

Assessing Australia's Progress towards a National Digital Communications Strategy at December 2022

TelSoc Broadband Futures Group

Abstract: This report, prepared by a working group of TelSoc, examines the progress during 2022 towards a national Digital Communications Strategy in Australia, using TelSoc's report on the need for such a strategy, first published in 2020, as a basis for the dimension upon which progress might be measured. TelSoc made a similar assessment of progress in 2021. The progress assessment is an important public statement that reflects TelSoc's beliefs in reporting and accountability in this important area of public policy.

Keywords: Digital Communications Strategy, Telecommunications Policy, Australia

Introduction and Background

TelSoc has advocated for a long-term bipartisan strategic framework to best ensure that all Australians are able to make effective use of world-class broadband services. TelSoc has committed to monitor and facilitate progress towards achieving such a strategy and to reporting on the nature and extent of the progress regularly.

TelSoc has considered how best to describe the strategy that it seeks, originally referring to a National Broadband Strategy and now considering that the term Digital Communications Strategy should be preferred because it avoids excessive emphasis on technological and supply-side dimensions at the expense of user requirements and capabilities.

As a means of assessing progress towards a national Digital Communications Strategy during 2022, TelSoc has used a gap analysis approach – that is, assessing the extent to which developments during the year have affected the gap between where Australia is, and where it ideally needs to be, in establishing and implementing a Digital Communications Strategy (DCS).

TelSoc

The Telecommunications Association (TelSoc) is an independent not-for-profit society registered as an incorporated association. TelSoc's purpose is to support the development of

the telecommunications and related sectors and harness the potential of the sector for Australia's economic and social development. TelSoc does this by promoting public discourse and assessment of the key telecommunications and digital economy issues of the day through public forums, member newsletters and publication in the *Journal of Telecommunications and the Digital Economy*.

TelSoc Broadband Futures Group

In February 2019, the NBN Futures Project,¹ later renamed the TelSoc Broadband Futures Group (TelSoc BFG), was established by interested TelSoc members to examine in greater detail issues associated with the rollout of the National Broadband Network (NBN) and a range of related issues such as public policy settings in Australia for broadband, harnessing the potential to transform Australia to a digital economy and an online society, and equitable and fair access to broadband services.

In November 2020, the TelSoc BFG completed and launched its report, *Towards a National Broadband Strategy for Australia, 2020-2030* (TelSoc NBS Report; [Holmes et al., 2020](#)). The themes and proposals in this report are discussed in more detail below.

In December 2021, the TelSoc BFG published *Assessing Australia's Progress towards a National Broadband Strategy* at December 2021, using the themes and proposals in the TelSoc NBS Report as a framework. This report builds on the 2021 Report, particularly seeking to examine whether gaps then identified have been addressed. The BFG has been transformed within TelSoc and its work is being taken forward by newly established more specifically focussed working groups.

Executive Summary

During the first part of 2022, there was little further progress towards a Digital Communications Strategy (DCS). Largely, this was because of the impending Federal Election (held on 21 May 2022) and a general inability to gain sufficient attention to longer term issues, such as long term DCS imperatives, during the lead-up to an election in which policy and political focus was elsewhere.

With the change of Government, clearer indications of the possibilities for a DCS have emerged.

In particular, the incoming Minister for Communications, Michelle Rowland, has met with TelSoc representatives and committed that her Office will explore and scope the prospects for a DCS. This commitment has been met and from September 2022 discussions have been

ongoing with a senior member of the Minister's Office on the issues. The discussions are continuing as at year's end and are encouraging.

While the Government has made a number of specific commitments to enhance the broadband network during its current term, there appears to be a recognition that a broader perspective needs to be taken for subsequent developments.

