

December 2023



MAPPING THE DIGITAL GAP

Measuring Digital Inclusion and Media Use in Remote Aboriginal and Torres Strait Islander Communities 2021-24



Warakurna, WA

2023 Community Outcomes Report



Acknowledgement of country

We respectfully acknowledge the Ngaanyatjarra people, the traditional owners for Warakurna, and pay our respect to their Ancestors and Elders, past and present. We also acknowledge the Traditional Custodians and their Ancestors of the lands and waters across Australia where we work, live and undertake our research.

About the Mapping the Digital Gap research project

Mapping the Digital Gap is a 4-year research project working in partnership with local organisations in 12 remote First Nations communities, to generate a detailed account of digital inclusion and uses of digital services including news and media, track changes over time, and inform appropriate local strategies and services enabling informed decision making by remote Aboriginal and Torres Strait Islander people. It is a supplementary project to the Australian Digital Inclusion Index, coordinated within the RMIT University node of the Centre of Excellence for Automated Decision Making and Society in partnership with Telstra.

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Community Development Adviser: Gina Livesay-Sutton

Community co-researchers 2023

Jeannie Pegg, Renisha Yates, Jenelle Mitchell

Research participants and stakeholders

Thank you to all the community residents and local agency staff who generously participated in the surveys and interviews, providing the personal experience to make this research meaningful. During our visit in February 2023, we conducted 48 surveys with First Nations community residents and 11 interviews with community leaders, residents and stakeholder agencies, including:

- + Warakurna Community Council (part of Ngaanyatjarra Council)
- + Ngaanyatjarra Council Community Development Program
- + Warakurna Clinic (Ngaanyatjarra Health Service)
- + Ngaanyatjarra Health Community Care Centre
- + Warakurna Remote Community School
- + Yarnangu Connections, Ngaanyatjarra Lands School
- + Warakurna Artists
- + Warakurna Roadhouse
- + Ngaanyatjarra Media

Warakurna research trip dates

27 February to 3 March 2023

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Cover: Sunset on Rawlinson Range behind Warakurna

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Research team
(Left to right):
Renisha Yates,
Jeannie Pegg,
Gina Livesay-
Sutton, Lyndon
Ormond-Parker
and Daniel
Featherstone



1. EXECUTIVE SUMMARY

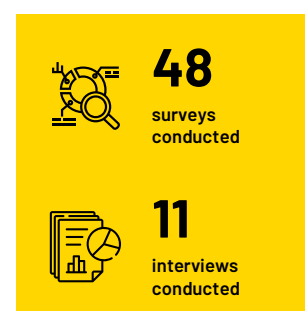
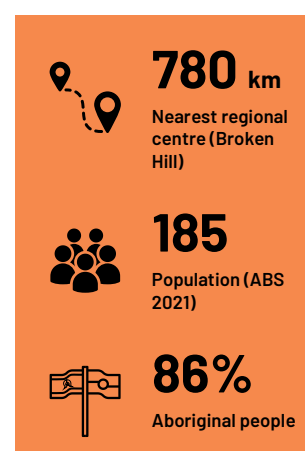
This report outlines findings from our first research visit to Warakurna, situated in the foothills of the majestic Rawlinson Range in the Ngaanyatjarra Lands of Western Australia. Located within the Shire of Ngaanyatjarraku, Warakurna is a key stopover on the mostly unsealed Tjukuraru (Great Central) Road, which bisects the region via Warakurna, linking Alice Springs (780 km north-east of Warakurna) to Kalgoorlie (1,130 km south-west of Warakurna). It is about 330 km west of Yulara, 780 km from Alice Springs, 1130 km from Kalgoorlie and 1,730 km from Perth. The traditional owners are the Ngaanyatjarra and Ngaatjatjarra people.

The Ngaanyatjarra Lands span approximately 250,000 square kilometres of the Great Victorian and Gibson Desert regions of Western Australia, adjoining the Northern Territory and South Australian borders. The population of the region is approximately 1,500 people, with most people living in 11 remote communities: Warburton (population 425, 83% Aboriginal); Warakurna (population 185, 86% Aboriginal); Kiwirrkurra (population 180, 95% Aboriginal); Papulankutja / Blackstone (population 162, 84% Aboriginal); Irrunytju / Wingellina (population 133, 88% Aboriginal); Mantamaru / Jameson (population 124, 90% Aboriginal); Wanarn (population 117, 82% Aboriginal); and the smaller communities of Tjirrkarli, Tjukurla, Patjarr and Pira Kata (Kanpa). Like other communities in the region, First Nations households in Warakurna face high costs of living, low incomes (\$706 average weekly household income) and overcrowded housing (4.4 people per household).¹

Communication services have improved significantly across the region since a fibre optic rollout 15 years ago, with mobile services now in the seven larger communities. We found that Warakurna has relatively fast and reliable mobile and broadband services, with a new nbn community-wide Wi-Fi pilot providing free internet access in residential areas. However, low levels of household access, affordability barriers for pre-paid mobile users, and low literacy and digital ability in some cohorts limit digital inclusion.

Our first visit to Warakurna, undertaken 27th February to 3rd March 2023, was a very productive week. Our sincere thanks to community research partner Warakurna Community Council, Community Development Advisor Gina Livesay-Sutton, and co-researchers Jeannie Pegg, Renisha Yates and Jenelle Mitchell, for their collaboration and guidance in the research. Thanks also to all who participated in the research, including 48 surveys with First Nations residents and 11 interviews with community leaders and local stakeholders.

This Outcomes Report presents research findings including survey results, interview analysis, an audit of communications and media services and usage, and suggested strategies for a local Digital Inclusion Plan based on community input. It is intended to assist community agencies, leaders and residents to better understand the barriers to digital inclusion, develop local strategies to address these barriers, and support planning and partnerships with government and industry stakeholders.



¹ Statistics from Australian Bureau of Statistics 2021 Census (see Appendix 2 for full results).

Warakurna at a glance

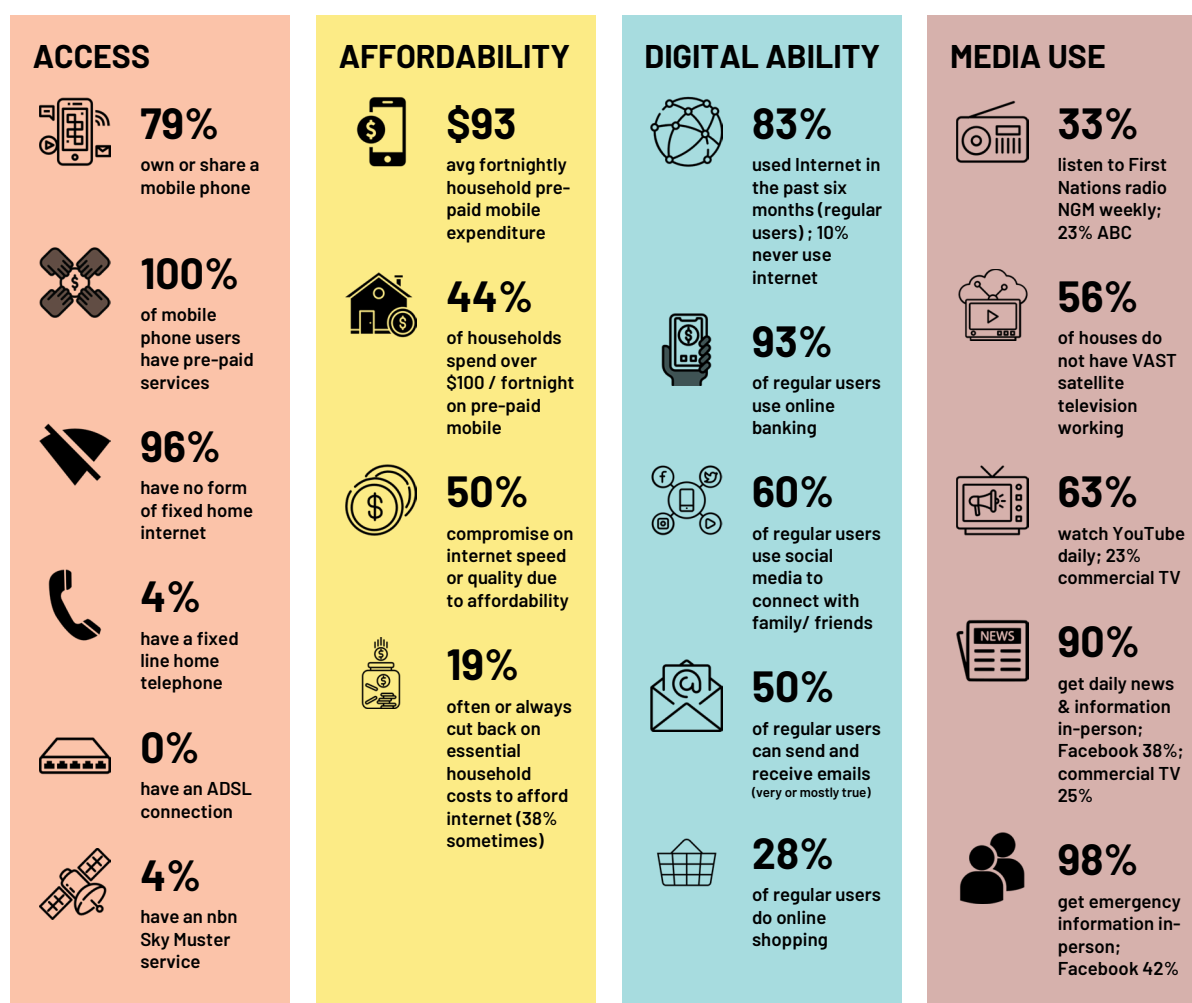
Distance	1,730 km	to nearest capital city (Perth)
Dwellings	69	private dwellings
	2.8	people per ATSI household
Language	85%	speak an Aboriginal language
Income	\$305	median personal ATSI income



Figure 2: Aerial photo of Warakurna community

Key survey findings

Below is a summary of unweighted 2023 survey results.



Full 2023 survey results are available in Appendix 1. An audit of demographics and communications and media services available in Warakurna is provided in Appendix 2.

What is digital inclusion? How is it measured?

Digital inclusion refers to equitable and reliable access to and use of information and communication technologies for participation in social and economic life.

The Australian Digital Inclusion Index (ADII) is a biennial national survey that measures three dimensions of digital inclusion: Access, Affordability and Digital Ability. ADII scores range from 0 to 100. The higher the score, the greater level of digital inclusion. ADII scores are relative, enabling comparisons across demographic groups and geographic areas over time.

The Mapping the Digital Gap project uses an amended version of the ADII survey to collect digital inclusion data. This enables us to compare results for the participating remote communities, towns and homelands with the national results collected by the ADII, and to track changes in digital inclusion between and within these sites.

In 2021, Closing the Gap Outcome 17 was introduced to ensure First Nations people have “access to information and services enabling participation in informed decision making regarding their own lives.” Target 17 includes a target of equal levels of digital inclusion for Aboriginal and Torres Strait Islander people by 2026.

Combined with ADII data collection, the Mapping the Digital Gap project is helping, for the first time, to track progress towards Target 17 for remote, regional and urban First Nations people.

DIGITAL INCLUSION



ACCESS

- > Reliable access to phone and internet
- > Access to IT devices and/or facilities
- > Access to trusted media, news and information



AFFORDABILITY

- > Affordable phone and internet services
- > Affordable devices



DIGITAL ABILITY

- > Ability to use digital devices, software and online services
- > Awareness of cybersafety, scams, and viruses

ADII First Nations data dashboard

The [First Nations dashboard](#) on the ADII website provides interactive charts and community-specific results from the ten research sites in 2022. The Mapping the Digital Gap [2023 Outcomes Report](#) provides summary findings across all sites. These will be updated in 2024 with 2023 survey results, including results from Warakurna.

