

THE FUTURE IS (FINALLY) HERE, AND IT IS GOOD (?!): THE (LONG) JOURNEY TO HIGH-SPEED BROADBAND

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ABSTRACT

Innovation is vital for the future of Australia as a country, and for us as individuals. The fast speeds promised by the NBN support that innovation, and those with high-speed broadband access cannot conceive a life without it. However, there remains parts of Australia, including areas perceived as being affluent, where high-speed broadband remains a dream. A decade and a half (plus) ago the author began their research related to broadband access. In their dissertation they observed “[h]igh speed broadband is the future.” On Monday 4th August 2025 at 11:59am they finally ‘saw’ the light as their home was connected to the fibre optic high-speed cables of the NBN. This paper will track the author’s high-speed access journey, will identify the continuing issues within Australia regarding its ongoing digital divide, and will identify the new divides wrought by NBN access. The Light is good, well sort of ...

Keywords: NBN, high speed broadband, *connectedness*, Australia, *digital divide*, ‘the NBN divide’

INTRODUCTION

As described by former Justice Michael Kirby the internet is “*ubiquitous, borderless, global and ambient in its nature*” (Dow Jones 2002, [80]). This borderless world can be accessed by mobile networks, but better access is achieved via high-speed broadband cables (Bradstock 2024; Lythreatis, Singh and El-Kassar 2022). Significantly for the purposes of this paper’s discussion “[i]nternet economic activity ... is dependent upon there being “ubiquitous high-speed networks”” (Craddock 2012, 3 referring to Barua et al. 1999). Today it is hard to imagine a world – business or personal – without computers or the internet. However, while the rollout of high-speed broadband may mean that there are more opportunities to engage with the internet, in 2026 many Australian users, similarly to the users in many other countries, still need active support to be able to engage (DITRDCSA 2025; McMenemy 2022). The required support may be training, financial, or access support; and or a mix of any or all of these (Craddock 2015), a lack of support merely adds to the ‘digital divide’ (Sparks 2013).

All governments have a core role both in enabling users to engage and in the rollout of high-speed broadband (Craddock 2015). Internet access was first achieved in Australia by dial-up over the analogue telephone system (Burkhart 1996). It was then achieved by ADSL and ADSL2, which still operated over the existing copper cables; then by fibre to the node (‘FTTN’), which operated over fibre to the node and then copper cables from the node to the home; and, finally, fibre to the premises (‘FTTP’), which provides high-speed cables directly to the home (Wang et al. 2009). In Australia, the entity tasked with rolling out high-speed broadband is a creation of its federal parliament. The NBN Company Limited is the primary provider of high-speed broadband infrastructure (NBN Co Limited 2009), while the services available over the infrastructure – pay-to-view sport and movies etc – are provided by other entities. Access issues may arise regarding both access to the high-speed cables and access to the services. A lack of access to high-speed broadband can impact upon our connectedness to others (Craddock 2015). Our lack of access also can impact Australia’s economic prosperity.

This paper continues the author’s engagements with issues relevant to Australia’s rollout of high-speed broadband, considered concurrently with the author’s ability to engage with it. The rollout, like everything and everyone, was impacted by the Covid-19 pandemic. The paper therefore also (briefly) considers the impacts of the Covid-19 wrought changes to work as we knew it, as relevant to the need for better internet access in our homes. The paper describes the author’s experience of connecting to the internet at the home they have owned since last century. In doing so it considers the status of high-speed broadband rollout in Australia, before concluding with a summary of the issues still facing full implementation and access.

This paper focusses on the digital divide and policy settings from the Australian perspective. However, in doing so, it does not explicitly address property implications in, for example, a valuation context. Rather, it engages with themes relevant to related implications such as those arising from the *greenfield v brownfield* suburbs debate about access, and considers technology policy and digital inclusion through the lens of a personal narrative about high-speed broadband access to a home. In doing so, it identifies the ‘NBN divide’ affecting Australians, including those living in otherwise affluent suburbs.