A number of other Government initiatives since the election have also added to the components needed for an overarching strategic framework, including:

- The joint letters from the Ministers for Communications and Finance in August 2022 to NBN Co and the ACCC, setting out the Government's expectations for the resolution of issues associated with NBN Co's proposed Special Access Undertaking, a long-term undertaking that will affect price, availability, and many other aspects of NBN Co's broadband service over the life of the network until 2040;
- The Statement of Expectations (SOE) published by the Ministers for Communications and Finance on 19 December 2022, which states the Government's intention to maintain NBN Co in public ownership and sets out the expectations of Government on the broad directions that NBN Co will take to achieve a range of social, economic and other goals associated with broadband service. The latest SOE replaces earlier statements that have been provided by the former Government; and
- NBN Co's Corporate Plan 2023 which was published on 20 December 2022 and sets out NBN Co's priorities and aims for 2023 and beyond.

There have been a number of announcements affecting specific programmes being undertaken by NBN Co or reviews by various bodies, such as the potential for LEOs which will be conducted by the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (the Department).

Some initiatives of the previous Government have either terminated or remain uncertain. They include:

- The Digital Economy Strategy (DES), which was launched in May 2021: It is not clear how the elements in the DES will be taken forward, if at all;
- The Joint Standing Committee on Broadband Services: The remit of this committee expired with the dissolution of the 46th Parliament in April 2022. No final report from the Committee has been published and it is unclear how and if its work will continue in some new form; and
- The Australian Broadband Advisory Council (ABAC): The remit of this body ceased on 30th June 2022. It is unclear how the work of ABAC might be continued.

The year 2022 has been one of change and of changing priorities, as well as of hope that initiatives since the election will lead to a more specific commitment to a coherent, overarching

Digital Communications Strategy in 2023. The prospects are considered by TelSoc to be positive, notwithstanding uncertainty on much of the detail.

Towards a National Broadband Strategy for Australia: 2020–2030 (TelSoc NBS Report)

The TelSoc NBS Report ([Holmes *et al.*, 2020](#)) provides a framework for an assessment of the progress towards a Digital Communications Strategy in 2022.

The TelSoc NBS Report was launched in November 2020. It argued for adopting a clear vision and objectives for broadband access and usage in Australia and for a long-term, coordinated, bipartisan national strategy to achieve the best social and economic outcomes as Australia further transforms to a digital economy within an online society. The TelSoc NBS Report recognised that the NBN would be a central part of such a strategy, especially in the earlier years, but that a comprehensive policy framework needed to recognise the contribution of mobile and other access technologies and provide a strong demand-side emphasis.

Recognising the initial central role of the NBN, the Report was also concerned to ensure that NBN Co was not privatised either in the shorter term (next five years) or without substantial consideration of all of the issues that need resolution beforehand. The incoming Federal Government has given the assurance needed on this point.

The other elements highlighted in the TelSoc NBS Report were:

- Developing a bipartisan national strategy
- Vision and Objectives – clarity and general agreement
- Extending Social and Economic Benefits

In recognising an increasing emphasis being given to realising the social and economic benefits of broadband services, particularly evidenced in the experiences during the COVID pandemic, the TelSoc NBS Report observed a number of requirements to ensure these benefits be achieved. including: a continuing “demand side” policy focus; a broad consideration of benefits across a range of applications, supported by underpinning inclusion; the generation of continuing research and discourse; and taking a long-term, effectively scaled, approach.

- Technology and technical pathways, including use of new technologies
- Finance, regulation and ownership

Progress towards a National Digital Communications Strategy during 2022

In this section the programs, activities and initiatives that may be discerned as contributing to a DCS, given the lack of any overarching approach, are described, together with an assessment of the contribution of each towards achieving the proposals in the TelSoc NBS Report.

New Government's commitments

The major election commitments by the ALP during the 2022 federal election were substantially supply-side measures and included \$650 million additional spending following the 2021 Regional Telecommunications Review, of which \$400 million would be directed to improving regional mobile communications and coverage and \$200 million towards upgrade and extension of regional fixed broadband networks, including increased fibre rollout.