View dashboard using the QR code below:

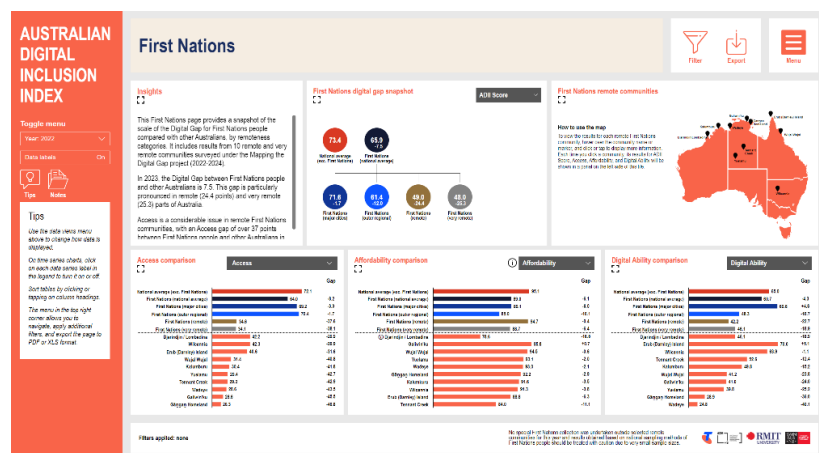


Figure 3: First Nations dashboard on ADII website: digitalinclusionindex.org.au/dashboard/firstnations.aspx

2. INTRODUCTION

Warakurna community, like the other five central communities in the Ngaanyatjarra Lands, has a range of communications services available, including 3G / 4G mobile, fixed line phone and broadband, Sky Muster and Starlink satellite, public phones and free Wi-Fi across the community. As in other remote communities with mobile services, Yarnangu (Ngaanyatjarra people) are predominantly mobile only users, with 79% owning or sharing a mobile phone and 100% using pre-paid services.

While communications access is no longer a major obstacle to digital inclusion in Warakurna, the next level challenges of affordability and digital ability play a more significant role in determining who can access the internet and what applications and services they use. Affordability plays a key role in access and usage, with 57% of respondents cutting back on food or other essentials in order to afford communications. Being a member of other vulnerable demographic groups was another key factor. The 17% of survey respondents who were low or non- internet users primarily comprised the elderly, people with disability, people with limited English literacy,² and those who did not complete Year 10 at school.

Across the region, communications services have improved significantly since 2008, when a fibre optic network was rolled out to the six central communities, extending on the network in the neighbouring Anangu Pitjantjatjara Yankunytjatjara (APY) region in South Australia (Featherstone 2011).³ This was largely the result of advocacy and coordinated efforts over many years by local agencies including Ngaanyatjarra Council, Shire of Ngaanyatjarraku and Ngaanyatjarra Media, along with proactive support from WA Government. This network provides the backhaul for all fixed line services including telephony, ADSL and BDSL (business grade DSL), as well fibre optic connectivity to key services such as schools, health clinics and multi-function police facilities (located in Warburton, Warakurna and Papulankutja). It also enabled 3G mobile services to be installed in the six communities between 2009 and 2014, with these mostly upgraded to 4G in the late 2010s. There have also been a range of digital inclusion programs since the mid 2000s to provide community access computers and IT training. Free Wi-Fi has also been available in most sites since 2009. The changes in communications in the region are outlined in Section 4.

Compared with other remote sites visited, the mobile service in Warakurna is relatively fast and reliable, with strong signal across the community. However, the signal is weaker at the Warakurna Roadhouse and multi-function police facility, located about 5km south of the community near the Tjukuraru (Great Central) Road. nbn Sky Muster satellite services are being used by agencies and staff residences in the community and near the Roadhouse, with initial uptake of Starlink services at the time of our visit. However, few Yarnangu households had Sky Muster or ADSL plans, with most Yarnangu using pre-paid mobile as their primary means of phone and data access.

In October 2022, nbn installed a community-wide Wi-Fi pilot network to provide free Wi-Fi access to residential areas in Warakurna. This is one of four pilot sites to have this service installed with a larger rollout of community-wide Wi-Fi networks planned for over 40 communities nationally. Wi-Fi access points in three locations in the community connect back to a central hub at the community office, where three Sky Muster dishes provide Sky Muster Plus Premium backhaul, enabling unlimited download and sufficient broadband speeds for users to stream video. This system enables community control over the hours of operation and content filtering, and for specific repeater sites to be switched on or off. See the case study in Section 6 for more details.

² 100% of those surveyed speak a language other than English at home.

³ See:

https://www.researchgate.net/publication/289248976_The_Ngaanyatjarra_Lands_Telecommunications_project_A_question_for_broadband_in_the_Western_Desert

A key driver for digital inclusion in Warakurna is the need to access online services such as Centrelink, MyGov, online banking, licensing and bills payment. With no bank, post office or library in Warakurna, and nearly 800 km to the nearest regional centre of Alice Springs, the community office / Centrelink agency is the primary point of access and support for most services. With high demand on a range of services and support, office staff focus their efforts on supporting residents to set up and use online services where possible. Residents are encouraged to use the free Wi-Fi service and public phone. Other local service providers reported having regular requests for assistance.

While digital literacy is relatively high among young people in Warakurna, there was demand for more digital skills training and mentor support, particularly by elders and those needing to improve or develop skills for the workplace. There were also concerns raised about scams, elder fraud, and misinformation and racism on social media, with a need for locally targeted cyber-safety training and awareness.

Another driver for fast, reliable broadband in remote communities is effective delivery of services such as health, education, welfare and employment services, land management, and retail for food, fuel and other essentials. We interviewed a range of service providers and community-owned agencies in Warakurna to find out about their use of communications and broadband services, and applications such as telehealth and cloud-based systems. While most gave positive feedback on their current services, there was some consideration of upgrading from ADSL or Sky Muster services due to issues of speed, latency or reliability. All agency staff talked about the importance of communications for their work and client communications.



“Good communications is vital to be able to get the message out about what we do [using] the various forms of media that we have, such as Facebook, and the phones, and the internet, and making sure that people understand how to use it and to interpret the information.”

– Gina Livesay Sutton, Warakurna Community Development Advisor, 2023

Despite the high cost of data, there is growing demand for broadband data by residents and agencies, especially following COVID-19 restrictions on travel and services, which led to increased use of digital services for telehealth, and online meetings and training. Young people are particularly heavy internet users with streaming services (e.g. YouTube, Netflix, Stan, TikTok, and Spotify), gaming and other high-bandwidth applications increasing in popularity. Limited access to free-to-air TV services, with VAST direct-to-home satellite services not working in 56% of households surveyed, is increasing demand for online streaming and subscription services, and further privatising the costs of entertainment.

Residents have access to online computers and support to use digital services at the Centrelink office, along with free Wi-Fi to access government and banking services. Ngaanyatjarra Media was also in the process of re-establishing community access computers and support at the Warakurna Media Centre. Ngaanyatjarra Media were also in the process of re-activating the RIBS radio station to provide local news and information, and shared segments on the regional Radio NGM network. Residents also urged the return of cultural events and media and music production support, as well as access to an archive of local language and cultural heritage recordings.

To address the media and communications needs identified in this report, and support improvements in digital inclusion and service delivery, it is recommended that a Digital Inclusion Plan be developed for Warakurna. Based on the audit of existing media and communications infrastructure and services outlined in Section 4 (and Appendix 2), and analysis of surveys and interviews with community residents and stakeholders in Section 5, a list of potential strategies for consideration for a Digital Inclusion Plan is presented in Section 7. As part of our ongoing research work with the Warakurna community in 2024–25, the Mapping the Digital gap team can assist with development of this plan.

3. MEDIA AND COMMUNICATIONS IN WARAKURNA

Existing telecommunications services



Mobile coverage

3G/4G mobile coverage to Warakurna is provided from a single mobile tower on the northern side of the community. The 3G mobile service was activated on 27 June 2013 as part of the WA Government's Regional Mobile Communications Program. It was upgraded to 4G in 2019. The coverage footprints can be seen at telstra.com.au/coverage-networks/our-coverage.

Telstra are currently preparing for the switch-off of all 3G services by June 2024, with 3G only devices no longer working after that time. Telstra has provided assurances that they will provide equivalent 4G coverage before the 3G network is switched off. More information is available at telstra.com.au/business-enterprise/support/3g-service-closure



Figure 4: Warakurna mobile tower



Backhaul to community

There is Telstra fibre optic to the community. This has been in place since 2008 and runs via the APY lands of South Australia.



Landlines

Landline connections are available to most agencies and residences. However, only 4% of First Nations residents surveyed had landline phones installed at their household.



Fibre to the premises

There are Telstra fibre connections to the school, police station and health clinic.



ADSL access

All other community agencies and residences rely on ADSL via copper network or mobile data, which has low penetration in most buildings.



Public phones

There are two public phones in Warakurna community – at the community office and by the Community Care Centre – and one at Warakurna Roadhouse. Public phones are well used by residents, especially by the elderly and those without mobile credit.



Low Earth Orbit (LEO) satellite services

At the time of our visit, several Warakurna Roadhouse staff and police had residential Starlink services, but no First Nations households. No agencies had Starlink, however the police facility was planning to have a Starlink enterprise grade service installed.



nbn services

Warakurna is designated as a satellite delivery zone under nbn planning. However, due to having 4G coverage, there is low household uptake of Sky Muster services in the community, with most usage by service providers.



Public Wi-Fi

nbn installed a community-wide Wi-Fi network in October 2022 to provide free Wi-Fi services to three access points in residential areas in Warakurna. Warakurna community office also has public Wi-Fi available during work hours. Previously Ngaanyatjarra Media provided free Wi-Fi since 2009.

Media services



Radio services

- + Radio NGM 107.7FM (provided by Ngaanyatjarra Media)
- + Warakurna RIBS studio not staffed at time of visit
- + No other radio services operating.



TV services

TV services are only available via VAST direct-to-home satellite, which provides access to all Freeview services and ICTV. However, 56% of those surveyed did not have VAST TV working.



Newspapers

There are no newspapers available locally, including Koori Mail.

Figure 5: Warakurna community layout (Artwork by Tracy Yates 2011)



4. CHANGES IN COMMUNICATIONS IN THE REGION

About the Ngaanyatjarra lands

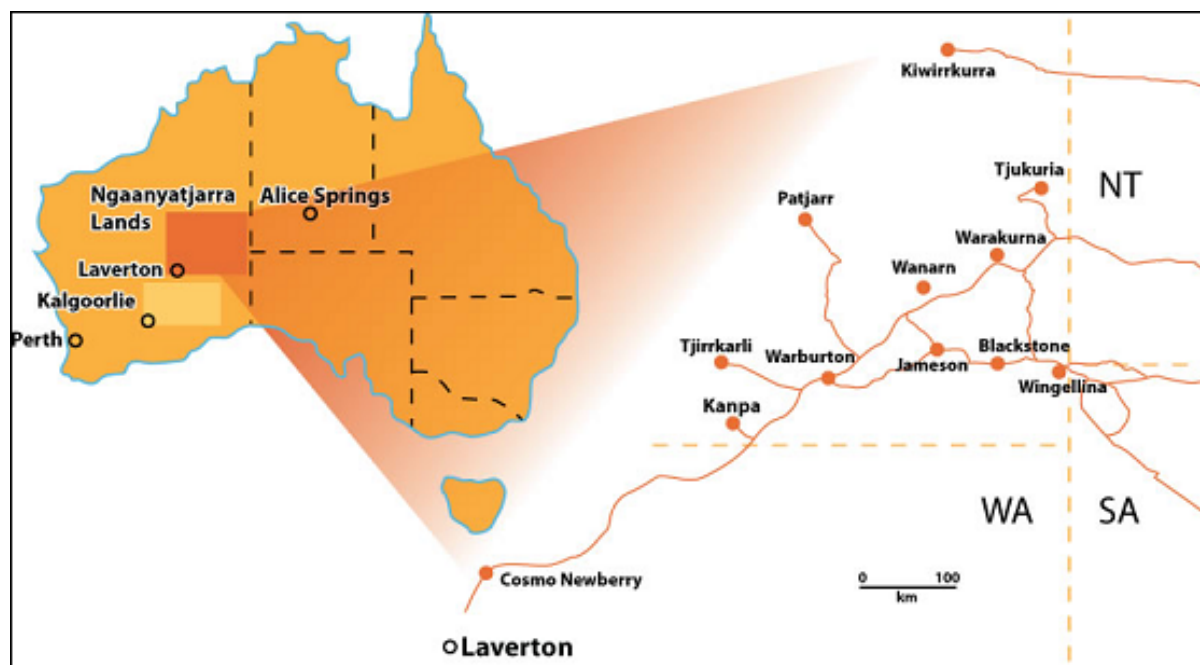


Figure 6: Location of the 12 communities on the Ngaanyatjarra Lands of WA

The region is relatively unique in its coordinated governance and service delivery model through two primary agencies – Ngaanyatjarra Council (based in Alice Springs, which coordinates services including the Ngaanyatjarra health service, Community Development Program (CDP), land management, aged care, transport and buying service, oversight and administrative support of the 12 communities) and the Shire of Ngaanyatjarraku which coordinates municipal programs and youth development programs. These two agencies have been very proactive over the last 20 years in successfully advocating for improved telecommunications in the region, as outlined below.