Thus, this paper is part personal retrospective, and part public anthem for the future. The cables of high-speed broadband can enable faster, better, and brighter internet access but only if all can be enabled to access the cables, and to the skills necessary to use the services available. *Onwards then, onwards to the light!*

METHODOLOGY

The aim of this paper is to provide an overview of Australia’s journey to ubiquitous high-speed broadband. Relevant literature and government materials are reviewed to identify Australia’s progress. This is then compared to the author’s experience of internet access at their home, as a long-time landowner in a recognised affluent suburb, being Buderim, Queensland, where other essential services commonly are taken for granted.

This paper is not designed to be a comprehensive consideration of the entirety of Australia’s (or the author’s) journey ‘to the light’. Rather its focus is limited to the consideration of one key aspect – the rollout of the high-speed cable of the Australian National Broadband Network (‘NBN’) as Australia progresses to full FTTP access for all Australian homes; and one person’s ‘journey’ – that of the author.

Limitations

This research faces two limitations:

First, while the research is primarily doctrinal (Hutchinson 2018; van Gestel and Micklitz 2014; Hutchinson and Duncan 2012), it also engages with empirical data being the personal experiences of the author and their neighbours. This data was not collected formally but anecdotally, over time, and in informal conversations where the author and neighbours shared their experiences (and concerns) regarding their internet access and or provider.¹ While autobiographical research is being used more commonly as methodological research tools (Harder, Nicol and Martin 2020), such experiences are non-replicable and, as such, their use as comparative data must be approached with caution. Thus, and while generally consistent with the experiences of others as reflected in the literature, as the personal observations discussed have not been able to be directly tested nor compared these must be approached with this limitation in mind.

Second, while the disparate rollout of high-speed broadband cables in the author’s immediate neighbourhood may be indicative of many areas in Australia, it cannot be assumed that all areas are the same. Many areas, particularly greenfield estates, are beneficiaries of the development approvals processes that require developers to provide utility services – including high-speed broadband cables – to all lots. Concurrently, other areas suffer even more significant lack of access and quality of access (Cradduck 2016) or lack of quality devices (DITRDCSA 2025). Noting these limitations, let us start the NBN journey.

FROM BELL TO VOIP

On 10 March 1876 the first telephone call was made by Alexander Graham Bell (Aronson 1977). In the 1930s, messages were able to be sent directly and securely, and internationally, by telex (Rimington 1977); and in the post-WWII decades the glimmer that was to become the internet and WWW developed (Kleinrock 2010; Leiner et al. 2009). As the technology developed, computers too developed; and, in turn, these both enabled greater productivity and created a demand for better infrastructure. The more the computers could enable, the more the users wanted. As Leiner et al (2009) observed “[w]idespread development of LANS, PCs and workstations in the 1980s allowed the nascent Internet to flourish.” (Leiner et al. 2009, 26). The uptake of computer use, and the rollout of infrastructure, also meant that from the mid-late 1990s internet access for business use began to become more common (Leiner et al. 2009).

¹ Done primarily to assist with personal decision making about whether to change providers and, if so, to whom.

The author's first experience of using the internet for work purposes was made possible only because the principal of the firm at which they worked was a self-described 'tech nut'. As such, the author was possibly among the first in Australia to regularly use the internet to communicate with clients,² although the number was small and consisted of similar 'tech nuts'. The rapid changes in technology also meant computers became smaller and less costly and, thus, available to more individuals who, in turn, began to engage with the internet on a personal level and at home.³ Computers thus moved into our homes and have not left. As computers became 'domesticated' a primary want (need?) of internet users was better and more reliable, and faster, access to the internet (Cummings and Kraut 2002).

While many companies provide internet services, the entity with primary responsibility in Australia for the infrastructure is the NBN Co Limited as the default *Statutory Infrastructure Provider*. NBN Co Limited was established in 2009 by the then federal government and has the principal activity "to build and operate a National Broadband Network to deliver telephony and high speed broadband to Australian homes, schools and business" (NBN Co Limited 2009, 2). As part of the NBN rollout, the copper cables within established suburbs are being made redundant by the progressive rollout of the high-speed fibre cables. However, the exact details of current home internet access are not certain as from the 2021 Census the ABS ceased asking questions regarding home internet access because its "extensive consultation on Census topics determined that the question on home internet access did not provide a contemporary reflection of today's society with the increase in mobile internet usage on personal devices outside of the home" (Australian Bureau of Statistics 2025).

