



# Remote Indigenous Communications Review

**Dr Daniel Featherstone**

**accan**  
Australian Communications  
Consumer Action Network

# Remote Indigenous Communications Review

Telecommunications Programs and Current  
Needs for Remote Indigenous Communities

Dr Daniel Featherstone

October 2020



“Remote Indigenous Communications Review: Telecommunications Programs and Current Needs for Remote Indigenous Communities”

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Published in 2020

The operation of the Australian Communications Consumer Action Network is made possible by funding provided by the Commonwealth of Australia under section 593 of the *Telecommunications Act 1997*. This funding is recovered from charges on telecommunications carriers.

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ISBN: 978-1-921974-65-6

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This work can be cited as: Featherstone D (2020) *Remote Indigenous Communications Review: Telecommunications Programs and Current Needs for Remote Indigenous Communities*, Australian Communications Consumer Action Network, Sydney

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## Introduction

The Australian Communications Consumer Action Network (ACCAN) is deeply concerned about the inadequacy of existing government programs supporting improved communications infrastructure in remote Indigenous communities (RICs). These communities are among the most disadvantaged and digitally disengaged in the country.

The pre-existing digital divide has been exacerbated by the COVID-19 lockdown. While there has been an accelerated take up of digital services such as videoconferencing, remote server access, and telehealth for those with access and skills, communities that are disconnected are at a much greater disadvantage at this time. Very few remote Indigenous people have the option of home schooling, working from home, or accessing basic services online. Most RICs have restricted all non-essential movement due to the high risks associated with COVID infection, increasing the need for remote access to services, including health, education, Centrelink, MyGov, justice, banking and so on. However, with an estimated 30% of remote and very remote Indigenous people without household access to telephony or internet, and many Shire/Council offices, schools and other service centres closed, some essential services have not been available to many remote Indigenous people.

In June 2020, ACCAN commissioned Dr Daniel Featherstone to undertake a review of programs that support telecommunications and internet access in RICs, and any gaps or outstanding needs identified by community stakeholders.

The report is structured in two parts. Part A of this report provides a summary of previous and existing programs for improved communications infrastructure in RICs, including government and private sector initiatives, building upon existing ACCAN research. It also includes an estimate of the funds spent in the last 5 years on Indigenous communications nationwide.

Part B provides an overview of the context and communications ecology of RICs, existing data collection and research identifying needs or gaps, and unmet communications needs of remote communities identified through community consultation.

The methodology taken to this research was:

- 1) Desktop review of government program information, reports and submissions to build upon and update existing knowledge.
- 2) Review of existing communications needs identified through recent research and data collection, submissions to government reviews and community forums, and other sources;
- 3) Consultation with key stakeholders from Federal and State/Territory governments as well as corporate and not-for-profit organisations that are undertaking activities or programs to support improved telecommunications in remote communities;
- 4) Consultation with First Nations organisations and communities to identify current needs.

The scope of this project is primarily focused on communications infrastructure, however it does refer to other important elements of digital inclusion such as affordability, digital ability or Information and Communications Technology (ICT) access in relation to infrastructure where applicable and where raised by stakeholders. This report does not address the regulatory framework required to ensure

equitable access to infrastructure and services. This report also takes a broad view of infrastructure to include last mile infrastructure such as WiFi and community access facilities.

The report concludes with a summary of the effectiveness and gaps within current government and external investment in improving digital inclusion of RICs. It provides a brief analysis of the gaps within current programs and raises the potential impact of emerging technologies. This paper is not a definitive summary of all community needs. Rather, it is intended to promote dialogue with government agencies, telecommunications providers and First Nations communities about addressing unmet connectivity and access needs.

## Executive Summary

This report was commissioned by ACCAN in June 2020 to undertake a review of programs to support telecommunications and internet access in RICs, and any gaps or outstanding needs identified by community stakeholders. This report was undertaken amidst the COVID-19 pandemic restrictions, which left many remote Aboriginal and Torres Strait Islanders with limited access to essential services including health, education, Centrelink, MyGov, justice, banking and so on.

Part A of this report outlines the activities that have been undertaken by the Australian Government, State and Territory governments, telecommunications providers and other agencies that have improved communications infrastructure and access by remote Indigenous people and communities. It found that there have been significant improvements in telecommunications coverage and digital connectivity in RICs over the last decade, due largely to the introduction of the NBN Sky Muster satellite, the Mobile Black Spot Program (MBSP), State/Territory government co-investment programs, the Community Phones Program, and a range of initiatives to provide shared WiFi services and access facilities.

There has been approximately \$155 million of investment in communications infrastructure for RICs since 2015, excluding co-investment by telcos and the cost of the NBN Sky Muster satellites. There have also been positive initiatives put in place by nbn co, Telstra and other agencies to support community access and reduce affordability issues during the COVID-19 pandemic travel restriction period.

The research identified that the opportunities for expanded coverage and services provided by mainstream programs dependent on a market model with industry co-investment, such as the MBSP, have now been largely exhausted for RICs due to market failure owing to remoteness, sparse populations and lack of terrestrial backhaul infrastructure. A safety net approach is now needed to ensure a next-level digital divide is not set up between larger and smaller communities, or between service providers and Indigenous households within communities.

It is encouraging to note that across both government and industry there is attention being given to the communications needs of RICs, owing to digital transformation of government services, social responsibility within the corporate sector, and a shift of focus towards digital inclusion by nbn co following the completion of the primary rollout phase in June 2020. The establishment of a Digital Inclusion Working Group by the Australian Data and Digital Council will hopefully help to improve coordination between Federal and State initiatives.

Part B of this report outlines the context and communications ecology of RICs, a review of research and data collection, and the outcomes of community consultation to identify unmet communications needs in remote communities.

The key finding is that, despite the increased availability of infrastructure to remote communities, there are still significant gaps in access and usage of communications technologies due to issues of affordability, lack of last mile delivery or community access facilities, issues with service reliability and congestion, and barriers to engagement with online services. Some communities are also choosing to

not accept infrastructure due to concerns around cyber-safety, potential impacts on cultural and social cohesion, and ongoing costs of services and equipment maintenance.

Further, the issues identified are not consistent but impacted by local variables of community size, remoteness from regional centres or large industry, existing infrastructure, existing communications ecology, regional coordination or agency support, and efforts by local champions.

This points to the need for more targeted and place-based solutions, in partnership with local community organisations, to address the next level of obstacles to digital inclusion, including:

- Affordability of services;
- Last mile access, such as WiFi services, and community access facilities;
- Improved quality and reliability of services;
- Free access to government and online services;
- Increased broadband speeds and data limits to meet demand for shared WiFi services and growing use of videoconferencing and high-bandwidth applications;
- Timely technical support;
- Effective delivery of telehealth, online education, court hearing etc;
- Digital skills and cyber-security issues;
- Accessibility of online services for people with limited English, text literacy or disabilities;
- Cultural and contextual awareness of service providers working with remote communities.

The 2018 Regional Telecommunications Review (RTR) recommended: “A targeted Indigenous Digital Inclusion program with a focus on access, affordability and digital ability be developed in partnership with Indigenous communities.” (Rec. 8). In its response, the Australian Government committed to developing an Indigenous Digital Inclusion Plan, however little visible progress has been made on this to date. In fact, there has been a reduction in federally funded Indigenous communications programs in recent years, compared with ongoing programs in the 2000s to early 2010s.

Recently, the policy focus has moved towards setting a target for digital inclusion within the renewed Closing the Gap framework. However, a key challenge is how to effectively measure and track digital inclusion in RICs, with a lack of reliable and up to date data for remote communities and the current limitations of the Australian Digital Inclusion Index (ADII) in not surveying remote communities.

It is hoped that the Closing the Gap target will provide the incentive for government investment in measuring and tracking digital inclusion of remote Aboriginal and Torres Strait islanders, and to implement the RTR recommendation to establish a targeted place-based program to address the obstacles. A well coordinated strategy could help to close the gap in Indigenous digital inclusion in the next 5-10 years.

## Acknowledgements

I would like to acknowledge the Dja Dja Warrung people on whose land I am living and working, and pay my respects to their elders, past and present, and to those of all First Nations people across Australia.

I would like to give a special thanks to all of the people from community organisations, peak bodies, government agencies, industry and research institutions who provided input to this report and feedback on the sections relating to their activities. Without their in-depth knowledge and detailed accounts this report would have lacked the detail needed to fully survey the work being undertaken and the outstanding challenges. I hope this report has done justice to your efforts and is useful for future planning.

A particular thanks to First Nations Media Australia (of which I was General Manager from 2012 to early 2020) , the Broadband for the Bush Alliance (now disbanded) and participants in the annual Indigenous Focus Day for the significant work done over the years to collate information and build the knowledge sharing network that laid the ground work for this report.

I would especially like to thank ACCAN for commissioning this report, particularly Una Lawrence and Rebekah Sarkoezy for their input and feedback throughout the various stages of this project. I have greatly enjoyed the robust conversations throughout the process.

Lastly, thank you to my loving family who have had to endure me working on this project from home during COVID-19 restrictions.

## Part A: Overview of Telecommunications Infrastructure and Access Programs for Remote Indigenous Communities

### 1 Australian Government Programs

#### 1.1 Late 1990s - 2015

Since the late 1990s, there have been a succession of Australian Government programs aimed at providing IT facilities, internet access and training into remote Indigenous communities (RICs). Beginning with the Networking the Nation program (NTN, 1998-2003) and the Telecommunications Action Plan for Remote Indigenous Communities (TAPRIC, 2003-6), both funded through income from the sale of Telstra, these also include the Backing Indigenous Ability (BIA, 2006-8), and the Indigenous Communications Program (2009-13) and other programs outlined below.

##### 1.1.1 Universal Service Obligation (USO) 1991 - present

The \$270m per annum industry/government-funded USO contract<sup>1</sup> was established in 1991, aimed at providing equitable access to telephony services throughout Australia. The contract was awarded to Telstra to provide standard telephony services, payphones, emergency and disability services nationally. Data, mobile telephony and pre-paid services were not included in the USO. Under the renewed USO contract in 2012, which continues until 2032, Telstra receives \$230 million per annum to provide fixed telephone services, and \$40 million per annum to provide payphone services.

##### 1.1.2 Extended Zones contract 2001

Under the 10-year Extended Zones contract beginning July 2001, Telstra was required to provide improved telecommunications services to customers in the remotest parts of Australia, including: un-timed calls at the local call rate in the extended zones; enhanced services, including the offer of an always-on internet access service; improved dial-up access speeds and improved timeframes for the connection of new services in the extended zone; and an upgrade of the telephone network in the extended zone. Under this contract Telstra expanded its microwave telephony network in remote Australia, upgrading from Digital Radio Concentrator System (DRCS; maximum 9.6kbps) to High Capacity Radio Concentrator (HCRC) Swing (19.2kbps) in the early 2000s, introduced local call rates in extended zones, introduced 2-way satellite internet services, minimum waiting periods for installation of new lines and servicing<sup>2</sup>, and kept prices for the bush comparable to other parts of Australia. These arrangements have not been updated to reflect current telecommunications technologies and needs,

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<sup>1</sup> Current rate. The Australian Government contributes funding of approx. \$100m pa to the USO contract, with the remainder raised through a levy on telcos. Telstra are the major industry contributor to the telco levy component.

<sup>2</sup> Installation periods are 10 working days where infrastructure exists, and 20 days where none exists. However, this only applies to billed services, not pre-paid services.

such as mobile telephony, pre-paid services and internet access in remote areas where commercial market imperatives fail.

### 1.1.3 'Networking the Nation' 1998-2001

In 1997, the 'Networking the Nation' (NTN) funding program was established by the Department of Communications, Information Technology and the Arts (DCITA) to provide innovative telecommunications solutions for remote and regional Australia (funded by the first partial sale of Telstra). Community organisations were eligible to apply. The biggest funded project was the Outback Digital Network, which sought to establish a terrestrial broadband network across northern Australia<sup>3</sup>. A final report (DCITA, 2005<sup>4</sup>) evaluated 720 NTN projects (totalling \$320 million in funding) for their effectiveness in providing improved access to telecommunications services in remote and regional Australia. Among other projects, UHF repeater networks were installed in the early 2000s across the Ngaanyatjarra and Anangu Pitjantjatjara Yankunytjatjara (APY) regions under Networking the Nation funding but, despite very high use, both failed after a few years due to a lack of operational funding for maintenance.

### 1.1.4 Telecommunications Action Plan for Remote Indigenous Communities (TAPRIC) 2003-06

In May 2002 the TAPRIC funding program was announced in response to the report of the 2001 Telecommunications Service Inquiry, in which the Commonwealth Government sought to assess telecommunications service levels in Indigenous communities. With \$8.3 million committed over three years, TAPRIC set out a guiding policy framework and action agenda to deliver sustainable service improvements to target communities, including the following elements: a Community Phone Program; an Online Access Centre Business Study; an Internet Access Program; a Content Development Program; and an Information and Awareness Raising Program (DCITA, 2002).

### 1.1.5 Backing Indigenous Ability (BIA) 2007-10

In 2007, the planned 4-year \$90 million Backing Indigenous Ability<sup>5</sup> funding program was announced as part of the Connect Australia package. It included \$48.5 million to establish a National Indigenous Television service (4-year funding at \$12m pa) and a range of programs aimed at promoting uptake of broadband technologies by remote Indigenous people. The BIA internet program included 5 components for IT training delivery, internet access computer equipment, videoconferencing

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<sup>3</sup> The Outback Digital Network sought to establish a communications network connecting all of remote northern Australia. While the project was not completed as intended (Telstra purchased much of the infrastructure installed), one component - the Cape York Digital Network - was completed and operated successfully for over a decade.

<sup>4</sup> DCITA (2005) 'Networking the Nation: Evaluation of outcomes and impacts' report by Communications Research Unit, June 2005.

<sup>5</sup> BIA funding was planned to be a 4-year program, from 2007-2010, but was replaced by the Indigenous Communications Program in 2009.



equipment, online content, and regional agents. The program was available to community organisations to apply, however it was cut short and replaced by the Indigenous Communications Program (ICP) in 2009.

### 1.1.6 Indigenous Communications Program (ICP) 2009-13

- The ICP<sup>6</sup> consisted of three elements:
  1. The Community Phones Program - A provisioning and maintenance program for up to 301 fixed phone booths (satellite or terrestrial backhaul) to communities of less than 50 people, providing for free incoming calls and some free, or purchased outgoing calls using pre-paid phone cards (\$17.466m). The contract went to Activ8me to design, install and maintain.
  2. A provisioning program for mobile satellite phone handsets for very small or transient communities; and,
  3. The Remote Indigenous Public Internet Access (RIPIA) program<sup>7</sup>- Provision of public internet facilities and training in computer and internet use in up to 120 RICs (\$6.967m over four years to 2012-13). This component was delivered by State/Territory governments under a National Partnership Agreement.
- The RIPIA element of the ICP was allocated a further \$6.3 million in funding until 2014/2015 to maintain and monitor facilities established as part of the ICP and to provide further training at existing locations. However, there was no provision for the identification of new communities or installation of new public internet facilities beyond mid-2013.

While these programs have resulted in increased access to IT facilities and awareness in some regions, there has been little coordination or continuity from one program to the next and a lack of longitudinal evaluation to assess the overall effectiveness of the programs. There has also been little consultation with communities to determine local priorities or concerns about the rollout of these programs.

### 1.1.7 Broadband Access Programs 2004-11

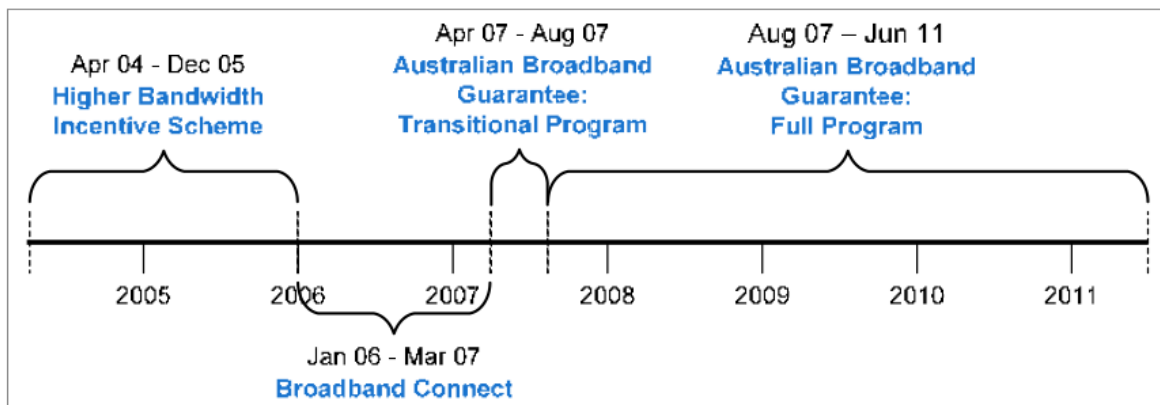
In 2002, the Regional Telecommunications Inquiry (RTI) identified that a major impediment to regional, rural and remote Australia having equitable access to higher bandwidth services was the higher prices that users pay. In response, the Government established the Higher Bandwidth Incentive Scheme (HiBIS) in April 2004. This was replaced by the Broadband Connect (BC) program which was, in turn, replaced by the Australian Broadband Guarantee (ABG) program in April 2007 (see Figure 1). The ABG program was administered by the Department of Broadband, Communications and the Digital Economy (DBCDE) and DCITA prior to 2007.

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<sup>6</sup> The ICP was extended for another two years to 2014/15 and was to be replaced by a new three-year 'IT Training and Internet Access' program under IAS from 2015/16, however this program was not implemented.

<sup>7</sup> The Internet access model was called the Remote Indigenous Public Internet Access (RIPIA) National Partnership Agreement, a multilateral agreement between the Commonwealth Government and the state and territory governments. Each state/territory government selected one of its own agencies (often the state library) to deliver the program.

**Figure 1: Timeline of Australian Broadband Guarantee and predecessor programs**



The primary objective of the HiBIS and Broadband Connect programs was to make higher bandwidth services more widely available in regional Australia at comparable prices to metropolitan services.<https://www.anao.gov.au/work/performance-audit/management-australian-broadband-guarantee-program-fnote> The objective for the ABG program was revised a number of times and, from August 2008 to June 2010, was to provide all Australian residential and small business premises with access to comparable broadband services. From July 2010, the objective was to provide Australian residential and small business premises with access to high quality, reasonably priced broadband services<sup>8</sup> in locations where such services were not commercially available. Under the ABG program, a one-off incentive payment (subsidy) was offered to registered ISPs to connect and supply broadband services to eligible household and small business premises in regional, rural and remote areas of Australia. About \$258 million was paid to 34 providers for connecting over 103 000 ABG customers from April 2007 to 30 June 2010, with almost 95 per cent for satellite broadband connections. The program was aimed to transition to high speed broadband services provided by NBN once rolled out (Source: [ANAo report 2011](#)).

## 1.2 2015 - 2019

This section is an overview of Federal government Indigenous telecommunications programs undertaken from 2015-2019.

### 1.2.1 Indigenous Telecommunications projects

Since 2014/15, Indigenous-specific telecommunications programs have been managed under the Indigenous Advancement Strategy (IAS), managed by Department of Prime Minister and Cabinet (DPMC) until 2018 and National Indigenous Australians Agency (NIAA) since then. Due to opaque public reporting on IAS expenditure, there is limited visibility of expenditure on telecommunications projects under DPMC/NIAA since 2014/15. In the 2015-16 financial year, \$6.35 million was reported to

<sup>8</sup> Defined in 2008-10 as at least 512/128 kbps, data allowance of 3GB/ month, at a total cost of no more than \$2500 (inc. GST) over three years (max. \$69.44 per month). In 2010/11, the threshold rates increased to 1Mbps download and 256kbps upload and the monthly data allowance 6GB (at least 3GB at peak times).

be spent under IAS on programs to specifically meet the communications needs of Indigenous Australians. This was mostly to cover the Community Phones Program/ WiFi upgrade (see 1.2.3 below) and the Community WiFi Trial program (see 1.2.4 below). A third component of the funding, the Remote Indigenous Internet Training Activity (RIITA) was never rolled out. Instead, a digital inclusion app was developed called '[Your Online Journey](#)', which includes IT skills tools as well as cyber-safety information (see below). The current NIAA budget is about \$4 million a year for telecommunications programs, primarily for maintenance of the Community Phones Program<sup>9</sup>.

### 1.2.2 'Your Online Journey' App

In February 2019, the Government launched the 'Your Online Journey' app, which was funded through the IAS. It is a free, publicly-available resource suitable for individuals or small training groups, and features modules that aim to address the online safety and digital literacy needs of these communities by providing culturally-specific information about the use of digital technology. 'Your Online Journey' was developed by the Office of the eSafety Commissioner in consultation with the Indigenous communities of Koonibba and Yalata in SA, and Hay in NSW, and is targeted at adults in these communities who have access to the internet but are not engaging online. Users can set their own pace by skipping forward and also back-tracking within the app to review parts of the lessons. It can be used offline, once it has been downloaded to a device.

### 1.2.3 Community Phones Program - WiFi Upgrade

The Australian government (through NIAA) currently funds public phones and WiFi services in small RICs and homelands through a contract with Activ8me. The program was initially designed to provide up to 301 fixed solar-powered phone booths to communities of less than 50 people. The booths are located in remote northern Australia, the Kimberley region in Western Australia, Arnhem Land in the Northern Territory and Mornington Island off the Queensland coast. In 2013 the program was modified to upgrade the phone booths to include WiFi hot spots, providing WiFi access up to 150 meters from each booth. By February 2019, 98% of the phone booths had WiFi installed.

Stage 2 of the program (2019/20) involved connecting 40 remote communities using the NBN satellite service. Another 14 communities were given access to public WiFi for the first time. About 80% of the sites remain on the legacy IPStar satellite solution.<sup>10</sup>

The Commonwealth currently pays for 20 gigabytes of free data per month per community, with content filtering. From 2017, a pre-paid model was introduced with an additional 150GB/month available to be purchased per community per phone. As well as the 301 community phones, NIAA also maintains about 245 payphones in the small communities. These services are also maintained by Activ8me.

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<sup>9</sup> Pers. comm. with NIAA 22/7/20

<sup>10</sup> The [IPStar satellite](#) was launched in 2005 and is now nearing end of life, with IP Star transitioning its customers to NBN Sky Muster services.

## 1.2.4 Community WiFi Trial program

From 2016-18, DPMC undertook a trial of community access WiFi in 5 sites - Amata SA, Doomadgee and Aurukun Qld, Murrin Bridge and Wilcannia NSW. The contract was with Easyweb Digital. An evaluation was undertaken by Ekistica for DPMC but this is not public. NIAA described mixed results with little uptake of some of the WiFi services. However (anecdotally), this may have been due to mobile services being available in most sites selected and the choice of location of the WiFi hotspot (e.g. near the police station in Aurukun). Once the trial was completed, local organisations were offered the opportunity to take over the contract to maintain the service. This was taken up in Doomadgee, Wilcannia and Murrin Bridge, with Easyweb Digital managing the Amata site for another 18 months (now shut down).

## 1.3 Current and Upcoming

### 1.3.1 Mobile Black Spot Program

The Government has committed \$380 million to the [Mobile Black Spot Program](#) (MBSP) to invest in telecommunications infrastructure to improve mobile coverage and competition across Australia. The MBSP is supported by co-contributions from state and local governments, mobile network operators (Optus, Telstra and Vodafone), businesses and local communities. Under the first five rounds (Round 1, Round 2, the Priority Locations Round, Round 4 and Round 5), the Government's commitment has generated investment of more than \$836 million, delivering a total of 1,229 new base stations across Australia. Under the MBSP, 868 base stations had been activated as at 16 April 2020. Base stations funded under the first 5 rounds of the Program are scheduled to be operational by 30 June 2022. Mapping of MBSP sites is available at [data.gov.au](https://data.gov.au).

In the first four rounds at least 32 base stations<sup>11</sup> have been funded in and around Indigenous communities in remote and very remote Australia, particularly in Northern Australia, which provide some coverage to Indigenous communities. A further 9 communities were included in Round 5. The Department is undertaking further analysis of base stations in Indigenous communities across five rounds of the Program.