Changing modes of communications

Traditional modes of communication by *Yarnangu* (Ngaanyatjarra people)⁴ include oral speech, hand signs, facial gestures, rock and body art, *Turlku* (dance/ song), *Tjukurrpa* (Law/dreaming), *Mirlpa* (sand drawing), smoke signals, message sticks and more. While many of these communications modes remain actively used today, western communications technologies have been rapidly adopted as they have become available. This has facilitated communications and social networking within and beyond the region and with service agencies located in Alice Springs, Laverton, Kalgoorlie, Perth and elsewhere. The traditional and changing nature of communications by Ngaanyatjarra people has been richly documented (See Kral 2012, Kral and Ellis 2020).⁵

⁴ A collective grouping of people from Western Desert language groups – Ngaanyatjarra, Ngaatjatjara, Manyjilyjarra, Pitjantjatjara, Pintupi, Luritja – as well as neighbouring groups including Martu Wangka and Wongatha.

⁵ Kral, Inge. (2012). *Talk, text and technology : literacy and social practice in a remote indigenous community*. Inge Kral. Bristol ; Buffalo : Multilingual Matters; Kral, I & Ellis, E.M. 2020, *In the Time of Their Lives. Wangka kutjupa-kutjuparringu: How talk has changed in the Western Desert*. Perth WA: UWA Publishers.

The Ngaanyatjarra Lands' remoteness has made telecommunications a challenge since the establishment of the Warburton Mission in 1934 and the Giles Meteorological Station near Warakurna in 1956. HF radio was the primary means of communications from the 1940s to the 1980s, initially facilitated by the Royal Flying Doctor Service as a means of emergency communications. HF Radio was popular among *Yarnangu*, who used it for group conversations in language across the lands, and to arrange cultural business and regional meetings and events. The HF Radphone system (an operator-assisted service connecting HF radio to telephone) had a single channel, with calls having to be booked and public over the network.

Arrival of telephony

In about 1987, Telecom Australia (now Telstra) set up the first telephony system in the region using a Digital Radio Concentrator System (DRCS) solar-powered microwave repeater network. A series of large towers were constructed across the lands at 40–50 km intervals, enabling lines of up to 13 repeaters to extend from the exchange to communities up to 600 km away. The DRCS network provided up to 127 lines for voice and low speed data traffic (maximum 9.6 kbps), with local copper networks installed. This enabled service providers to communicate directly via phone and fax (the primary means of distributing public notices, purchase orders and written information). Public phones were installed for residents' use.

By the mid-1990s the DRCS network was plagued by issues of congestion, an insufficient number of lines, repeater batteries going flat during overcast periods, frequent breakdowns and outages and insufficient speeds for internet or EFTPOS use. Warburton was transferred to an Iterra satellite system to reduce congestion, however this proved to be very slow and highly unreliable. The region continued to struggle with very poor communications services for several years, despite a fibre optic network being rolled out in the neighbouring APY lands in South Australia in 1998 (this was extended to Irrunytju and Blackstone in 2000). Exchanges were overloaded and unable to meet increasing demand. The repeater network was upgraded, with the replacement of DRCS by the new Higher Capacity Radio Concentrator (HCRC) system in 2002. This provided more phone lines and improved reliability, however at a maximum 19.2 kbps, it enabled only very basic dial-up internet or email access.

Radio and TV services

Warburton community was the first site to have a TV broadcast service from the late 1980s. Community radio and video broadcasting was introduced in the region via the Broadcasting for Remote Aboriginal Communities Scheme (BRACS), initially in three communities (Irrunytju, Tjukurla and Kiwirrkurra) from 1991, before expanding to the other nine communities from 1996. A remote Indigenous media organisation was established in 1991 (Irrunytju Media, changed to Ngaanyatjarra Media in 1999), to provide media training and support across the region. A cross-regional radio network 5NPY was established in 1998 with Pitjantjatjara Yankunytjatjara (PY) Media. The lack of effective communications services and satellite capacity limited the establishment of a dedicated Ngaanyatjarra radio network until 2012. Ngaanyatjarra Media played a key role in supporting Yarnangu access and engagement with media and communications services throughout the 2000s, including production and broadcasting of local community and cultural content (see Featherstone 2011, 2012, 2015).

Need for improved broadband communications in the region

Internet access was primarily via satellite up until the late 2000s, with the schools, health clinics, police stations, community offices and other agencies paying high rates for broadband satellite services that often did not meet their needs due to speed, latency or reliability issues. Telstra rolled out a subsidized

satellite service in 2003,⁶ however this was intended for basic internet use, allowing only 1GB of data per month. There was no residential access to this service.

From the early 2000s, Ngaanyatjarra Council and the Shire of Ngaanyatjarraku advocated for improved telecommunications infrastructure and services in the Ngaanyatjarra Lands, describing existing infrastructure as “grossly inadequate”, further entrenching “welfare dependency” and limiting Yarnangu access to “social and economic opportunities”.⁷ A 2001 report on telecommunications needs in the region reported:

- + *It is extraordinary that in such a developed nation as Australia that the people of the Ngaanyatjarra Lands have such limited access to basic items as telephones [with existing phones] mainly accessible only to non-Indigenous staff members. With few exceptions, houses occupied by Aboriginal people on the Lands are without residential telephones. (Farr et al, 2001)⁸*

Ngaanyatjarra communities in the region had very poor connectivity until the late 2000s, with no mobile services in the region.

UHF radio network 2003

A UHF radio repeater network was installed by the Shire of Ngaanyatjarraku in 2003, using Networking the Nation funding. This was highly utilised by Yarnangu, enabling free communications throughout the region on shared channels, often with multiple concurrent conversations underway in language. Having communications access in cars when travelling on roads and bush tracks provided improved safety and the ability to call for support if broken down. This resulted in reduced burning of bushland, the previous means of signalling a need for assistance. Despite its popularity, the UHF radio network fell into disrepair after a few years due to wind damage to some towers and a lack of recurrent funding to maintain the batteries on repeaters, mostly located at the tops of hills.

Ngaanyatjarra Lands Telecommunications Project

Due to advocacy by Ngaanyatjarra Council, Shire of Ngaanyatjarraku, Ngaanyatjarra Health Service and Ngaanyatjarra Media, as well as the need by the WA Government for broadband services for schools and police stations in the region, a collaborative approach was taken to establish a regional communications network. After five years of planning and development, and with co-funding from WA Government, Australian Government, the Shire and the winning tenderer Telstra, the \$5.8million Ngaanyatjarra Lands Telecommunications Project (NLTP) was officially launched in April 2008.



Figure 7: The fibre optic cable being laid near Blackstone community (Photo: Daniel Featherstone/ Ngaanyatjarra Media)

⁶ Two-way satellite services were rolled out under the Extended Zones program.

⁷ Thurtell, J. 2002. Submission to the Regional Telecommunications Inquiry. Perth, Shire of Ngaanyatjarraku and Ngaanyatjarra Council.

⁸ Farr, P; and MC Media Associates. 2001. Networking the Ngaanyatjarra Lands- Strategy for Roll Out and Support Services (Final Report 2nd May 2001). Prepared for Ngaanyatjarra Council by Peter Farr Consultants Australasia & MC Media and Associates, funded by Networking the Nation. Ngaanyatjarra Council, Perth.

The Project included the rollout of 400km of fibre optic cable connecting the six larger communities in the region – Warburton, Warakurna, Wanarn, Mantamaru (Jameson), Papulankutja (Blackstone) and Irrunytju (Wingellina). This extended on the existing fibre optic cable network installed in the Anangu Pitjantjatjara Yankunytjatjara (APY) Lands in South Australia in the late 1990s, originating at the Stuart Highway near Indulkana and ending at Blackstone. Local exchanges were upgraded at each of the six sites enabling fibre connections to schools and multi-function police facilities in Warburton, Warakurna and Blackstone, along with business-grade DSL services to health clinics, community offices and Shire facilities. ADSL services were also available to other agencies and residential houses via the existing copper network in communities. This enabled reliable broadband access for the first time in these communities, replacing reliance on satellite services. The HCRC microwave repeater network became redundant for delivery of phone services to these sites but was still required for the smaller communities.

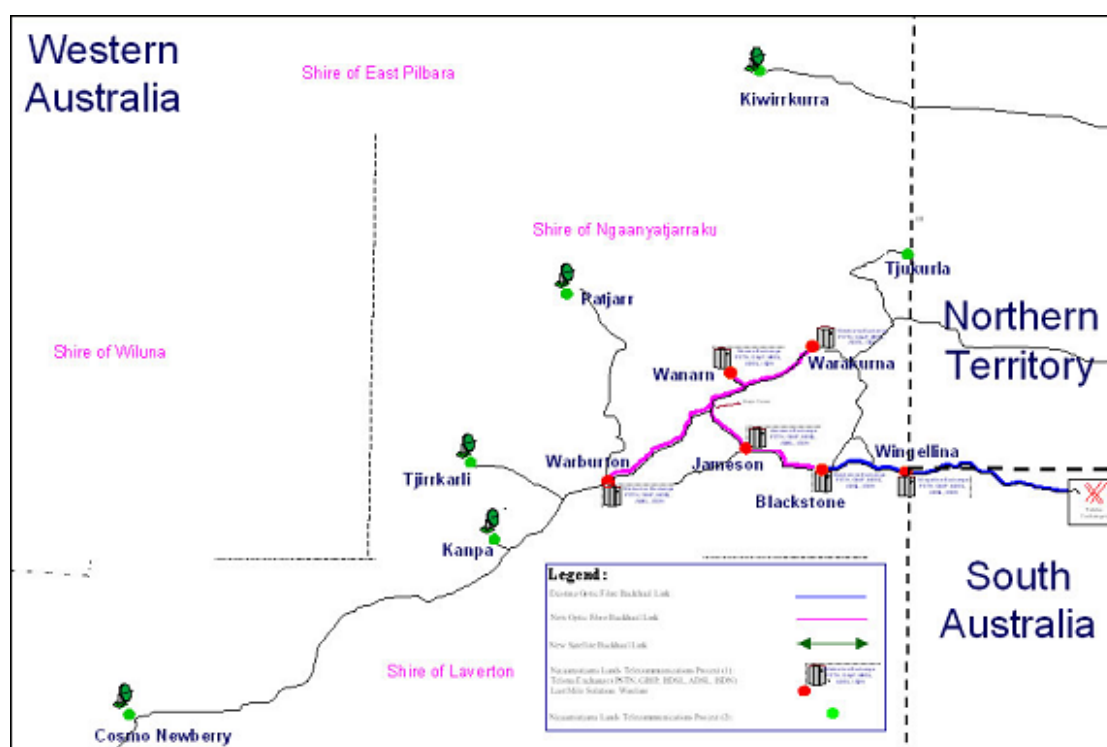


Figure 8: Map showing fibre path of optic rollout (in pink) to six communities, with satellite solution for remaining six communities under NLTP Stage 2 (Figure courtesy of WA Government, 2006)

In 2010, Ngaanyatjarra Media completed Stage 2 of the NLTP project, providing a broadband satellite service to the remaining six smaller communities – Tjukurla, Tjirrkarli, Patjarr, Cosmo Newberry, Kiwirrkurra and Kanpa, and free public Wi-Fi hotspots in all twelve communities. Concurrent with this project, Ngaanyatjarra Media established the regional Media and Communications Centre in Irrunytju as a hub for supporting twelve on-line media centres in the region, which was opened in September 2008.

An article detailing the rollout and impact of the Ngaanyatjarra Lands Telecommunications Project, along with a range of initiatives to support community access in the 12 Ngaanyatjarra communities, is available online (Featherstone 2011).⁹

⁹ See:

https://www.researchgate.net/publication/289248976_The_Ngaanyatjarra_Lands_Telecommunications_project_A_quest_for_broadband_in_the_Western_Desert

Mobile services in the Ngaanyatjarra region

The fibre backhaul enabled 3G mobile services to be installed in the region, initially in Warburton in 2009 and later to the other five communities in 2012–14 under WA Governments' Regional Mobile Communications Project.¹⁰ This led to immediate uptake of mobile services across the region, with Yarnangu (Ngaanyatjarra people) primarily choosing pre-paid services. In 2019, the mobile services were upgraded to 4G in five communities, addressing speed and congestion issues. Wanarn is the only one of the six larger communities yet to be upgraded from 3G, but will have 4G replacement by June 2024, when all Telstra 3G services are scheduled to be switched off nationally.