Various frameworks were established by governments to assist with broadband's rollout, however, there remains the barriers of cost (DITRDCS 2025), and accessibility as the rollout of the NBN (and alternatives) is impeded by Australia's dispersed populations and areas notoriously plague by 'black spots' (Craddock 2012). Australia's *National Digital Economy Strategy* aimed to have 12 per cent of Australian workers engaged in teleworking arrangements by 2020 (DBCDE 2011). That aim was easily but arguably artificially achieved as one of the impacts of Covid-19 was that most of us were 'sent home' for extended periods of time, some for longer, much longer periods than others. Consequently, those whose work could be done at home became teleworkers whether they wanted to or not (Bick, Blandin and Mertens 2023), a circumstance that reinforced the 'need for speed'⁴ and reliability in our connections. Significantly, five years plus after Covid-19's first impact, the current number of those Australians still in some teleworking arrangements appears to have remained consistent and has not reverted to pre-Covid-19 levels as many of us continue to work at least one day from home (Australian Institute of Health and Welfare 2023; Australian Bureau of Statistics 2022).

One of the promises of high-speed broadband was that it would enable individuals to more easily engage with the services of the internet by enabling our choices (Kelso 2009). The focus on individuals and their engagements, and their ability to be able to connect, is crucial to Australia's economic growth as the "internet economy is dependent on the engagement of the individual end users in the internet" (Craddock 2012, 3, referring to Kellerman 2004). Economic activity, however, is not the sole concern. As was also observed:

as telecommunications has played a key role in the global economy to date, broadband will have a significant role to play in the future of the digital economy. In particular broadband will have a great role to play in the delivery of applications and services necessary for acquiring, and maintaining into the future Australia and Australians' appropriate education level; community; health services, information provision and support; and government services and engagement and participation by the public in the political process. (Craddock 2010, 1) (citation omitted)

However, rightly or wrongly, our ability to engage with the services of the internet is changing in ways not related to our access capacity. The Australian federal government has the primary and exclusive role of regulating the infrastructure provision; and the service providers, users, and their uses of the internet. This role includes oversight of providers and protection of consumers.

² Albeit that this also enabled communication to a relative who was based in the United States, this only was done through the use of the author's work computer.

³ The author's use of personal computers pre-dated her employment and internet use. The author's father also was a 'tech nut' who was one of the first purchasers of a Commodore 64, which the author used for writing high school assignments.

⁴ With apologies to Tom Cruise. The author is currently multitasking – editing this paper while enjoying the benefits of engaging in the streaming services of an online movie provider over their newly accessible high-speed cables.

The Australian federal government's ability to legislate regarding access to, and activities on, the internet falls within the exclusive telecommunications power conferred on it by Section 51(v) of the Commonwealth Constitution. Separate from the federal government's role in enabling consumers in their internet engagements, it also can act to limit their access to services and or providers.

The federal government's exercise of its legislative power is seen most recently in its implementation of controls relating to the age of those able to engage with certain online service providers. The amendments primarily amend the *Online Safety Act 2021* and commenced operation on 10 December 2025 (*Social Media Minimum Age Act 2024*). Referred to as the 'social media age restrictions' the amendments define an "age-restricted user" to be "an Australian child who has not reached 16 years" (Section 5), and introduced age restrictions for a variety of social media platforms (Section 63C). The restrictions drew support and praise at the United Nations September 2025 meeting in New York (Reuters 2025), which is perhaps evidence of both the global nature of the internet and the global nature of the concerns regarding the services it enables users to access (Thomas 2025).

However, in order for those of us 'of age' to be able to access internet services fully requires in the first instance the ability to have full access to the internet. While the NBN is beneficial for many, it is not for all as not all have full access. Together with the coming of the light through its fibre optic cables there came the barriers of a new divide - the 'NBN divide'.

THE 'NBN DIVIDE'

At its most simple, the phrase 'digital divide' is the term used to refer to the gap between those with technology access and the skills to use it, and those without the ability to access (Sparks 2013). 'Access' refers to access to the infrastructure itself, access to the devices needed to engage with that infrastructure, access to the skills and knowledge required to engage with the devices and software, and access to the financial capacity to establish and maintain engagements (Craddock 2015).

