

Inquiry into the business case for the NBN and the experiences of small businesses

I am a recently retired software and computing engineer who worked in small and medium IT and telecommunications business settings, including in business upper management. I have no political agenda or affiliation. In compiling this submission, I have simply applied my acquired knowledge and experience in putting together the following discussion points and recommendations on what I professionally perceive as the biggest political blunder in this country's history, the MTM version of the NBN.

1. What would be the cost benefit if a million people could telecommute instead of driving to work every day? This is a very conservative estimate of what a full fibre network would offer that Multi Technology Mix (MTM) does not. Population drain from rural communities would ease and potentially reverse as more people and small businesses move to their dream "tree change" rural locations. Urban housing pressures would ease and commuting pressures on urban transport infrastructure would also ease. Less car accidents, less auto injuries and deaths, less road rage stress. Less fossil fuel consumption, less pollution. MTM's inadequacies are costing us all of this. And much more.

And, focusing on current events, don't forget that full fibre infrastructure withstands bushfires. It doesn't care at all about floods either. And it doesn't require repeaters. That way people can get emergency calls out and information in – life saving technology that would have been helpful right now. But sadly, MTM fails us in these essential safety needs.

2. Are you aware that we are experiencing an MTM-induced brain drain from Australia? Put bluntly, MTM is not fit for purpose, so tech-based businesses and tech experts are migrating en masse to NZ and other "advanced" countries (those with full fibre) to avoid the inadequacies of the MTM. And tech-oriented business opportunities, that may have come our way, are simply not coming because MTM has shattered Australia's tech reputation and capability.

Instead of leading the world in this century's Digital Revolution as the "clever country" (that we still wrongly imagine ourselves to be) we are now becoming the "backward country", relying on brawn over brains for our revenues. We were on the right track - remember that this country invented Wi-Fi, and with the timing of NBN Mark 1 we had the chance to be one of the first countries with a full fibre network. The economic potential was enormous, but we blew it. Australia is now seen as a joke internationally. Instead of what should have been an early adopter's fibre-led employment boom and economic boom, we are actually now facing a looming MTM-induced recession.

3. Unreliability is one of the biggest issues we have with MTM. Unlike fibre, which simply works flawlessly, the MTM's degraded copper (FTTN and HFC) is plagued by inherent problems. For successful small business applications internet drop outs are inexcusable, yet let's not forget that the MTM NBN is so badly flawed that "up to 5 drop outs per day of

undefined duration" is now considered fit for purpose by NBN Co., so requiring no repair response. Meanwhile, the country's dodgy old MTM copper is ageing further and its joints are drying out and cracking. Just wait until the drought breaks and see how the cracked and corroded copper responds when wet. Internet? What internet? On the other hand, fibre is fully waterproof.

4. How do the ever-growing maintenance costs of the MTM's ageing copper infrastructure stack up versus a full fibre roll out? Fibre is virtually maintenance-free for at least 30 years and the true difference in actual roll out costs between it and MTM was always marginal at best. And besides, technological developments (like easily deployed "skinny fibre") and the inevitable economies of scale price improvements would have come with continued fibre deployment (as displayed by Chorus in NZ). MTM's supposed "savings" simply represents false economies, even before considering the maintenance issues. Once MTM's maintenance is added to the balance sheet we get a completely different picture. Even now, as the MTM NBN approaches completion, the ongoing exploding costs of keeping the ever-degrading copper last-mile in place versus immediately commencing replacing it with maintenance-free full fibre is fiscally compelling.

5. And then we come to speed... or lack of it. Many people don't understand that it isn't a childish "mine is better than yours" brag match about who has the fastest speeds. Actually, internet speed availability completely dictates how many devices can successfully run at once, because each connected device reduces the available speed for the other devices. And some online activities require more bandwidth (speed) than others, leaving less of the available speed for the other devices to also function. Any small business with more than one device connecting by Wi-Fi or cable is at the mercy of this simple arithmetic. Even at its best, MTM's paltry offering severely limits this ability. And very few Australians get anything near its best.