In recent years there has been small cell mobile coverage rolled out in most of the other communities in the region, including some due for completion in 2023. These have mostly been funded under the Australian Government's Mobile Black Spot Program (MBSP) funding, with WA Government co-investment. Kiwirrkurra community, to the north of Warakurna and 200km west of Kintore, had a satellite small cell service installed in June 2021. Based on community request, this service has content filtering.¹¹

Cosmo Newberry community to the south of the Ngaanyatjarra Lands along the Tjukuraru Road, had a Telstra mobile small cell installed in September 2020, with an Optus small cell installed at nearby Tjukayirla roadhouse in December 2020. Also under MBSP Round 5 was funding for Telstra 4G small cells to be established in the small communities of Tjukurla (due December 2023) and Kanpa and Patjarr (due 2024). To the south, Optus received funding to upgrade the 3G small cell at Ilkurlka Roadhouse to 4G, which was completed in October 2023¹² (Source: Penny Griffin, WA Government).



Figure 9: Optus small cell at Tjukayirla Roadhouse (Source: Facebook page)

Changes since then

nbn provided improved and relatively affordable satellite services from July 2011 with the Interim Satellite Solution, and later the availability of nbn Sky Muster services from 2016. Residents still rely primarily on pre-paid mobile access and pay premium rates to use online services.

The introduction of Starlink low earth orbit satellite service since 2022 provides an alternate high-speed, low-latency broadband service, with initial uptake in the region by non-Indigenous staff and agencies in 2023. WA Police were in the process of rolling out Starlink enterprise grade services to all Multi-Function Police Facilities (MFPFs), police stations and police vehicles in remote and very remote areas.

¹⁰ https://www.commerce.wa.gov.au/sites/default/files/atoms/files/rmcp_newsletter_aug_2014_0.pdf

¹¹ To the authors' knowledge, this is the only Telstra mobile site with content filtering in Australia. Mobile services typically do not have any content filtering, though Optus has put content filtering on small cell services in some sites.

¹² Ilkurlka on p 15 was upgraded to 4G in April 2023 but there was an overheating issue that impacted performance until October 2023 when finally resolved.

5. KEY FINDINGS FROM DATA ANALYSIS

This section provides key findings from the 11 interviews undertaken with community members and stakeholders during our first visit in February 2023, as well as observational data and survey results.

See Appendix 1 for the full set of unprocessed survey results. Please note that the raw survey results provided in this report may vary slightly following data cleaning and weighting against ABS data.

As this was the first visit to Warakurna, it was not included in the [2023 Outcomes Report](#) or on the [First Nations dashboard](#) of the Australian Digital Inclusion Index website. Warakurna will be included in the 2024 report and dashboard.

Communications access

Quality of communications services in the region has improved significantly

As outlined in Section 4, the Ngaanyatjarra Lands relied on HF radio as a primary means of communication up until the late 1980s when telephones were introduced into the region.

- + *"[We had HF] radio in little wiltja [shelter] for talking on the radio. Everyone used to have it in each community ... Then they got the phones started coming in, the public phone, that was the only way people could make a phone call ... Now there are mobile phones which are better." (Devon Yates, Warakurna Community Chairperson, 2023)*

Since the rollout of the fibre optic network in 2008, the quality and range of communications services has greatly improved, as reflected by some long-term staff.



"When I first started [working at Warburton in 2008] there was no mobile coverage. [3G came in 2009 and now it's 4G]. It definitely helps [with working] from home, it's a lot faster. The internet at the school is a lot faster. They've upgraded that as well. [We] used to have to wait like 40 minutes for log ons for the computers in the morning at school. [Now we have good Wi-Fi and] use iPads, it's a lot easier these days in the classroom."

- *Craig Alexander, Principal, Warakurna School, 2023*

- + *"We had no mobile phones when I first got here [12 years ago], they came in [about] eight years ago. And it's changed massively because I was on dialup internet which was useless." (Kim Seamons, Ngaanyatjarra Health Community Care, Warakurna, 2023)*

Pre-paid mobile is the primary means of phone and internet access

79% of respondents own or share a mobile phone, of which 100% were smartphones and 100% used pre-paid services. 93% of people said they use their smartphone as their primary means of internet access. Only 25% used a desktop computer, mostly in the Centrelink office or other shared facilities.

90% of survey respondents said they use a mobile phone for making phone calls, with 35% using the public phone and 25% using a phone in the community office or workplace (multiple choice question). 4% of respondents had a fixed line phone in their home.

There are two Telstra public phones within Warakurna community, located at the community office and by the women's centre, as well as one at the Roadhouse. All provide free calls. As described above, the public phones get regular use by residents, particularly elderly people and those without mobile phone credit, with 67% of respondents saying the public phone is reliable.

Of respondents using pre-paid mobile phones, some need assistance from a family or staff member to activate a new SIM due to not having a driver's license or email address.



Figure 10: Renisha Yates using the public phone near the women's centre

- + *"People with ID or a license, they activate [the SIM for] their families. [Sometimes people have to] go Alice Springs and do it." (Jeannie Pegg, Co-researcher/resident, Warakurna, 2023)*

The mobile service is relatively fast in Warakurna, but the roadhouse has a weak signal

As outlined throughout this report, the Telstra 3G/4G mobile coverage covers Warakurna with a strong signal and is relatively reliable.

However, we heard that the signal is relatively weak at the Warakurna Roadhouse and surrounding facilities, including the Multi-Function Police facility and staff houses, Giles Meteorological Station, Ngaanyatjarra Council training facility and the airstrip. There were calls for a booster to be set up at the Roadhouse to service these facilities and the flow of visitors and service providers who pass through or stay at the Roadhouse.



Figure 11: 3G/4G mobile tower

There is also very limited mobile service on the Great Central Road.

- + *"There's not that much range at all. [You drive] out of Warakurna and it stops working." (Lara Smith and Jacob Gerrard-Brown, Warakurna Artists, 2023)*

There is low household adoption of Sky Muster or ADSL broadband services

Most Warakurna households do not have any form of fixed internet service such as satellite or ADSL, with only 4% of survey respondents with an nbn Sky Muster service at their home and no respondents with ADSL. 96% had no fixed home internet and relied on 4G or the community Wi-Fi for internet access.

Yarnangu residents expressed reluctance to sign up for Sky Muster services, primarily due to affordability of monthly bills on low incomes. Residents also cited challenges in the application process.

Local agencies and staff residences are primarily using nbn Sky Muster, which is meeting basic needs. However, we heard calls for more speed and data limits, with 4G providing better speed and lower latency.

- + *"[Sky Muster is] reliable but it's slow. [It] mainly works fine for just Zoom [but] sometimes we opt for just using the mobile hotspot, it is generally quicker. For*

really important meetings sometimes we'll go for that option just because it is a little bit more reliable ... I think when there are better options we'll probably take them." (Lara Smith and Jacob Gerrard-Brown, Warakurna Artists, 2023)

Community staff reported other issues with Sky Muster services, including congestion during afternoon peak periods, dropouts with cloud cover, and latency impacting on online applications such as gaming.

- + *"[Sky Muster] was pretty slow. When I tried to play video games on it, it was just unplayable. I couldn't play video games at all. The search time was super slow."* (Nathaniel Rosenberg, Warakurna Roadhouse Assistant, 2023)

nbn co have sought to address issues of speed and data limits with the new Sky Muster Plus Premium product, which has speeds of up to 100 Mbps and unlimited downloads. However, this product was not released until July 2023 and thus was not available at the time of our visit.

There was some initial uptake of Starlink LEO satellite by agency staff

Low Earth Orbit (LEO) satellite technology can help to provide high two-way data speeds for agencies reliant on high-bandwidth applications such as videoconferencing or the low latency needed for some cloud-based systems.

Starlink LEO satellite services have been available in Warakurna since late 2021, providing an option of high-speed, low latency broadband with unlimited data caps. While there was limited uptake of Starlink at the time of our visit, we spoke to a staff member at Warakurna Roadhouse who recently set up Starlink who gave a glowing review of the service.

- + *"It's like the fastest internet I've ever had. [In the city I had] nbn, it was like 60 megabytes per second, but this [Starlink is about] 170 megabytes per second. It's completely blown it out of the water. Yeah, it's been an overall great experience. [Now] I can play videogames online with my mates again, I can get that social fix [that] I don't usually get while working remotely."* (Nathaniel Rosenberg, as above)

We heard that some of the Warakurna police also had Starlink, with other staff in the community considering it for home and work. However the fixed monthly cost of \$139/month, as well as up-front equipment costs,¹³ compared with Sky Muster services was referred to as a barrier, with no uptake by First Nations households.

- + *"[It's] a bit on the expensive side with monthly subscription, but still worth it, because it's the fastest that we've got."* (Nathaniel Rosenberg, as above)

An app is provided by Starlink to assist customers with the dish install to ensure there are no obstructions such as trees blocking the satellite connection. We have been advised of a limitation of Starlink dishes only being operational up to 50°C, beyond which they switch off. As roof temperatures of well above 50°C would be common in the central Australian summer this may emerge as an issue, but was yet to be reported by Warakurna users. However we did hear about occasional dropouts most likely due to gaps between satellites while the constellation is still being densified.

- + *"Sometimes the satellite drops out. [maybe] once every three hours or [so]. Suddenly the internet will cut off [during a game] and it's just unplayable for the next 15 seconds and sometimes you lag out of the game."* (Nathaniel Rosenberg, as above)

¹³ At the time of our visit in March 2022, the up-front equipment cost of \$900 was being discounted by Starlink to \$450. This has since been discounted further.

Mobile communications enable dispersed families to stay connected and can save lives

Before mobile services were available in Warakurna, communication with dispersed family members was primarily possible in public spaces such as public phones, community office, or in other staff-mediated spaces during opening hours. During the 2000s, videoconferencing facilities were often used by people to maintain connection with family who were away from the community at boarding school, in prison, or in hospital. While these sessions were appreciated, access to videoconferencing facilities was limited, lack of privacy was an issue, equipment was costly and effort required to arrange sessions made it an unwieldy process.

For patients requiring dialysis, it is common to be away from family in Alice Springs or Perth, as dialysis support in Warburton and Wanarn is limited. The mobile phone service has made it easier for families to stay connected from home using personal devices.

- + *"[Some people] have to permanently move out of the community. It is very hard [to stay connected with family]. [One lady was flown out, to Perth where] they had to put her on dialysis. [Before we would] help family ring her [but now they can do it] with their own cell phones using Facebook [or] Messenger." (Karen Higgins, Remote Area Nurse, Warakurna Clinic, 2023)*

The ability to connect with family can significantly impact a person's physical and mental health, and in some cases, their will to live.



"With [Ngaanyatjarra] people the connection to the land and their families [and] community is massive ... It's probably 90% of [maintaining] mental health. [Without that contact] they are just going to pass away because they get sad and [lose hope].

When [an elderly resident had a] heart operation, she was five weeks in ICU [where she] was intubated [but] every time [they removed the tube] she flatlined [pulse stopped]. [So I told] the ICU nurse [that I would] get her family to talk to her [and I told her sisters to] tell her whatever you want to tell her. [And] three hours later [the nurse] rang back and said, "We've taken [the tube] out and she's fine". [That connection to family], it's massively important."

- Kim Seamons, Ngaanyatjarra Health Community Care, Warakurna, 2023

Social media is a primary means of communication, with limited use of email

Social media is a primary means of communications and accessing news and information for most residents (60% of those surveyed use it to keep in touch with family or friends). The primary platforms used are Facebook, TikTok (preferred choice for younger people) and Instagram.

Co-researcher Renisha Yates described the primary means of communication for young people.

- + *"Mobile phone, social media, message each other, [and] talking to each other. [And I'm] on a WhatsApp group for my church group. [I also use group chat on Facebook Messenger] and Facebook Live. [Mostly social media is how] we contact people." (Renisha Yates, Co-researcher/ resident, Warakurna, 2023)*



Figure 12: Co-researcher Renisha Yates using mobile

Email is not commonly used by Yarnangu other than for work purposes or to set up online services.