As was observed in 2012, enabling many to overcome the 'digital divide' requires government support for the upskilling of those who need to use the technology, up to date (quality) devices, financial support to buy the necessary devices, and in some instances ongoing financial support to engage with those services (Craddock 2015). This is seen, for example, in the telephone allowance available to Australian pensioners and other federal allowance recipients to assist them with accessing voice and internet services. However, there are barriers still as not everyone is eligible for that support, and the current support does not in any event cover the whole amount of the cost of internet access or access to the services available.⁵ Separately, while many currently do not have 'quality' devices (DITRDCA 2025), not everyone is either able to afford the cost of replacement nor eligible for support to acquire the most up-to-date technology.

Families with school aged children (NBN Co Limited 2025), and those working from home (Bick, Blandin and Mertens 2023), tend to have a greater need for good home internet access, which drive their uptake of high-speed broadband. Those who have streaming or gaming services also seek the higher speeds and reliability of this cable access (West 2010). However, as access and extra services both come at a cost, not everyone is able to afford all the benefits high-speed broadband can provide. At a base level, the cost of a simple telephony services is a concern for many (DITRDCA 2025).

As an example, the last analogue telephone bill the author paid in December 2009 only cost \$9.94 per month. The author's most recent internet access bill also had a telephone charge of only \$10 per month for VOIP, however, in order to have that access they are required to have an NBN access package of \$45 per month.⁶ This was the cheapest provider in the author's area for the most basic package. Where greater speeds or access are required, i.e. if you work from home, have several users, are an online gamer, or need higher download speeds, the cost will be more, often considerably so. This "persistent affordability barrier" (DITRDCA 2025, 5) means many who otherwise will not want internet access will need additional financial support to merely have a VOIP service (NBN 2025a).

⁵ Top rate is \$55.60 per quarter. <https://www.servicesaustralia.gov.au/how-much-telephone-allowance-you-can-get?context=22226>

⁶ The actual cost is \$59 per month minus a 'honeymoon' discount of \$14 per month until July 2026. \$177 per quarter.

Issues of access are not limited to affordability. Where you are located can impact your ability to access infrastructure and, and despite the ubiquity of the internet and the services available over it, the ability to gain the necessary skills to engage. The rollout processes of the NBN meant that those in greenfield estates tended to receive high-speed broadband access before most others (Craddock 2011; Craddock 2011a). Even the various plans targeted at *smart cities* were not a guarantee of either service provision or access (Craddock 2017). The suburb in which the author lives, Buderim, is an affluent suburb located in the Sunshine Coast of Queensland. While badged as a ‘retirement’ suburb, it in fact has a healthy mix of singles, families, and retirees (Australian Bureau of Statistics 2025). Those who live there therefore, generally, have the desire, need, time, and or means to embrace the numerous internet services now available. However, the author’s experience of the NBN’s rollout is that it is inconsistent, reactive, and slow.

The author can recall only having dial-up access when friends in other parts of Australia already had ADSL. Also, the fact the author now has FTTP was not part of a neighbourhood rollout as not everyone in the neighbourhood is similarly connected. In conversations with the author’s immediate neighbours, the author discovered that currently only two houses – both new builds finished just before Covid-19 – also have FTTP. The author’s journey to FTTP only began because in changing providers they cancelled their then current plan and then signed up to a new provider and plan, rather than just transferring to the new provider. It was the fact that the connection request was registered as a ‘new’ connection that sparked the NBN into action. However, while the author is enjoying the capacity that the high-speed cables of FTTP connection brings, one immediate neighbour – who has a greater need due to having school aged children – still needs to juggle the ‘who is using what’ nightly battle. This is the *‘brownfield barrier’*.

Even where there is no cost to the homeowner for the laying of the cables, there are other costs., the FTTP upgrade, similarly to previous upgrades, was not ‘free’. This is the *‘infrastructure barrier’*. Moving from dial-up to ADSL meant the author’s existing (vintage) telephone no longer worked, necessitating the cost of purchasing a new telephone and a contribution towards a modem. Moving to FTTP required acquiring a more advanced modem, but with no up-front fee. However, these modems were not in fact low cost nor ‘free’ as the author was required to commit between 12 months and 18 months to the relevant telecommunication services provider. Any break of the contracts would mean the cost of the modem would be payable in full.