#### 1.3.1.1 Mobile Black Spot Program Round 5A

On 20 March 2019 as part of the Government's response to the 2018 Regional Telecommunications Review, \$160 million in funding was allocated to two further rounds (5 and 6) of the MBSP. The Round 5 outcomes were announced on 21 April 2020, with 182 base stations being awarded funding, at a total cost to the Commonwealth of \$34 million. An additional Round 5A will test different approaches to allocating MBSP funding, with funding to be drawn from the unused portion of funding allocated to Round 5 (noting that \$10 million of this will go towards the \$37.1 million Strengthening

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<sup>11</sup> The 32 base stations identified were: Patjarr, Tjuntjuntjara, Ilkurlka Roadhouse, Burringah, Karijini Eco Resort, Karijini Visitors Centre, Karijini Campground, Yandeyarra, Punmu, Cardabia, Kanpa, Kalumburu, Tjirrkarli, Nepabunna, Beltana Station, Finke, Imanpa, Mt Liebig, APY Lands (6 base stations here), Litchfield (3 base stations), Minjilang, Urandangi, Mistake Creek, Archer Pines, Darnley Island.

Telecommunications Against Natural Disasters package). A [discussion paper](#) was released on 21 April 2020, seeking feedback from industry and the community on design options for Round 5A. The consultation closed on 19 June 2020. The paper proposed that Round 5A will divide the available funding into three components, addressing the following three priority areas:

- a. high priority natural disaster prone areas including those affected or prone to bushfire<sup>12</sup>
- b. new technology solutions in areas where low population densities have discouraged applications under earlier rounds
- c. major regional and remote transport corridors.

Two of the proposed key principles were:

- Delivering coverage benefits for non-commercial regional and remote areas.
- Funding is available for the capital costs of proposed solutions and some operational and maintenance costs.

These principles, if enacted, would enable sites which were not previously eligible for the MBSP due to not being economically viable to be considered under this round. Hopefully this will mean that more RICs will be eligible. A recent [ABC story](#) cited that the funding could be used to provide UHF Radio coverage in Mobile Black Spots on Kangaroo Island SA during the upcoming bushfire season, while awaiting a new mobile base station at Keilira.

### 1.3.2 Regional Broadband Scheme

As part of the recent Telecommunications Reform Package the Australian Government has established the [Regional Broadband Scheme](#) to ensure transparent and sustainable funding for essential broadband services to regional, rural and remote Australians. The Regional Broadband Scheme will require all NBN-comparable networks to pay \$7.10 per month for each premises on their network with an active high speed superfast broadband service provided via fibre-to-the-premises (FTTP), fibre-to-the-node (FTTN), fibre-to-the-basement (FTTB), fibre-to-the-curb (FTTC) and hybrid fibre-coaxial (HFC) networks. The Scheme will start on 1 January 2021. Details of how it works are outlined in this [fact sheet](#).

### 1.3.3 Regional Connectivity Program (upcoming)

The Australian Government is investing \$53 million<sup>13</sup> in telecommunications infrastructure projects as part of the Regional Connectivity Program, in order to target investment to local priorities to maximise economic opportunities and region-wide benefits for regional, rural and remote Australians. This is

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<sup>12</sup> A separate \$37 million of federal support for bushfire-affected areas has currently funded portable, temporary base stations to service bushfire-hit communities. That money had also been put into longer-term strategies such as increasing battery life in towers, electricity connections, and satellite communications. (Mark Coulton MP, quote 8/7/20)

<sup>13</sup> The Australian Government committed an [additional \\$30.3 million](#) to the Regional Connectivity Program in its 2020/21 Budget, announced on 6<sup>th</sup> October 2020, taking the program funding up to \$83 million.

part of a \$60 million package, which also includes funding for a Digital Tech Hub, a trial of alternative voice services in remote areas (\$2 million) and a fixed amount of \$2.6 million for two measures to support the further development of the Universal Service Guarantee. The commitment was made in the Government's [response](#) to the [2018 Regional Telecommunications Review](#) as part of a \$220 million Stronger Regional Digital Connectivity Package, and includes the \$160 million allocated for Mobile Black Spot Program Rounds 5 and 6 (see 1.3.1.1 above).

The Government sought consultation on the [draft guidelines](#) in March 2020 and the final Program guidelines and application pack were released on [GrantConnect](#) on 28/7/2020, with the grant period running until 30/6/21. The program aims to improve access to mobile and/or broadband services in Eligible Areas of high economic, social, or public safety significance. It has three funding categories (up to \$300,000, \$300,000 - \$2 million, and over \$2 million) with the application closing date extended to 17/11/2020. Applicants can be licensed telecommunications carriers, owners or intended owners of the Proposed Solution infrastructure, or a consortium with government or agencies which also includes one of these. Key aspects of the guidelines are:

- New services must be an improvement over existing telecommunications solutions in the area. These may include upgrades to address seasonal congestion, backhaul capacity upgrades to improve quality of service, or additional mobile towers in areas of patchy coverage;
- Financial co-contribution - all projects will be expected to leverage substantial financial (cash) co-contributions to capital costs and/or installation;
- Demonstrate local community priority - through a regional digital plan/strategy or evidence of support from state or local governments, regional or community development agencies, industry, business, not-for-profits **or First Nations community-controlled organisations**;
- Funded Solutions should provide retail services for a minimum period of 7 years after the asset has become operational;
- Applications must demonstrate economic and/or social benefits, capacity to deliver and co-investment.

The Government has also launched an online noticeboard to help foster links between communities, regional/remote businesses and telecommunications providers who want to develop potential projects. Potential projects can be viewed at [www.communications.gov.au/what-we-do/internet/regional-connectivity-program/regional-connectivity-program-noticeboard](http://www.communications.gov.au/what-we-do/internet/regional-connectivity-program/regional-connectivity-program-noticeboard). The noticeboard will be available until the closing date for applications.

#### 1.3.4 Alternative Voice Services Trials in rural and remote Australia

DITRDC is proposing to contract organisations to trial alternative ways to deliver voice services in rural and remote areas of Australia, and particularly those areas serviced by Telstra's HCRC networks and assess their effectiveness. The trials are funded as part of the \$220 million Stronger Regional Connectivity package, with a total of \$2 million allocated. Following consultation on a draft program design at the end of 2019 a brief consultation process on the draft Alternative Voice Services Trials (AVST) guidelines was undertaken in May 2020. The Guidelines for the AVST were released on 4 August 2020, with up to \$2 million in funding available. Applicants should be carriage service providers, or consortia where at least one member is a carriage service provider. The carriage service

providers would supply trial services to consumers located in remote and rural areas of Australia within nbn co's fixed wireless and satellite footprints. The trials should provide insights into better ways to deliver the Universal Service Guarantee.

### 1.3.5 Indigenous Digital Inclusion Plan

This was a commitment within the Australian Government's response to the RTR 2018, although no budget was committed for implementation of the Plan. While NIAA and DITRDC are continuing discussions, there has been no update provided from either agency regarding the progress of the plan. However, digital access for Indigenous Australians is being considered as part of the process for renewing the Closing the Gap targets.

### 1.3.6 Closing the Gap Refresh

The current key mechanism within Indigenous affairs policy and outcomes measurement is the 'Closing the Gap' (CTG) framework, which has just undertaken a major review process as a co-designed refresh of the process between Council of Australian Governments (COAG) and the Coalition of Peaks. The new National Agreement on Closing the Gap<sup>14</sup>, released on 30 July 2020, included a commitment to develop the following targets within three months of the Agreement being signed (Clause 87):

*ii. Access to information: This target will measure Aboriginal and Torres Strait Islander people's access to the information and services that can enable participation in informed decision-making about their lives. This will require data development to measure digital inclusion, including ability to use the internet at home and in the community; accessibility of different online services; and the availability and use of culturally relevant media.*

There was also a commitment to "Building the Community-Controlled Sector" (Priority Reform 2), improved accountability (Priority Reform 3), and "Shared access to location specific data and information at a regional level" for use by First Nations organisations and communities (Priority Reform 4). The new Agreement calls for more co-designed and place-based solutions to address systemic issues. This will require improved communications infrastructure and means of access to facilitate many of the targets within the Agreement.

### 1.3.7 Universal Service Guarantee

In 2018 the Department of Communications and the Arts reviewed options relating to the development of the [Universal Service Guarantee](#) (USG), including:

- alternative means of providing reliable voice services to premises outside nbn co's fixed line footprint;
- the potential impact on nbn co costs as premises currently served by Telstra under the existing USO migrate to the NBN;

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<sup>14</sup> <https://www.closingthegap.gov.au/sites/default/files/files/national-agreement-ctg.pdf?q=0720>



- the ongoing role of payphones and other community solutions<sup>15</sup>.

The new USG updates the long standing [Universal Service Obligation \(USO\)](#), by providing all Australian homes and businesses with access to both broadband and voice services, regardless of their location. The USG will use the [National Broadband Network](#) (NBN) to deliver broadband services and will continue to use Telstra's existing copper and wireless networks in rural and remote Australia for the provision of voice services in NBN fixed wireless and satellite areas. With ongoing use of Telstra's copper and wireless networks in rural and remote areas, a key priority will be getting the most out of the existing contract with Telstra on performance and reliability. The Government has consulted on new arrangements to improve the reliability of services generally in [Part B of its Consumer Safeguards Review](#). While the USG will retain payphone services, there will be careful examination of payphone locations, as the uptake of mobile services has grown. The Government will continue to work with consumers and industry to look for ways to improve the USG over time as the telecommunications market changes.

### 1.3.8 The Australian Data and Digital Council

The Australian Data and Digital Council (ADDC, aka [Data and Digital Ministerial Forum](#)) has agreed to consider digital inclusion when considering future digital transformation initiatives. The [Communique from May 2020](#) meeting included the following section:

#### *Enabling digital inclusion*

*Ministers agreed to continue to prioritise digital inclusion when agreeing future digital transformation initiatives. Ministers acknowledged the importance of the digital transformation of government services reaching the whole community, to ensure no one is left behind by the digital divide. Affordability, along with digital connectivity, skills, and service design, are significant factors of the digital divide. Low income, lack of employment, and low education are considered significant contributing factors to digital disadvantage and prevent people from using critical digitally enabled government services. Ministers agreed to conduct a feasibility assessment on affordability options for Australians at risk of digital disadvantage to access government services online and by telephone, as a priority collaborative digital inclusion initiative. Ministers noted the reinvigoration of a digital inclusion working group, led by the Northern Territory, Western Australia and Queensland, to develop a program of priority digital inclusion initiatives for the Council's consideration at a future meeting.*

At the June 2020 meeting, Ministers agreed to conduct a feasibility assessment on affordability options for Australians at risk of digital disadvantage.

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<sup>15</sup> See 'Development of the Universal Service Guarantee (USG)' Summary [report](#), DCA November 2018



### 1.3.9 Australian Broadband Advisory Council

On 22/7/20, Communications Minister Paul Fletcher announced the establishment of the [Australian Broadband Advisory Council](#) to provide advice on ways to maximise the benefits of the National Broadband Network (NBN) and other high speed networks in key sectors of the economy. The Advisory Council, chaired by Deena Shiff, will provide advice and recommendations to the Minister on:

- ways the NBN and other high-speed networks can be used to lift Australia's economic output and the welfare of Australians more generally;
- opportunities to increase the use of the NBN by other networks, including by small and family businesses;
- barriers to using the NBN and other networks, including financial and cultural/behavioural issues and cost effective strategies to reduce such barriers; and
- potential implementation, communication and outreach strategies.

The initial focus of the Council will be considering the impact of COVID-19 on broadband use, including in key sectors of the Australian economy, and trends in how Australians are now using connectivity to learn, work and connect with services and their communities.

### 1.3.10 Digital Literacy Initiatives

#### *1.3.10.1 Be Deadly Online*

Be Deadly Online is an online safety resource package that consists of a series of posters and short animated videos aimed at educating Indigenous community members about cyberbullying, sexting, managing one's digital footprint, social media use and online privacy. The online program was developed for schools and educators, service providers, not-for-profit organisations, health centres, local police, and any community members who interact with Indigenous youth. It was created with major contributions from a number of Indigenous communities across Australia, including Yarrabah in Tropical North QLD, communities in regional Victoria and the mid-west Gascoyne region in WA. The resource is managed by the Office of the eSafety Commissioner.

#### *1.3.10.2 Keep Our Mob Safe Online*

In March 2019, the Government's National Online Safety Awareness Campaign was launched by the Office of the eSafety Commissioner. The campaign includes an initiative targeted at Indigenous Australians called 'Keep Our Mob Safe Online'. This campaign aims to provide culturally-specific information and resources (including videos, posters, booklets and podcasts) about online safety to Indigenous communities.

#### *1.3.10.3 ACCC Scam Awareness in Indigenous Communities*

In 2018, the ACCC Scamwatch website received more than 1,800 reports of scams from people identifying as Indigenous, with losses of almost \$3 million. Under the National Indigenous Consumer Strategy (NICS), the ACCC and state and territory consumer affairs agencies launched the 'Too good to be true' scam awareness initiative in November 2018. The initiative is aimed at engaging, educating and empowering Indigenous consumers – including those in remote communities – to identify and avoid scams. It primarily consists of face-to-face engagement through outreach activities, but also

consists of residual messaging through fridge magnets and Facebook messaging. NICS members include the ACCC, state consumer affairs agencies, and the Indigenous Consumer Assistance Network (ICAN).

## 2 State and Territory Programs

This section provides an overview of State and Territory infrastructure and access programs currently underway or undertaken in the last 5 years.

### 2.1 Western Australia

WA Government have been proactive in monitoring and addressing telecommunication gaps in remote communities through the MBSP and the Regional Telecommunications Project, as well as previous co-investment programs. WA has invested \$125 million since 2012 to expand the mobile coverage footprint and reduce communication gaps in small, rural communities and at strategic locations across regional Western Australia. This investment has funded 375 new or improved mobile communication infrastructure sites.

As shown in Table 1 below, WA Government have installed, or have funding to install, mobile coverage in all larger communities over 100 people except for 2 sites, and all communities over 50 people except for 3. There are outstanding issues with the 3G network being congested or having poor or marginal coverage in 5 of 8 sites with over 50 people and 4G coverage being poor or marginal in 8 of 24 sites with over 50 people. However, there is awareness of these issues and many of the gaps are being addressed through upcoming MBSP funded upgrades.

**Table 1: Analysis of WA communities for mobile coverage against population of community**

Population size	Number of communities				Total
	With 3G mobile coverage (or coming)	With 4G mobile coverage	With mobile coverage coming (funded)	No mobile coverage	
Up to 50	35 (33 poor or marginal)	60 (58 poor or marginal)	8	128	<b>231</b>
51-100	1	5 (5 poor or marginal)	6	3	<b>15</b>
101-200	3 (2 poor or marginal)	9	3	2	<b>17</b>
201-300	1 (1 poor or marginal)	2	1	0	<b>4</b>
Over 300	3 (2 poor or marginal)	8 (3 poor or marginal)	0	0	<b>11</b>
Total number of communities					<b>278</b>

The smaller communities and homelands with 50 or less people generally do not have mobile coverage due to low numbers of consumers and lack of backhaul, unless they are near a larger community that

has coverage, in which case the service is usually considered poor or marginal. WA Government has been applying for MBSP funding (with co-investment) to install Optus and Telstra satellite backhaul small cell mobile services into some sites. Following on from the Tjuntjuntjara trial (see 2.1.3), WA Government is also planning to support further WiFi Mesh installations in smaller remote communities. The approach being taken in WA is a model for what could be done in other states.

WA Government has implemented the following programs to improve digital connectivity in regional, rural and remote WA:

### 2.1.1 Regional Telecommunications Project

Building on the \$40 million Regional Mobile Communications Project (see below), the Regional Telecommunications Project (RTP) is an \$85 million State Government initiative (2014/15-2021/22), administered by the Department of Primary Industries and Regional Development (DPIRD). The RTP focuses on expanding mobile broadband in regional WA, plus alternative technology solutions where cellular mobile may be unaffordable or not fit for purpose. The project is delivering 335 new or improved infrastructure sites<sup>16</sup> (plus 13 upgrades from 3G to 4G), supplying both wide area coverage through large mobile base stations and highly targeted, local area coverage through small cell satellite installations. To capture the additional funding needed to deliver a rollout of this scale, the State Government has partnered with mobile network operators and the Commonwealth Government's Mobile Black Spot Program. WA Government is anticipating more sites will be co-funded in MBSP Rounds 5 and 6.

Roughly \$69 million has been committed to date, including:

- \$58 million has been allocated to co-fund 257 base stations under the Mobile Black Spot Program Rounds 1, 2, 4 and 5 (See the RTP/ MBSP [Telstra Network Coverage Map](#) and the RTP/ MBSP [Optus Coverage Map](#)).
- \$11 million to 24 new base stations and upgrade of 13 existing base stations directly with mobile network operators; and
- \$0.5 million for pilot initiatives, including the Tjuntjuntjara Community WiFi Project in partnership with Activ8me and nbn co. WA is looking to replicate the Tjuntjuntjara model in other remote communities (see below).
- 43 Indigenous communities have been targeted under RTP, but others may have gained incidental coverage as a result of other investment such as highway coverage.

#### 2.1.1.1 *Regional Mobile Communications Project 2012-14 - completed*

The [Regional Mobile Communications Project](#) (RMCP) was a \$40 million State Government initiative that provided reliable mobile voice and broadband coverage across 137,000 square kilometres of regional Western Australia. The RMCP successfully delivered:

- 113 mobile towers along major highways, covering nine regions;
- Increased mobile phone coverage across regional WA by 31%;

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<sup>16</sup> The rollout of the current 335 sites is due to be completed by 30 June 2022.

- Mobile infrastructure installed at 113 sites on major highways;
- Mobile connectivity for approx. 70 small aboriginal and other remote communities.

### 2.1.2 Satellite Small Cell Mobile Rollout

Under the RTP, the WA government in 2019-20 has committed to co-funding the upgrade of 11 satellite small cells in regional communities with Optus. The 4G satellite and small cells will be located at Karijini Eco Resort, Karijini Visitor Centre, Home Valley Station, Kalumburu, Burringurrah, Cape Le Grand Lucky Bay, Mindibunga, Alexander Bay, Karijini Campground, Bell Gorge and Parnngurr Community.

### 2.1.3 Establishment of Community WiFi in Remote Communities

Since 2018, WA Government has funded a successful trail of Optus mobile coverage and community wide WiFi Mesh rollout in Tjuntjuntjara community, in partnership with Australian Private Networks (APN/Activ8me) and nbn co. The aim of the Tjuntjuntjara Community WiFi Project was to demonstrate an accessible, affordable, sustainable and scalable model for community-wide WiFi in remote areas. The project incorporated:

- A WiFi mesh network providing external outdoor coverage and indoor coverage for 55 community houses and buildings, and the ability for roaming;
- A public network open to all residents and visitors. All managed content placed on the public network by the Community Resource Centre (CRC) accessible free of charge;
- Authorised users have access to the community and CRC corporate networks;
- A private voice network that provides free extension to extension calling;
- 1,000GB of NBN Sky Muster data per month across four 25/5Mbps services;
- Merchant facilities for purchase of data vouchers from office or CRC by cash or EFTPOS at a range of price points determined by community - \$5 for 200MB, \$10 for 500MB, \$15 for 1GB. \$20 for 3GB or \$30 for 10GB;
- Data vouchers can be shared by multiple users until the credit limit is exhausted;
- Ability for people to use a single data voucher to roam across Tjuntjuntjara and Ilkurlka, 135 kilometres north, where APN installed a similar system as part of the project;
- Unlimited free access to all gov.au websites;
- Supports voice over WiFi depending on the device and/or carrier functionality;
- Content filtering to the Communications Alliance industry association's best practice Family Friendly standard. This supports both safe list and blocked list options at the community's discretion, for example the blocked list can prevent access to pornography and gambling sites;
- Hardware for all internal and external WiFi access points, the central communications hub, solar panels and batteries for external access points, and telephone ports and USB charging ports on internal WiFi access points;
- Spare equipment cache for hardware replacement;
- A three year service and maintenance agreement;
- Monthly performance and data reports;

- Training for a local support person to liaise with community members and assist with basic fault rectification;
- Revenue sharing, whereby Tjuntjuntjara community receives an agreed commission from the sale of all data PINs to provide for future maintenance and equipment upgrade/replacement.<sup>17</sup>

WA Government (DPIRD) is looking to expand the rollout of WiFi to other remote communities on a place-based solution approach. WA Government is considering funding from Regional Connectivity Program and other sources to fund this program, with a contract to go to an industry provider (possibly APN) to install the infrastructure in a community-provided location. A voucher system would be set up for users to purchase data credits.

#### 2.1.4 Digital Farm Grant Fund

The Digital Farm Grant Fund (DFGF) has a \$7 million budget from 2017-18 to 2021-22, which is fully committed. The DFGF supports the establishment of fixed wireless networks in high production value areas outside the NBN fixed line footprint in order to provide flexible, enterprise-grade connectivity to regional businesses and communities.

#### 2.1.5 Data Collection on Indigenous Community Connectivity

DPIRD has analysed the list of all WA Indigenous communities (including outstations) against carriers' coverage maps, added in existing mobile service details, population figures where available, and other information (provided, not for sharing). According to DPIRD, there is some private investment in communications infrastructure from the mining industry which can have a secondary benefit of improved connectivity for nearby communities. Other agencies that have invested in internet connectivity improvements in remote communities include the WA Departments of Health, Education, Communities and WA Police (for emergency services). The Digital Inclusion Working Group (see 2.1.7 below) is aiming to capture this data in the future.

#### 2.1.6 The WA Digital Infrastructure Atlas

WA Government has mapped the telecommunications infrastructure across the State, including telephone exchanges, dark fibres and radio-communication sites, in its recently launched online [Digital Infrastructure Atlas](#). [The Atlas](#) was produced as part of the State Telecommunications Infrastructure Audit which is guiding investments through its Agricultural Telecommunications Infrastructure Improvement Fund to drive growth and jobs. In 2017, the Department of Primary Industries and Regional Development worked with the former Office of the Government Chief Information Officer – now the [Office of Digital Government](#) – to conduct an audit of WA's telecommunications infrastructure. The sources of all data sets used are included on the website.

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<sup>17</sup> Source: 'Tjuntjuntjara Community Wi-Fi Project Summary' report, DPIRD 2019.

### 2.1.7 Digital Inclusion Working Group

WA Government has established a dedicated role of a Senior Policy Officer Digital Inclusion, in the office of Digital Government, as well as a WA Digital Inclusion Working Group. This office has also been supporting a national working group on digital inclusion through the [Australian Data and Digital Council](#) (see 1.3.8) with priorities currently in development. WA Government has just commenced a [stakeholder engagement process](#) for the draft WA Digital Inclusion Blueprint to guide the delivery of digital inclusion initiatives for WA. The draft, which includes recommended strategies to address Connectivity, Affordability, Skills and Design, is currently open for public consultation.

## 2.2 Queensland

Queensland government has not had any specific remote Indigenous telecommunications programs recently. With an election coming up in October 2020, the Queensland government will be going into caretaker mode in a couple of months. It is unlikely that Queensland will be funding any new activities until after the next government is in office. There has been no needs analysis done for RICs in Queensland, relying largely on local government initiatives.

### 2.2.1 Mobile Black Spots co-investment

Like other states, Queensland government has provided co-investment to the Mobile Black Spot Program, with about 40 sites announced in Queensland in Round 5. Most of the larger remote Aboriginal communities have already had mobile services installed. Under a federal government Resilience Program, Telstra 3G services at Mornington Island, Palm Island, Kowanyama and Yarrabah are being upgraded to have longer life batteries installed to ensure reliable communications in the instance of power outages caused by cyclone damage or other causes (batteries will last up to 4 days). Hopevale recently got a new fibre backhaul link and mobile base station upgrade under a QLD Govt/Telstra co-investment project.

### 2.2.2 Torres Strait Regional Authority

In June 2018, the Torres Strait Regional Authority (TSRA), Queensland Government and Telstra finalised the first phase of a multimillion-dollar telecommunications infrastructure project known as the [Torres Strait Digital Foundation Project](#), to improve the mobile network in the Torres Strait region. The first stage of the two-stage Torres Strait Digital Foundation Project has now been completed. Under stage one, the project delivered improved 3G performance across all sites where that network was already available, established new 4G coverage on two of the central islands (Badu Island and Kubin Village on Moa Island), saw the installation of more ADSL ports on Horn Island, and delivered new 4G-ready infrastructure at Mabuag Island, Ugar, Erub and Mer.

The second phase, known as the Torres Strait Digital Expansion Project, is valued at \$7.32 million and aims to build upon stage one by upgrading the telecommunication infrastructure to deliver 4G coverage to all remaining islands of the Torres Strait. Due for completion by the end of 2020, it will focus on upgrading 4G Base stations in the Top Western islands of the Torres Strait, where biosecurity risks are great due to the close proximity to Papua New Guinea and Indonesia.