- + *"Some [have email for work or to] contact white people. [We mostly] use text [or Messenger] rather than email. Only white people use the emails." (Jeannie Pegg, Co-researcher/ resident, Warakurna, 2023)*

Dropouts and outages can have significant impact on services, with more backup systems needed

While the mobile service is mostly reliable, there were reports of occasional dropouts and outages.

- + *"[The mobile service] tends to go down more than the Wi-Fi goes down. Sometimes there is no reception and people [can't] do their banking on their phone ... It tends to be that it's down maybe a couple of days in a row and then it will be good for three months and it's not an issue. It's not like it's happening every week." (Lara Smith and Jacob Gerrard-Brown, Warakurna Artists, 2023)*
- + *"[Mobile can sometimes go off] maybe a couple of days, then it came back on. [When it goes off, people] use the Wi-Fi, Warakurna free Wi-Fi." (Jeannie Pegg, Co-researcher/ resident, Warakurna, 2023)*
- + *"[Or] they've got to use a public phone to contact people in other places. It always works." (Renisha Yates, Co-researcher/ resident, Warakurna, 2023)*

Interviewees reported a major outage in July 2021, during the COVID-19 restriction period, due to damage to Telstra's fibre optic cable in South Australia.

- + *"We had an outage for three weeks [in 2021 which left us without] internet or mobile ... It was because there was diggings around cables over on the APY Lands and they couldn't pinpoint exactly where it was. So they were looking for where this one piece of wire was not linked and it was over in Kanypi [in SA]." (Gina Livesay Sutton, Warakurna Community Development Advisor, 2023)*

Fortunately, the Warakurna Community office still had internet access via nbn Sky Muster. However other facilities reliant on ADSL, including the Warakurna store, were without connectivity and unable to use EFTPOS or ATM.

Regular dropouts in the ADSL service have become an ongoing issue for the Store, impacting on sales and food security. The community are looking at getting a satellite backup service installed to prevent the impact of outages or dropouts.



Figure 13: Warakurna community store

- + *"The store has their internet go down quite a bit [so we're] looking into getting better internet because it's so important with their transactions that need to be done on a day-to-day basis." (Gina Livesay Sutton, as above)*

Outages have impacted on operations at the Warakurna Remote Community School, which is fully reliant on fixed line connectivity, as well as delivery of classes.

- + *"There's been a week where we've been without any internet or phone coverage, which makes it really hard when the school is pretty reliant on that stuff to*

engage the students, [so] when it goes down, it's pretty hard because a lot of it is digital now." (Craig Alexander, Principal, Warakurna School, 2023)

Power outages also impact on connectivity, with all power supply in Warakurna provided by a local diesel generator. Satellite services and Wi-Fi are reliant on mains power, usually without battery backup. Mobile and fixed line phone services continue through short outages with battery backup at the exchange, but this is limited to a few hours. Some outages can also last for days or weeks due to waits for parts or technical support.

During power outages, the Warakurna Store has to close due to a lack of power and internet backup. However, Warakurna Roadhouse has a backup generator to continue providing food and fuel supplies when the community power or internet is out. It also has a Sky Muster satellite service which is not impacted by Telstra outages.

There were calls for mobile services in the smaller communities and on the highway

Warakurna Clinic staff provide outreach support to the nearby community of Tjukurla, about 150 km northeast of Warakurna. However, remote and emergency support is hampered by the lack of mobile phone service or other reliable means of communications.

- + *"The only big issue is Tjukurla ... which is hard to look after ... there's no permanent clinic there. At the moment we are going there once a month or so ... [But communications is] really, really bad ... That one community we have ... there's no [connectivity] whatsoever [so] trying to get hold of them [is difficult] so not sure what the long term plan is with that community. ... I couldn't live there, there's just – if you have internet connection you can live somewhere, you are still connected to the world but there there's just nothing." (Karen Higgins, Remote Area Nurse, Warakurna Clinic, 2023)*

Warakurna Artists support artists in Patjarr (Karilywara) community, however communications are very limited.

- + *"When we do bush trips out to Patjarr, there's no reception, the main art house does have Wi-Fi [but it barely works]. Usually it's just off the grid when we're there." (Lara Smith and Jacob Gerrard-Brown, Warakurna Artists, 2023)*

There were calls by elders for the three smaller communities of Tjukurla, Patjarr and Tjirrkarli to have mobile communications. They said it is increasingly difficult to retain families, especially young people, in these small communities without reliable communications.

- + *"[The three smaller communities of Tjirrkarli, Patjarr, Tjukurla will] be growing then rise up soon because people are going to start going back to the communities. [If they have mobile coverage] people will hopefully move back. We want to encourage families, because Patjarr they got their land back last year and they've got [the Wampuru] ranger program [for] 10 years, joint management with the Western Australian government." (Elizabeth Ellis, Cultural Curriculum Coordinator, Ngaanyatjarra Lands School, 2023)*

The Art Centre coordinators agreed that lack of communications can be a factor in people living in small communities, but other services are also needed.

- + *"[Lack of communications] just adds to one of the lack of services in these places. Particularly in Patjarr ... people can get a bit stressed because there's no clinical nurse out there. So people might want to be out there [full-time] but*

without a reliable phone source and a nurse there, anything could kind of go wrong.” (Lara Smith and Jacob Gerrard-Brown, as above)

There were also calls for more mobile coverage along the Tjukururu Road (Great Central Road), which is currently unsealed for about 1100 km from Kaltukatjara (Docker River) to Laverton.¹⁴ There is only limited mobile access in the vicinity of the communities along the way – Kaltukatjara, Warakurna, Warburton and Tjukuyirla Roadhouse. There have been a number of accidents on the unsealed road, with police and clinic staff, who are often the first responders, reliant on satellite phones for communications.



Figure 14: Tjukururu (Great Central) Road

- + *“In an emergency like that, all you can do is provide first aid, pack them up and come to a clinic ... [We do carry] satellite phones in the cars.” (Karen Higgins, Remote Area Nurse, Warakurna Clinic, 2023)*

Lack of local technical support increases cost and repair times and can require travel for support

With no local technicians based in the Ngaanyatjarra Lands, calls for IT support from technical contractors in Alice Springs, Kalgoorlie, or further afield typically involve high costs and time delays. For Telstra faults or outages, the closest technician is based in Yulara, about four hours' drive east of Warakurna.

- + *“We need a [Telstra] tech [based] on the Lands ... And we need equipment based out here so they're [not] having to wonder what to bring with them. [Often they say] ‘now we've got to wait for the diggers [or] wait for this’. If you had it all somewhere in a central point, it'd be a lot quicker.” (Gina Livesay Sutton, Warakurna Community Development Advisor, 2023)*

Access to IT devices, Wi-Fi or shared facilities

The Centrelink agency has community access computers, as well as the media centre

The Centrelink agency, located in the Warakurna Community office, is open weekdays and has three computers available for accessing Centrelink, banking and other government services. These computers are supported by Ngaanyatjarra Council in partnership with Money Mob and Westpac, who have been doing financial literacy training in the lands. Jenelle Mitchell provides mentor support for people to use online services on phone and access computers.

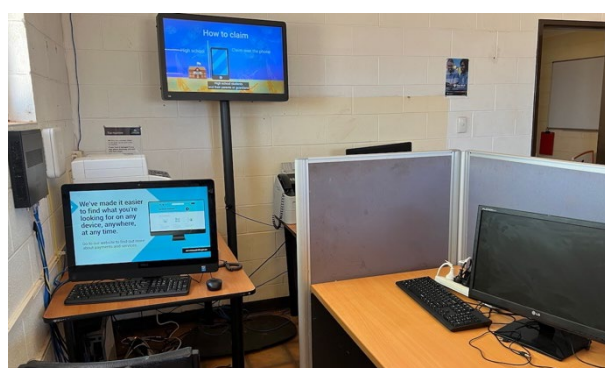


Figure 15: Access computers in the Centrelink agency

¹⁴ The Tjukururu Road is planned to be fully sealed in coming years as part of plans for the 2700 km Outback Way tourist route from Winton in Queensland to Laverton in WA (<https://www.outbackway.org.au/>). The section from Kata Tjuta to the NT border has been sealed in the last decade as the first part of this upgrade.

Services Australia also provides free Wi-Fi for use by Centrelink clients. However, there is currently limited access to computers for other purposes, including learning or creative projects.

- + *"[The Centrelink] computers are for Centrelink and MyGov and banking. [We need some] computers here that would allow people to go in and use it just for training themselves." (Service provider, Warakurna, 2023)*

At the time of our visit, Ngaanyatjarra Media (NG Media) was re-establishing the Warakurna media centre as a community access facility, equipped with six online computers and free Wi-Fi. At the time of our visit, NG Media was waiting on the Starlink satellite service to be installed to enable internet connectivity to the centre. The CDP provider was keen to work with Ngaanyatjarra Media to enable CDP participants to access the computers to develop digital skills.

- + *"NG Media [have] set up of a suite of computers [so I want to] see if we can use some of those [for CDP participants to learn on] even if it's a couple of hours in the morning." (Service provider, Warakurna, 2023)*

Two NG Media staff now live in Warakurna community – Radio Coordinator Poppy Cullen and the Community Resource Centre Coordinator – and support access to the facility during business hours on most weekdays.

A free nbn community-wide Wi-Fi pilot provides Wi-Fi coverage to residential areas

Warakurna is one of four pilot communities to have a community-wide Wi-Fi pilot project installed by nbn as part of a trial to provide free broadband access. While nbn have also installed 112 Wi-Fi hotspots in 99 communities (Source: Sam Di Marco, nbn co 21/3/23), the community-wide Wi-Fi model is designed to address demand for connectivity near homes in residential areas, rather than at a central hotspot.

The Community-wide Wi-Fi pilot project is outlined as a case study in Section 6.

Service delivery and use of online services

The community office provides regular support in the use of online services

Despite mobile and Wi-Fi access being available at home, there is still a high reliance on the community office for assistance with online banking and other services. Sometimes this is for privacy or security reasons, to avoid log-in details being shared with family members.

- + *"A lot of people still come into the office to do their banking ... I say to them, 'You can do this online.' 'Oh, yeah, but can you help me out?' I know full well people can do a lot of the things, but [some] people can't. [Or] they [are concerned about humbug from family members if they] know that they've got their details at home ... So [it's safer to say] I have to go back to the office to check all that." (Gina Livesay Sutton, Warakurna Community Development Advisor, 2023)*

Warakurna CDA Gina Livesay outlined obstacles faced by residents in using online services at home.

- + *"Phones are shared within families, so details aren't safe and secure ... There's [over] crowdedness in the houses [and] there's no privacy to be able to do those things. The internet coverage for the Wi-Fi is not in the house, it's outside of the houses ... There is limited money in the house for people to buy phone cards and to be able to top up their internet on their phones. The phone, the Wi-Fi going down, the powerhouse going down, which happens a great deal. [Some people don't have an email address or] they're unaware of how to use it." (Gina Livesay Sutton, as above)*

As a result, office staff provide support to elderly people and those with low digital ability.

- + *"More the elderly and where English is very, very limited [or] where people may have mental health issues ... We tend to help [those groups] out a lot more [with] their banking [or] Medicare [or] myGov, it could be can you ring up and check when my licence is due ... anything at all that we take for granted [but] it's such a challenge for a lot of people." (Gina Livesay Sutton, as above)*

However, providing digital support rather than teaching independent use of online services can create dependence on the community office staff, leading to requests out of hours.

- + *"When the office closes on the weekend, I still have people coming up to my house going, can you do my banking for me? And I say, this is why you need to be in charge of your own money story because you won't have to rely on me. [I usually say no but sometimes] people are hungry and in those cases I tend to help out." (Gina Livesay Sutton, as above)*

Telehealth is being used successfully at the clinic

The Warakurna Clinic is managed by the regional Ngaanyatjarra Health Service (NHS) and provides primary health care as well as emergency care. Remote Area Nurse Karen Higgins described the importance of connectivity.

- + *"[Without] communication we won't be able to work, basically. So the phone is our lifeline, internet as well." (Karen Higgins, Remote Area Nurse, Warakurna Clinic, 2023)*

The clinic has fibre optic connectivity which provides sufficient quality and reliability for telehealth consultations. Telehealth is being used regularly at Warakurna Clinic, particularly since COVID restrictions in 2020–21, when WA's border closure limited access by visiting specialists.