Overseas, Google Fiber (in the USA) has completely removed its 100 Mbps option, now only supplying unlimited 1,000 Mbps up and 1,000 Mbps down speeds for the same price as their old offering. Our little cousin, NZ, is rapidly heading even further, trialling converting its current 1,000 Mbps connections to 10,000 Mbps capable connections. Hong Kong, Norway, Qatar, Taiwan, Singapore, South Korea, and some parts of the US, have already launched 10,000 Mbps connections (that cost users no more or little more than the speeds they replaced). And that scale of fibre-facilitated development is fast becoming the international norm. Productivity much? You bet! They experience no buffering or drop outs ever, regardless of how "hungry" an online activity is, or how many connected devices a business finds it needs. And this is what we Aussies should have too.

Yet, here we are, now ranked in the 64th spot in the "Speedtest Global Index" broadband speed rankings, with most Australians still shackled to the government mandated "No one needs more than 25 Mbps!". This dinosaur thinking has ensured that most of our ensuing

copper-based MTM connections can't even reach 50 Mbps, while 100 Mbps is the theoretical Australian MTM maximum that very few premises can actually get. Bluntly put, the MTM's obsolete technology is not capable of better. Compare this inadequacy (remember that most Aussies actually get a fixed maximum somewhere between 25 and 50 Mbps) with the full fibre countries now on (or working towards) 10,000 Mbps. And, of course, those full fibre countries will be able to cheaply continue speeding up their rock-solid reliable fibre networks as the technology connected to it further develops. MTM is a slow and unreliable dead-end system that will only become even slower and less reliable over time as the copper continues to age. Yes, even more online activities will simply freeze due to lack of bandwidth (speed), and the constant buffering delays and regular dropouts that MTM's inadequacy has created will continue to undermine small business productivity... only more so over time.

Already NBN Co. have recently announced plans to drastically cut upload speeds for all users in 2020, fearing/accepting that the copper can't cope with demand. This drastic throttling decision will push many more "cloud utilising" businesses overseas. And it will only get worse.

6. And let's not forget those in Australia on Fixed Wireless (FW) who only get up to 6 Mbps download speeds during peak times. Only in the sparse Outback? No. They are mainly located in far too many urban suburbs and large towns that shouldn't be on wireless at all. Many streets have FW down one side and MTM copper connections down the other. Or one side of a town will have FW and the other side has MTM copper. And these FW residents all had phone lines pre-NBN, so tell us again NBN Co., why can't they have broadband? Simply put, deadline expedience made this quickly deployed "choice" compelling for NBN Co.'s roll out, and for no other reason.

Can small businesses function effectively on FW? Some may, most could not. 6 Mbps is barely suitable for an old-fashioned phone connection and emailing, and nothing more. Fixed Wireless definitely prevents telecommuting possibilities, stifling "tree-change" businesses and innovative "bush" business opportunities, further ensuring the death of the bush. And I repeat, this isn't reserved for the sparse Outback. This business-killing travesty is deployed in many large towns and even in many urban suburbs.

7. NBN Co. obediently persist with the "anything but fibre" mantra to the point of ridiculous. Necessary repairs (done during roll out or later) on many residual copper loops to homes and businesses far exceed the cost of simply replacing the copper with fibre, but that superior long-term option is forbidden by their masters. Copper must be patched and if it can't be patched then obsolete new copper must replace old copper.

The ever-escalating costs associated with repairing/deploying HFC is applying similarly flawed logic, yet NBN Co. persist. They dangle the future promise of experimental DOCSIS

3.1 and G.Fast to speed up HFC, yet the costs of such a change would far exceed the costs of simply rolling out full fibre. They should already be installing 10G-PON or NGPON2 in new estates/business/industrial areas, rather than wasting money 'researching' dead end technologies such as DOCSIS3.1 and G.Fast. And even if DOCSIS 3.1 and G.Fast do proves successful, HFC will still never have a fraction of the capabilities of full fibre, so what is the point?

8. Why is there such poor NBN take up? The flaws inherent in the MTM system (slow speed availability and chronic unreliability) are severely undermining the NBN's viability. And NBN Co.'s response to these problems (illogical tiering, excessive pricing, CVC constraints, and their drop outs non-repair policy) has only exacerbated the situation... these all actively encouraging less take up. Because the NBN has these flaws, individuals with lower data requirements are sticking with their faster and more reliable wireless non-NBN plans where possible. (Yes, even dodgy 4G is considered better than what MTM NBN can offer for many). Our mobiles (which aren't limited by the individual premise's copper length from the node) produce speeds up to 700 Mbps to 900 Mbps and even in peak times they usually get better than what the MTM connections can offer. Factor in the unreliability of MTM and it is plain why take up of MTM is so low.

