", even to the extent, for example, of abolishing the "CVC" bandwidth charge (see Section 7 above). It would also help nbn[™] achieve the best possible sale price in the event that it is privatised in the 2020s.

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