- + *"During Covid, we were doing a lot more [telehealth]. We were having to because we couldn't get anyone in and out, we were closed by a security zone. We are starting to use it more now ... they've done a roll-out [of equipment] at Warburton and [will upgrade Warakurna soon]." (Kim Seamons, Ngaanyatjarra Health Community Care, Warakurna, 2023)*

Telehealth can improve health outcomes through more immediate diagnosis and treatment, reduce patient travel costs to regional centres for consultations, reduce emergency evacuation flights, and provide expert support to clinic staff.



"We do a lot of telehealth phone calls [and] are starting to do a lot more [video]. But [we can also send a photo of a wound] to RFDS or to a doctor ... and get advice. [Or] you can take a photo of the ECG [at any time and], send it straight off to the RFDS. So it's been massive having all of this."

– *Kim Seamons, as above*

The use of telehealth consultations was described as reasonably user-friendly.

- + *"We do a lot of video consults with the doctors because it's [best] if the doctor can see the patient directly and talk to them, that just makes everything so much easier ... So the doctor sends us an email with a link, [we] click on the link and then we both come up on the camera and we look at each other, so usually it's very straightforward ... We have [several] outpatient appointments here [from]*

the hospital [but the main] challenge is to get the patient in [to the clinic].” (Karen Higgins, as above)

Telehealth is reasonably common practice now with patients preferring the online service to having to travel over 800 km to Alice Springs for a consultation. Patients are more likely to feel comfortable doing a telehealth consultation with one of the NHS doctors who is familiar to most patients in the community.

- + *“Aboriginal people seem to like the face-to-face an awful lot more than just talking [on the phone. They] like to see who [they]’re talking with, there’s no cultural issues really. The [NHS doctors] have been here very long term and they know [the] patients very well.” (Karen Higgins, as above)*

While telehealth reduces some travel, emergency evacuation travel is still needed for procedures which cannot be undertaken at a remote clinic. This is often the result of people waiting too long before visiting the clinic for treatment, causing the situation to become chronic.

- + *“Even if the doctor sees the patient face-to-face [they] still need to be flown out [if] they really need to go off for procedures or emergencies.” (Karen Higgins, as above)*

While having connectivity with residents has significantly improved client support, it also means staff are always contactable, even when on leave.

- + *“[Having mobile now is] very good, except sometimes I wish people wouldn’t ring me ... when I was in Melbourne over Christmas for five weeks, everyone was ringing me constantly.” (Kim Seamons, Ngaanyatjarra Health Community Care, Warakurna 2023)*

The Communicare patient records system is working effectively

Clinic staff reported that the Communicare patient records system used by Ngaanyatjarra Health Service works well via the fibre optic connectivity. Prior to the fibre rollout in the 2000s, the inability of clinics to use Communicare reliably due to latency and slow speeds of satellite services was a key driver for demand for upgraded terrestrial telecommunications in the region.

The Community Care nurse also has access to the Communicare system at her house courtesy of a high-speed microwave link from the clinic.

- + *“It’s so much better [now] because I have full access to Communicare which [contains our] Health records. So I have full access to that so I can access it at any time which is great.” (Kim Seamons, Ngaanyatjarra Health Community Care, Warakurna, 2023)*

Education levels and student engagement have improved with digital tools and good connectivity

The Warakurna Remote Community School has a high-speed fibre optic connection with local networking to all classrooms. This enables use of IT equipment and applications by all age groups within the school.

- + *“[We use iPads with] the ECE [Early Childhood Education] class [for] educational games. [In the] middle primary [class], iPads are used for educational games but also a little bit for taking photos and doing some literacy. [For] high school, we’ve used laptops for typing and doing assignments [and] iPads, using apps like Procreate to create artworks and apps to create digital books as well. And also using computers to do resumes.” (Craig Alexander, Principal, Warakurna School, 2023)*

Former student Renisha Yates described the digital applications she used at school.

- + *"We used Procreate [to] create art [and] make shirt designs. [We also learnt to use iMovie to produce] videos." (Renisha Yates, Warakurna resident/ co-researcher, 2023)*

Warakurna school also moderates a Warakurna Facebook page, on which some girls at the school run a social enterprise to sell artwork and jewellery. This generates skills development opportunities, for example Renisha helped post local news stories on the Facebook page while doing work experience with Ngaanyatjarra Media.

While students have access to iPads and laptops at school, there is very limited home computer access.

- + *"People [are mostly] using mobile phones, there's not many laptops at home. [Students are] tech savvy when it comes to TikTok or any of those applications, a lot more than I am. [But as for] using Word and PowerPoint and educational apps, that's all done pretty much at school." (Craig Alexander, as above)*
- + *"It's good to put a computer in somebody's house so that the kids can learn, like high school kids ... That's forward thinking. They can do work [at home]." (Elizabeth Ellis, Cultural Curriculum Coordinator, Ngaanyatjarra Lands School, 2023)*

The lack of home computers made home schooling challenging during the relatively short COVID-19 lockdown period in 2021, so paper-based learning packs were distributed to students to complete.

- + *"We had a Yarnangu teacher for each family group [who] handed the [learning] packs out to the kids [and] collect[ed] the work packs up and then the teachers would assess it afterwards. [We also used the] Warakurna Facebook page as a place to keep accountability [and] put some content on there for the kids." (Craig Alexander, as above)*

On the positive side, the requirement to use online applications during the COVID-19 pandemic has resulted in increased digital ability among students.

- + *"Each group of kids coming up [is] getting slowly better with their digital literacy. I think COVID ... helped with that because we had to be a bit more tech savvy. [Digital learning in school increases with] staff who are really tech savvy, it helps with the students a lot more. [And] it depends on the reliability of the network and also depends on what school resources there are as well." (Craig Alexander, as above)*

In contrast to some sites visited, Warakurna school students are able to use the online NAPLAN tests. However, there are still challenges with some students having limited keyboard skills or English literacy.

- + *"We are slowly getting better and better at using the [online NAPLAN] software. [This is] the third or fourth year [we've used it]. We use iPad pros with the typing keyboard with the kids. [We still] have to build up the typing skills of the students, we find that part challenging ... It is also harder in an ESL context because [for] a lot of the kids, English is their second language so NAPLAN can be quite challenging for them." (Craig Alexander, as above)*

Elizabeth Ellis, the Cultural Curriculum Coordinator for the Ngaanyatjarra Lands School, has played a key role in developing the Yarnangu Connections curriculum. She describes the program as an inverted version of the standard curriculum taught within the classroom, instead having lessons delivered out bush with elders, and using emotions and all the senses as part of experiential learning.



Figure 16: Ngaanyatjarra Lands School office

- + *"We need to teach the children to be able to do that deep thinking so that they can learn to [use] descriptive language, to be able to describe what they saw ... that's what we learnt as children in the bush with our parents." (Elizabeth Ellis, Cultural Curriculum Coordinator, Ngaanyatjarra Lands School, 2023)*

There is a use of digital technologies – cameras, video cameras, drones and 360 cameras – to document bush activities. These digital materials are then used in follow-up activities in the classroom to consolidate the learning and encourage discussion. Digital technologies are also used in the two-way science elements of the school curriculum.

- + *"We're looking for more interesting ways to engage the students in two-way science [and] engaging on country with the elders [using tech within] the integrated curriculum and the Yarnangu Connections. We're very reliant on the knowledge of the elders and what they can pass on to the kids at the school [and on] bush trips. [That makes learning] more engaging for the high school students. [And] they like using that tech, [like] digital cameras [to photograph] animals or using drone footage to map areas. We've got a 3D camera that can capture [footage in country and then] re-experience it in the classroom [using VR]." (Craig Alexander, as above)*

The art centre uses a cloud-based system for art cataloguing and sales

Warakurna Artists is an Aboriginal owned and governed art centre based in Warakurna and also supporting artists in Wanarn community and Patjarr. Staff use the Story Arts Money (SAM) cloud-based database to catalogue the artworks, document artist biographies and stories, and record sales. While the system works on Sky Muster connectivity, uploading of large photo files can be challenging.



Figure 17: Warakurna Artists studio

- + *"I think for most of what we need it for it works fine [on Sky Muster], just making invoices and consignments and stuff. [But] it is very slow when we're uploading images [and] cataloguing takes a while, so that's a slow process [because we're uploading high-res images of paintings and artists]." (Lara Smith and Jacob Gerrard-Brown, Warakurna Artists, 2023)*

There has been training provided by peak body Desart for arts workers to use the SAM database, but currently most data entry is undertaken by the non-Art Centre coordinators.

- + *"In terms of cataloguing, it's pretty user friendly and easy to use ... people use it for a time and then they don't [use it regularly so] we don't really have lots of*

people that use [it at the moment].” (Lara Smith and Jacob Gerrard-Brown, as above)

Warakurna Artists are currently developing a new website to promote the artists’ work and enable direct online sales, rather than wait for works to be sold at exhibitions or by arts dealers.

- + *“Our website is desperately in need of overhauling [to] have a more direct point of sale here. [So] We are working on a new website ... it’s been a long time project [which was delayed during COVID but is] underway now. We’re trying to put some of those video assets into place. Hopefully we’ll [be] starting in March and then up and running as soon as the web developer can put it all together. [It will] be good to have [our sales] automated and online if we are going to do more point of sale in the future.” (Lara Smith and Jacob Gerrard-Brown, as above)*

Access to media and news services

Many households are without TV services

A case study in the 2023 Outcomes Report (Featherstone et al 2023)¹⁵ outlined a range of issues with VAST direct-to-home satellite television services, resulting in low levels of household access to free-to-air television services in remote communities across Australia. Our 2023 surveys found an average of 53% of households being without TV services in the 9 communities reliant on VAST services.

Installed around 2013 under a federal government digital switchover program, VAST TV services are no longer working in about 56% of Warakurna households. This is primarily due to either damage or failure of the satellite dish or cabling (21%) or failure of the set-top box (55%). Maintenance of VAST was made a householder responsibility, with no funding allocated for coordinated maintenance programs in remote communities. The cost of satellite technicians, including travel from Alice Springs, is prohibitive for individual households.



Figure 18: A UEC VAST set top box

The high cost of replacement (about \$400 at Warakurna store) is also a barrier to replacement for people on low incomes. Activation of the smart card in a new set top box is also challenging.

- + *“A few people have [VAST working in the] house. [They buy the black box from] the store [for] maybe \$400, something like that. Sometimes the [storekeepers help people to] activate it.” (Jeannie Pegg, Co-researcher/ resident, Warakurna, 2023)*

The high replacement cost of set-top-boxes has made theft an issue in Warakurna.

- + *“A lot of people when they go into the house, the VAST set box is no longer there ... So hence a lot of them won’t have TVs and stuff. [We have had] the board members asking if we can put a cage around the VAST boxes so that it’s locked up somewhere and up high.” (Gina Livesay Sutton, Warakurna Community Development Advisor, 2023)*

¹⁵ <https://apo.org.au/node/324397>. See case study on page 51.

Some digital TVs now include an in-built VAST satellite tuner to access VAST satellite services without the need for a separate set-top box. However this is generally for small TVs.¹⁶

Community staff and Council members expressed interest in re-establishing television broadcast services if this was a funded option, as it would save household maintenance and mobile data costs for residents.

Despite the lack of free-to-air television services in Yarnangu households, people find other ways to watch television, primarily YouTube and streaming services via 4G connectivity.

- + *"Some people [are] connecting the TV with a USB [or connecting via] Bluetooth [or] hotspot ... [to] watch YouTube."* (Renisha Yates, Co-researcher/ resident, Warakurna, 2023)

The data usage for these streaming services is however adding to household costs, given the high cost of pre-paid mobile data.

Local news and information is mostly shared in-person with First Nations media

Local news and information is shared via a number of community channels to keep the community informed of current events and upcoming activities, including the Warakurna Facebook page, community noticeboards and word of mouth.

Our survey found the most common sources of news and information are direct, in-person communication (90% daily), followed by Facebook (38% daily), local noticeboards or posters (60% weekly), commercial television (46% weekly), NITV (42% weekly) and Ngaanyatjarra Radio (29% weekly).



Figure 19: An example of a locally targeted COVID-19 health information poster

Radio NGM, the regional radio network operated by Ngaanyatjarra Media, provides locally trusted and relevant news and weather, information, community messages and music. The importance of Radio NGM for Warakurna residents was underscored in the survey data, with 40% of people surveyed listening to Radio NGM each week compared with 29% for ABC radio. However, there is low home radio use, with most listening in the car (90% of radio listeners). 21% of respondents said they never listen to the radio.