In the October 2022 federal budget, the Government budgeted for \$2.2 billion over the forward estimates for regional network improvement and \$480 million for upgrading fixed wireless services. The budget included \$2.4 billion over the 4 years of the forward estimates to enable an additional 1.5 million premises to have fibre access. Of this amount, \$660 million will be directed to regional areas.

NBN rollout

In its 2022 Annual Report NBN Co reported 12.1 million premises ready to connect to the network, compared to 12 million at the end of FY2021. This figure has increased to 12.2 million as at December 2022.

In its 2022 Annual Report NBN Co reported 5.1 million premises able to access Home Ultrafast Speed services (between 500 Mbps and 1 Gbps download), compared to 3.9 million at the end of FY2021.

Network availability has improved in the past year to 99.95%.

Assessment:

NBN Co has continued to deliver further fibre and improved fixed wireless coverage and, partly through specific Government funding, committed to further improvement in both areas.

Some customers have noted improvements in rural and remote services through SkyMuster 2.0 satellite services, but there has been a shift by many customers (full figures not available) to LEO services, and to StarLink services in particular.

Statement of Expectations of NBN Co

The Ministers for Finance and Communications issued a revised statement of expectations of NBN Co on 19 December 2022.

In summary, the 2022 Statement of Expectations:

- Sets out objectives for the NBN and NBN Co and for operating NBN Co on a commercial business;
- Sets out service expectations, including:
 - that NBN Co will upgrade technologies to expand access to peak download speeds of up to 1 gigabit per second for 90% of premises in the fixed line footprint; and
 - that NBN Co will efficiently implement upgrades to the fixed wireless network and improve satellite services and data allowances, and undertake proactive network planning to position itself to utilise emerging and future technologies to meet future demand, promote innovation and improve services and service delivery efficiency;
 - that NBN Co will promote equitable access through improving service and consumer experience, promoting access through improved digital inclusion for low-income households and other vulnerable groups, and connecting First Nation Australians;
 - that NBN Co will continue to improve connectivity to regional and remote Australians through expanding full fibre access to a further 1.5 million premises, including 660,000 in regional and remote areas; and
 - that NBN Co will provide all premises with download access speeds of 100 megabits per second (50 Mbps in the busy hour), with, specifically, 80% of regional and remote premises having download speeds of at least 100 Mbps by 2025.

Assessment:

The 2022 Statement of Expectations combines broad targets with specific ones. It is an important component part of any national Digital Communications Strategy, and important in itself.

However, many of the expectations need to be operationalised and provided with more specific time-bound targets and milestone expectations.

NBN Pricing and Special Access Undertaking (SAU)

The SAU process is still continuing at the end of 2022.

The Ministers for Finance and Communications wrote to the ACCC and to NBN Co in August 2022 with a view to providing guidance that might assist in the resolution of fundamental

issues, such as the extent to which past accumulated losses might need to be recovered from future revenues. The guidance was intended to help development of wholesale prices that might be commercially acceptable to the industry, meet the regulatory requirements for approval by the ACCC and ultimately deliver affordable broadband services in the retail market. A key aspect of this letter was that the commercial returns expected from NBN Co might be relaxed and could take account of the Government's intention not to privatise NBN Co in the foreseeable future. Nevertheless, NBN Co would be expected to maintain an investment grade credit rating.

NBN Co has provided a revised SAU in November for consideration by the ACCC and the industry. It is based on an accelerated removal of CVC (volume) components in service charges and recovery of \$12.5 billion of accumulated losses (ICRA) rather than the full amount (circa \$32 billion in 2022).

Assessment:

The Ministerial intervention has been very important, and the further revisions to the proposed SAU have reasonable prospects for being approved by the ACCC in 2023 following further industry consultation. The SAU is a long term (40 year) commitment and its resolution will therefore have significant strategic implications for broadband take-up and use in Australia.