### 2.2.3 Queensland Capacity Network

Queensland Government has funded the establishment of the Queensland Capacity Network (QCN), a fibre backhaul network within the state to increase areas that can be reached by fibre<sup>18</sup>. Internet service providers can purchase backhaul at more affordable wholesale prices than all existing wholesalers (i.e. nbn co, Telstra, Optus, Vodafone), thus improving prices to consumers. It is feasible that QCN could be used for collocation of NBN services to expand terrestrial reach of NBN broadband services in the future. QCN includes a fibre service as far as Cairns to the north.

### 2.2.4 GetOnlineQld

The GetOnlineQld program, which includes the Community Digital Champions and Digital Mentors programs, is currently inactive due to changes within departmental responsibilities.

## 2.3 South Australia

In March 2018 the SA government committed to improving telecommunications and connectivity for regional areas through the establishment of a \$10 million Mobile Phone Black Spots Fund. The aim of the Fund is to address coverage gaps across regional South Australia, working with the Australian Government (through its MBSP) and the private sector on investment opportunities to maximise the impact of this funding.

Six new mobile base stations in the APY Lands were funded under Round 1 of the Mobile Black Spot Program. These were in Amata, Fregon/Kaltjiti, Indulkana/Iwantja, Mimili, Ngarutjara Homeland and Pipalyatjara. Previously only Pukatja (Ernabella) had mobile coverage (see [Telstra story](#)). The SA Govt acknowledged that there are benefits of connectivity as well as a number social and economic risks that need to be managed. The SA Government urged the ongoing need for payphone services in the APY Lands and West Coast communities. (Source: SA Govt response to RTR 2018). The SA Government has not undertaken a survey of infrastructure in RICs.

## 2.4 Northern Territory

Northern Territory Government (NTG) have implemented a range of programs to identify and address the specific needs of remote Indigenous communities in the NT. With over 400 remote communities and homelands across the NT and very limited budgets, NTG have focused initially on providing mobile coverage to the larger communities of over 2-300 people and where there was existing fibre backhaul. They are now seeking low-cost solutions to connect smaller communities. However, there is still much to be done, as outlined in the NT Homelands and Outstations Assets and Access Review (see 10.2.7), and as described in NT Government's submission to the 2018 RTR:

*"In the Northern Territory there were 21 remote communities (over 100 people) with no mobile phone service, 33 with no fixed internet service (ADSL) and 37 connected to the NBN via unreliable or unsuitable satellite services in 2018. The Northern Territory*

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<sup>18</sup> Qld Govt have claimed this is in response to NBN not delivering sufficient terrestrial coverage to regional Qld.



*(NT) population is approximately 32% Indigenous, of which approximately 79% live in remote Indigenous communities (RICs).” (NTG 2018)*

#### 2.4.1 Co-investment in expanding telecommunications infrastructure in NT remote areas

The NTG and Telstra have committed \$28 million over 2019–2022 to prioritise infrastructure investment in remote communities, major transport corridors and remote tourism sites. This builds on their previous remote telecommunications infrastructure co-investment programs (see below), which delivered mobile telephone and broadband services to about 23,000 residents in 45 remote communities since 2007. Over 20,000 Territorians now have access to mobile and broadband communications because of these programs. This is probably the last of the co-investment programs due to unit costs getting too high<sup>19</sup>. The NT Government is also investing in connecting optical fibre and upgrading fibre pathways to remote regions including the Groote Eylandt fibre upgrade project and a sub-sea optic fibre connection to the Tiwi Islands, activated in 2020<sup>20</sup>.

#### 2.4.2 NTG/Telstra 2015-2018 Infrastructure Sustainability Co-Contribution Agreement Project

Mobile phone and/or broadband services were delivered to 18 remote Territory communities as part of the 2015-2018 NTG/Telstra Infrastructure Sustainability Co-Contribution Agreement Project (ISCA).

Communities connected to date are:

- Ali Curung
- Barunga
- Santa Teresa
- Timber Creek
- Titjikala
- Manyallaluk
- Minyerri
- Kaltukatjara
- Umbakumba
- Bulman
- Weemol
- Yarralin
- Atitjere
- Mt Liebig
- Kintore
- Alpururulam

2020 progress update: Installation of mobile phone services at Belyuen and Bulla are in progress and estimated to be completed by December 2020.

#### 2.4.3 Remote Mobile Phone Hotspots

The Centre for Appropriate Technology (CfAT) in Alice Springs has created a simple mobile phone hotspot that extends mobile phone signal for up to 100 kilometres, helping people in very remote locations make calls. The hotspots are constructed by CfAT's Aboriginal workforce in Alice Springs.

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<sup>19</sup> Correspondence from NT DCIS

<sup>20</sup> Source: 'State of the Data and Digital Nation' report, ADDC, September 2020

They are rugged with no moving parts and use no power, making them ideal for the Territory's harsh conditions. However, they can only be used by one person/device at a time. Through a grant from the NT Government CfAT has built and installed 49 hotspots across the Territory to provide communication links for residents and visitors from roadside stops, national parks and other sites.

#### 2.4.4 Digital Territory Strategy

NTG have developed the [Digital Territory Strategy](#), a framework for maximising the opportunities of the digital age across our business, industry, education, community and government sectors.

#### 2.4.5 Pre-Paid WiFi Solution (in development)

NTG is looking at co-funding a WiFi solution that is agnostic to backhaul and can operate on the same basis as pre-paid mobile service to ensure longevity. The solution needs to be transportable, mobile, pre-paid, available using any device. NTG are seeking to do a pilot trial in Kakadu National Park using a WiFi calling product that can connect via any form of backhaul including satellite<sup>21</sup>.

#### 2.4.6 NT Library WiFi Rollout

Library and Archive NT (LANT) has rolled out free WiFi services to 46 remote Indigenous communities, including 15 within community libraries (operated by regional councils) and an additional 31 [remote communities](#) across NT to deliver library services. An additional two are being established in Titjikala and Alyungula through an arrangement with McDonnell Shire. The backhaul is a mix of Sky Muster, ADSL and 4G. Some WiFi services were turned off during COVID-19 due to Councils closing down offices where the WiFi was housed. Currently all WiFi is managed by Easyweb Digital, with NTL planning to go to contract for the ongoing management in the future.

#### 2.4.7 Policy approaches

NTG have included KPIs around digital inclusion in their recent Aboriginal Affairs Strategy 2019-29 '[Everyone Together](#)'. This includes: Measure 5.6 – increase the number of Aboriginal communities, homelands and outstations with access to stable mobile and internet services; Measure 5.7 – increase the amount of telecommunications infrastructure in remote communities; and Measure 5.8 – develop a Northern Territory Aboriginal digital inclusion program.

NTG have also put digital inclusion on the agenda for the [Australian Data and Digital Council](#) (established Sep 2018), including urging that access to all government websites be at no data cost.

## 2.5 New South Wales

### 2.5.1 Connecting Country Communities Fund

The NSW Telco Authority has a key role in NSW regional areas, managing the \$50 million 'Connecting Country Communities' fund, which includes the NSW Mobile Black Spot Program (\$39 million) and

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<sup>21</sup> WiFi Calling has improved, no longer requiring a Telstra account to use it.

the \$11.5 million Broadband Internet Access Program. Considerable alignment with the Commonwealth's Regional Connectivity Program is expected.

Under the Mobile Black Spot Program, the NSW Government has committed more than \$39 million to build at least 183 new or improved mobile base stations throughout the state. The NSW Telco Authority works in partnership with the Department of Premier and Cabinet on the program, which is being delivered in partnership with the Australian Government and mobile network operators. In NSW, 159 new sites have been built to date.

The Broadband Internet Access program, using Yless4U as the provider, will deliver a metro-quality wireless broadband internet service to 11 communities that previously relied on a satellite internet service: Bungendore, Carwoola, Googong, Michelago, Royalla, Collector, Gundaroo, Gunning, Murrumbateman, Tarago, and Wallaroo.

### 2.5.2 Regional Digital Connectivity program

In 2019, the NSW Government expanded its commitment to improving regional connectivity with the \$400 million [Regional Digital Connectivity program](#), funded through the Snowy Hydro Legacy Fund to address mobile black spots and internet connectivity in regional NSW. The Regional Digital Connectivity program builds and expands on the work commenced under the Connecting Country Communities Fund to benefit many more communities, with a focus on delivering metropolitan levels of service to regional NSW. A press release on 6th July 2020 claimed:

- 21 new mobile phone towers will be delivered in partnership with Optus and Telstra
- the wireless broadband service will be delivered by rural communications carrier Yless4U
- funding will enhance existing assets including towers, land, fibre and backhaul as well as building new infrastructure.

There was no specific mention of Indigenous communities in these programs.

## 2.6 Victoria

While the Victorian Government has not listed any specific programs for Indigenous communities, it is delivering the following programs for regional Victoria.

### 2.6.1 Fixing the Digital Divide

Victoria's nine Regional Partnerships have identified a number of digital connectivity issues affecting their regions and which contribute to the digital divide, which include:

- concerns around the NBN rollout in terms of both coverage and technology choices, as well as affordability and service quality for regional users
- ongoing issues with mobile coverage and quality of services
- the availability of public WiFi networks to provide alternative connectivity to existing services
- the provision of enabling infrastructure to support adoption of emerging technology like the Internet of Things (IoT)
- digital literacy issues and the availability of resources to help address them.

- The Victorian Government in partnership with regional communities is developing a detailed understanding of place-based telecommunications issues across the state. This information will better inform all levels of government as well as industry on digital gaps, region by region, to enable more efficient investment decisions, develop partnership opportunities and to prioritise locations most in need<sup>22</sup>.

### 2.6.2 Connecting Regional Communities Program

The \$45 million [Connecting Regional Communities Program](#) (CRCP) aims to address multiple digital issues in regional Victoria such as mobile black spots, but is also intended to lay the grounds for future work, digital agriculture, free public WiFi, and enhanced broadband projects and policy development. Regional initiatives include reducing mobile black spots, improving mobile coverage on V/Line commuter services, providing free public wi-fi and piloting new high-quality broadband business networks.

### 2.6.3 Victorian Mobile Project

The Victorian Mobile Project (2018) is aiming to improve mobile coverage across regional Victoria, expanding 3G/4G mobile coverage for residents and local businesses. This project brings together private investment and Commonwealth Government Mobile Black Spots funding, in partnership with the telecommunications industry. The Victorian Government is:

- co-funding 193 new mobile base stations in areas with poor or no mobile coverage across the state.
- By September 2018, 118 of these new mobile towers were up and running, connecting communities with mobile services.
- Victorian Government has invested \$44 million in improving mobile coverage to date, securing \$146 million infrastructure investment for Victoria.
- A further \$11 million was committed to fund more new mobile towers to fix blackspots in the 2018/19, bringing the Victorian Government's total investment to \$55 million.

### 2.6.4 Free public WiFi Project

[Free public WiFi](#) is improving connectivity for tourists and visitors to the Melbourne, Bendigo and Ballarat CBDs, and these pilots are being extended as part of the [Connecting Regional Communities program](#) (see 2.6.2 above). New free public WiFi networks were installed in Shepparton (which has a large Aboriginal population) and Geelong in 2019. Victoria's free public WiFi deployments are a combined effort of Victorian Government, local government, and industry.

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<sup>22</sup> Source: [Fixing the Digital Divide - Connecting communities in regional Victoria](#)

## 2.7 Tasmania

### 2.7.1 Flinders Island and Cape Barren Island Telecommunications Project

In 2017, the Tasmanian Government partnered with Telstra, the Flinders Island Council and the Australian Government on an \$11 million project to upgrade telecommunications services for Flinders Island and Cape Barren Island. This project, now completed, aimed to improve internet access for many Tasmanian Aboriginal people.

## 3 Industry Activities

### 3.1 nbn co

#### 3.1.1 Public Interest Premises Program

Nbn co is providing support for about 100 Indigenous communities to access services over the Sky Muster satellite through its Public Interest Premise (PIP) program. The program supports public WiFi through community centres and enables purchase of data by users through a voucher system. The NBN supports access through:

- larger data allowances to support community WiFi compared to services for a single premise;
- allowances for additional fit for place installations of Sky Muster equipment;
- complete customer installations by accredited RSPs where required.

The PIP services are currently set up on standard NBN Sky Muster services<sup>23</sup>. Communities that have the PIP service have reported the need for increased data to meet demand, which would be enabled if the PIP services were upgraded to using Sky Muster Plus services (see below).

#### 3.1.2 Enhancements to NBN Sky Muster plans

In March 2020 as a COVID-19 response, nbn co announced increased data download limits from 45GB to 90GB for standard NBN Sky Muster services ([nbn co media release 25/3/20](#)). In September 2020, nbn co extended this offer until 30 November ([nbn co media release 4/9/20](#)). Alongside this capacity boost, nbn co announced up to \$150 million of financial relief and assistance packages to help keep low-income households and small and medium businesses facing hardship stay connected<sup>24</sup>.

In August 2019, nbn co established Sky Muster Plus which provided unmetered general web browsing, emails and software updates and burst speeds above 25Mbps download and 5Mbps upload speed when network conditions allow. Since 1 April 2020, all traffic on Sky Muster Plus plans were unmetered except for video streaming and traffic via a VPN, both of which continue to be metered. Other enhancements include:

- a new 25GB+ entry plan offering 25GB of peak data and 25GB of off-peak data for video streaming and VPN traffic, to improve accessibility for lighter users;
- greater flexibility for RSPs to customise data allowances on their retail plans in increments of 5GB (starting from 25GB peak data/25GB off-peak data, up to 150GB peak/ 150GB off-peak);

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<sup>23</sup> For standard NBN Sky Muster plans, all data is metered and customers have a set amount of data each month

<sup>24</sup> From nbn co media release 4/6/20

- a new ‘top-up’ feature, providing RSPs the option of offering ‘top up’ data, should their customers use their monthly metered data allowance (available in coming months).

### 3.1.3 Regional Action Plan

Nbn Co has delivered a range of initiatives under its [Reconciliation Action Plan](#) (III), focusing on Indigenous procurement, employment, internal cultural awareness and connectivity. This has included:

- establishing an Executive Manager role within the Regional and Remote business unit focused on Indigenous Affairs;
- providing 7 of the 12 Town Camps in Alice Springs with fixed line services;
- supporting a telehealth trial in the Laynhapuy Homelands.

Nbn co’s COVID-19 response for regional/remote Indigenous communities also included connecting [three communities](#) (Kowanyama, Yarrabah and Thursday Island) in Far North Queensland to enable delivery of online educational programs and deploying a free-of-charge community WiFi emergency service at 26 communities (see 3.1.4 below), and deployment of Business Satellite Services at border closures.

Nbn co’s Reconciliation Action Plan (IV) and Indigenous Affairs strategy is largely aligned with the ADII indicators of access, affordability and ability. Initiatives include:

- identify Indigenous health, education and arts facilities and work with partners to ensure key facilities have access to a connection;
- develop a digital capability assessment tool to baseline Indigenous ability and inform the development of a digital literacy campaign;
- address affordability as part of the current NBN and industry focus.

### 3.1.4 ‘Communities in Isolation’ COVID-19 WiFi pilot

On 17<sup>th</sup> April 2020, nbn co [announced](#) it would establish a \$150 million financial relief and assistance fund to help internet providers to support their residential and small and medium business customers affected by the COVID-19 pandemic. In addition to this, nbn co is rolling out free PIP services with WiFi installed to 26 remote Indigenous communities, with more sites being planned. This program was originally planned to continue to the end of September 2020 but this has now been extended to January 2021. Skymesh and Easyweb Digital are among the providers rolling this service out. Nbn co is considering offering this as a product option in the future. Under its legislation (nbn co not being an RSP), nbn co can only offer the services free of charge and is obliged to remove the infrastructure at the end of the support period.

### 3.1.5 Connecting Older Australians and Education Assistance

In February 2020, nbn co released a Connecting Older Australians Expression of Interest to RSPs and Consumer Groups with the aim of co-developing comprehensive and innovative solutions that encourage more seniors to get online. Nbn co is prioritising the over 65-year-old segment of the

community as part of the first phase of a strategy to lift digital capability of underserved segments of Australia<sup>25</sup>.

In September 2020, nbn co also [announced](#) an extension to its Education Assistance offer for unconnected low-income households with online schooling needs to 15 January 2021. It also broadened the 'Illuminate' (First Timers') wholesale discounts for premises not yet connected to the NBN network or that have disconnected an active service.

### 3.1.6 Program Beyond Rollout 2020

Nbn co's strategic priorities beyond the completion of the primary rollout at end of June 2020 are:

- *Connectivity*- of constrained sites, where lack of existing infrastructure limited initial rollout, such as Alice Springs town camps
- *Engagement* – Stakeholder engagement, including peak bodies and communities, to identify appropriate products/services and affordability measures
- *Digital Literacy* – will seek partnerships to deliver training.

Nbn co is preparing for a future role under the USG as a provider of last resort. It is currently seeking to participate in the Alternative Voice Trials (pending announcement). It is also exploring options for making use of legacy infrastructure including HCRC towers if Telstra moves away from HCRC telephony delivery.

Nbn co is looking at ways to expand terrestrial and low-latency broadband delivery in regional and remote Australia up to and beyond the life of Sky Muster (9 years of 15 year life remaining), including more fixed line rollout, fixed wireless, Low Earth Orbit satellite constellations, SigFox, and Lora WAN (low bandwidth mesh network application).

### 3.1.7 Indigenous engagement

Nbn co has recently recruited an Indigenous Affairs Officer to undertake engagement with Indigenous people and communities to identify needs, promote NBN services and help develop appropriate products. Nbn co is using the ADII as an indicator for Indigenous digital inclusion but is aware of its limitations. As a result, nbn co is developing a Capability Assessment Tool designed to enable a qualitative assessment of digital access in remote Indigenous communities, in order to help address locally identified needs.

## 3.2 Telstra

### 3.2.1 Co-investment in remote community mobile and data services

Telstra has been involved in a range of co-investment programs with WA government, NT Government, Queensland Government and SA Government. Some recent co-investment examples include:

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<sup>25</sup> Source: nbn co media release 24 February 2020



- Working with the NT government, Telstra has committed \$15 million over three years for the expansion of mobile coverage (see 2.4.1), and \$1.35 million per year for digital inclusion programs. Telstra previously worked with the NT government to fund mobile phone coverage and internet access to 13 communities at a cost of \$5.76 million.
- Telstra also partnered with the NT government to build a service to support telehealth applications for remote communities using the Telstra Health service. Telstra has connected 11 services with 4 additional sites in progress.
- In 2018 Telstra worked with the Federal Government to provide mobile base stations to six remote communities in the APY Lands of South Australia. Telstra also worked with the South Australian Government to deliver improved connectivity to eight schools in the APY Lands and enhance teaching and learning experiences.

### 3.2.2 Payphones

The ACMA Communications report 2018-19 claimed that there were 571 Telstra operated payphones and 246 non-Telstra payphones in remote Indigenous communities (p116). ACMA claims that Telstra met its USO payphone fault repair benchmark (80%) in time delay for repairs of 3 days for remote locations with a fault repair performance of 86.2%. Fault reporting is mostly via remote monitoring where the payphone calls back into its management system to advise of its status. Faults can also be reported by customers via a freecall number (1802244) displayed on the payphone pictogram. In June 2019, Telstra [announced](#) an upgrade to its public phone network nationally, with improvements to pricing and technology.

Despite a proposal by the Productivity Commission that payphones be phased out from inclusion in the USO, there was consistent feedback in responses to the RTR that public payphones are an essential means of communications for people in remote Indigenous communities and town camps and cannot be phased out without a reliable, accessible and affordable alternative.

Telstra made its 573 community phones in remote Indigenous communities free for calls during the COVID-19 pandemic restrictions- see [ABC story](#). According to Central Land Council, this provided a much needed service for people in small communities and homelands to contact Centrelink and other service providers, as well as family, when a lot of community WiFi and access facilities were not available. The free services have been continued on selected public and community phones in remote and regional Indigenous communities with Telstra monitoring government advice and travel restrictions to assess when services will return to normal.

### 3.2.3 Telstra RAP Targets

Telstra's Reconciliation Action Plan (RAP) commits Telstra to working with State and Territory governments under a matched funding model to install mobile base stations and broadband for remote communities. Targets under the RAP are tabled below.

**Table 2: Telstra RAP targets<sup>26</sup>**

<b>Commitment</b>	<b>Action</b>	<b>Target- 2019</b>	<b>Target- 2020</b>	<b>Target- 2021</b>
<p>Infrastructure</p> <p>Improve the digital, social and economic inclusion of remote Indigenous communities through co-investing with Governments to build or upgrade telecommunications infrastructure</p>	<p>Upgrade and enhance telecommunications infrastructure for the Gulkula site to support Garma and other key community events in East Arnhem Land</p>	<p>Fibre Upgrade complete</p>	<p>Mobile Cell on Wheels (COW) technology deployed (satellite backhaul)</p>	<p>Cell on Wheels (COW) technology deployed</p>
	<p>Invest in the \$28m Remote Telecommunications Co-Investment Program with the Northern Territory Government, targeting remote locations, including communities, transport corridors and tourist destinations</p>	<p>Feasibility studies on priority sites</p>	<p>Feasibility studies on remaining sites / commissioning of sites to expand network</p>	<p>Construction and commissioning of sites to expand network</p>
	<p>Seek government co-investment to expand and upgrade fixed and mobile network infrastructure in the Torres Strait and Northern Queensland Indigenous communities</p>	<p>Explore opportunities, prioritising Hopevale and Torres Strait</p>	<p>Explore opportunities for additional Indigenous communities</p>	<p>Explore opportunities for additional Indigenous communities</p>
<p>Telehealth</p> <p>Build the capability of Indigenous health organisations to use telehealth technology to facilitate better health outcomes for</p>	<p>Pilot Telehealth solutions in two remote communities in Far North Queensland to establish connectivity to the National Telehealth Connection Service</p>	<p>One pilot site connected</p>	<p>One pilot site connected</p>	<p>Review and evaluate pilot</p>

<sup>26</sup> Source: Telstra Reconciliation Action Plan 2018-21 p15

Commitment	Action	Target- 2019	Target- 2020	Target- 2021
Aboriginal and Torres Strait Islander peoples				

Telstra also funds several digital inclusion programs in Indigenous communities including Indigenous Digital Excellence (run by National Centre for Indigenous Excellence), Deadly Digital Communities (run by State Library of Queensland -see 4.3), and inDigiMOB Digital Mentors project in NT (run by First Nations Media Australia - see 4.5). Telstra recently announced further investment of:

*“...more than \$5m over the next few years to extend our partnership with First Nations Media Australia to deliver inDigiMob – an indigenous digital literacy program, to roll-out more specific telecommunications literacy programs for indigenous communities and to extend our research through the ADII to better understand how the drivers of access, affordability and digital ability play out in regional and remote communities.”<sup>27</sup>*

### 3.2.4 Satellite small cells

Telstra is working with regional councils and small communities to promote co-investment in Telstra Satellite Small Cells to provide satellite backhaul mobile coverage to small sites.

### 3.2.5 Value Mobile Offer

An affordable post-paid [Value Mobile Offer](#) product was introduced by Telstra in 2020 for people with an eligible concession. It costs \$30/month, which is a \$40 Extra Small Mobile Plan with a monthly recurring \$10 credit. It has unlimited calls and texts, no lock-in contracts and no excess data costs, however the plan only includes 2GB of ‘fast’ data. Shaped after that to 1.5 Mbps, the product enables access to services needed – health, education, government services - at a conservative price-point.

### 3.2.6 The Australian Digital Inclusion Index (ADII)

The Telstra-funded ADII measures the extent of digital inclusion across the Australian population using three dimensions: access, affordability and digital ability. A copy of the 2019 ADII report<sup>28</sup> can be viewed at [www.digitalinclusionindex.org.au/the-index-report/report/](http://www.digitalinclusionindex.org.au/the-index-report/report/). The report shows that Indigenous Digital Inclusion is low but improving. Aboriginal and Torres Strait Islanders living in urban and regional areas have relatively low digital inclusion (6.8 points below the national average)<sup>29</sup>. Although their digital inclusion score rose by 1.0 point in the past year, this was less than

<sup>27</sup> Source: [speech](#) on July 9 2020 by Telstra CEO Andy Penn

<sup>28</sup> The 2020 ADII report is being released on 22/10/20.