The Warakurna RIBS studio was not active at the time of our visit, but has since been re-activated with a full-time Ngaanyatjarra media staff member, Radio Coordinator Poppy Cullen, based in Warakurna. There was community interest in having local radio again.

- + *"[We want to] start the media again [to hear Warakurna stories on radio and across the region]. And recording the Tjukurrpa [the Dreaming – for the kids to learn]."* (DY, Warakurna Community Chairperson, 2023)
- + *"I want to see Ng Media going strong again to help keep our culture and language going."* (Survey comment, 2023)

Ngaanyatjarra Media have worked with the Warakurna School in recent years to introduce students to radio broadcasting and making videos.

¹⁶ <https://uec.com.au/products/vast-tv-products/idtv-32inch>

- + *"We've taken kids over to the media centre. Probably a couple of years ago they did little radio segments, played some music. I think Renisha was part of that team, it was with Miss Susan. We have worked with Ng media before when there was a filmographer and they made movies at each of the campuses which was really cool and that really engaged the students as well. And last year there was Mara came and did music with the kids and I think she worked with some of the high school kids and recording drums and stuff like that." (Craig Alexander, Principal, Warakurna School, 2023)*

To address this, the Warakurna CDA suggested that radio speakers be set up outside the community office and at the store.

- + *"We're hoping to get a radio [speaker setup outside the office] so that when people are waiting for the office to open, or even when they're just sitting outside under the shade, [people] have something to listen to, [they find out the news, and hear] the music that they like." (Gina Livesay Sutton, Warakurna Community Development Advisor, 2023)*

Affordability

Affordability is a significant concern, with high costs of living

Cost of living has always been an issue for Warakurna residents, however this has become more challenging recently with the cost of food, fuel and essentials rising further with higher freight costs.



"Here in the store, everything is so expensive for us ... The closest town is Alice Springs, but we still have to get things from the city, from Perth, and it takes three days [for] the truck come in from the coast with our stores. [So] it's really hard to keep our money."

- Daisy Ward, Community leader/elder, Warakurna 2023

With the average weekly personal income in Warakurna of \$305 (ABS 2021), the cost of internet access and digital devices are a significant burden. Yarnangu have to make decisions between food and other essentials and communications, with 19% of those surveyed saying they often or always cut back on essential household costs to afford internet, and 38% sometimes cutting back. 50% said they compromise on internet speed and/or quality to prioritise affordability. 38% of low internet users said one of the reasons they do not use the internet is "the internet is too expensive for me".

For affordability reasons, only 4% of those surveyed had a fixed home broadband service, with most people mobile only. 100% of those with a mobile phone are on pre-paid rather than post-paid services, with most using one to two \$30 recharge vouchers per fortnight. The average household expenditure on pre-paid recharge is \$93 per fortnight. There is a lack of information on how to reduce costs of pre-paid data by opting for higher value vouchers.

Pre-paid credit is a valued commodity in the community with demand by young people on parents and grandparents to buy smartphones and pre-paid vouchers, or share data via hotspots, to enable access to online content including social media, streaming and games.



Figure 20: A discarded mobile recharge card after use

There is high usage of the free Wi-Fi at the community office and the nbn Wi-Fi network now available in residential areas, particularly by young people. The free public phones are also used regularly.

There is financial management support for residents, including to address phone plan debts

Expensive bills for vehicle registration, fines or other services can be difficult to pay for remote residents on low incomes and without savings. As a result, there has been increased take-up of high-interest loan plans, such as Afterpay, which exacerbates the financial issues as people struggle to maintain these repayments. Limited English literacy can also result in bills not being paid.

- + *"They open up their bills here and it's very rare that people understand what the bill is for. I'll try to go through it with them. Some [ask for help to] ring up and [arrange] a payment bit by bit. Others will [say they're] not interested." (Gina Livesay Sutton, Warakurna Community Development Advisor, 2023)*

Some residents had previously set up post-paid plans for mobile phones or home internet services, but found it difficult to continue to pay monthly bills.

- + *"People are paying that much a month and then going, well I don't want it anymore because now it's eating into my food money, or I'm not going to pay the bill [any more]." (Gina Livesay Sutton, as above)*

Non-payment of bills can result in fines, people being restricted from accessing services or loans, and can lead to potential jail time if fines remain unpaid.

- + *"A few of those [non-payments] then end up with people going to prison for time ... Because there is no education about what if I fail to pay, what are the consequences?" (Gina Livesay Sutton, as above)*

To address these issues, Ngaanyatjarra Council have established the regional *Mani Wangka* (Money Talk) financial literacy program to provide training and support in financial management, such as managing income, superannuation, and debt repayment. Financial counsellor Suzanne Waldron visits communities in the region from her base in the Papulankutja (Blackstone) community.

The financial counsellor has also supported Telstra customers who were caught up in the mis-selling of phone plans and devices on which they were unable to maintain repayments.

- + *"Some people come out last year [as part of] a class action against Telstra [because some shops] just signed people up on plans [they couldn't afford and] people had no idea what they were signing. So we were going through the files, and assisting those people to get their money reimbursed." (Gina Livesay Sutton, Warakurna Community Development Advisor, 2023)*

Digital ability

Digital ability levels are relatively high, but limited by mobile-only use and English literacy

The introduction of accessible internet in Ngaanyatjarra communities since 2009, including free Wi-Fi in 12 communities and mobile services in the six larger communities, has resulted in rapid uptake of mobile devices and development of skills in using online services and applications. As well, there were digital skills development programs outside of schools since the mid-2000s, with a range of IT training programs delivered by Ngaanyatjarra Media between 2005 and 2013, along with community access computer facilities (see Featherstone 2011, 2015, 2012). Combined with other training programs and peer support, these initiatives helped to establish basic digital literacy levels in Warakurna and across the region.

- + “[Since the 2000s] there’s a lot more digital literacy for the community people and also the students, they’re becoming a bit more tech savvy.” (Craig Alexander, Principal, Warakurna School, 2023)

Current digital skills primarily relate to use of mobile devices and applications that are of interest to Yarnangu, such as social media, online entertainment, online banking and games, rather than office-based applications. Our survey found that 95% of regular internet users have used online entertainment services in the last six months, 88% have played online game, and 60% have used social media to keep in touch with family and friends. In contrast, 50% know how to send and receive emails (responded very true or mostly true of me), 58% can complete online forms and 48% are able to open and download a file. However, 93% reported using online banking in the last six months, and 73% had accessed government services online.

There was caution urged to not see low use of office applications as a deficit, but to ensure applications being taught are relevant and interesting.

- + “You can guarantee that everybody [here] knows how to use a phone. Everybody knows how to use internet. Everybody knows how to use TikTok [and Facebook]. So I think the level of digital awareness [and use is] absolutely there. But [we shouldn’t expect people to be interested in entering data into a] database so that we can say they are proficient [in] doing an Excel spreadsheet ... If I put up a spreadsheet with numbers and dollars, they’ll just walk away [but] if [have an activity] about going bush, they will be like ... yes, let’s do that ... They’ll do what they want to do.” (Service provider, Warakurna, 2023)

The primary reason given by the 17% of low or non-internet users for not using the internet more was “I am not confident using the internet” (63%). This points to the need for targeted support for those groups, particularly the elderly, people with disability, people with low English literacy and low levels of education.

While there is a relatively high level of digital ability in using basic digital applications in Warakurna, there are a range of obstacles preventing development of higher-level digital skills such as office applications, content creation and online learning. These include a primary reliance on mobile devices (93% usage compared with 25% who also use desktop computers) and low levels of English text literacy (100% of respondents speak a language other than English at home, with 67% saying they understand written English very or quite well and 85% understanding spoken English). Education levels are also a factor with only 27% of survey respondents having attained year 12 schooling and 58% attaining Year 10 or below.

There is demand for more digital skills training and support

Staff from Warakurna Community office, CDP, Ngaanyatjarra Media and other agencies regularly assist clients with using online services and other digital needs. However, they have time constraints with busy workloads. While most residents have become confident in using online apps, they may want a private space to use them.



“[On] occasion we will support someone [with] MyGov and the banking [apps. Once] I open up the app, they’re like, “Okay, we can do the rest” [and] they’ll put in their password [and] username [and do it] themselves. And then they’ll say to me, “Log off now.” So they can do it. [Sometimes they just want a private space because the home or office is] an open space so everybody can see or everybody can hear.”

- Service provider, Warakurna, 2023

Co-researcher Jenelle Mitchell provides digital support as part of her role in the community office, assisting people with Centrelink needs, use of MyGov, and internet banking. She has found that it is mostly elderly people that need support, with most younger people able to use online services independently on their phones. However, support is often needed to set up online accounts. Yarnangu face multiple barriers to set-up, including identification requirements, filling out online forms and lack of an email address.

There were calls for a dedicated program to provide digital literacy training and support, including in use of online services, particularly for the elderly, people with disability, and those with low English literacy. Digital skills development is typically driven by the need to undertake an often time sensitive task such as accessing MyGov, activating a SIM, doing online banking, completing a form or paying a bill online, and there is demand for training available when these needs arise, rather than 'just in case' training.

Some digital skills training is being provided by workplaces

While digital skills are required for many of the jobs in the community, currently there is limited workplace readiness training in use of computers and digital applications. The CDP staff have found that even young people do not have the digital skills needed for some roles, creating a barrier to employment.

- + *"Looking at the jobs in Warakurna, my sister [works] in the office on the computer helping people, [but] in the clinic, we don't have a person there. At the shop, we don't have people there. We [want] to get some people working." (Elizabeth Ellis, Cultural Curriculum Coordinator, Ngaanyatjarra Lands School, 2023)*

While most young people are very proficient with mobile phone applications, there is a need for training in use of applications used in workplaces to increase employment opportunities.

- + *[Since coming back to Warakurna] I've seen that there's a lot of young people [are] very savvy with the phone, [they are] very clever. We just have to give them opportunities ... to be given jobs, and say "You do the work and if you need help we'll be here" ... You can't just throw a person in the deep end and expect them to swim. You have to teach them to swim first." (Elizabeth Ellis, as above)*

Ngaanyatjarra Health Service provides basic community nurse training at Alice Springs, which includes use of the Communicare online patient records system.

- + *"[Aboriginal nurses] get a day or two [induction], usually in [the] Alice Springs office. [This is mainly] to learn how to run the Communicare [system], everything else is [learnt on the job]." (Karen Higgins, Remote Area Nurse, Warakurna Clinic, 2023)*

Similarly, Warakurna Artists do on-the-job training in use of the SAM database and taking and uploading digital photographs of artworks. There is also online training provided by peak body Desart.

Ng Council CDP do workplace training, however this is currently mostly focussed on technical roles such as equipment use. Digital skills has been identified as a priority area for future training programs.

Digital mentor support would reduce pressure on service providers

A digital mentor model has proven to be effective for providing 'just-in-time' digital support in the Ngaanyatjarra Lands, with mentors supported by roving trainers. Gender-specific training and support is required for cultural protocols, so male and female mentor roles would be preferable.

Interviewees expressed interest in having a digital mentor role in Warakurna to provide peer support when needed, if funding was allocated to support this.



"[It would be good to have] someone working with [residents on] digital literacy and helping them with online stuff like their banking [and Centrelink] so they can do [it] online rather than having to ring up ... A bit of support might make it easier for them. [Community staff] work really hard to help community members but ... they're doing other jobs. [It requires a] specific [program] to support Yarnangu people to build that digital literacy."

– Craig Alexander, Principal, Warakurna School, 2023

- + *"That would be amazing. If there was something in the budget for them [from] the WA Government or [another source] that would be great. So that they're wholly and solely just doing education around digital media." (Gina Livesay Sutton, Warakurna Community Development Advisor, 2023)*
- + *"[We need] to get somebody in the community [who can help people use] email [or] set up of the MyGov [app, to help people overcome] the thing[s] that are frustrating for them." (Service provider, Warakurna, 2023)*

Confidentiality and password security can be issues

Password security is a challenge, with no safe place within shared households, or on shared devices, to keep passwords or banking details secure. This can lead to issues where family members or others may be able to access bank accounts, social media accounts or other online services.

As outlined in the Service Delivery section, there is high reliance on the community office by some residents for assistance with online banking and other services. Warakurna Community CDA Gina Livesay said that she wants residents to learn about cyber-security and how to use online services safely.