Other Infrastructure Developments

5G Rollout

The roll-out of 5G continued during 2022 with little noticeable effect on broadband usage. This is as expected given that most of the changes from 4G to 5G are within the network, such as control and user plane separation (CUPS) and network function virtualization (NFV). All mobile network operators (MNOs) offer a fixed 5G service as an alternative to NBN Co's services, but these services only appear to be displacing the NBN on the fringes. The substantial use of mobile services for online access remains via 4G at present.

MNOs are investigating new 5G features such as slicing, but this is still at the stage of trials rather than of providing commercial services. Telstra might exploit wireless-wireline convergence to support both mobile and NBN services from a common 5G core. There is no sign that MNOs are considering using PONs for 5G midhaul (between the gNB-CU and the gNB-DU).

The most significant change will be the establishment of neutral hosts in regional and remote areas, most likely using multi-operator core networks (MOCNs). The Government is currently investigating how it will implement this policy, which was part of its election manifesto. Given

that each MNO using a MOCN must contribute spectrum to be shared with other participating MNOs, the outcome will have implications for spectrum policy.

LEO (Low Earth Orbit) Satellites

The Government is by default adopting a laissez-faire approach to LEO services, i.e., it is allowing them to operate without significant regulation. Starlink offers services in Australia, and OneWeb has established a number of distributors. However, the government is reviewing its position through a Departmental working group.

Assessment:

A comprehensive strategy is needed to ensure that all technologies and platforms for the provision of broadband services are fully utilised. The proposed review by the Department working group of LEOs will be an important part of this.

Digital Economy Strategy

The Digital Economy Strategy (DES) was developed by the Digital Technology Taskforce, within the Department of Prime Minister and Cabinet (PM&C) and launched in May 2021 in association with the 2021 Federal Budget. However, it has not been taken further by either the former Government or the current Government.

Assessment:

TelSoc included an assessment in its submission to the Digital Technology Task Force to extend and deepen the DES.²

TelSoc considers the DES to be a potentially important statement by Government because it attempts to be strategic and to take a longer-term view (albeit for 10 years) of issues and programs to address them. However, it is not comprehensive enough to be a National Strategy of the kind envisaged in TelSoc's NBS Report.³

Australian Broadband Advisory Council (ABAC)

ABAC Expert Working Groups (EWG) produced a number of important sector reports during 2022, namely:

- Health EWG: Report, January 2022
- Creative Industry EWG: Position Paper, March 2022
- Construction EWG: Construction Tech Scoping Study, March 2022

The remit of ABAC terminated on 30 June 2022 and there has been no statement from the new Government on whether and how its work might be continued.

Assessment:

TelSoc's assessment from the end of 2021 still applies. Many of the recommendations are well aligned with the recommendations in the TelSoc NBS Report. It is not at all clear where responsibility lies to take these recommendations further and to turn them into actionable programs that can be specifically funded and/or managed. The members of former ABAC expert working groups are unlikely to perform that role.

ABAC has indicated that the purpose of its work is to start conversations leading, hopefully, to more concrete action plans in many areas. But this approach runs substantial risks of fading away without result, potential losing the advantage of substantial work and valuable insights in the reports.

Regional Telecommunications Review

The 2021 Regional Telecommunications Review: A step change in demand⁴ was tabled in parliament in February, with a Government response in March.⁵ The new Government subsequently released its **Plan for Better Connectivity for Rural and Regional Australia** during the 2022 Commonwealth election, taking up a number of the Review's recommendations.⁶

The Review identified four themes:

1. The 'Patchwork Quilt' of connectivity
2. Reliability, resilience and redundancy
3. The demand for data, and
4. Connectivity literacy and digital inclusion

in which were identified 16 key findings, leading to 12 Recommendations in regard to:

1. Longer term approach to regional communications infrastructure and digital skills
2. Enhanced Connectivity Investments
3. Regional Telecommunications Resilience
4. Emerging Technology Trial
5. Connectivity Literacy
6. NBN Co regional delivery
7. Network Performance and Reliability
8. Adequacy of USO/USG
9. Mobile Services
10. Shared Network Access
11. Indigenous Communities
12. Affordability

Assessment:

The Regional Telecommunications Review, conducted by a newly-appointed Committee every three years, and its associated Government responses stands as one of the most overtly strategic elements in the present Digital Communications System, with its Terms of Reference including being a “review of the adequacy of telecommunications services in regional, rural, and remote parts of Australia” and identifying “whether changes are warranted to existing Government policies and programs to ensure they continue to be effective, fit for purpose and are maximising the social and economic potential from existing and emerging technological advances”.