<sup>29</sup> Breakdown - Affordability score of 52.4, which is 6.6 below national average; Access score of 68.4, 7.3 points below national average; and Ability score of 44.4, 6.4 below national average.

the rise in the national average (up 1.7 points), with affordability being the key issue especially for mobile data. The current ADII data collection does not survey remote Indigenous communities, where geographic isolation and socioeconomic disadvantage exacerbate digital inclusion issues. Telstra has conducted supplementary research in Pormpuraaw in far north Queensland in 2019, and the central Australian remote Indigenous community of Ali Curung in 2018, which suggests digital inclusion for Indigenous Australians further diminishes with remoteness, particularly with regards to Access and Affordability. Telstra has recently announced a significant investment in extending remote data collection.

### 3.3 APN/ Activ8me

Australian Private Networks (APN), trading as Activ8me, has been providing internet services across Australia since 2003. It claims to be the pre-eminent internet service provider (ISP) in rural, regional and remote Australia, certified in NBN Sky Muster™ satellite services (including the Public Interest Premises WiFi sharing product), Fixed Wireless and Fibre. APN provides commercial services to Government agencies, Remote Communities, Not-For-Profit Organisations and commercial entities including Satellite, Public WiFi, Mesh networks, IoT, Fixed Wireless, Fibre and Telephony.

APN has provided satellite internet services to a total of over 50,000 customers across Australia under the Australian Broadband Guarantee Scheme and similar Federal Government schemes. Under this program APN undertook all aspects of the delivery including detail planning, full stock and logistics/freight management, installation resources, field support and activation of services. Activ8me designed the solar powered satellite phone booths for the Community Phones Program and enabled all 301 for WiFi sharing. They still have the maintenance contract for these and 245 public payphones in small communities under 50 people.

### 3.4 Easyweb Digital

Easyweb Digital have worked with a range of Indigenous communities and organisations to install community access WiFi or Happy Hotspot or Encapto systems (enabling voucher payment for data use). These include: CAYLUS computer rooms, Warmun community WA, Uluru-Kata Tjuta and Kakadu National Parks, Irrunytju community WA, and NT communities Ntaria, Imanpa, Mutitjulu and Kalkutatjara. Easyweb also provided the WiFi solution for the DPMC WiFi trials in 5 communities in 2016-18.

### 3.5 Low Earth Orbit satellite providers (upcoming)

There are currently two constellations of low earth orbit (LEO) satellites being established – Starlink (Space X) and OneWeb - and preparing to deliver low-latency<sup>30</sup> satellite communications services, with partial services to begin from 2021. SpaceX has launched more than 480 of a planned constellation of 30,000 satellites. The companies are wanting to reach the roughly four billion people

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<sup>30</sup> OneWeb recorded an average latency of 32 milliseconds in July 2019 on transmissions between space and South Korea.

on Earth who now lack high-speed internet access, aiming to sell their services to governments, non-profits and telecommunications providers, including to support WiFi hotspots in remote areas<sup>31</sup>. LEO could be used to support telehealth, autonomous vehicles, remote monitoring, Internet of Things (IoT) connectivity, and other applications that require low latency, for areas outside of 5G coverage footprints. As compared with the geo-stationary Sky Muster satellites, which require a fixed antenna, LEO satellites could enable a more mobile mode of connectivity while travelling or working away from fixed antenna locations.

### 3.6 Remote High Speed Wireless Technology Pilot

The [Remote High Speed Wireless Technology Pilot](#) is an initiative of the Northern Regional Development Australia (RDA) Alliance, representing a partnership between RDA NT, RDA Kimberley, Central Desert Regional Council, and Distant Curve. The project has successfully connected two remote Indigenous communities (Engawala and Atitjere) to Nextgen fibre via long-distance point-to-point microwave technology. This pioneering project demonstrates the potential of low-cost, small-scale telecommunication solutions for remote regions in some of the NT's smallest communities.

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<sup>31</sup> Source: [Washington Post article](#)

## 4 Internet Access Facilities and Digital Inclusion projects

There is no evidence of the Australian Government providing funding for community access internet facilities since the Indigenous Communications Program in 2013-6<sup>32</sup>. However, a number of State Government and NGO initiatives have continued to provide access facilities, WiFi services and other digital inclusion programs, mostly in locations where there is local community support for facility usage, staffing, training and operational expenses.

### 4.1 Central Australian Youth Link-Up Service (CAYLUS)/Dot Com Mob

CAYLUS works with a range of partner agencies to establish computer rooms in remote Aboriginal communities in Central Australia for public use along with some supervision and assistance. These facilities are used by all age groups for internet banking, paying bills, communication with kids away at boarding school and family in other communities, playing games, surfing the net and making media. [Dot Com Mob](#) was established as a not-for-profit organisation (able to accept donations) to establish or upgrade community technology centres to enhance educational outcomes for Aboriginal and Torres Strait Islanders resulting in improved social inclusion and economic opportunities.

CAYLUS/Dot Com Mob have supported the development of 28 computer rooms and/or free WiFi hotspots in the following remote communities: Ali Curung, Alpurrurulam (Lake Nash), Amoonguna, Ampilatwatja, Apatula (Finke), Arlparra, Atitjere (Hart's Range), Engawala, Kaltukatjara (Docker River), Kintore, Ikuntji, Imanpa, Laramba, Mt Liebig, Mt Theo Outstation, Ntaria (Hermannsburg), Nyirripi, Papunya, Santa Teresa, Tennant Creek, Tjuwanpa, Titjikala, Papunya, Utju (Areyonga), Willowra, Yuelamu (Mt Allen), Yuendumu and Yulara. CAYLUS/Dot Com Mob has installed computer rooms in the following town camps: Truckies (Nyewente), Hidden Valley (Ewyenper Atwatye), Karnte, Warlpiri camp (Ilperle-Tyathe), Charles Creek (Anthelk-Ewlpaye), Little Sisters (Inarlenge), as well as the YORET headquarters (Youth Out Reach and Engagement Team) and Women's Shelter in Alice Springs. They have also provided computers for 15 Purple House locations, with the Pintubi Luritja Photo Archive installed on them. Through recent funding from Central Land Council (CLC) to address communication issues during COVID19 restrictions, Dot Com Mob have been actively installing free 4G WiFi hotspots into communities without any: Titjikala, Engawala and Arlparra.

### 4.2 Indigenous Knowledge Centres Queensland

Indigenous Knowledge Centres are a public information hub, library and computer access centre owned and operated by 12 Indigenous Shire Councils, with financial assistance from the State Library of Queensland (SLQ). IKCs are operated by 12 Indigenous Shire Councils located across Queensland from the Torres Straits and Cape York regions in the north to Cherbourg in the south. The main function of IKCs is to coordinate programs and activities that support the documentation and

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<sup>32</sup> In its response to the 2015 RTR report, the government reported that under the ICP, approximately 3200 Indigenous Australians living in remote communities received basic computer training through the establishment of 106 public internet facilities. The DBCDE also conducted a trial of internet kiosks using the Interim Satellite Service in three remote Indigenous communities.

preservation of Indigenous Australian cultures. A number of IKCs also offer public access to WiFi and other IT services. Councils are responsible for the physical infrastructure, staffing and operations of their IKC.

### 4.3 Deadly Digital Communities (QLD Govt)

The Deadly Digital Communities program, established in August 2017, aims to help Aboriginal and Torres Strait Islander communities to develop digital literacy skills and use digital technologies to access health, social and financial services. Deadly Digital Communities is an initiative of QLD Government and Telstra delivered through the State Library of Queensland in partnership with local government through Indigenous Knowledge Centres (IKCs) and public library services in 31 communities. It is a community-based digital technology skills training program for Aboriginal and Torres Strait Islander peoples and communities across Queensland with the aim to increase digital literacy. Since the program began in 2017, 4,656 Aboriginal and Torres Strait Islander Queenslanders have participated in over 1,220 free training sessions delivered across the state through participating IKCs and public libraries. Participants have developed digital skills from sending an email to using social media to paying bills online to promoting a new business idea and more.

### 4.4 Community Resources Centre Network WA

The [Western Australian Community Resource Network](#) (WACRN) is comprised of over 100 rural, remote and regional Community Resource Centres (CRCs). CRCs are not-for-profit organisations that are independently owned and operated by their local communities. CRCs are contracted by the Department of Primary Industries and Regional Development (DPIRD) to provide access to government and community services and information, and undertake community, business and economic development activities. Many are located in regional towns with large Indigenous populations as well as some in remote Indigenous communities including: Kalumburu, Djarindjin, Bidyadanga, Noonkanbah, Irrunytju and Tjuntjuntjara.

### 4.5 First Nations Media Australia/ inDigiMOB

First Nations Media Australia FNMA has managed the Telstra funded [inDigiMOB](#) project since 2016, supporting 23 remote NT communities with digital training, cyber safety awareness and support for community digital mentors. The program continues to operate with funding from Telstra. It has delivery partnerships with PAW Media, Aboriginal Resource and Development Service (ARDS), Tangentyere Council and Anindilyakwa Aboriginal Corporation.

Since the project began, inDigiMOB has had 10,346 workshop participations, 2,575 individuals impacted and 127 Digital Mentors employed (informally and formally). In Year 4 (2019/20), inDigiMOB worked in 23 communities with 31 new Digital Mentors employed, 1855 workshop participations and 628 new individuals impacted.

The project has been delivered in the following communities (delivery partner in brackets):

- Angurugu (Anindilyakwa Land Council)
- Alyangula (Anindilyakwa Land Council)\*\*
- Umbakumba (Anindilyakwa Land Council)
- Alice Springs Library Geekco (Indigemoji)

- Yuendumu (PAW Media)
- Yuelamu (PAW Media)
- Kintore (PAW Media)
- Nyirripi (PAW Media)
- Willowra (PAW Media)
- Laramba (PAW Media)
- Gapuwiyak (ARDS)
- Milingimbi (Yurrwi) (ARDS) \*
- Ramingining (ARDS)
  - Nhulunbuy (ARDS)
  - Larapinta Valley (Tangentyere)
- Hidden Valley (Tangentyere)
- Charles Creek (Tangentyere)
- Karnte Camp (Tangentyere)
- Trucking Yards (Tangentyere)
- Little Sisters camp (Tangentyere)
- Warlpiri camp (Tangentyere)
- Yarralin (inDigiMOB)
- Bulla (inDigiMOB) \*\*
- Timber Creek (inDigiMOB)
- Santa Teresa (CatholicCare NT)

\* No activities during FY20

\*\*One-off workshop.

## 4.6 The Digital Literacy Hub

The Digital Literacy Hub (DLH), delivered by the Aboriginal Literacy Foundation, is a digital platform designed for Indigenous students and their families. It aims to make the following available in one central place: eBooks, literacy and numeracy games, educational resources, a portal to Indigenous employment opportunities, academic links and support, health and wellbeing support, a direct link with Indigemail, and a database of Indigenous statistics and facts.

## 4.7 Other facility providers

Other community access computer facilities are being provided by public libraries in all states, the PY Ku Network on the APY lands of SA, Ngaanyatjarra Media in the Ngaanyatjarra Lands of WA (access facilities in 12 communities including shared WiFi), the Rural Transaction Centres in Victoria, NSW, SA and Tasmania, through network partners involved in the Be Connected program aimed at digital inclusion of older Australians, as well as other agencies.

The Central Land Council (CLC) reported that a number of Aboriginal communities in Central Australia have chosen to invest their land use income through Community Development program into establishing community access WiFi facilities.



## 5 Expenditure

**Table 3: Estimated total communications infrastructure expenditure for remote Indigenous communities since 2015 (including current and upcoming programs)**

Source: publicly available information.

Agency	Program	Total Funding (since 2015)	Indigenous-Specific Funding (since 2015)
Australian Government	Indigenous Communications programs (Community Phones, WiFi trials etc)	\$6.35m in 2015-18. Currently about \$4m pa.	Approx. \$14m
Australian Government	Mobile Black Spot Program	\$380m (\$160m for Rounds 5 and 6)	Approx. \$30m for 43 sites (est.)
Australian Government	Regional Connectivity Program (upcoming)	\$53m	N/A
WA Government	Regional Telecommunications Programs	\$85m since 2015	Approx. \$15m (est.)
NT Government	Co-investment in remote mobile services	\$15m for ISCA \$14m for RTCP over 2019–22	\$29m
SA Government	Mobile Phone Black Spots Fund	\$10m	\$5m (for APY Lands rollout)
QLD Government	Mobile Phone Black Spots Fund		\$5m (est.)
TSRA	Torres Strait Digital Expansion Project	\$7.32m	\$7.32m
NSW Government	Connecting Country Communities Fund	\$50m	Not defined
NSW Government	Regional Digital Connectivity program	\$400m	Not defined
VIC Government	Connecting Regional Communities Program (CRCP)	\$45m	Not defined
VIC Government	Victorian Mobile project	\$55m	Not defined

TAS Government (& funding partners) <sup>33</sup>	Flinders Island and Cape Barren Island Telecommunications Project	\$11m	\$11m
Telstra	NT Mobile Co-investment Project	\$28m over 2019–22	\$28m
Telstra	MBSP co-investment		Not defined
Optus	MBSP		Not defined
nbn co	‘Communities in Isolation’ program	\$0.5 million (estimate)	\$0.5 million (estimate)

Total investment in remote Indigenous communications since 2015: approx. \$155 million (excludes MBSP co-investment from telcos – no public figures)

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<sup>33</sup> Co-funded between Telstra, Australian Government, Tasmanian Government and Cape Barren Council

## 6 Issues with Existing Program Delivery in Remote Indigenous Communities

The Australian Government programs targeted at remote Indigenous communities (RICs), which were regularly funded from the late 1990s to mid-2010s, now consist primarily of maintenance of the Community Phones Program and some WiFi trials. All other activities are through mainstream programs, with the delivery of NBN Sky Muster and the Mobile Black Spot Program being seen as largely addressing the need<sup>34</sup>. This is despite the clear demand for improved access and increased data limits, through the introduction of MyGov and increased need for telehealth and tele-education programs, digital transformation to online service delivery and growing demand for online media and entertainment.

The key issue for RICs with existing funding programs is of market failure due to low population bases, long distances between communities and from regional centres, a lack of backhaul infrastructure and high costs of installing and maintaining equipment in remote areas. While the larger and more viable sites have already been funded through the first four rounds of the MBSP, the only sites funded in Round 5 were using small cell technology. There are still several remote communities funded under earlier rounds waiting for installation due to the need for upgraded backhaul or network infrastructure.

Clearly the market-based policy and procurement approach has been exhausted to expand further mobile coverage to rural and remote regions. As shown in the draft guidelines for the MBSP Round 5A and the Regional Connectivity Program, place-based solutions are now required that provide increased government investment share towards capital and operational costs, as well as alternative technology solutions that are more cost-effective and scalable to the size and needs of community.

It is yet to be seen whether either program will support many projects in remote Indigenous communities. The flexibility within the RCP guidelines, to address the limitations in the MBSP, is welcome, however the requirement of a telco product with a sustainable 7 year business case may still limit the type of services that can be funded under this program. This points to the need for a dedicated remote Indigenous communications program with infrastructure needs fully funded.

While the expenditure summary (see Table 3) shows a considerable investment of approximately \$155 million since 2015 to support connectivity of remote Indigenous communities<sup>35</sup>, there is still substantial need. The outstanding needs are covered in detail in Part B of this Report. There are some important points worth noting:

- 1) Apart from the National Broadband Network, the bulk of the investment by federal and state governments is in relation to the Mobile Black Spot Program, including state co-investment. Where this is supporting remote Indigenous communities, it is primarily

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<sup>34</sup> As outlined in the Australian Government response to the 2018 Regional Telecommunications Review.

<sup>35</sup> This figure excludes Telco investment. It is primarily provided by the Australian Government, the States/Territories with large remote Indigenous populations -WA, NT and Queensland.

supporting larger communities (mostly over 2-300 people) and transport routes due to the high cost of base stations and the need for a demonstrated business model for a telco to maintain a service for a minimum of 10 years. The increased use of small cell technology, satellite or microwave backhaul and more flexible arrangements being proposed under the MBSP 5A program are welcome to increase access by smaller communities, however the market model will limit eligibility for most remaining sites.

- 2) Most of the budgets provided are multi-year budgets over 3-4 years.
- 3) Telstra receives significant funding (approximately \$270 million pa) through its existing USO contracts to deliver telephony services into remote and regional Australia. While Telstra is meeting its USO obligations, a majority of remote Indigenous households are still without a home phone service, largely due to affordability issues with billed services. In communities without mobile coverage there is still a heavy reliance on payphones in small-medium sized communities.
- 4) Telstra has successfully bid for a significant share of the MBSP funding to date to expand its mobile coverage in regional and remote Australia. Optus also increased its coverage in remote communities under MBSP funding, mostly using satellite small cell technology.
- 5) With mobile becoming the preferred model for telephony and data access becoming the focus for digital inclusion, the USO is becoming an outdated instrument to meet the communications needs of remote communities. A USG needs to still ensure voice services are available to all Australians.
- 6) NBN is being set up as the provider of last resort under a new model of a USG, supporting broadband access and potentially voice services in the future. NBN is also seeing a role for supporting digital inclusion and digital capability going forward.

The Australian Government has made little visible progress on its commitment to develop an Indigenous Digital Inclusion Plan. Government effort has been recently focused on developing a Closing the Gap target on access to information services, which includes a digital inclusion measurement (see 1.3.5), however it is unclear at this stage if a new program is being planned to help close this gap. This is despite advocacy from First Nations Media Australia (FNMA)<sup>36</sup> and Broadband for the Bush Alliance since 2018 for a funded Indigenous digital program with a 6-part program proposed based on Indigenous Focus Day outcomes.

It is, however, encouraging to see the establishment of the Digital Inclusion Working Group emerge from the work of the Australian Data and Digital Council. It is hoped that this group will develop specific strategies to address the needs of remote Indigenous communities. It is also encouraging to see NBN taking a greater focus on digital inclusion and targeted solutions for remote Indigenous communities as part of its forward agenda.

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<sup>36</sup> See FNMA proposal in 11.1. FNMA has been actively participating in the Closing the Gap refresh process, as a member of the Coalition of Peaks, to advocate for Indigenous digital inclusion to be included in the new framework.

## Part B: Overview of Context and Outstanding Communications Needs for Remote Indigenous Communities

### 7 Context of remote Indigenous communities

#### 7.1 Community and Population Data

In 2016, there was an estimated 798,365 Aboriginal and Torres Strait Islander people in Australia, representing 3.3% of the total Australian population, with approximately 19% of these living in remote Indigenous communities and homelands. These proportions vary greatly from state to state, being over 30% in the Northern Territory (see Table 5 **Error! Reference source not found.** below). The Aboriginal population is relatively young, with a median age of 23 years in 2016, compared with 38 years for non-Aboriginal people. 65% of the Aboriginal community is less than 30 years old, compared with 39% of non-Aboriginal people. Just 4.8% of the Aboriginal population are over 65 years old. In 2016 the average size of Aboriginal households was 3.2 persons, while it was 2.6 in non-Aboriginal households in 2011. Three-quarters (75.1%) of Aboriginal households were one family households.<sup>37</sup>

According to the 2016 [ABS Indigenous Locations](#) data, there were 1115 Indigenous locations nationally with 1097 of these being remote communities and homelands<sup>38</sup>. The 2006 Community Housing and Infrastructure Needs Survey<sup>39</sup> found that almost three quarters of total discrete Indigenous communities had a population of less than 50 people and 17 discrete Indigenous communities had a reported population of 1,000 people or more. In 2006, a total of 92,960 Aboriginal and Torres Strait Islander people were reported as living in discrete Indigenous communities, down 15,125 people from the 108,085 people reported in 2001. Decreases were noted across all remoteness areas.

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<sup>37</sup> Source: Aboriginal population in Australia - Creative Spirits website

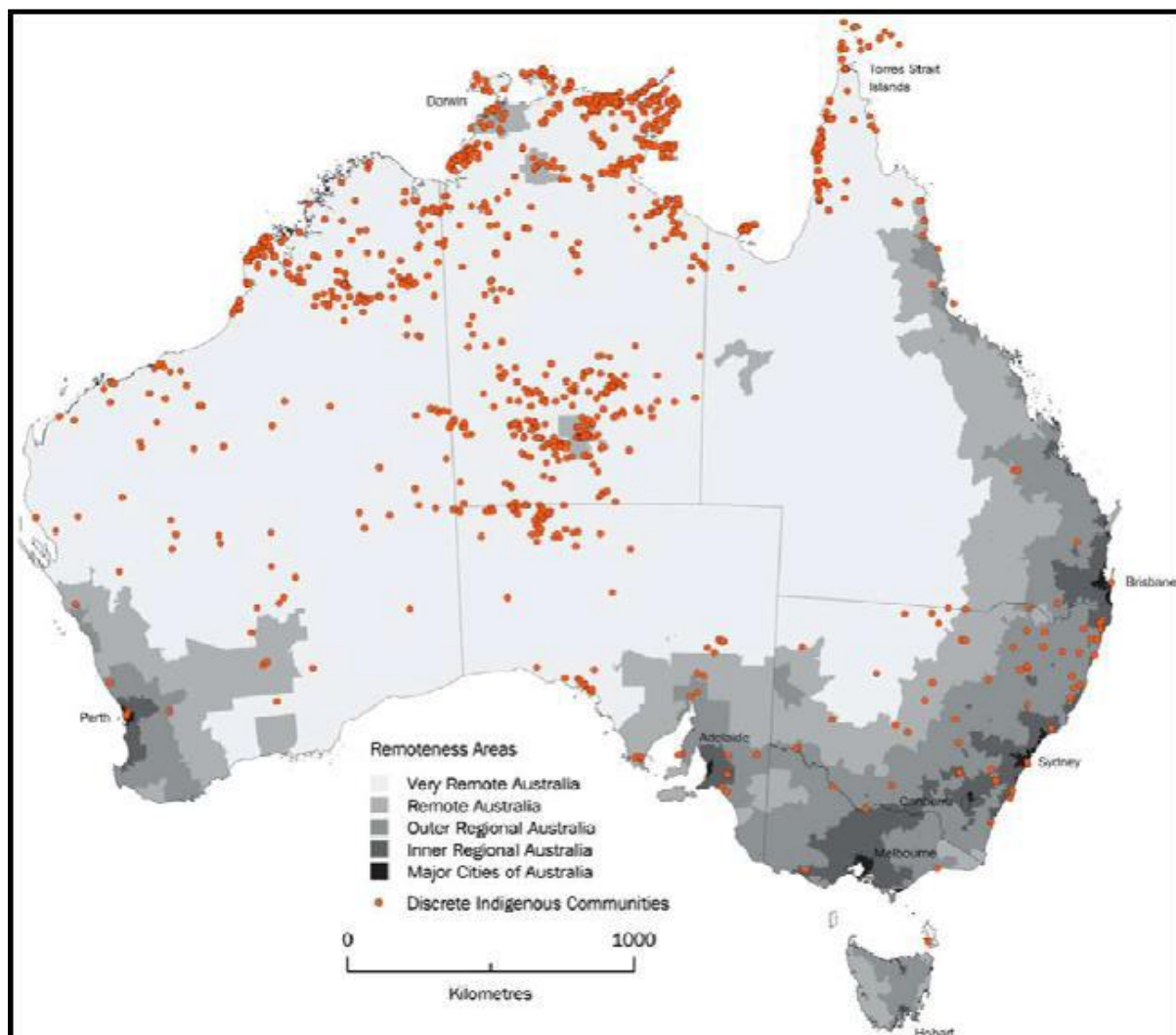
<sup>38</sup> Previously, the 2006 CHINS survey found there were a total of 1,187 discrete Indigenous communities in 2006, down by 29 communities from 1,216 in 2001.

<sup>39</sup> While the CHINS survey has not been updated since 2006, it provides the most up-to-date publicly available data on community population breakdown.

**Table 4: Numbers of discrete Indigenous communities, by population and remoteness - 2006**

<b>Population size</b>	<b>&lt;50</b>	<b>50-99</b>	<b>100-199</b>	<b>200-499</b>	<b>500-999</b>	<b>&gt;1,000</b>	<b>Total number of discrete Indigenous communities</b>	<b>Usual population size per community</b>
Major cities	2	0	2	0	0	0	4	346
Inner regional	5	5	8	1	0	0	19	1 870
Outer regional	20	9	16	4	0	3	52	10 254
Remote	71	14	8	7	2	2	104	11 237
Very remote	767	95	58	59	17	12	1 008	69 253
Whole of Australia	865	123	92	71	19	17	1 187	92 960

Figure 2: Remoteness areas<sup>40</sup>



<sup>40</sup> Note: Remoteness areas refer to Australian Standard Geographical Classification Remoteness Structure 2001. Source: Australian Bureau of Statistics (2006)

**Table 5: Estimated state populations by Indigenous status, 30 June 2016**

	Aboriginal and/or Torres Strait Islander	Non-Indigenous	Total	Proportion of Indigenous residents
NSW	265 685	7 467 173	7 732 858	3.44%
VIC.	57 767	6 115 405	6 173 172	0.94%
QLD	221 276	4 623 876	4 845 152	4.57%
SA	42 265	1 670 578	1 712 843	2.47%
WA	100 512	2 455 466	2 555 978	3.93%
TAS.	28 537	488 977	517 514	5.51%
NT	74 546	171 132	245 678	30.34%
ACT	7 513	395 591	403 104	1.86%
<b>Australia*</b>	<b>798 365</b>	<b>23 392 542</b>	<b>24 190 907</b>	<b>3.30%</b>

\*Includes other territories.