Where FTTP is not available there may be other means of access. However, mobile access, while cheaper, is not reliable due to numerous ‘black spots’; and satellites, while more expensive, are impacted by Australia’s environment. This leaves many without consistent access (Craddock 2012). This is the *‘reliability barrier’*.

Finally, there is an issue with NBN access that simply did not exist with analogue. The author refers to this as the *‘power barrier’*. That is: if there is a power outage then, unless you have FTTP and your NBN connection box has ‘battery backup service’ (NBN Co Limited 2023, 13), or you have a device that itself is internet enabled, i.e., a laptop or mobile phone, you will not be able to access the internet.

CONCLUSION

On the other side of Covid-19, even if our work from home arrangements have reverted to (almost) pre-pandemic levels, our engagements with and reliance on technology and the ability to easily access the services of the internet have forever changed (Laß and Wooden 2025). The need for reliable internet access is now essential for telephone access (via VOIP), work, personal life, and for study (DITRDCSA 2025). In a university context, for example, life without the ability to engage students with online resources is now inconceivable, as academics and students both depend on reliable technology and internet access (Craddock, Gregory and Campbell 2022). However, and still, not everyone has the ability – as relates to skills or equipment or physical access – to access high-speed broadband (DITRDCSA 2025). This is not good for us, nor for Australia.

Separate from deliberate, public policy-based initiatives to limit certain individuals’ access to certain services, the mere fact of the change from analogue to digital access created a ‘digital divide’ (Sparks 2013). That divide continued to grow and change, creating new versions of itself. The current version is that existing between those with access to the high-speed broadband of the NBN, and those others who (still) continue to access through slower speed broadband or try to rely on mobile access. As describe above, this is the ‘NBN divide’. Meanwhile, the internet continues to have *“an ongoing and vital role to play in Australia’s future as a means of nurturing and ensuring the continuity of community; of providing access to information and education services; of educating; and providing a means of access to government services irrespective of time or place.”* (Craddock 2010, 2) Or it would if you but could properly access it!

As Leiner et al. (2009) concluded their discussion by observing, “[t]he most pressing question for the future of the Internet is not how the technology will change, but how the process of change and evolution itself will be managed.” (Leiner et al. 2009, 31). The rollout of the high-speed broadband of the NBN now will not be completed before 2030 (Evans 2025). Consequently, if this paper was a report card on Australia’s management of its ‘process of change’, the related comment would have to be ‘can do better’. Much better! However, even when all the high-speed cables are laid and all homes have been connected, this will not be sufficient to ensure Australia’s future.

The need for reliable high-speed broadband internet access for business continues to grow. However, reliable high-speed broadband is not only necessary for businesses and online engagements. The phasing out of analogue telephone systems and the change to VOIP reinforces the need for reliable online systems to enable ‘old fashioned’ voice services for medical assistance. This need remains as relevant today as it was for that first phone call (Aronson 1977, citing Mackenzie 1928, 114-115). The consequences of systems outages can be fatal, as was experienced in the Optus outage in mid-September 2025 (Evans et al. 2025).

As also was identified, ongoing financial support still is required (DITRDCSA 2025). This support is required “to ensure all households are able to connect to the infrastructure of the NBN; ... to acquire the necessary computer equipment and internal infrastructures; and [to] ... enable all Australians to have the necessary skills, digital literacy and user-awareness safety skills to engage proactively and safely with others and with the information and resources available via the NBN.” (Craddock 2011b, 1).

Access to the internet remains as vital a need as ever (Craddock 2015). Despite this need, the promised high-speed broadband access is being rolled out too slowly in many areas. The author’s immediate neighbour, despite asking to be upgraded, is still waiting. While policies such as *universal service obligations* (howsoever called) will continue to have a core role to play in governments’ response (NBN Co Limited 2024; McMenemy 2022; Craddock 2017a; Craddock 2016a) these may not be sufficient. As was raised a decade plus ago, the only true solution is for the federal parliament to legislate for “access to high-speed broadband [as] a right of all citizens” (Craddock 2011b, 2). Until this occurs, too many Australians will continue to be adversely affected by the *NBN divides*. The only conclusion that currently can be reached is that: *All broadband users are equal. But some are more equal than others!*⁷

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⁷ George Orwell – Orwell (2023), p.77 “all animals are equal but some are more equal than”.

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