The Review Committee places its considerations within the framework of the Digital Economy Strategy, noting “It is clear that regional, rural and remote Australia will have a vital part in realising the DES goals”.

As such, it is an important monitoring, review and regenerative element of an ongoing DCS, but it also stands to mark the history of sporadic strategic initiatives and the lack of a substantial, agreed bipartisan and continuous strategic approach. The Digital Economy Strategy it references is now of unknown status, and the Review process itself lacks continuity in not taking the previous Review as a starting point for examination.

An enormous amount of work is embraced in the six-month process of issues identification, consultation and refinement of recommendations. As a long-term DCS process is established the RTR, required by legislation, should continue to be a central component, having relevance beyond its important regional and rural focus.

It is significant that its ToR point to ensuring the realisation of the social and economic benefits of the telecommunications infrastructure, although the Review seems not to have fully opened up the nature of these benefits and the requirements for support, still having a largely supply-side emphasis (with notable exceptions in its recognition of the underlying requirements of inclusion, affordability and connectivity). More specifically, what is required to get the greatest benefits in health, education, government services, home working, social communications, agriculture, business and industry in regional and rural areas? The broad answer of the Review is the capacity to handle hugely increased demand for data. The full story may require more attention than a concentrated six-month review.

Joint Standing Committee on NBN

The remit of the JSC expired with the dissolution of the 46th Parliament in April 2022. No final report from the Committee has been published and it is unclear how and if its work will continue in some new form in the 47th Parliament.

Assessment:

The main role of the JSC appears to have been to provide a forum for discussion of NBN rollout and performance. There have been other forums in which these matters have been able to be discussed, such as in the submissions to the Regional Telecommunications Review. The absence of the JSC seems to have made little difference since it was not pursuing an explicitly policy agenda, nor did it claim to be contributing to the development of a strategic framework for digital communications or broadband.

Inclusion and Affordability

There have been no major reorientations of approach to Inclusion and Affordability in 2022.⁷ Various organisations have repeated measurement and reporting activities – including ACMA, Good Things Foundation and auDa. The anticipated Indigenous Digital Inclusion Plan initiated by the previous Government did not emerge, although it is understood to still be under consideration. The next version of the Australian Digital Inclusion Index will be released in July 2023.

Two major research projects have continued and provided interim reports – the ARC Centre of Excellence for Automated Decision-Making & Society at RMIT's Mapping the Digital Gap project, focused on First Nations communities,⁸ and the QUT Digital Media Research Centre's Advancing digital inclusion in low-income Australian families.⁹

The Government has taken several initiatives, promising the provision of free internet access for 12 months through NBN for 30,000 families to improve use in education and establishing a First Nations Advisory Committee. The SoE more explicitly places an obligation on NBN Co to consider issues of Inclusion and Affordability.

The Good Things Foundation called for the establishment of a national digital inclusion strategy, which was echoed by the Australian Digital Inclusion Alliance with a specific emphasis on the development of a standard Digital Capability Framework.

Assessment:

The matters identified in the 2021 Assessment remain, namely: agreement about the extent to which digital exclusion and problems of affordability are significant issues; the establishment of accepted national benchmarks; and the need for a co-ordinated approach.

Apart from the SoE and the limited free access to NBN, there is no evidence of the issues of inclusion and affordability being addressed or progressed by the Government in any direct way during 2022, although the Minister has stated digital inclusion is a major concern.