**Table 6: Urban, regional and remote distribution of Aboriginal and Torres Strait Islander people (in %, 2006)**

State or territory	Urban	Regional*	Remote and very remote**
Australian Capital Territory	100	0	0
New South Wales	42	52	5
Northern Territory***	0	19	81
Queensland	26	52	22
South Australia	48	33	19
Tasmania***	0	96	3
Victoria	48	52	0
Western Australia	34	24	41

\* Includes inner and outer regional areas.

\*\* Includes remote and very remote areas.

\*\*\* Darwin and Hobart are classified as regional areas.

## 7.2 Socio-economic context

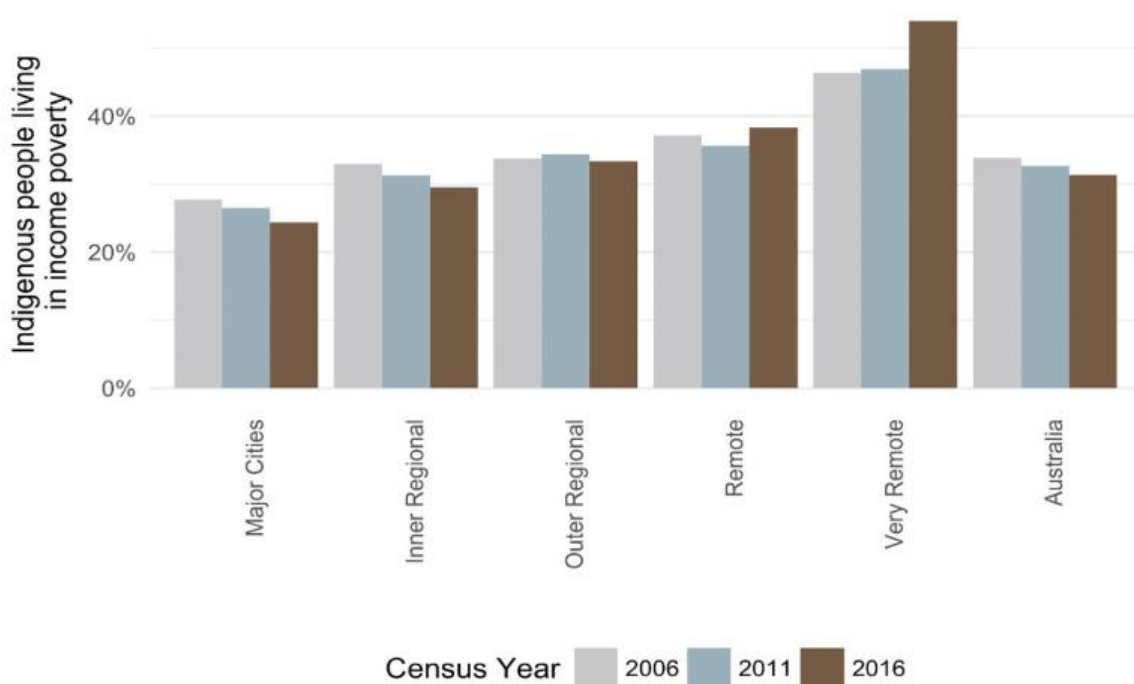
While remote communities differ in terms of size, population, distance from regional centres, services provided, and social, cultural and historic influences, there are unique needs and challenges for many Indigenous Australians living in remote Australia. Many of these challenges are well known



and documented, including: low socio-economic conditions; limited training and employment options leading to heavy reliance on welfare; limited availability of key services (bank, library, police, hospital, post office, youth services, legal support); high costs of living (food, fuel, services); common use of Indigenous language/s as first language; limited employment opportunities or work options (further eroded by abolition of CDEP); high incidence of chronic disease and significantly lower life expectancy; high rates of incarceration; lack of housing, leading to overcrowding and social issues; unreliable water and power supply; rough unsealed roads with high incidence of accidents and vehicle damage; seasonal flooding leading to road closure and disruption of supplies and services; limited municipal resources and expertise for maintaining community infrastructure; essential services often managed by external service providers and contractors.

According to research undertaken by Central Land Council (CLC)<sup>41</sup>, Indigenous poverty rates have been getting significantly worse in remote areas over the last decade, despite some improvements in urban and inner regional areas.

**Figure 3: Poverty levels by remoteness**

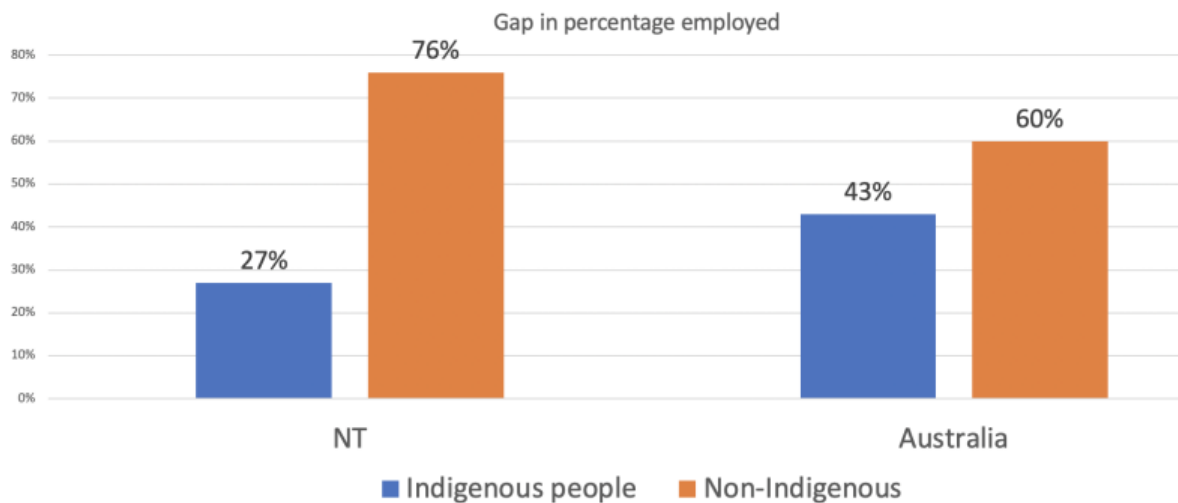


Additionally, there is a huge gap in employment for people living in remote Indigenous communities, as shown in the graph below<sup>42</sup>.

<sup>41</sup> Sources: Markham & Biddle (2018). *Income, Poverty & Inequality*. CAEPR 2016 Census Paper No. 2. <http://hdl.handle.net/1885/186937>

<sup>42</sup> Source: CLC research based on ABS Census data 2016.

**Figure 4: Employment gap for Indigenous people**



Despite these challenges, about 19% of Aboriginal and Torres Strait islanders choose to live in remote Indigenous communities and homelands rather than relocate to regional towns or cities.

Given the socioeconomic factors, affordable and appropriate communications services are needed to ensure remote Indigenous people have access to services and opportunities that other Australians take for granted.

### 7.3 Factors relating to telecommunications infrastructure

There are a range of factors that can significantly impact on the uptake and effectiveness of communications technologies and services, and need to be considered in determining appropriate communications infrastructure:

- Due to low and unreliable income, pre-paid services are typically used for mobile and internet access, where WiFi vouchers are available. This leads to paying premium rates for communications, adding to financial stress in covering cost of food or other essentials;
- Communities, families and social networks are dispersed over vast distances, and services are often located in distant regional centres, making communications very important;
- Highly dispersed and mobile populations, regular changes of address/community, with extensive travel for family, cultural and 'sorry' business;
- Households are commonly shared by large family groups, with people often spending significant time outside of houses;
- Home phone and internet connectivity is limited or non-existent in many small to medium size communities, with reliance on public phones and WiFi services, where available;
- Sharing of devices and connections is common. This can create issues such as one person bearing costs of other users, young people dominating use of device, inappropriate text or social media messages being sent from another person's account, inability to tailor user settings etc. (Rennie et al 2016);

- There is little use of credit cards limiting online purchasing, however the Basics card does enable some online purchasing;
- Facebook and other social media platforms are used extensively where there is internet access, whereas email is rarely used for personal communications;
- For many remote people, their first language is not English, making access to phone or online (text-based) support in English difficult or impossible to understand;
- People often don't have an email address, street address, home phone number, or even date of birth for older people, making setting up of accounts very difficult;
- Some communities and homelands have chosen not to accept mobile or WiFi infrastructure due to concerns about the cyber-safety risks and social impact (e.g. young people accessing inappropriate content, online bullying, sexting, fight videos etc).

Clearly, decisions in relation to telecommunications infrastructure need to take these factors into consideration to effectively address community needs. Further, infrastructure is only one element in addressing digital inclusion and choice of technology needs to be considered in a broader context. First Nations Media Australia identifies four key obstacles to digital inclusion and full participation in the digital economy as:

1. *Availability* – access to services and networks, including last mile distribution and community access facilities;
2. *Affordability* of mobile and internet services, devices and technical support;
3. *Awareness* – digital skills, cyber-safety issues, knowledge of services and available content;
4. *Appropriateness* of content and applications, interfaces, training, support and services<sup>43</sup>.

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<sup>43</sup> Source: FNMA submission to Regional Connectivity Program Discussion Paper September 2019

## 8 Existing modes of telecommunications access in Remote Indigenous Communities

Remote Indigenous communities are supported by an array of communications modes of varying capacity and effectiveness. With less than a third of remote Indigenous communities connected by fibre optic cable, there is heavy reliance on satellite and microwave backhaul solutions.

### 8.1 Telephony & ADSL services

Where there is fibre backhaul in remote areas (typically owned by Telstra), this is used to provide fixed line telephony and ADSL services to the community, as well as Business-grade DSL or local fibre connections for schools, police stations or other government facilities. Where there is not fibre, backhaul for telephony services are provided mostly by Higher Capacity Radio Concentrator (HCRC) microwave links<sup>44</sup> from the nearest exchange, delivered under the USO. HCRC is designed for voice services only, and with relatively slow speeds (19.2kpbs), is not able to be used for data access, videoconferencing or other contemporary applications. 20 years on from its replacement of the DRCS system in 1999, HCRC technology is a legacy system nearing end of life, yet no replacement technology has been proposed by Telstra. Where Telstra has not had HCRC infrastructure in place to reach very remote sites, it has installed satellite telephony services under its USO obligations. These can suffer from regular outages, 'noisy' lines and latency, creating echo on the line.

Not all households in remote communities have copper line connectivity for fixed line telephony. Public phones provide a primary telephony service for most people living in small to medium size remote Indigenous communities, yet these can be some distance from individual homes so are mostly useful for outgoing calls when they are working.

Only those offices or premises that have agreed to sign up to a post-paid phone service have received connections under the USO obligation (pending availability of lines at the exchange), and where there isn't a pre-existing connection, the trenching and lead-in to the premises is at the expense of the customer. For this reason, most remote Indigenous households are still without a fixed line home phone service after nearly 30 years of the USO (stats not available). Similarly, ADSL connectivity requires a fixed line connection so is mostly available to offices, service agencies and staff houses in communities.

With the increasing migration to mobile telephony in communities where it is available, as well as alternate services (Zoom, WiFi Calling, WhatsApp, Messenger etc), and the subsequent decrease in the customer base for landlines in those communities, there is concern about the future viability of providing and maintaining landline services. Already, there are fewer Telstra remote area technicians with installation and maintenance work being increasingly contracted out. This impacts on the cost and timeframe for installing new services and the response time for maintenance.

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<sup>44</sup> HCRC towers are typically located every 30-60km depending on terrain, requiring solar power to amplify and transmit signals. Towers can be up to 50-80m high to enable line of sight.

## 8.2 Mobile Services

3G or 4G mobile services have been installed in most large remote communities (typically over about 250-300 people) across Australia, primarily by Telstra through infrastructure co-investment via a range of Federal and state government programs (see sections 1 and 2). The advantage of mobile services is that it provides access to both voice and data, including options for both pre-paid and post-paid services. The high cost of infrastructure for a mobile tower and exchange (typically over \$1 million) requires a sufficient population to provide a business case to install and operate the service. Mobile services have traditionally required fibre optic backhaul, however in recent rounds of the Mobile Black Spot Program, Telstra and Optus have both installed small cell mobile services with satellite backhaul, which have lower capex and opex costs, into smaller communities. High-speed microwave backhaul is also an option and could make use of the legacy HCRC towers. With Telstra planning to de-commission its 3G network in 2024 to make way for 5G spectrum, there is a need to upgrade all 3G services to 4G over the next four years.

Some issues with mobile services include:

- Lack of mobile coverage and / or declining mobile coverage.
- Many mobile towers in RICs are only 3G, which offers poor speeds and are prone to congestion. Lack of information regarding upgrade pathways for 3G.
- Limited battery life at towers, further exacerbated by the often unreliable power supply in RICs. This is a significant issue during natural disasters such as cyclones or bushfires when emergency communications are critical.

## 8.3 Satellite broadband services

Prior to the NBN Sky Muster satellites being launched in 2015 and 2016, satellite internet was delivered through a range of providers including IP Star, Newsat, Optus and other providers. While there were business grade services available at a premium price, services were relatively slow speeds with limited download, costly and unreliable. The Telstra Extended Zones satellite service, which had been rolled out in 2003 as a subsidised remote area data service, had become so congested it was almost unusable by the 2010s. The NBN Interim Satellite solution (2011-2017) provided a much needed affordable satellite service but suffered from congestion due to heavy demand.

The NBN Sky Muster satellites have been a game changer in terms of speed, data limits, reliability and affordable services. Most domestic users have migrated to the Sky Muster services (12Mb/1MB and 25MB/5MB options) and have mostly reported that this has met their day to day broadband needs. The announcement in 2017 of increased data limits (from 75GB to 150GB) was welcome by heavy data users.

However, some businesses and agencies in communities complained about speed and data limits under the standard Sky Muster service, as well as issues of latency preventing use of some applications such as telehealth and remote server access. Also, satellite services rely on community power supply to operate (as compared with Telstra landline and mobile services which have backup batteries), meaning that when the community has power outages there may be no 'back-up' or

alternative options for communications access. Also, during periods of heavy cloud cover or rainfall, the satellite services can be affected by rain fade. Other [issues](#) raised included:

- installation, connections, and quality (speed and data limits) of the service once connected;
- current suite of plans not meeting the needs of the community; and
- the appropriateness of the allocation of satellite services to sites with existing fibre backhaul.

The introduction of the Sky Muster Plus service in 2019 which allows unmetered use of all but video and VPN, data limits up to 300GB/month, and reliable peak speeds of 25MB/5MB have been welcomed. This has enabled use of satellite for telehealth consultations, videoconferencing, remote schooling and training delivery, and other broadband services such as cloud-based and remote server access. However, latency is still an issue for some applications and the ever-growing demand for data will no doubt mean some heavy users will still want higher data limits.

## 8.4 WiFi services

WiFi provides a means for sharing an internet service to a number of users via a hotspot or WiFi mesh network. Especially for communities without mobile coverage, WiFi enables a relatively affordable means of accessing online services without having to install and pay a monthly bill to have a household satellite service installed (which is very uncommon in Indigenous households). Depending on the agency providing the WiFi service, it can be provided as a free service to the community (e.g. library services, Indigenous Knowledge Centres etc) or as a managed system with data quotas paid for through purchase of vouchers.

WiFi Calling is becoming a popular service where there is WiFi coverage but no mobile service. Telcos do not charge for WiFi calls, which are now also available on Telstra Pre-paid and Boost services. While there is still a cost for data use (approx. 1MB per minute) this is fairly low and is unmetered on Sky Muster Plus services.

The table below outlines some of the relative pros and cons of WiFi services compared with mobile as a means of last-mile delivery for community access:

**Table 7: Pros and Cons of Mobile vs WiFi**

Mobile - Pros	WiFi - Pros
Enables access to voice communication services as well as data access	Relatively easy to set up and manage as community infrastructure
Enables individual pre-paid or post-paid accounts	Relatively cheap to use; costs may be covered by agency, or vouchers can be purchased for data use
Greater range and penetration due to frequency band and power of transmitter	Can be switched off at night to limit late-night use
4G may be used for high-bandwidth applications, including video streaming,	Content filtering can be installed using router

videoconferencing, gaming etc, depending on backhaul speeds and congestion	
	Can be configured for free access to government, banking and other online services.
<b>Mobile -Cons</b>	<b>WiFi - Cons</b>
Only available to large communities with enough users to justify telco business case, unless subsidised by government	Designed for data access primarily (although can be used with WiFi Calling)
Relatively expensive for data use, especially with pre-paid services	Coverage limited to line of sight to hotspot, limited range and penetration without repeaters or WiFi Mesh network
No content filtering capability	Shared broadband service leads to congestion, slow speeds
No community control over access times	Monthly download limits may not meet community demand, can be shaped or excess data charges
	Suitable for low-bandwidth applications, not ideal for video streaming, gaming etc

## 8.5 Community Access facilities

With very low home internet access, ICT access in remote Indigenous communities may only be available in community access facilities, where available. Some communities have had public access facilities provided under a range of government programs since the early 2000s, variously named as Community Resource Centres (WA), Indigenous Knowledge Centres (Qld), Rural Transaction Centres (NSW), PY Ku Centres (APY lands of SA) and computer rooms (Central Australia) (see section 4). If well managed, these can be very popular and an ideal learning environment to enable peer and self-guided learning.

However, based on a longitudinal internet usage study in three NT homelands, Rennie et al (2011<sup>45</sup>) proposed that home internet access is a preferred model over shared access facilities where there are issues of lack of access outside of work hours, preferred models for usage, dominance by particular age or gender groups, and cultural issues that affect accessibility.

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<sup>45</sup> 'Home Internet for Remote Indigenous Communities' report (2011), research undertaken by ARC Centre of Excellence for Creative Industries and Innovation, the Centre for Appropriate Technology and the Central Land Council.

However, for most remote households home internet access is not an option due to affordability issues with post-paid services, meaning there is still an important role for access facilities. Table 8 outlines some of the pros and cons of each model:

**Table 8: Pros and cons of community access facilities compared with private ownership of ICTs**

Pros	Cons
<b>Community Access Facilities</b>	
<ul style="list-style-type: none"> <li>• Important first-in facility for demonstrating value/relevance and providing basic training to people with low experience of ICTs;</li> <li>• Enable affordable access to ICT facilities with support to learn how to use programs and undertake relevant tasks;</li> <li>• Lack of alternate availability of IT equipment and internet access and support in most communities (most used for business purposes and staff facilities);</li> <li>• Commonwealth and State IT training programs have increased awareness of the value and demand for internet access;</li> <li>• Telecentres with good design, community ownership and management with state-wide support network and funding tend to be successful and sustainable (e.g. Community Resources Centres WA, Indigenous Knowledge Centres Queensland);</li> <li>• Community access facilities provides a meaningful job as a local community supervisor/trainer, where an appropriately skilled person is available;</li> <li>• Easier to manage/ maintain equipment centrally, especially using thin client or networked computers where software</li> </ul>	<p>There can be issues around management and resourcing of community access facilities which can limit access, including:</p> <ul style="list-style-type: none"> <li>• open hours limited to work hours (often no evening or weekend or holiday period access), which limits access by people with jobs;</li> <li>• limited number of computers can lead to conflict over usage during busy periods;</li> <li>• lack of funding continuity for access facility programs;</li> <li>• shared access may be restricted by kinship protocols (especially avoidance relationships), gender and family politics;</li> <li>• bureaucratic or community staff control affects who gets access, rules around usage (download limits, blocking of certain sites such as YouTube or Facebook), switch off to avoid responsibility for inappropriate material (e.g. under NT Intervention rules);</li> <li>• older people may feel unwilling to participate due to low digital literacy compared with young people.</li> <li>• Commonly public access centre require a (non-local) supervisor to manage usage and provide training and technical support – this can be cost prohibitive in many sites, especially with on-costs and housing;</li> </ul>



<p>and content can be upgraded centrally or via remote support.</p>	<ul style="list-style-type: none"> <li>• Communal assets lack ownership at a family or individual level which can lead to them being used as a target for damage when someone is demonstrating anger or frustration;</li> <li>• Humbugging of local staff, with difficulty for young people to take on role due to lack of authority and kinship relationships.</li> </ul>
<p><b>Private Ownership</b></p>	
<ul style="list-style-type: none"> <li>• Commonly people who are familiar with and see value of ICTs may want personal devices (smartphones, tablets, laptops, PCs) and home internet access;</li> <li>• Private ownership (individual or family level) may result in equipment being looked after more;</li> <li>• Access/usage times not limited- can be used at any time, including evenings, weekends and holidays periods;</li> <li>• Universal personal mobile telephone and (wireless laptop) internet access is a priority, rather than household phones and public internet access.</li> </ul>	<ul style="list-style-type: none"> <li>• Affordability of ICT equipment and internet access are key issues limiting household uptake of ICTs (Rennie et al 2010);</li> <li>• Lack of internet access options means that home access is restricted for many remote Indigenous people currently (NBN Sky Muster services require signing up to a two year contract with monthly bills, which is not viable for many households);</li> <li>• Mis-use of family assets, such as a shared phone or ICTs.</li> <li>• Family sharing obligations may mean that equipment is 'borrowed' or given away to a relative when requested.</li> </ul>

## 9 Typical online applications/data needs in RICs

The following table outlines the typical applications used by community agencies and service providers, as well as households, in remote Indigenous communities, the associated data and speed requirements, and any specific issues or details.

**Table 9: Typical applications used in remote Indigenous communities**

Application	Requirements	Users	Issues/ Notes
Mobile telephony	3G or 4G to meet whole of community needs	Community and workplaces	Often congestion during peak periods makes poor internet use - More backhaul capacity needed. Upgrade to 4G needed in many sites as well as longer battery life in natural disaster prone areas.
Telehealth consultation	Needs reliable (dedicated) minimum 5 Mbps up/down for effective telehealth consultancy <sup>46</sup>	Remote clinics, health practitioners, community members	Reliable speeds can be provided by Sky Muster Plus or business grade DSL services
Remote court hearings / parole hearings etc	High quality videoconferencing (min. 5 -10Mbps dedicated speed up/down) to clearly see faces	Justice departments/ police/ Courts / parole officers etc	Usually set up in police stations or multi-purpose government facilities.
Prison family visits- Videocon	About 5Mbps symmetrical, speed not as critical	Prisons/ community members	These visits need to be booked and require a suitable space for a large family group to participate.
VPN to central server or cloud-based server	Requires high-speed reliable symmetrical services- may require business grade services or direct fibre link to premises (e.g. schools which have	Used by shires, police, health, government agency access to central servers or cloud-based servers	Latency on satellite services can be an issue if servers have time limit on handshakes, will break connection to server. Many reports of remote server access not working over satellite (software improvements have addressed some issues). Several regions have set up Wide Area

<sup>46</sup> According to David Murtagh who is doing research trials in the Lahnepuy Homelands in East Arnhemland using Sky Muster Plus service

Application	Requirements	Users	Issues/ Notes
	multiple students on computers)		Networks for schools, clinics, police stations, shire facilities, RIBS etc
Videoconferencing for meetings	Ideally 2Mbps up/2-4 down <sup>47</sup> , via 3G/4G, satellite	Used by most agencies for meetings (Zoom, Google Hangout, skype etc)	Regular dropouts on Zoom calls and buffering limit video use in many sites, latency can be an issue
On-line training/schooling (Google Classroom)	Videocon (approx. 2-5Mbps) and online training platforms (Moodle etc)	Used by RTOs/ TAFE, schools, Universities, and for vocational training (eg Rangers, media orgs)	Lack of facilities in homes, usually occurs in schools or training facilities where broadband and ICTs are available; unlikely to work over WiFi or 3G/4G
WiFi sharing	Satellite or ADSL backhaul	Requires enough speed and monthly download to meet needs of community users	NBN Public Interest Premises product allows WiFi sharing either as free access or pre-paid voucher system for use. Some sites set daily download limits per device. See 8.4 above for more details.
WiFi Calling	Reliable WiFi connectivity	Community members. Visiting staff/agencies	Where no mobile service available, calls can be made over WiFi using pre-paid phones now
IP Radio streaming	Requires about 512kbps stable upload speeds, codecs can provide some stabilisation.	14 First Nations radio services are streamed live to Optus satellite uplink via Imparja TV in Alice Springs	Requires a codec at each end and reliable two way data link. This is also how RIBS broadcasters deliver regional network radio shows via a codec link to the RIMO hub site.
Video/audio streaming	Need good download speeds (approx. 1-4Mbps for video) to	use of indigiTUBE, ICTV Play, Netflix, Stan, ABC iView, YouTube, Vimeo,	Increasing use of streaming in communities is increasing data demand exponentially. Very expensive using pre-paid mobile,

<sup>47</sup> Zoom videoconferencing requires about 2Mbps up and down for single screen and 2Mbps up/4Mbps down for dual screen. Screen sharing requires only 150 to 300kbps and audio VoIP requires about 60 to 80kbps.