Businesses are obviously less able to take this option, so are stuck with weathering MTM's business-stifling flaws, or they move offshore. The good news is that all of the issues currently restricting take up would be easily solved (or would solve themselves) by quickly rolling out a full fibre network.

9. NBN Co.'s pricing structure is actively throttling back our economy. NBN Co.'s pricing/tiering structure is clearly designed to steer customers towards slower plans and to stifle take up of faster speeds. As this makes no business sense, it can only be designed to support their masters' political lie that "there is no demand for higher speeds" and to try to mask the fairness inadequacies of the MTM (locking in slower speeds mean less people may notice that their connection is less capable than their neighbour's).

Tiering is cunningly set at levels that encourage people to go for slower/cheaper speeds. Someone who can get 35 Mbps will likely sign up for a 25 Mbps tier (and not the dearer 50 Mbps tier) while someone who can get 60 Mbps would likely sign up for a 50 Mbps tier (and not the dearer 100 Mbps tier).

Even connections that are capable of producing world-class throughput are being stifled by NBN Co. policies. To get any advantage from their fibre, the lucky 20 percent of Australians with full fibre connections must pay a whopping \$250 for 250 Mbps down and 100 Mbps up. This is as good as it gets, nothing faster is currently offered. By world standards this is very expensive and slow, discouraging uptake. For example, for unlimited data with 1,000 Mbps up and 1,000 Mbps down speeds, Google Fiber and AT&T (in the USA) are charging only

\$A102, and in Singapore it is only \$A40. And remember, these speeds are now considered to be slow. The new (and rapidly spreading) benchmark is to actually offer 10,000 Mbps (up and down) speeds with similar pricing to the old slower speeds.

As an answer to constant criticisms in this regard, NBN Co. has recently revealed misguided plans to scrap the current 250/100 Mbps offering and replace it with a slightly less expensive 250/25 Mbps and a new 1000/50 Mbps offering, but for business purposes, the even more throttled back upload speeds completely undermine the point of the fast download speeds. These changes appear to be progress but are actually moves in the wrong direction. This is more of the same throttling, but cunningly disguised. The new plans appear fast to the less technical user, but they will actually choke productivity. Slower upload speeds are NOT what we need.

10. What do we need? We need NBN Co. to stop kowtowing to the economy-destroying ill-conceived political expediencies of their masters and to start acting in the interests of the Australian people. Coupled with the obviously essential full fibre roll out, we need the tiers gone. And a pricing approach that actively encourages uptake of the fastest speeds available per connection. The ideal would be unregulated symmetrical speeds like the rest of the world are adopting. By that, I mean speeds as fast as the connection will allow, both in a down and up direction. And priced affordably, of course. The CVC component needs scrapping entirely, this is essential. CVC constrains bandwidth flow, causing peak time bottlenecks, and is artificially keeping pricing high. And it is currently the biggest barrier to uptake of higher speed services. **All NBN charges should be just a flat access fee, based purely on AVC, the actual fixed cost of providing the connection.** Basic business logic says more customers with a smaller profit margin is better than fewer customers with a larger margin.

The business benefit to NBN Co. of these changes would be a flood of new customers (away from 4G and 5G). And we'd finally have a world-class NBN that works properly for everyone. And (for the government's bottom line) the ensuing huge boost to GDP would soon offset the costs of these changes. Just give people what they want, at a price they're willing to pay, and they'll actually want to buy your service. We know it works because that's what's happening in NZ. When you take the politics out, it really is very simple.

11. Conclusion. Everything related to the MTM is nothing more than applied idiotic ideology that is inexplicably outweighing clear fiscal, social, economic, business and technological common sense. Simply put, MTM is bad for small business and bad for Australia. The world has moved on and left us far behind. We need full fibre, now more than ever. And we need a pricing structure that will facilitate and encourage Australians to make the most of all of the magic that the Digital Revolution can offer.