Assessment of Progress in terms of TelSoc NBS Report Proposals

As for last year, there are developments which indicate underlying strategic perspectives. Principal among these are:

- a decision on the public ownership of NBN Co. which settles a substantial uncertainty for the time being
- other directional elements of the new Statement of Expectations for NBN Co.
- the tabling of the Regional Telecommunications Review
- exploring neutral hosting, which suggests reconsideration of how market approaches may be directed towards provision of essential services.

Most Government actions have, however, largely been addressing supply-side enhancements of the system as it stands, rather than reflecting a conception of how an overall system, embracing multiple access technologies and linking supply and demand sides, might evolve.

The Minister's stated disposition to consider a long-term strategic approach, focusing on the social and economic benefits of the system, does suggest this situation could soon change.

Rather than repeating last year's detailed examination of unfulfilled components of a strategic approach, we have chosen to rest on this prospect and simply do a brief update of last year's assessment in the following table.

An appropriate test question for the digital communications system, given our recent experience with COVID, could be: are we getting better prepared for managing living with a future pandemic with the support of the digital communications system?

While digital inclusion and capability are key components of this preparedness, so is the viability of applications, including preparedness of people to use them, in health, education, government services, home working, social communications, agriculture, business and industry and so on. While we recognise many efforts are being made, we do not have the research capacity to track them as a fully-fledged DCS should do.

Table 1. Assessment of Key Gaps

Strategic Component	Key Gaps 2021	Proposed Action	Status 2022
Bipartisan agreement on developing a National DCS	<p>Elements of a national strategy can be observed, but there is no explicit strategy or bipartisan support for one at this stage.</p> <p>No apparent continuity/cohesion of policy development, implementation, monitoring and review.</p>	<p>Ultimately the leadership in developing a National DCS and achieving bipartisan agreement must come from the Federal Government. The task it includes the important role of coordinating the various activities and initiatives of State, territory and local governments.</p> <p>The Federal Government should establish the coordinated institutional structure, with clear accountabilities, to ensure continuity and cohesion of policy development, research, monitoring and review.</p>	The new Minister has indicated a disposition to the development of a strategy in some form, and her office is scoping the matter.
Vision and Objectives <i>Vision</i> <i>Objectives</i>	<p>Statement proposed, but lacks a sense of national intent.</p> <p>Statement of Expectations for the NBN contain key constructs which need clarification for monitoring through appropriate measures and standards; including:</p> <ul style="list-style-type: none"> • <i>maximise the economic and social benefits of the NBN</i> • <i>current and future needs of Australians, wherever they live</i> • <i>reliably</i> • <i>affordably</i> • <i>digital capability</i> • <i>inclusion</i> <p>These and objectives such as in Digital Economy Strategy need application to the broadband system as a whole, including mobile service provision, with NBN's role delineated within that.</p>	<p>Further work should be undertaken by the Federal Government to expand and strengthen existing statements of vision in the proposed National Broadband Strategy.</p> <p>These key constructs need to be given meaningful targets and measures, to be effective and to define accountabilities. Note however that it cannot be a matter only for NBN Co to achieve, since they are operating at the wholesale level in the broadband market. Achieving these objectives will involve the whole system of industry, Federal Government and other policy-making bodies at State level.</p>	<p>No further work apparent</p> <p>A new Statement of Expectations has been developed but only recently published (19 December 2022). In August 2022 the Ministers for Finance and Communications have written to the ACCC and NBN Co about the Government's expectations in relating to developing longer term pricing for wholesale broadband services.</p>