Application	Requirements	Users	Issues/ Notes
	play without buffering <sup>48</sup>	Soundcloud, Spotify, Apple Music etc	need other options, including local buffering of regularly used content.
Community Archives	Cloud-based services like Keeping Culture and Mukurtu are mostly cloud-based, requiring similar speeds to Video Streaming	Arts, language, media and cultural organisations	On-site storage for local sharing of regularly used content.
Facebook / Social media	Can use on basic internet service	Community users	
Internet searching	Can use on basic internet service	All users	
Stories Art Money database (art centre software)	Requires medium-high speeds for uploading if images and data to server	Art centres, galleries	Local hard drives (Black boxes) are used in sites with inadequate internet (e.g. Yirrkala, Yuendumu), enabling storage to cloud at off-peak times.
ATM/ EFTPOS	Reliable two-way speeds	Shops, agencies, art centres, community members	
Remote Monitoring systems	Reliable two-way connectivity via 4G or WiFi (usually low bandwidth)	Municipal services orgs for generators, water tanks, bores, pumps, signs etc; media orgs for transmission facilities; security cameras, thin client computers etc.	This is a rapidly growing area with IoT technology now being used for monitoring and carrying out remote activation/re-boot for many types of equipment

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<sup>48</sup> YouTube videos can be streamed in standard definition at 512 kbps, with live events requiring at least 1 Mbps. HD (720p) videos require a minimum of 2.5 Mbps, while those in 1080p need at least 4 Mbps.

## 10 Data collection and research

### 10.1 Current Data Collection

There is a lack of reliable integrated data collection to monitor remote Indigenous communications infrastructure and identify the gaps in access. The ACMA previously produced the comprehensive [Telecommunications in Remote Indigenous Communities](#) report, however this has not been updated since 2008 and is no longer available online. A regularly updated version of this report would help to track recent activities from government and telecommunications providers, along with identification of gaps.

The current data collection that provides relevant up to date information is:

- **Australian Bureau of Statistics:** The 2016 Census tells us that 75.3% of Aboriginal and Torres Strait Islander households are accessing the internet, compared with 85.8% of all Australians. Within the Aboriginal and Torres Strait Islander population there are significant differences based on location: 82.8% in major metropolitan areas access the internet, compared with 73.2% in regional areas, 61.3% in remote areas, and 49.9% in very remote areas.” (Rennie, Thomas, Wilson 2018). The ABS has dropped the question on internet connectivity from the next census so this data set will be less applicable going forward.
- **National Aboriginal and Torres Strait Islander Social Survey (NATSISS):** The 2014–2015 NATSISS shows that 78.6% of Aboriginal and Torres Strait Islander people had accessed the internet in the previous 12 months, however this was only 47.5% of those living in very remote areas. 71.1% of Aboriginal and Torres Strait Islander people living in metropolitan areas used the internet every day, compared to 36.5% in remote areas and 19% in very remote areas. 71.0% of users access the internet out of home (work, government office, library, community centre, etc) with those in remote and very remote areas much more likely to exclusively rely upon out of home access. Overall, 11.4% of remote internet users and 27.0% of very remote users rely exclusively on ‘out-of-home’ connections compared to 2% for metropolitan users. 64.0% of Aboriginal and Torres Strait Islander internet users accessed government services online in the previous 12 months, with 70.0% of internet users in metropolitan areas accessing one or more service compared to 55% in remote areas and 54% in very remote areas. (Rennie, Thomas, Wilson 2018)
- **Government data sets:** The Australian Government is now uploading data and location mapping of the Mobile Black Spot Program sites and other telecommunications project data to data.gov.au, enabling an improved level of public access. WA Government has mapped the telecommunications infrastructure across the State in its recently launched online [Digital Infrastructure Atlas](#). Other states provide general information about telecommunications projects on their websites but not detailed data.
- **NBN:** NBN provides detailed data and mapping on the national [coverage](#) of the network, a [dashboard](#) of usage, connections and fault reporting and a [weekly progress report](#) on the rollout.

- **Telco data:** [Telstra](#), [Optus](#) and [Vodafone](#) are now required to provide coverage maps on their websites. However, it is still difficult to access other data from the telcos.
- **[Australian Digital Inclusion Index](#):** The Telstra funded ADII (see also section 3.2.6) is the primary tool for measuring and tracking changes in digital inclusion within Australia. However, remote Indigenous communities are not represented in the current data collection methodology which uses Roy Morgan phone surveys (a new survey tool is being developed for the 2021 survey). In an effort to address this deficit, the 2018 ADII report included a supplementary survey undertaken in Ali Curung community, 380 kilometres north of Alice Springs. Although the survey sample size was small (112 people from a community of 500), the resulting index score (42.9, which is 17.2 points lower than the national average and 11.5 points below the urban and regional Aboriginal and Torres Strait Islander population) and analysis gave some insight into the extent and nature of digital inclusion for Indigenous communities. Interestingly, Ali Curung’s Digital Ability score of 52.3 was higher than the Australian average (49.5) and significantly above the urban and regional Aboriginal and Torres Strait Islander population score (45.0). The 2019 ADII report included a similar survey in the community of Pormpuraaw in Cape York, which had a digital inclusion score for Indigenous Australians of 36.7, 25.2 points lower than the Australian average (61.9) and 18.4 points lower than Indigenous Australians in urban and regional areas. Despite having mobile coverage in the community, the key issues were poor Access (50.1, or 25.6 below national average) and Affordability (9.0, a staggering 50.2 below national average). While all communities are different, with many less connected than these selected sites, the two case studies highlighted significant challenges for access, affordability and digital ability common to many First Nation communities across Australia. The report states:

*“Local patterns of use suggest the internet is an important lifeline for those in remote communities, but accessing it comes at a higher cost than it does for those in the cities and towns. There is some evidence that the preference for prepaid mobile-only access by Indigenous Australians in remote communities is a response to affordability concerns. While pre-paid plans may reduce financially [sic] vulnerabilities by enabling more direct expenditure management than post-paid contracts, they exacerbate other aspects of affordability related to value for expenditure (particularly as pre-paid access is currently limited to mobile network access). A more comprehensive approach is needed to address the issue of internet affordability for Indigenous Australians in remote communities. The Digital Inclusion Plan outlined by delegates of the 2019 Shaping Our Digital Futures Indigenous Focus Day calls for such an approach. The plan points to the need for more affordable pre-paid options, as well as an expansion of community WiFi networks and unmetered access to key online services.” (p.25, ADII 2019)*

- **[National Mobile Black Spot Database](#):** This is a database of nominated regional locations with poor or no mobile coverage used to inform proposals to the Mobile Black Spot Program. The was re-opened for new nominations for Round 4 and closed on 11 October 2018, with no new nominations accepted since this time.

## 10.2 Recent Research:

There has been limited specific research undertaken in recent years on the connectivity and digital access of remote Indigenous communities and people. However, the following is a summary of some recent research undertaken to identify or address gaps in remote Indigenous communications:

### 10.2.1 Aboriginal and Torres Strait Islander people and digital inclusion: what is the evidence and where is it?

This paper by Ellie Rennie, Julian Thomas & Chris Wilson (2019) outlines the significant gaps in data relating to Aboriginal and Torres Strait Islander people's communications access. The authors compare the Australian Digital Inclusion Index (ADII) data, the National Aboriginal Torres Strait Islander Social Survey (NATSISS) and the Census of Population and Housing to identify these gaps. While the ADII provides the most comprehensive examination of digital inclusion data, across access, affordability, and digital ability measures, its dataset does not currently capture data from Aboriginal and Torres Strait Islander people in remote communities. Future releases of the ADII will aim to address this gap with Telstra investment in extending remote data collection. The paper draws together findings from existing qualitative research to demonstrate why digital choices—including the preference for mobile devices—are important for understanding statistical trends.

Key insights in the paper include:

- Aboriginal and Torres Strait Islander people are much more likely to be mobile-only users;
- More than one in three Aboriginal and Torres Strait Islander people are mobile-only (34.7%), compared to a national rate of one in five (20.4%). This reduces communications affordability, with pre-paid mobile data being poor value for money;
- Mobile-only users are generally also less digitally included in terms of digital abilities, which may explain why Aboriginal and Torres Strait Islander people living in non-remote areas are behind on basic skills (-9.5 points) and activities (-6.7 points).
- The 'location of use' question included in the 2001 Census enabled a more complex picture of internet access for Aboriginal and Torres Strait Islander people such as the difference between home internet use and access at community centres, libraries and workplaces (three times higher than home use in 2001). The removal of the location question in 2006 has implications for public internet access policy.
- Research by Radoll and Hunter (2017) using the Australian Census Longitudinal Dataset (ACLD) from the 2006 and 2011 collections found that the rate of internet access loss ('antidiffusion', also known as 'un-adoption') for Indigenous Australian households was more than double that of the non-Indigenous population (12% compared to 5%).
- The digitisation of government services, a central platform of public sector reform in Australia, carries particular risks for vulnerable population groups, including Aboriginal and Torres Strait Islander people living in remote communities (O'Sullivan & Walker, 2018). It is important that government service access questions of the type posed in NATSISS 2014–2015 be incorporated in future research as a mechanism for evaluating the impact of government service digitisation. Given that the NATSISS survey tool is currently only used to collect data on Aboriginal and Torres Strait Islander people, the process of comparing

outcomes on this issue (and others) to the national population or other cohorts is problematic.

### 10.2.2 Remote Indigenous Communications and Media Survey 2016

In 2016 the Indigenous Remote Communications Association (now FNMA) worked with McNair Ingenuity Research to conduct a survey in remote communities examining remote media audiences and information service users. The Remote Indigenous Communications and Media Survey (RICMS) involved 218 face-to-face interviews in the Northern Territory, Queensland, Western Australia and South Australia, conducted by people from the ten communities trained by McNair Ingenuity Research. The 2011 Census was used to weight the results to the overall adult Aboriginal and Torres Strait Islander population. Overall, 77% of people owned or shared a mobile phone, 39% owned or accessed a desktop or laptop computer, and 22% had a home landline phone. Overall internet access was found to be 71%, based on questions about access to various devices that a respondent might own, have access to at home or in the community (shared) or at a friend or relative's home (MIR & IRCA, 2016, pp. 12–13).

### 10.2.3 Northern Australia Communications Analysis

This [Directions Paper](#) identifies impediments and solutions to enterprise and social development through digital participation in Northern Australia, offering insights into agriculture, health and First Nations sectors. The research was undertaken by a consortium of partners including the QUT Digital Media Research Centre (DMRC) (lead institution), Cairns Institute at James Cook University, Northern Institute at Charles Darwin University, Regional Development Australia Northern Territory, and the Centre for Appropriate Technology. Section 6.1 (pp 47-56) of the paper outlined the following First Nations sectoral findings:

1. First Nations people are providing leadership in digital inclusion in Northern Australia.
2. Digital inclusion efforts across northern Australia could be more inclusive by incorporating First Nations perspectives into broader development of policy, programmes and research.
3. Knowledge sharing through various forms is critical to digital inclusion in northern Australia.
4. Indigenous-led enterprise could more widely leverage digital technologies.

### 10.2.4 Internet and telecommunications services in rural Australia

This ACCAN funded [research project](#) was undertaken by Broadband for the Bush Alliance in 2018 to investigate the availability, quality, reliability and affordability experiences, using a national survey of member organisations across regional, rural and remote Australia. The key findings were:

- **Affordability:** Communications services are generally less affordable in rural, remote and regional areas than urban areas. Respondents reported that significant barriers including speed and reliability meant that services were poor value for money.
- **Speed of services:** RRR people generally felt that speeds of internet services were poor, while urban respondents were happy with their internet speed.



- **Reliability of services:** Survey respondents reported that their services were very unreliable, however noted that WiFi Calling has been a 'game changer' in providing better voice services in comparison with fixed line services.
- **Fault rectification:** The survey found that fault rectification is a major area of consumer dissatisfaction, with many respondents reporting a need to refer to the Ombudsman to have issues resolved and waiting up to 6 weeks for faults to be rectified.
- **Telehealth:** Although a number of respondents had heard of telehealth, only a small percentage had used the service. Respondents reported a number of barriers in accessing telehealth services including inadequate internet service and data allowance, consultations not being billable to Medicare, and a lack of access to specialists.

### 10.2.5 Developing a simple, robust telehealth system for remote communities

[The Cooperative Research Centre for Developing Northern Australia](#) (CRCNA) is undertaking a study by Marianne St Clair and David Murtagh on the use of telehealth services in the Laynhapuy Homelands of East Arnhemland. This research has found that despite growing evidence of the benefits and cost savings of telehealth, there remained limited uptake by the primary health care sector in the NT. In tests of two Sky Muster Plus services over the 2019/20 summer wet season at Humpty Doo near Darwin, they found that the services provided reliable speeds of 25Mbps down, 9Mbps up, with high reliability (the longest outage was 26 minutes during heavy rains). They claim that this test has demonstrated Sky Muster Plus to be reliable and stable enough for telehealth consultations, which requires reliable two-way speeds of about 5Mbps. The team are now doing speed trials in 7 clinics in Laynhapuy Homelands, with positive results to date.

### 10.2.6 'Falling Through the Net: The Digital Divide in Western Australia' report

This [report](#) by Bankwest Curtin Economic Centre outlines the nature of the digital divide in WA along geographic, demographic and socio-economic lines. It found that 26 per cent of the state's lowest income earners did not have access to the internet in 2016-17, compared to 99 per cent of high income earners who did. It reports that those most at risk of falling through the net are those living in the most remote areas; families at higher levels of socio-economic disadvantage; older population cohorts and low income families, including children at risk of missing out on the educational benefits of ICT. Using results of the BCEC Small Business Survey of internet quality and coverage the report found 26 per cent of small businesses in the South West and Pilbara regions rated the internet quality as low, compared with 25 per cent in the Wheatbelt and only 11 per cent in Perth.

Importantly, this report includes a chart (see Figure 5) showing households internet access in 2016 by level of remoteness. The report describes:

Across all states, levels of internet access are higher in the major cities and inner regional areas relative to more remote areas. Albeit small, for SA and WA, remote areas have higher internet access than those living in outer regional WA. Across the five levels of remoteness (major cities, inner regional, outer regional, remote and very remote), WA compares favourably with other states, with the most notable difference in the very remote regions. For the latter, 83 per cent of WA households have internet access. This compares with an Australian average of 69 per cent. It may be

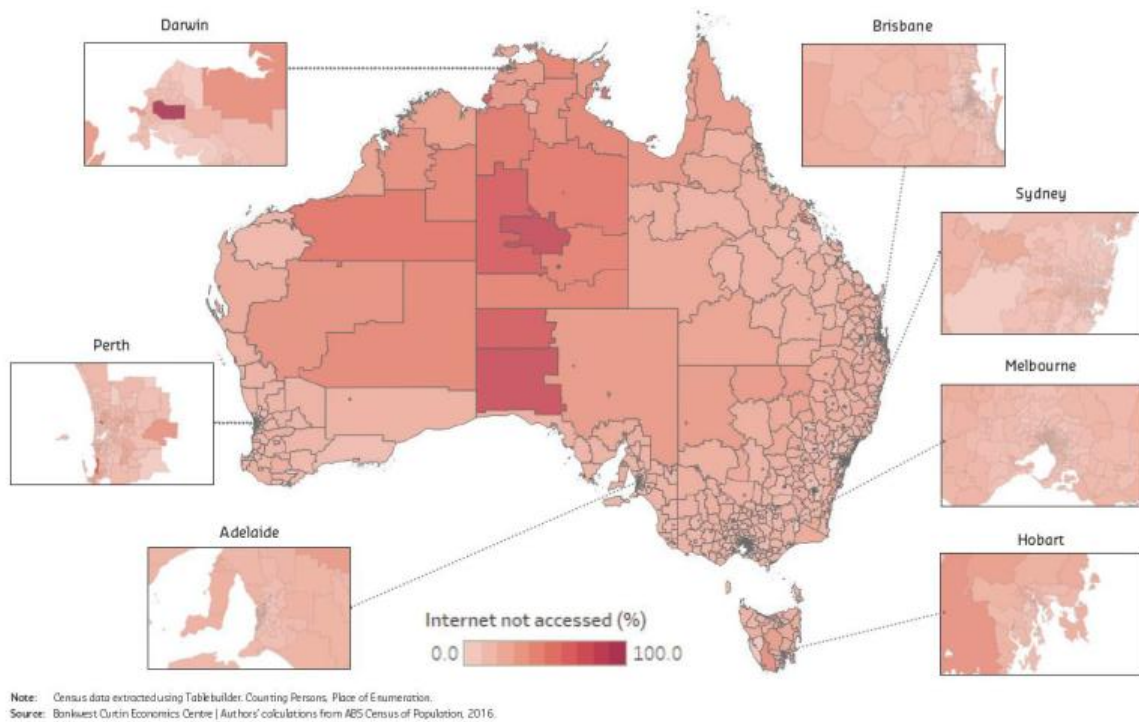
the case that infrastructure emerging from the needs of the mining industry have benefited those in very remote regions in WA, with higher levels also reported for the very remote areas in QLD, another mining state. (Bankwest CEC 2016:4)

**Figure 5: Internet usage by level of remoteness & state, 2016**



The report describes a positive 14 percentage point difference for very remote areas in WA, and a 4.1 percentage point difference for remote areas, compared to the Australian average for very remote areas. In comparison, remote parts of NSW report an 8 percentage point lower level internet access compared to the average of remote areas across Australia. The report includes Figure 6 below, which provides a visual geographic representation of the digital divide in Australia. Not surprisingly, the remote central and northern desert regions of NT, SA and WA stand out as the least connected, followed by northern and south-western Queensland and northern NSW.

**Figure 6: Households not accessing the internet from dwelling, Australia and WA, 2016**



### 10.2.7 NT Homelands and Outstations Assets and Access Review

The Northern Territory Homelands and Outstations Assets and Access Review, undertaken in 2016 by Centre for Appropriate Technology (<http://www.icat.org.au/>) surveyed 401 Indigenous Homelands and Outstations in the NT (population 10,000). It found that only 78 (20%) sites surveyed had mobile phone network access as shown in Figure 7 and Figure 8 below.

Figure 7: Number of Homelands/Outstations with mobile phone coverage in Central Aust. regions

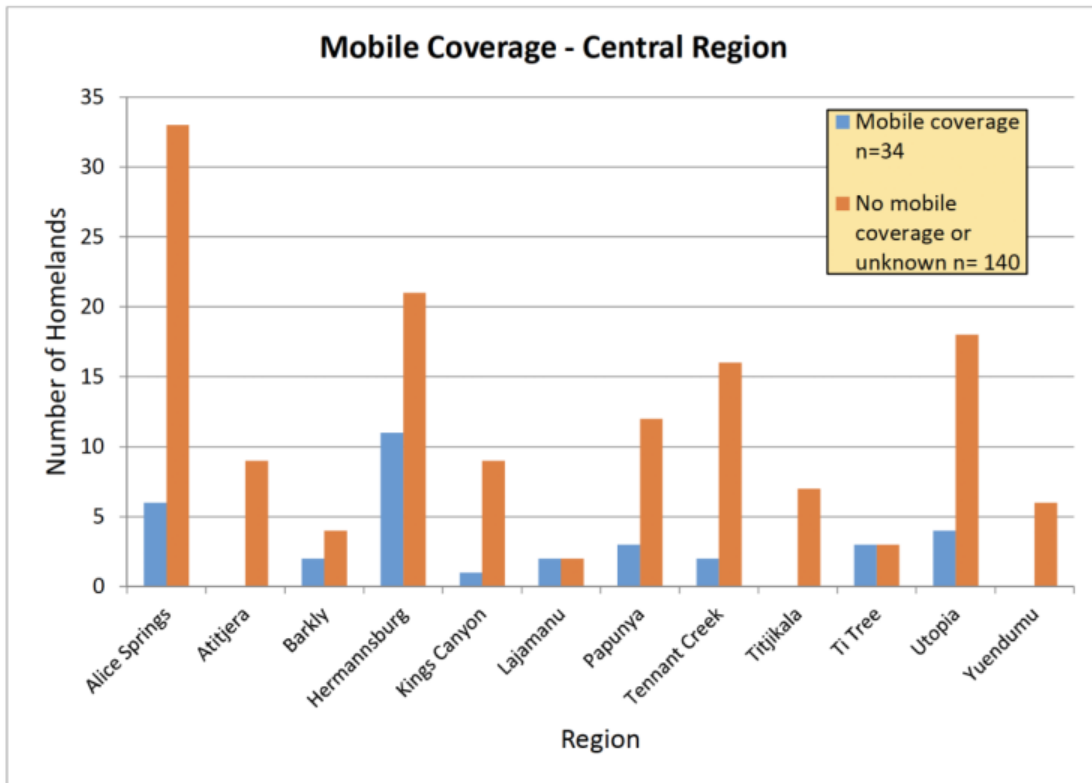
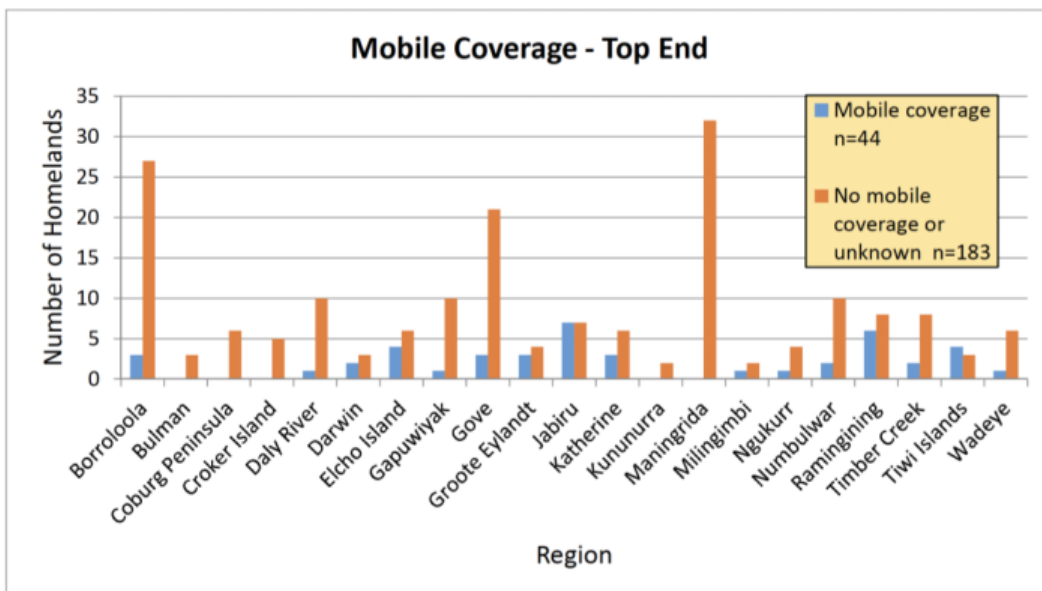


Figure 8: Number of Homelands/Outstations with mobile phone coverage in Top End regions



CfAT found that of the 401 sites surveyed “only 140 (37%) Homelands/Outstations had internet coverage. In 112 (80%) of these, the internet was only accessible at one house. One community in

the Utopia Homelands, for example, is described as having internet access; however, the community has a population of more than 40 people and it is only the three people living in the one house with internet access that can use the internet. Service providers, including governments, need to be mindful that, based on these statistics, the trend to delivering services online will be of limited benefit to the majority of NT Homeland/Outstation residents.” (CfAT 2016)

With regard to public phone access, the report found that “Of the 401 Homelands/Outstations surveyed, 305 (76%) have access to a public phone (payphone or community phone) and 274 (90%) of these phones were working at the time of the survey. Of these, 197 (72%) Homelands/Outstations report them as being reliable, with 49 (18%) reporting minor disruptions to service.”

CfAT argues that “public and private service providers, including resource agencies, should be required to give attention to the difficulties associated with contacting and being contacted by residents of unserved Homelands/Outstations, and to give them equal priority of service by accepting that it takes more time, effort, travel and cost to stay in contact with residents in these cases.”

While this data requires updating in light of NBN services and MBSP rollouts, it is likely that the situation for mobile and fixed line services in most small homelands and outstations remains largely unchanged. This is due to the focus of most government programs on meeting the needs of sites with larger populations and the cost of upgrading remote sites without backhaul infrastructure.

### 10.2.8 Other research

Other relevant research papers include:

- Featherstone, D. (2011) *The Ngaanyatjarra Lands Telecommunication Project: A Quest for Broadband in the Western Desert*.
- Featherstone, D. (2015) *Connected, Creative and Cultural Communities: Developing an Integrated Approach to Policy and Evaluation for Remote Australian Indigenous Media and Communications*. PhD thesis.
- Radoll, P., & Hunter, B. (2017) *Dynamics of the digital divide*.
- Rennie, E., Crouch, A., Wright, A., & Thomas, J. (2011) *Home Internet for remote indigenous communities*.
- Rennie, E., Hogan, E., Gregory, R., Crouch, A., Wright, A., & Thomas, J. (2016) *Internet on the outstation: The digital divide and remote aboriginal communities*.
- Thomas, J., Barraket, J., Wilson, C. K., Cook, K., Louie, Y., Holcombe-James, I., MacDonald, T. (2018). *Measuring Australia’s digital divide: The Australian digital inclusion index 2018*.

First Nations Media Australia is currently undertaking an ACCAN funded research project to identify digital inclusion challenges and the impact of COVID-19 restrictions in remote Indigenous communities in the Northern Territory.

## 11 Responses to Government reviews

### 11.1 Regional Connectivity Program 2019

Submissions to the Discussion Paper about the Regional Connectivity program (see 1.3.3 for details) were invited by September 2019. A question was included “What can be done to improve access to and uptake of telecommunications services in remote Indigenous communities?”, which is welcome as this is often an oversight in government consultation.

The submission by First Nations Media Australia (FNMA) stated that “A key recommendation from the 2017 and 2018 IFDs [Indigenous Focus Days] was that Indigenous Digital Inclusion become a Closing the Gap target” and outlined the following six-part Policy Action Plan developed from those forums to reduce inequity and increase access to services and opportunities:

1. Remote Data collection to measure access, availability, affordability and digital literacy;
2. Improve availability – prioritized rollout of broadband and mobile coverage to communities with limited access;
3. Last-mile access – public internet access through satellite delivered community-wide WiFi and community access computers;
4. Affordable access – unmetered access to all key online services and affordable pre-paid mobile options;
5. Digital literacy – culturally and language appropriate skills program in remote communities, locally tailored to needs and existing levels of digital access, engagement and skills; and
6. Digital Mentors program to provide local jobs and peer-supported learning model.

The FNMA submission proposed that approximately \$10m of the \$60m Regional Connectivity Program could contribute to achieving elements of this Plan by rolling out NBN Public Interest Premises (using Sky Muster Plus) and WiFi distribution to interested remote indigenous communities of between address a connectivity gap, particularly for remote communities with populations of 50-350 people<sup>49</sup>; not supported under the Mobile Black Spot Program. This would “provide a basic safety net communications service, enable unmetered access to key online services, support learning and digital literacy, enable community control over internet access hours, enable use of WiFi Calling. The program could be jointly delivered by NBN, State/local governments and First Nations media organisations. FNMOs can provide use of existing broadcast rooms and towers for WiFi facilities as well as setting up media servers to enable community access to locally relevant media and learning resources.” (FNMA 2019)

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<sup>49</sup> Homelands of under 50 people are covered under the Community Phones Program, which provides phone and WiFi access; Most larger Indigenous communities (over 350) have had mobile services provided under the Mobile Black Spots or other State/Territory co-investment programs. ACCAN also urged for a WiFi rollout to mid-size communities of 50-350 people.

The response also proposed:

- Unmetered access to government and key services and the option to purchase pre-paid vouchers to access other services and information.
- The upgrade of Remote Indigenous Broadcasting Service (RIBS) broadcast towers and facilities to enable co-located mobile and WiFi infrastructure, with connectivity using Sky Muster services;
- The re-purposing of legacy Telstra HCRC towers for high-speed microwave backhaul to enable expanded mobile coverage.

The Northern Territory Government response suggested that First Nations organisations with on-the-ground experience be considered trusted sources of information for identifying communications priorities (this was adopted in the final guidelines). NTG also urged some flexibility on the requirement of 10-year retail service delivery using funded equipment to allow for diversity of situations, including projects in remote or small communities.

NTG stressed that backhaul capacity “is a key limitation to the effective roll out of telecommunications services in many remote areas of the NT”, particularly for expanding mobile coverage, and urged that the RCP be able to help address and remediate backhaul restrictions. “The ability to consider the longer-term benefits of increasing backhaul capacity as part of creating enabling infrastructure has potential to assist more residents and businesses than site-specific requests.” NTG argued that inclusion of an under-\$200K funding category “would enable proposals for a small cell satellite service and other localised solutions to be progressed. By way of example a small cell service is being installed at Urapunga with funding of \$43 000 from both the NTG and Telstra.” (NTG response 2019)

The response from Regional Development South Australia Far North outlined the challenges for remote communities, including accessing information and technical support, as well as training in use of the technologies, due to language barriers (65.6% of residents in the Anangu Pitjantjatjara Yankunytjatjara Lands speak Pitjantjatjara or Yankunytjatjara as a first language). Their response cited that a remote school claimed that students “cannot even access ‘google.com’ 60% of the time, let alone check their emails, which is important to keep up to date with their work tasks”.

The Telstra response to the RCP discussion paper argued that the MBSP had successfully provided coverage all sites with sufficient population to make a business case for installing a mobile base station, and further delivery of new and upgraded infrastructure would be uneconomic due to the number of people that are likely to be served by that site. Sites funded under Round 4 had an 85% decline in the average number of customers receiving coverage per site compared with Round 1. With the current model for MBSP no longer viable without increased co-investment, Telstra argued that future MBSP should follow similar guidelines to the proposed flexible model under RCP (which has been reflected somewhat in the Round 5A proposed guidelines).

Telstra pointed out that another key challenge with MBSP was that many proposed sites in remote areas required

“enabling infrastructure such as backhaul and transmission networks. In regional and remote areas, it is often cost prohibitive to provide the connectivity and backhaul to upgrade to newer

technologies. Even in cases where infrastructure (e.g. fibre and radio systems) exist, improvements are often not possible without costly upgrades of the supporting transmission equipment.”

It is likely that the RCP will be used to fund a number of backhaul upgrades, including microwave links, as well as network upgrades, in order to enable mobile coverage in more remote sites. However, Telstra’s point about the lack of a business case for coverage in smaller sites points to the need for different types of solutions, including satellite small cell mobile<sup>50</sup>, Cel-Fi Go to enhance and/or extend existing coverage, satellite-delivered WiFi (including WiFi Calling) and other innovative technologies.

## 11.2 Regional Telecommunications Review 2018

Among a number of worthwhile recommendations, the Regional Telecommunications Review (RTR) 2018 included the following recommendation:

*Recommendation 8: A targeted Indigenous Digital Inclusion program with a focus on access, affordability and digital ability be developed in partnership with Indigenous communities.*

It provides details on p.61:

A coherent and holistic policy approach to telecommunications services is needed for remote Indigenous communities. A number of stakeholders have called for the development of an Indigenous Digital Inclusion Strategy. It is important that there is local ownership in all aspects of the strategy, and that it builds upon the capacity of existing organisations, infrastructure and programs to avoid duplication.

The strategy should include data collection to measure whether remote Aboriginal and Torres Strait Islander community members have broadband available to them with the minimum requirements in terms of access, availability, affordability and digital literacy. The strategy should consider affordability and suitability of services for Indigenous communities, such as community WiFi. It is important that a digital literacy program is included as part of any such strategy, and is developed to be culturally and linguistically appropriate for remote community members.

While the Government response included a commitment to developing an Indigenous Digital Inclusion Plan, there has been little visible progress and no associated timeline or funding allocation for the Program as outlined in the recommendation. This requires ongoing advocacy.

The report includes a section on Place-based Planning (p.29), calling for “a strategic place-based approach to guide future telecommunications investments. A place-based approach would give effect to local and national goals, through targeted investment in telecommunications infrastructure that is specifically suited and tailored to the particular requirements of each region. A number of

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<sup>50</sup> Telstra have developed the 4GX-lite Satellite Small Cells which can deliver voice, broadband and IOT connectivity more cost effectively, particularly suited to very remote communities and farming co-operatives. Optus have also been installing satellite small cells in recent MBSP rounds.



state and territory agencies have already begun this journey. With the regional rollout of the NBN so advanced, the development of regional digital plans is a logical next step.” (RTIRC 2018)

This is particularly relevant to remote Indigenous communities where existing strategies have largely run their course, and community-based digital inclusion plans are needed to guide future development and access, with community ownership in the process as a central element. Funding and support is needed to enable communities to build the capacity and engage support to develop these plans.

The CAYLUS Submission to the RTR 2018 provided a stark picture of growing issues:

With the levels of systemic poverty in remote aboriginal communities apparently worsening, there is a high risk of digital, health, education, and other disadvantage becoming a more entrenched part of remote community life, and the gaps in opportunity and life expectancy will widen rather than close. Something as simple as access to a power source to keep a smart phone charged cannot be assumed when it is likely that no one in the household has any money to buy power cards, and it's a four hour wait to speak to Centrelink. To mitigate the risks:

1. Provision of cost free stable and reliable content filtered WiFi internet with generous daily data limits, the capacity for community input into hours of operation, and community control of access to social media and other problematic sites.
2. Support for remote community computer rooms, including funding so that supervision and assistance can be provided in community, and computer equipment can be maintained and repaired. As part of our youth programme development activities, CAYLUS has provided and maintained remote community computer rooms and equipment with the support and assistance of remote community youth workers.
3. Continued provision of community phone boxes. These are disappearing from remote communities and Alice Springs town camps, so there is no alternative to bearing the costs of mobile phones and prepaid mobile phone connectivity.” (CAYLUS 2018)

The Tangentyere Council submission highlighted the ongoing importance of public phones in town camps: “While mainstream Australia may experience public phone boxes and fixed land line services as redundant, Tangentyere considers that access and availability of fixed-line phone services and public phone boxes in remote and regional urban and Town Camp localities as essential to making contact with essential services, maintaining social connectedness including cultural and family ties and to ensure safety and wellbeing, especially in the case of an emergency.”

## 12 Community Consultation by State

A number of community organisations around the country were contacted as part of the research for this report. The key questions asked were:

- What projects have improved telecoms access in the community/region?
- How much impact has this had?
- What are the most urgent telecoms needs in the community/region?
- Any other issues you want to raise?

### 12.1 Northern Territory

As outlined in 2.4, Northern Territory Government have implemented a range of programs to identify and address the needs of remote Indigenous communities in the NT.

Based on community consultation of NT based organisations, some of the specific sites that have been identified as needing upgrade in the NT are Alice Springs town camps, Utopia homelands, Central Desert and Barkly regions. CAYLUS have installed computer rooms in most Central Australian communities but advised that Mutitjulu has no WiFi and only have marginal mobile coverage from Yulara. More detail on these issues, and solutions underway, is outlined below.

#### 12.1.1 Alice Springs town camps

The Alice Springs town camps have very limited telecommunications as outlined the Tangentyere Council and CAYLUS submissions to the RTR. Despite being mostly within the Alice Springs footprint, the town camps were left out of the NBN coverage areas. Tangentyere Council have outlined 5 key areas of need for infrastructure and resourcing in town camps<sup>51</sup>:

1. Lack of reliable phone boxes
2. Lack of mobile phone reception
3. Limited internet connectivity
4. Hardware/software in access centres
5. Staffing- Digital mentors to deliver training and support in community centres.

The COVID-19 restrictions have exacerbated the issues of limited internet access as highlighted in several recent articles by Else Kennedy, including this story [COVID-19 and the digital divide in Alice Springs](#) and another for NITV [In the town camps of Alice, coronavirus is raising the stakes of the digital divide](#) (excerpts below):

*"We all living in this town. We should all have NBN connected to our community, to our town camp," said Mr MacNamara from Hidden Valley town camp.*

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<sup>51</sup> Source: Tangentyere Council presentation at Indigenous Focus Day 2018.

*Seven of the [12] town camps have no broadband internet.*

*Tim Saul, head of NBN Local in South Australia and the Northern Territory, said a lack of existing infrastructure has delayed the set up of NBN and led to the camps being left until after the rest of the town was connected. Mr Saul said he hopes to connect the camps this year, but the coronavirus crisis could now delay the installation.*

*Another five of the town camps rely on satellite internet. Many residents can't afford an internet connection to their house, and at camps like Hidden Valley up to 400 residents share a single WiFi hotspot connected to the town camp community centre."*

Since these stories, nbn co claim to have now connected 7 of the 12 sites with fixed line services, with plans to address the other sites. However according to one person consulted, NBN are installing the WiFi hotspot on community leader's houses, but these are not always accessible by other residents in the town camp. CAYLUS also raised that in the town camps there is an issue with power supply for internet because the houses with WiFi hotspots are on power cards so the WiFi only works when the resident has money to purchase power cards.

### 12.1.2 Utopia homelands

There are 16 dispersed homelands in the Utopia region near the larger communities of Arlparra and Ampilatwatja, which have both had mobile coverage installed in recent years. While people mostly travel into the larger centres for stores, school and services, several of the homelands have small schools and stores. However, most of these homelands have had little or no internet coverage and only a few sites are close enough to the larger communities to receive marginal mobile coverage.

There has been significant advocacy by CAYLUS, Central Land Council (CLC) and the community council to address these issues. As a result, there are solutions underway in the region including:

- NBN are installing the 'Communities in Isolation' WiFi project to provide free WiFi services at the schools and enable home schooling in 5 of the Utopia homelands. This is being jointly funded by NIAA 'Stronger Communities' program;
- A public 4G WiFi hotspot is being installed in Arlparra youth centre by CAYLUS, funded by Central Land Council as a COVID-19 response project. (there is also a free hotspot being installed in Engawala under this program).

### 12.1.3 Central Desert region

Pintubi Anmatjere Warlpiri (PAW) Media reported the following issues and local solutions in communities in their coverage area:

- Lajamanu has periodic outages on its 3G network which is unreliable and has heavy congestion;
- Willowra and Nyirripi have no mobile coverage;
- There is no mobile coverage at Engawala;

- Only Ti Tree and Ali Curung have services in that region;
- The art centres at Ali Curung and Engawala provide public access computers;
- PAW Media has installed 4G or ADSL internet access to enable radio network links from the RIBS radio studios at Lajamanu, Yuendumu, Kintore, Ti Tree and Ali Curung, but not other 7 sites in their footprint due to lack of ADSL or 3G/4G, building belonging to regional council and latency issues on NBN Sky Muster (other regions have reported the codecs working OK on Sky Muster);
- WYDAC now have the contract to manage the learning centres in Lajamanu and Yuendumu and are looking to move into Willowra and Nyirripi (previously managed by Batchelor Institute). They have set up free WiFi hotspots in all learning centres.

CAYLUS identified a gap in community access in Mutitjulu community where there is patchy mobile coverage but no WiFi or computer room.

CLC reported a patchwork of connectivity in Central Australian outstations and homelands, with most sites only having a shared public phone and some with WiFi. CLC describe a lack of equity in connectivity creating two classes of citizens in Australia- those for whom internet access is taken for granted and those without affordable access. As outlined in section 7.2, in remote Australia there is a very limited labour market and increasingly levels of poverty, with many people reliant for income through Centrelink for Community Development Programs, welfare payments, disability pensions, parental support and aged pension. These often require regular reporting to continue receiving benefits. However, in most communities there is no face to face Centrelink or other government, postal or banking services, with the only means of access increasingly online. CAYLUS have estimated that up to 53% of eligible people in NT communities are not receiving benefits, largely due to the difficulties of reporting<sup>52</sup>.

Further, CLC report that the cashless debit card being rolled out in NT communities is premised on internet access. Also, most government and other services require several forms of identity, being a date of birth, fixed street and/or postal address, mobile phone number and email address. These forms of ID are often not possible for remote Indigenous people. Communities often do not have street names, few people have email addresses and people can have up to 25 mobile number registered to their name<sup>53</sup>, with high turnover of pre-paid phones.

CLC argue for the need of free internet access in all communities and homelands to address this inequity and enable opportunities for social and economic prosperity. Also the prices of pre-paid mobile services, WiFi vouchers and power cards need to be monitored to ensure affordability.

#### 12.1.4 East and West Arnhem regions

While most larger communities in west and east Arnhemland have mobile coverage, there is reported congestion on the mobile services during peak periods in most communities. Most smaller communities and homelands are reliant on satellite services for all forms of communications- radio,

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<sup>52</sup> Source: CAYLUS presentation to Indigenous Focus Day 2017.

<sup>53</sup> Source: Telstra retail manager in NT

TV and internet. There are challenging conditions across the Top End during wet season (typically from December to April), where many communities are inaccessible by road for up to four months, making effective telecommunications essential. Heavy cloud cover and rain during these periods can cause rain fade, causing communications outages in sites dependent on satellite services<sup>54</sup>.

Cyclones can cause catastrophic damage to satellite equipment and mobile towers, as well as power supply in communities. For instance, Cyclone Lam in 2015 left several Top End communities, including Galiwin'ku and Gapuwiyak, without any communications services for up to two weeks. In 2019, Cyclone Trevor took out all communications including landlines, mobiles & internet across Groote Eylandt. Even in dry season, there are reports of regular outages of mobile services in communities, with the mobile service at Galiwin'ku cut for four days in August (cause unknown).

Telstra are currently upgrading the batteries in some mobile towers, including Yirrkala and Galiwinku, to extend back-up power from 2 hours to 12 hours. This is needed in all sites along with upgrades to 4G and network infrastructure to address congestion issues.

East Arnhem Regional Council (EARC) have been actively advocating for improved communications infrastructure throughout the region, arguing that significant upgrade is required before comparable access to telecommunications is achieved. Telecommunications outages are regularly experienced throughout the whole region, some involving no telephone or internet to whole communities for several days. While these outages cause severe disruption to daily communications, they also impact people's access to cash, electricity, food purchases and health records.

In May 2020, eight Local Authorities in the East Arnhem region provided the following specific comments:

- Angurugu and the surrounding homelands:
  - a) Four days in February with no service, leading to major social unrest because there was no access to phones, internet or EFTPOS for purchase of food.
- Galiwin'ku and the surrounding homelands:
  - a) Too many outages in Galiwin'ku, which affects the ability to withdraw cash or monitor the cost of power. There are big delays to repairs to fix outages.
  - b) Limited mobile phone reception outside of Galiwin'ku, specifically limited mobile service near the barge landing on Elcho Island.
  - c) Emergency landline phones are not being maintained and do not work.
- Gapuwiyak and the surrounding homelands:
  - (a) Need to improve the quality and reliability of phone services at Homelands.

(b) Need for free WiFi like is provided in cities.

(c) Too many outages; there needs to be a reliable service to East Arnhem.

- Milingimbi and the surrounding homelands:

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<sup>54</sup> However, tests of Sky Muster Plus outlined in section 10.2.5 provided positive results with only short periods of outage.

- a) Always seem to have 3G rather than 4G and the signal is always very weak.
- b) The limitations in Milingimbi due to being on satellite internet services; the weather badly affects the signal.
- c) Internet access is also limited and needs to be reliable as people use more technology for internet based financial and social services.
- Milyakburra and the surrounding homelands:
  - a) Only have mobile coverage inside the Council office and at the airport.
  - b) The signal is weak and is interrupted by cloud coverage.
  - c) Difficulties with dealing with emergencies because of the inability to communicate from our remote island.
- Ramingining and the surrounding homelands:
  - a) The access road to Ramingining off Central Arnhem Highway, approximately 1km from Emu Spring, is a black spot for mobile service.
  - b) Black spot for mobile service on road between Ramingining and Maningrida.
- Umbakumba and the surrounding homelands:
  - a) There are problems everyday with lack of phones. When the power goes out, the landlines also go down. This has been ongoing for years.
  - b) Most community members do not have access to internet at home. This was very hard with COVID-19 and everything, including school learning, has moved to on-line. It is difficult to get the internet on at home.
  - c) When satellite dish coverage is interrupted there is no access to television to access essential news and information. Repairs and maintenance of set top boxes and satellite dishes has not been occurring. (This is an issue for all communities).
- East Arnhem Regional Councillors raised the following concerns:
  - a) There are problems with public phones not working on the Homelands across the region; we request, please, a status report from Telstra in relation to the public phones in all Homelands across the region.
  - b) There is a need for all communities to be upgraded to at least 4G coverage.
  - c) East Arnhem requires increased capacity for effective, reliable mobile and internet coverage, in communities and across the whole region.

Eight months ago, EARC rolled out a Point to Point Wireless connection Project, providing connectivity to the majority of EARC buildings (Aged Care, Child Care, Youth Sports & Rec, Library) back to the EARC Main Council Building in Nhulunbuy that has dedicated Fibre Connection to the EARC Private Network. At the moment, the Fibre Connection is only dedicated for EARC staff due to very limited bandwidth on the fibre backhaul in East Arnhem Region. This wireless network model is scalable, able to connect any building in the community. It is a more robust and reliable connection compared to the PSTN/ADSL services, as the copper lines within communities are unreliable due to age and wear and tear. Natural disasters such as flooding, wet season and cyclone can also cause issues with the connection. With a much more reliable connection EARC could expand access to the network and use for IOT solutions.

EARC Library Services are currently in partnership with the Northern Territory Government Library services to provide Public WIFI in the following communities: Galiwin'ku, Gapuwiyak, Umbakumba,

Ramingining, and Milingimbi. There is also additional Apple iMacs dedicated for community members to use the internet for free.

nbn co has installed “communities in isolation” due to the Covid-19 pandemic and has also provided free Public WiFi for the Gunyangara Community as a proof of concept, with hotspots in two locations in the community.

### 12.1.5 Other issues identified

CAYLUS also reported:

- There are issues with the cost of vouchers in some sites with some PIP hotspots. Community members are paying up to \$1500 per month for vouchers, to use a service which should be costing only \$90/month for 150 gigabytes download. There needs to be more regulation of the rates for vouchers as people are saying they can't afford to buy the vouchers.
- Communities are using up all the 150GB download limit on the PIP WiFi hotspots very quickly.
- NBN Public Interest Premises should be upgraded to Sky Muster plus to take advantage of the extra download capacity (up to 300 gigabyte per month) and unmetered internet browsing and non-video or VPN usage. This would make the services much more affordable and reduce data issues.
- The NT library WiFi hotspots could also be upgraded to Sky Muster Plus.

Desart reported that the cloud-based Stories Art Money software used by all of the remote art centres is problematic due to poor internet in some sites. Some large art centres upload large quantities of high-resolution images of paintings (up to 100 per day in some centres eg Yuendumu and Yirrkala). Due to congestion and unreliable speeds on ADSL and 4G networks, they have installed ‘black boxes’ or local content storage which uploads to the cloud overnight.

FNMA/inDigiMOB reported:

- During COVID-19 lockdown, local Regional Council offices in communities which had WiFi hotspots turned these off to prevent people congregating to access the services. For many community members, this was their only means of internet access and sourcing information and online services;
- There have been delays in rolling out MBSP mobile services, NBN services and WiFi installations during COVID-19 lockdowns due to limited access to communities;
- Some regional councils are not allowing Indigenous staff to have work phone or data access due to risk concerns about inappropriate use;
- Increased internet access in communities is leading to increased cyber-safety issues, especially during COVID restrictions.
- With so much public access mediated by private providers, there needs to be some level of regulation on the standards required for community WiFi, including content filtering, maximum voucher data prices, use of Sky Muster Plus, community switch-off capability (or time to turn off each night). There also needs to be an alternate service to direct people to

for heavy data users (e.g. for video streaming) to avoid congestion and using up community download limit.

- A coordinated approach is needed to educate and address cyber-safety issues. There are not enough programs to help communities to address these issues.