Strategic Component	Key Gaps 2021	Proposed Action	Status 2022
	<p>Establish accurate, regularly updated national databases of broadband availability, usage and affordability</p> <p>Establish regularly updated 'gap analysis' of activities and timing required to advance current status of Australian broadband to the level of its aspirations.</p>	The Federal Government should establish institutional arrangements to ensure that research, monitoring and data collection is implemented in a coordinated and comprehensive manner, together with regular assessments.	There is no evidence of a consolidated and comprehensive approach at this stage
<p>Extending Social and Economic Benefits</p> <p><i>Demand-side policy focus</i></p> <p><i>Broad consideration of social and economic benefits</i></p> <p><i>Long-term coordinated activity</i></p>	<p>User-centred approaches need to be built in to policy and research (use construct of "effective use" as core</p> <p>Strong focus on digital inclusion and affordability</p> <p>Comprehensive approach to applications deployment, development and support</p> <p>Ensure long-term research and policy development</p>	<p>Methods for ensuring user-centred approaches need to be established.</p> <p>Review of Inclusion and Affordability of Broadband Services should be conducted by the Federal Government.</p> <p>Devise and establish a Broadband Institute or similar agency. This links with the institutional focus referred to above.</p>	<p>There is no evidence of systematic attention to this focus.</p> <p>The Minister is placing strong emphasis on the issues in digital inclusion, but so far, no programmatic approach has emerged.</p> <p>Focus on applications may be reduced through the termination of ABAC and, apparently, the Digital Economy Strategy</p> <p>No relevant action at this point.</p>
<p>Technology Pathways</p> <p><i>Establishment of future targets for moving to data speeds of 100/50 and 1000/500</i></p> <p><i>Establishment of pathways towards targets</i></p>	<p>Apparent acceptance, but ubiquitous nature in the longer-term needs to be made explicit target</p> <p>Technology pathways to long-term objectives for a fixed-mobile-wireless-satellite system</p>	<p>These targets, together with clearer descriptions of the service characteristics that need to be better and more comprehensively specified, need to be built into the National Broadband Strategy.</p>	<p>Targets increasingly underlie policy decisions but are not explicit and addressed through an overarching strategy.</p> <p>Department is establishing a working group on LEOs.</p> <p>In response to the RTR the Government has included specific supply side funding for mobile coverage, fibre extension and fixed wireless development in regional areas.</p>

Reference

Holmes, J., Burke, J., Campbell, L., & Hamilton, A. (2020). Towards a National Broadband Strategy for Australia, 2020-2030. *Journal of Telecommunications and the Digital Economy*, 8(4), 192–269. <https://doi.org/10.18080/jtde.v8n4.371>

Endnotes

¹ <https://telsoc.org/blog/nbn-futures-project>

² TelSoc, *Submission about the Digital Economy Strategy*, August 2021.

³ The DES does, however, seek to deal with new technologies affecting digital economy futures, such as artificial intelligence. The assessment relates only to its coverage of longer term social and economic dimensions of broadband.

⁴ <https://www.infrastructure.gov.au/departments/media/publications/2021-regional-telecommunications-review-step-change-demand>

⁵ <https://www.infrastructure.gov.au/departments/media/publications/australian-government-response-2021-regional-telecommunications-independent-committee-report-2021>

⁶ <https://www.infrastructure.gov.au/media-communications-arts/better-connectivity-plan-regional-and-rural-australia>

⁷ Note that as part of the SAU variation in November 2022 NBN Co has committed to the establishment of a ‘Low Income and Digital Inclusion Forum’, to meet initially in March 2023: <https://www.nbnco.com.au/rsps/industry-consultation/low-income-and-digital-inclusion-forum>. In addition, a ‘School Student Broadband Initiative’ has been announced by the Australian Government in conjunction with NBN Co, service retailers and other industry participants, commencing in February 2023: <https://www.infrastructure.gov.au/media-communications-arts/internet/national-broadband-network/school-student-broadband-initiative-ssbi>. In both cases, the substantive programs associated with these 2022 announcements are for delivery in 2023.

⁸ <https://www.admscentre.org.au/mapping-the-digital-gap/>

⁹ <https://research.qut.edu.au/dmrc/projects/advancing-digital-inclusion-in-low-income-australian-families-2/>