## 12.2 Western Australia

As outlined in 2.1, WA Government have been proactive in monitoring and addressing telecommunication gaps in remote communities across the state, with mobile coverage provided to most communities of over 100 people. However, many of these services are described as marginal or patchy, so there is a next level of work underway to seek to improve the quality of services in communities. This is highlighted in the responses from WA communities consulted, where the issues of reliability of services, limited data to meet demand, and lack for services in very small communities were common themes.

### 12.2.1 Tjuntjuntjara Community

As outlined in 2.1.3, WA Government have funded the installation of an Optus satellite small cell mobile service and an Activ8me WiFi Mesh solution in Tjuntjuntjara as a pilot for other remote communities. The community have reported being very pleased to have reliable and affordable phone and internet after sub-standard services and lack of home phones previously.

However, a representative of Tjuntjuntjara community reported that, despite the improvements, there are still issues they are trying to address:

- Optus mobile network is slow speed with congestion;
- The data speed at the community office is not good enough for VoIP telephony; The office is having to use work arounds, including cloud connectors, dynamic file synchronisation, VPN to local server etc.
- There are internet bandwidth issues via the public WiFi; To reduce congestion on the WiFi, they want to set up a local content distribution network i.e. hosting high-use content on a local area network (LAN) server rather than internet download. For instance, the community archive collection on Storylines (Keeping Culture software) which is cloud-based could be stored locally.
- WiFi is proving difficult to manage without an Educator/Trainer focussing on appropriate use and cyber-safety.
- Core infrastructure issues to be addressed:
  1. Underground cabling damage with frequent drop-outs on PSTN lines and loss of calls for essential services like health and education and community admin/municipal services;
  2. Telstra exchange hut needs an upgrade to increase number of PSTN lines to buildings – over 20 years old with ageing network equipment; more lines needed for connections to new buildings;
  3. Microsoft Teams integration with PSTN lines needed (note: internal call quality for Teams is fairly good over satellite).



## 12.2.2 Ngaanyatjarra Lands

7 communities (Warburton, Blackstone, Irrunytju, Warakurna, Wanarn, Jameson, Cosmo Newberry) currently have mobile coverage under previous WA Government co-investment projects (2009-11). Kanpa, Tjukurla, Tjukayirla Roadhouse and Kiwirrkurra are getting Optus small cell mobile services under MBSP funding.

Ngaanyatjarra Media provides free WiFi services in 12 sites across the region with Sky Muster backhaul<sup>55</sup>. However, the WiFi and router equipment requires regular maintenance, so several sites are currently not working due to lack of recurrent funding for maintenance. Sky Muster Plus services have been set up in Tjukurla, Kiwirrkurra, Wanarn and Irrunytju. Irrunytju community has a WiFi Mesh setup with Easyweb Digital on a user-pays voucher system, which is working well and gets a lot of use. Ngaanyatjarra Media share local content from a media server and a streamed local radio service free to the community over this WiFi service<sup>56</sup>. Ngaanyatjarra Media raised the issue of community use regularly exceeding the limited monthly data allowances on Sky Muster services and said higher data allowances are needed for WiFi sharing.

## 12.2.3 Kimberley region

Pilbara and Kimberley Aboriginal Media (PAKAM) reported that:

- All 14 communities supported by PAKAM now have mobile coverage;
- Optus 4G small cell recently installed at Kalumburu, Bililuna, Yungngora (Noonkanbah);
- Djarindjin/Lombardina have a sub-standard mobile service<sup>57</sup>;
- Beagle Bay has congested ADSL service, poor Tieline<sup>58</sup> connections for radio networking;
- Fibre optic is installed up the Dampier Peninsula, but exchanges need upgrading;
- Looma is getting upgrade with mobile tower in community, currently outside community;
- The transition to NBN IP services created issues for Tielines which only worked on landline voice services, not IP, and had to be replaced;
- Had a national outage of Sky Muster for a whole day on Wednesday 5th August, satellite had rolled 31 degrees and NBN had to realign an antenna; the service was restored by next day, but they didn't put timings on updates, only notice of dropout issues;
- Have issues with Sky Muster service in Warmun; put in fault report to Activ8me but taking months to get it fixed;
- Have set up Sky Muster basic services at all RIBS;

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<sup>55</sup> Warburton Community have set up their own WiFi solution.

<sup>56</sup> There is demand from other remote media organisations for replicating this model of local content sharing and radio streaming via WiFi.

<sup>57</sup> WA Government is funding a Telstra 4G small cell to address this issue with installation due for completion by 31 December 2020.

<sup>58</sup> Tieline codecs are used for IP streaming of radio services to hub sites to contribute to regional programming.

- No public WiFi services in the region<sup>59</sup>;
- Community Resource Centres are still operating, mostly on shoestring budgets;
- PAKAM are keen to set up video content sharing in communities via WiFi.

Third Space Indigenous Corporation in Fitzroy Crossing posted the following project request on the [RCP noticeboard](#): “Build a mixture of fibre and fixed wireless to connect and/or improve remote Aboriginal communities communications in the Fitzroy Crossing Valley. Currently satellite services only available to all including the township of Fitzroy Crossing. Benefits include closing the digital divide with online services and greater digital participation of Indigenous peoples on country.”

#### 12.2.4 Pilbara region

Ngaarda Media provided the following report on Pilbara community coverage:

- Yungaleena has mobile but it’s patchy;
- Jigalong has problems with congestion on 3G mobile<sup>60</sup>;
- Parngurr and Punmu have mobile coverage, but it is Optus small cell so limited coverage;
- No mobile coverage at Ngurrawaana<sup>61</sup>, Wakathuni and Bellary Springs.

### 12.3 Queensland

The Queensland government have mostly focused on larger communities under the MBSP, leaving it largely to the shires to address the needs of smaller communities. Several sites have recently been upgraded, including Hopevale, Mornington Island, Palm Island, and Kowanyama. Other Queensland sites reported to have issues with mobile coverage were Woorabinda (could hardly use Zoom via 3G) and Birdsville.

While there is internet access at the Indigenous Knowledge Centres in 31 communities, not many sites have public WiFi.

#### 12.3.1 Cape York

There is a single Telstra fibre optic cable running from Cairns up Cape York to the Torres Strait, with no redundancy in place in case of damage or other causes of outage. The top half of Cape York and Torres Strait have been without communications services for weeks in the past due to rodent damage to the fibre cable.

Ingeous Studios reported that:

- Communities in Cape York have relatively decent access, but at peak times these are slow;
- Outstations still need a solution;

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<sup>59</sup> Kimberley Development Commission pushed for strong mobile coverage in the region rather than WiFi.

<sup>60</sup> Telstra has insufficient backhaul capacity to upgrade to 4G.

<sup>61</sup> Ngurawaana was funded for a Telstra 4G small cell under MBSP Round 4, operational from 29 August 2020.

- Biggest issue is affordability;
- Aurukun has good connectivity due to mining company nearby. This shouldn't be the determinant to get coverage;
- WiFi Mesh network set up in Aurukun but are old, needs upgrading;
- Wujal Wujal WiFi Mesh network works OK, but was set up like a defence network to maintain connectivity in cyclones, needs upgrade to cover the whole community;
- High maintenance costs and specialist skills needed to maintain services in communities. We need more Indigenous people trained to maintain equipment;
- Pormpuraaw has limited access;
- Lockhart River has issues;
- Bamaga has a defence force base so communications are reasonably good at NPA;
- Torres Strait is very congested and patchy, upgrades coming through TSRA project;
- COVID-19 has shown need for connectivity for schools, work. Most Aboriginal children in Cairns don't have internet at home for schooling as too expensive;
- Proposed solutions:
  - Need free WiFi networks run out of community organisations to enable community access, but need to address potential cyber security issues;
  - Neighbourhood Area Networks (NAN) - mesh in a community or suburb, has central exchange, cache a lot of content, localised cloud system for community, needs custom build. Does back up to cloud server overnight. Have been rolled out in Spain successfully;
  - Need an Indigenous owned ISP, especially to support Low Earth Orbit (LEO) connectivity. LEO backhaul with mesh networks will provide low latency, stable and direct connections;
  - Need to set up a First Nations Technology Council to coordinate communications programs for First Nations people.

### 12.3.2 Torres Strait

Torres Strait Islander Media Association (TSIMA) reported that:

- The mobile upgrade being undertaken by TSRA and Telstra is much needed with heavy congestion on the mobile service at Thursday Island, and most islands having limited coverage and congestion issues. Mobile is the only way that most people on Torres Strait can access phone and data services;
- TSIMA is installing NBN Sky Muster services into 6 RIBS facilities (Iama Island, Warraber, Poruma, Erub, Badu) for IP streaming of radio and remote monitoring of RIBS transmission;
- IKCs are operating on islands, providing community access;
- There is poor service at Northern Peninsula Area (congestion on mobile network, and poor signal in Seisia) and on Erub (Darnley) Island.

## 12.4 South Australia

SA Government have not been visibly proactive in identifying or addressing the needs of remote SA communities beyond co-investment in mobile services in the APY Lands.

### 12.4.1 APY lands

In 2018, 6 communities in the Anangu Pitjantjatjara Yankunytjatjara (APY) Lands received mobile services through the MBSP (see 2.3). Previously only the largest community of Ernabella had mobile coverage, with PY Ku centres in the 6 sites providing some community access computers and public WiFi. The mobile rollout has significantly improved access but has introduced cyber-safety issues into the region, which there is limited programs to address. Reports from Money Mob, which is working in the region, are that there are significant issues of affordability due to the high cost of data on pre-paid mobiles, people being signed up to unaffordable mobile plans (Telstra is actively addressing this issue), and high susceptibility to online fraud.

### 12.4.2 Ceduna, Eyre Peninsula

The communities of Ceduna and Oak Valley have previously had significant connectivity issues.

As part of a trial of the Cashless Debit Card for welfare management undertaken in Ceduna, Yalata and Oak Valley (begun March 2016), WiFi Hotpots were set up by Activ8Me with unmetered access to government, banking and other services. These services proved to be very popular and increased access but there are no public reports available on usage of these services. The WiFi services have been maintained as an ongoing trial service.

Oak Valley has had both Optus and Telstra mobile services installed which, according to Maralinga Tjarutja Aboriginal Corporation, has made a huge difference. Many of the houses in the community also have Sky Muster or Sky Muster Plus services, which were described as 'not particularly fast'. Community houses that have connectivity are now able to access Netflix and other streaming services for the first time. Community staff were able to work remotely during COVID-19 restrictions, using MS Teams over a fixed wireless network in the community.

## 12.5 NSW

NSW have put in significant co-investment into expanded mobile coverage and network infrastructure and through the 'Connecting Country Communities' and Regional Digital Connectivity programs. However, parts of regional NSW have significant issues with connectivity with some regions with large Indigenous populations having similar issues to very remote communities.

### 12.5.1 Wilcannia / Central Darling region

A recent [ABC Story](#) 'Remote schools using radio, music, and cooking to keep students with no internet connected' (24/4/20) on Wilcannia, in the Far West of NSW, reported that:

Very few homes have access to the internet and those that do mostly access a patchy 3G service often inaccessible from inside people's homes... Deputy principal at Wilcannia Central School, Sarah Donnelly, said all those factors come together to make home learning a challenge for most students.

Unfortunately, without the opportunity to jump on a zoom meeting with your teacher every morning, it is difficult to maintain the connection between kids and teachers," she said. Wilcannia River Radio had become an essential way to communicate with students, Ms Donnelly said.

Wilcannia River Radio reported that:

- The radio service kept kids connected to school during COVID. The radio shows provided lessons for home schooling;
- Most households don't have internet at home; when they have it, they use pre-paid mobile phone with multiple users connected, expensive and slow due to sharing internet;
- 3G/4G available but continual issue with internet speeds, so slow it's a black spot;
- There are 6 communities in the region with the same issue- Menindie, Tibordurra, Brewarrina, Walgett, Godooga, Ivanhoe;
- Have approached NSW government and NIAA to upgrade service, got no response from NSW Govt;
- Can't get employment or business without internet access;
- Have a Telstra booster at work to make phone connection possible;
- Zoom Videocon freezes all the time, very frustrating;
- Streaming of radio service is always freezing, losing connection;
- Applied for Sky Muster but haven't got it, Wilcannia doesn't have NBN fixed line in the town.

The Central Darling Shire have been actively seeking to get the issues of poor mobile coverage and lack of internet access addressed through lodging a list of projects on the Regional Connectivity Program noticeboard, seeking to "deliver a free WIFI coverage network to our indigenous community, offering access to all homes, businesses, and facilities within the community. The service must be high speed and unlimited internet access with little or no expense for Council to operate. The service allows stakeholders and the main users to provide and promote education programs and indigenous inclusion, (Advancement via Digital inclusion)."

The sites listed were:

- Wilcannia, population 750, of which 75% are indigenous.
- Ivanhoe, population 200, of which 50% are indigenous.
- Menindee, population 500, of which 50% are indigenous.
- White Cliffs population of 250.

## 12.6 Victoria

The Victorian Government does not identify any remote Indigenous communities in the state. Mobile co-investment projects are aimed to improve mobile coverage across regional Victoria, expanding 3G/4G mobile coverage for residents and local businesses, with a WiFi hotspot installed Shepparton which has a large Indigenous population. No community agencies responded to the request for input into this report.

## 12.7 Tasmania

Tasmanian Government partnered with Telstra, the Flinders Island Council and the Australian Government on an \$11 million project to upgrade telecommunications services for Flinders Island and Cape Barren Island in 2017. No community agencies responded to the request for input into this report.

## 13 Summary of the Gaps Identified in Part B

The literature review and consultation outcomes in Part B identified a number of gaps beyond basic connectivity as well as a number of suggestions for solutions. These include:

- Affordability is still a key issue for most remote indigenous consumers, particularly on pre-paid mobile services. There are also reports of high prices for WiFi data vouchers in some sites.
- Despite the increase in mobile coverage, many remote sites reported patchy or unreliable mobile services with heavy congestion at peak use times due to limited backhaul capacity. Heavy congestion is also common on ADSL services.
- An upgrade plan is needed to replace ageing telephony infrastructure and HCRC microwave networks in many regions to ensure ongoing reliability and availability of phone lines, especially in sites where there is no mobile coverage or fibre backhaul.
- There is a lack of options and information about mobile phone plans in smaller communities, which limits ability to choose the most affordable or appropriate plan.
- There are reports of long delays in phone connections and maintenance, as well as regular outages of public phones.
- There are significant safety concerns about the reliance on payphones as the only means of communications in small communities, with no backup option if they are not working.
- NBN satellite, WiFi services and satellite small cell mobile typically rely on community power supply, which can be prone to voltage fluctuations and blackouts, including during emergencies. Backup batteries and/or solar power cells may be needed to ensure reliability.
- Increased terrestrial broadband rollout (via fibre optic or microwave) is needed across tropical northern Australia where communities can be cut off for up to 5 months annually due to monsoonal weather. Reliable communications are essential during cyclones and storms to receive emergency information (by internet, radio or TV), with satellite equipment prone to damage and rain fade.
- NBN should expand its terrestrial network infrastructure (fibre and wireless) in remote and regional areas currently serviced by satellite to reduce congestion on Sky Muster in areas/spot beams with high data use.
- A rollout of WiFi Mesh services should be implemented in communities not eligible for the Mobile Black Spots Program or Community Phones Program (typically sites with populations of between 50 and 250 people).
- WiFi services should have unmetered access to government, education and key services with the option to purchase pre-paid vouchers to access video streaming or other non-essential services.
- NBN Public Interest Premises should be upgraded to Sky Muster Plus to take advantage of the extra download capacity (up to 300 gigabyte per month) and unmetered internet browsing and non-video or VPN usage. This would make the services much more affordable and reduce data issues.

- Community or regional digital inclusion plans would provide a place-based approach to future development and access models. Funding and capacity support is needed to develop and implement these plans.
- With so much public access mediated by private providers, there needs to be some level of regulation on the standards required for community WiFi, including content filtering, maximum voucher data prices, use of Sky Muster Plus, community switch-off capability (or time to turn off each night).
- There needs to be an alternate pre-paid service (beyond shared WiFi) to direct heavy data users (e.g. for video streaming) to avoid congestion and using up community download limit.
- Proposal to establish an Indigenous owned ISP to provide affordable access and appropriate services and support.
- Proposal to set up a First Nations Technology Council to coordinate communications programs for First Nations people.



## 14 Conclusions

The many programs and funding initiatives outlined in Part A have resulted in significant improvements in telecommunications coverage and access across remote Australia over recent years. In particular, the introduction of the NBN Sky Muster satellite, the Mobile Black Spot Program, State/Territory government co-investment programs, the Community Phones Program, and various programs to provide shared WiFi services and access facilities have helped to substantially improve connectivity in remote Australia.

As a result of these initiatives, backhaul infrastructure to the community and availability of services are no longer the most significant obstacles as compared to a decade ago. However, as shown in the community consultation outcomes in Part B of this report and the ADII results for Alice Curung and Pompuraaw, there are still significant gaps in access and usage of digital technologies due to issues of affordability, lack of last mile delivery or community access facilities, issues with service reliability and congestion, and barriers to engagement with online services.

The issues identified in Part B are not consistent but impacted by local variables of community size, remoteness from regional centres or large industry, existing infrastructure, existing communications ecology, regional coordination or agency support, and efforts by local champions.

Beyond connectivity, the next level of obstacles now need to be addressed to ensure affordable and reliable access to services. These include:

- Last mile delivery to enable household or individual access;
- Affordability of services;
- Improved quality and reliability of services;
- Demand for increased broadband speeds and data limits, especially to enable use of streaming services and high-bandwidth applications;
- Providing community access facilities for those without personal devices;
- Timely technical support and effective response times for installation and repair of equipment;
- Appropriate IT systems to address congestion and latency for remote servers and two-way high bandwidth applications such as telehealth;
- Digital skills and cyber-security issues;
- Accessibility of online services for people with limited English/text literacy or disabilities;
- Cultural and contextual awareness of service providers working with remote communities.

The COVID-19 lockdown of most remote Indigenous communities has drawn attention to the lack of effective communications access and digital literacy programs. Very few remote Indigenous people have the infrastructure or support in place to work from home, do home schooling, access Centrelink or MyGov for welfare payments/reporting, or access other basic services for health, training, justice, licensing, bill payment, banking and so on. With service providers limiting travel to communities, many people were left without access to essential services. In some remote communities, the WiFi hotspot, the only point of access, was switched off to avoid people

congregating. Where there is existing mobile and WiFi services, these are being over-subscribed with the increased demand, and many are not affordable.

Some government agencies, NGOs and service providers, including nbn co, have provided emergency WiFi infrastructure to support connectivity during the COVID-19 crisis, and Telstra has provided free public phone services. However, some of these activities are short term only with the nbn co WiFi equipment to be removed following the restriction period. The issues of access during the COVID-19 restrictions have clearly demonstrated the urgent need for expanded mobile coverage and free WiFi access in remote communities to enable access to essential services, many of which are now only available online.

The current government infrastructure programs, which require industry co-investment, have now run their course in terms of addressing the specific challenges of remote Indigenous communities. Future programs require full government funding to ensure communities with small populations are not left without access to services.

With so many activities being undertaken by federal and State governments, telcos, service providers, and not-for-profits, there needs to be a targeted and coherent Indigenous Digital Inclusion Strategy developed to coordinate effort, maximise the impact and avoid ad hoc or misdirected activities. As outlined in Recommendation 8 from the Regional Telecommunications Review, such a Strategy needs to be co-designed with First Nations people and be adequately funded.

There has been no visible progress on the Indigenous Digital Inclusion Plan committed to by the Australian Government in its response to the 2018 Regional Telecommunications Review, nor has there been a funding allocation to establish a targeted program as outlined in the RTR. In fact there were more consistent programs in the 2000s than in the 2010s. At a time of Digital Transformation to online delivery of government services, expansion of telehealth and increasing reliance on digital skills for accessing education and employment, more investment is needed to ensure the digital divide does not widen for people living in remote Indigenous communities.

The development of localised digital inclusion plans will enable a place-based approach with targeted solutions to identify the high-demand consumers and applications which enables prioritisation, cost-sharing through aggregated use, and tailored solutions to reduce the risk of congestion and ensure ongoing performance.

With a target for digital inclusion of Aboriginal and Torres Strait islanders currently being developed as part of the renewed Closing the Gap framework, a nationally coordinated approach to data collection is needed to measure digital inclusion – access, affordability and digital ability - in remote Australia and monitor progress annually. Further, a strategic approach is needed to ensure national data collection on the state of telecommunications services in remote Indigenous communities, along with analysis to map the gaps in connectivity and access.

However, building on the progress of the last decade with targeted investment and coordination, there is good reason to believe that the gap in Indigenous digital inclusion can be closed in the next 5-10 years.

## 15 Appendices

### Appendix 1: Acronyms

ABG	Australian Broadband Guarantee
ABS	Australian Bureau of Statistics
ACCAN	Australian Communications Consumer Action Network
ACCC	Australian Competition and Consumer Commission
ACMA	Australian Communications and Media Authority
ADDC	Australian Data and Digital Council
ADII	The Australian Digital Inclusion Index
ADSL	Asymmetric Digital Subscriber Line
ANAO	Australian National Audit Office
APN	Australian Private Networks
APY	Anangu Pitjantjatjara Yankunytjatjara (Lands)
ARDS	Aboriginal Resource and Development Service
ATM	Asynchronous Transfer Mode
AVST	Alternative Voice Services Trials
BIA	Backing Indigenous Ability
B4BA	Broadband for the Bush Alliance
CAYLUS	Central Australian Youth Link-Up Service
CCIF	Coordinated Communications Infrastructure Fund
CfAT	Centre for Appropriate Technology
CLC	Central Land Council
COAG	Council of Australian Governments
CRC	Community Resource Centres (WA)
CRCNA	Cooperative Research Centre for Developing Northern Australia
CRCP	Connecting Regional Communities Program
CTG	Closing the Gap
DBCDE	Department of Broadband Communications and the Digital Economy (from 2007)
DCA	Department of Communications and the Arts (2014-2019)
DCITA	Department of Communications, Information Technology and the Arts (1990s-2007)

DPIRD Department of Primary Industries and Regional Development (WA)

DPMC Department of Prime Minister and Cabinet (now NIAA)

DITRDC Department of Infrastructure Transport Regional Development and Communications

DRCS Digital Radio Concentrator System

EFTPOS Electronic Funds Transfer at Point of Sale

EZ Extended Zones

FNMA First Nations Media Australia (formerly Indigenous Remote Communications Association)

GST Goods and Services Tax

HCRC High Capacity Radio Concentrator

HiBIS Higher Bandwidth Incentive Scheme

IAS Indigenous Advancement Strategy

ICP Indigenous Communications Program

ICT Information and Communication Technologies

IFD Indigenous Focus Day (now Indigenous Digital Leadership Forum)

IKC Indigenous Knowledge Centres

IoT Internet of Things

Kbps Kilobits per second

LAN Local Area Network

LANT Library and Archive NT

LEO Low Earth Orbit (satellites)

Mbps Megabits per second

MBSP Mobile Black Spot Program

NBN National Broadband Network

NGO Non-Government Organisation

NIAA National Indigenous Australians Agency

NTG Northern Territory Government

NTN Networking the Nation

PAW Media Pintubi Anmatjere Warlpiri Media and Communications

PC Productivity Commission

PIP Public Interest Premises (nbn co product)

PIRSA Department of Primary Industries and Regions SA

PSTN	Public Switched Telephone Network
QCN	Queensland Capacity Network
RAP	Reconciliation Action Plan
RBS	Regional Broadband Scheme
RDA	Regional Development Australia
RIBS	Remote Indigenous Broadcasting Service
RIC	Remote Indigenous Community
RIMO	Remote Indigenous Media Organisation
RIPIA	Remote Indigenous Public Internet Access
RMCP	Regional Mobile Communications Project (WA)
RSP	Retail Service Provider
RTC	Rural Transaction Centre
RTIRC	Regional Telecommunications Interim Review Committee
RTP	Regional Telecommunications Project (WA)
RTR	Regional Telecommunications Review
SLQ	State Library of Queensland
SMS	Short Message Service
TAPRIC	Telecommunications Access Project for Remote Indigenous Communities
TSRA	Torres Strait Regional Authority
UHF	Ultra High Frequency
USG	Universal Service Guarantee
USO	Universal Service Obligation
VoIP	Voice over Internet Protocol
VPN	Virtual Private Network
WACRN	Western Australian Community Resource Network
WAN	Wide Area Network

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Note: Other reports or articles cited in this report have links to their online location.



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