- + *"[We want] people educated [about] cyber security because people also share bank cards. If somebody [loses] their bank card or it doesn't work for whatever reason ... they'll just get their money transferred into their sister's, or brother's, or aunty's bank card and they'll use that, but [that] compromises the bank card." (Gina Livesay Sutton, Warakurna Community Development Advisor, 2023)*

Cyber safety is a growing concern

The survey results indicate moderate levels of online security and cyber-safety awareness, with most people knowing how to set privacy settings (75% said 'very true' or 'mostly true') but lower numbers knowing how to set privacy settings (56%), decide what personal information to share online (53%), or check if information is trustworthy (33%).

In interviews, local agencies identified a range of cyber-safety issues prevalent in the community, from online bullying and harassment, accessing inappropriate content, grooming, scams, and social media posts causing family disputes. This is causing some people to avoid social media.

- + *"A couple of weeks ago, we had an issue with [people] coming over from different communities for payback because they've read something about their family members or themselves on Facebook ... that was misinterpreted, or said maybe the wrong way ... It's quite challenging trying to educate people into the power of social media and how far it can be spread." (Gina Livesay Sutton, Warakurna Community Development Advisor, 2023)*

There were calls for locally targeted media resources to help build awareness of online issues.

- + *"I would like a USB drive [of e-safety video content] on the TV, so when people come into the office and they're waiting, they can see something in their language, they*

understand it, it's step by step, simple form, simple procedures ... the same messages running over and over and over [in the office, the shop, the clinic, and on radio with NG Media. Not] just a bit of paper that people will go, what does all that mean and throw it away." (Gina Livesay Sutton, as above)

Mobile phones have become a primary means of access to entertainment by young children, with high use of online entertainment services such as TikTok and YouTube, often with limited parental controls or supervision. We heard of some incidents of online bullying and inappropriate use of social media by school students. The school delivers some formal lessons on safe internet use, but agencies called for more resources to promote cyber-safety awareness for young people and parents.

- + *"I think there needs to be a big emphasis on [online awareness for] the kids. [It would be good] to put more [online safety] resources into the schools." (Service provider, Warakurna, 2023)*

There are calls for more cultural governance in the digital space

Elders raised concerns about the cultural impact of social media on the behaviour of young people.

- + *"We are living in two worlds, [Ngaanyatjarra and] Western culture. And we still need to keep our culture strong, because [the] phones, TikTok, [make young people act] like somebody else ... That culture comes in from some other countries. [That's] been happening in towns [like Alice Springs], and you see all the problems[from] introduced [culture]. When I see it, it makes me really sad." (Daisy Ward, Community leader / elder, Warakurna, 2023)*

Elders also raised concerns about what young people are sharing online, with limited ability to intervene.

- + *"People swear [at] each other on Facebook, makes trouble and families fighting. That is wrong way for culture. We need the community to have a meeting about it, to stop it. Fight videos are no good too. Young people use Facebook, not the old people. We want to close the Facebook out here." (Survey comment)*

We heard reports of posting of sensitive cultural information on social media, including by young men going through initiation business, which led to phones being removed by elders. Elizabeth Ellis suggested that there needed to be governance by elders in the digital space, as there is in other aspects of community life.

- + *"We need the elders' council, especially in the Ngaanyatjarra region. Men's side, women's side, so young people can give a complaint to the elders' council ... If a young person does or says something wrong way [online] about a different family they can put a report and the elders' council can talk to that person." (Elizabeth Ellis, Cultural Curriculum Coordinator, Ngaanyatjarra Lands School, 2023)*

Scams are increasingly prevalent via text or social media

Scam calls, texts and online messages are becoming more commonplace, with more sophisticated scams now deliberately targeting remote First Nations people. These include finance scams such as offers of bank loans or compensation payments, romance scams, lotteries or prize scams, and impersonation of banking, telco or government services seeking urgent payments or bank details. Many in the community do not know how to discern or avoid scams, or identify which messages are legitimate.

We heard about a high incidence of Warakurna residents receiving scam messages, with several residents having been scammed for thousands of dollars. Yarnangu are becoming increasingly aware of aware of scams, with regular requests of service providers to check if messages were scams or legitimate, however there are still many people who are vulnerable to scams.

- + *"Scamming is a big thing, especially for older people out here. It seems to be a big thing Australia wide. But I guess education on that would be good. I think some people are more vulnerable than others and I think [elderly artists are] quite vulnerable to some of that stuff." (Lara Smith and Jacob Gerrard-Brown, Warakurna Artists, 2023)*
- + *"People will [come in and] say, 'Oh, if I send this person my details, then they'll give me \$100,000'. [There's lots of] scams. And so there's got to be more and better information out there and especially in the local language that we can display to assist people in how we can get around all these challenges." (Gina Livesay Sutton, Warakurna Community Development Advisor, 2023)*

The *Mani Wangka (Money Talk)* financial counsellor Suzanne Waldron provides advice on scams but only visits the community occasionally. The Warakurna community office has a range of brochures from the Office of e-Safety, including on scams. However, brochures like this typically have limited effect in remote communities with more direct communications via face-to-face, visual posters or radio messages in language being more effective. Regular updates are also needed as scams are constantly changing.

The WA Government has established a dedicated Senior Aboriginal Community Education Officer role at Consumer Protection WA with a key focus on raising awareness of scams and consumer issues. CPWA have created a range of simple English posters and videos as well as a web page with scam updates on www.scamnet.wa.gov.au. The ACCC also have set up the Scamwatch website for reporting of scams and updates on latest scams.



Figure 21: *Mani Wangka* sign

Elder financial abuse was described as an issue in Warakurna

The already high incidence of elder financial abuse and humbugging (making unreasonable or excessive demands from one's family or other connections) for money has been further enabled by mobile access across the Ngaanyatjarra Lands.

- + *"[Family members are always] humbugging for money. [For one lady, on] pay-day it will start from 9 o'clock in the morning [to] all day the next day, she'll get that many phone calls wanting money." (Kim Seamons, Ngaanyatjarra Health Community Care, Warakurna, 2023)*

As outlined in the section on password security above, the sharing of bank details between family members, including for support with online banking, has resulted in increased elder abuse. Lost funds are unable to be reimbursed by banks.

- + *"People come up to me and say, 'I've got money missing'. I'll say, well, you've handed out your bank details, your PIN number, so there's nothing the bank can do to reimburse you." (Gina Livesay Sutton, Warakurna Community Development Advisor, 2023)*

Warakurna Artists reported elder fraud as an issue, but said that artists are becoming more aware of how to manage the issue.

- + *"[The artists are aware that others have their bank account details so] they've got to be strategic about working around that ... If they have money from a painting, sometimes the ladies will say don't transfer now and we'll specify a time that they*

want the money to go in because then they know they can access it then.” (Lara Smith and Jacob Gerrard-Brown, Warakurna Artists, 2023)

Elder abuse is also described as an issue, with family members transferring money from elders’ bank accounts, or using their debit card. However, more digital support is needed for elders to help reduce issues of elder abuse, improve scam and cyber-safety awareness, and build confidence in use of online services.

- + *“Kids are way above adults [with using online banking] and [they] know how to transfer money from accounts and all of that, but [we] need to [teach elders about] online security and being conned. [I taught my co-worker how to do] banking online. And now ... she can [move her money] and hide it so people couldn’t see and all of that as they do with the slip at the ATM. So I think we need to be teaching more of it.” (Kim Seamons, Ngaanyatjarra Health Community Care, Warakurna, 2023)*

Online learning is growing but face-to-face learning is still preferred

Online training enables community members to learn without leaving the community and is being used by some people, including use of YouTube self-learning videos. However, we heard of limited engagement with online learning, with face-to-face training and support the preferred model for most.

- + *“I think it needs to be hands-on education not computer stuff ... We need to teach them the computers because they are the way of the world and it’s only going to get bigger, especially out here while we’ve got such good infrastructure going now.” (Kim Seamons, Ngaanyatjarra Health Community Care, Warakurna, 2023)*

Local Digital Media Content Production, Archiving and Sharing

There is a long history of cultural media production in the Ngaanyatjarra and APY regions

There is a strong history of the use of media and digital technologies to document and preserve language and culture in the Ngaanyatjarra region. There have been hundreds of videos recorded by EVTV and PY Media in the APY Lands of SA since the early 1980s, and by Irrunytju Media since 1991 (changed to Ngaanyatjarra Media in 1998).

- + *“Good things used to happen with media, with recording Ngaanyatjarra culture, dancing, songs ... teaching kids about the dance [and] the Tjukurrpa, that was passed down from our old people.” (Daisy Ward, Community leader/elder, Warakurna, 2023)*

The Warakurna community chairperson Devon Yates worked as a media worker in the 1990s.

- + *“I was BRACS worker before, long time. I was training at Batchelor college, making video [and making stories from cultural side]. Yeah they’ve got [those videos] at Ngaanyatjarra Media.” (DY, Warakurna Community Chairperson, 2023)*

Ngaanyatjarra Media continue to coordinate events and media productions across the region. A recent example is the recent Sandtracks concert tour to five communities including Warakurna, in partnership with Regional Arts WA and Wilurarra Creative. Ngaanyatjarra Media are currently working on a video production of the event, which featured local bands alongside a feature band.

Over more than 30 years, Ngaanyatjarra Media have documented *Turlku* (cultural dance events), re-enactments of *Tjukurrpa* (cultural stories), oral histories, community events and information videos in partnership with local agencies. The extensive video, audio and photographic collection is stored at the

Ngaanyatjarra Media centre in Irrunytju, with efforts underway to digitise the collection to enable future access. However, many of the videos contain deceased content and are stored away until deemed able to be viewed again by the relevant families.



"They did fantastic work [at] EVTV and Irrunytju Media and all those recordings are just gems, they're treasures. I'm sure they're kept somewhere safe [so they can] be brought out at the right time for the right people to see and learn from."

- Elizabeth Ellis, Cultural Curriculum Coordinator, Ngaanyatjarra Lands School, 2023

In more recent times, Elizabeth Ellis and Dr Inge Kral have led the innovative i-Tjuma language project, working with young people to document 'sand drawing' stories using iPads. This built on an earlier project of filming senior women telling sand drawing stories, with a second overhead camera on the drawing.

+ *"By doing what we did, we made sure that our custom, our cultural practice, wasn't lost. We kept it alive in the new methodology of that iPad. We kept that sand story alive. By doing the split camera, we kept the story telling on the ground alive." (Elizabeth Ellis, as above)*

Ngaanyatjarra Council has also collated historic collections of photographic and written records on the *Tjumalampatju* archive, managed by Ngaanyatjarra Council's Land and Culture Unit. However, there is limited community access to this content. We heard calls for more ready access to archival records to support the continuity of language and cultural knowledge to next generations.

There was interest in having more regional news content

Due to its remoteness, the Ngaanyatjarra region is rarely represented in mainstream media, except as negative stories when there is a tragic incident.



"When I hear all these stories on news, [I wonder] why isn't the Ngaanyatjarra Lands mentioned? ... It's always talking about the coastal towns, Kimberleys, and they talk about Northern Territory, and not us. We aren't recognised."

- Daisy Ward, Community leader/elder, Warakurna 2023

Local news and information is shared by broadcasters over Radio NGM. However, there were calls for more local news reporting capacity to share positive stories from the region to national audiences. Ngaanyatjarra Media have begun participation in the First Nations Media Australia news reporting project, but more support is needed to employ and develop the skills of community journalists.

6. CASE STUDY: COMMUNITY-WIDE WI-FI PILOT

An nbn trial of community-wide Wi-Fi is underway in Warakurna as well as three other remote communities across Australia – Coonibba and Indulkana in SA, and Aurukun in Cape York, Queensland. The Wi-Fi network was installed in Warakurna in June 2022. This builds upon the nbn 'Communities in Isolation' Wi-Fi project, which provides 112 Wi-Fi hotspots to 99 remote communities across Australia. It seeks to address concerns that Wi-Fi is only available in a central site in the community rather than close to homes where people mostly need internet access.

Network Design

The network consists of a hub site, with three satellite dishes on the roof of the Warakurna community office providing six Sky Muster services as backhaul, and a small tower with microwave links to 13 Access Points in residential and high-traffic areas around the community. While data usage on the systems was previously limited to 900 GB per month during peak periods, in June 2023 the backhaul was upgraded to the new Sky Muster Plus Premium product, providing unlimited data and higher speeds, enabling minimum speeds of 4 Mbps per user.

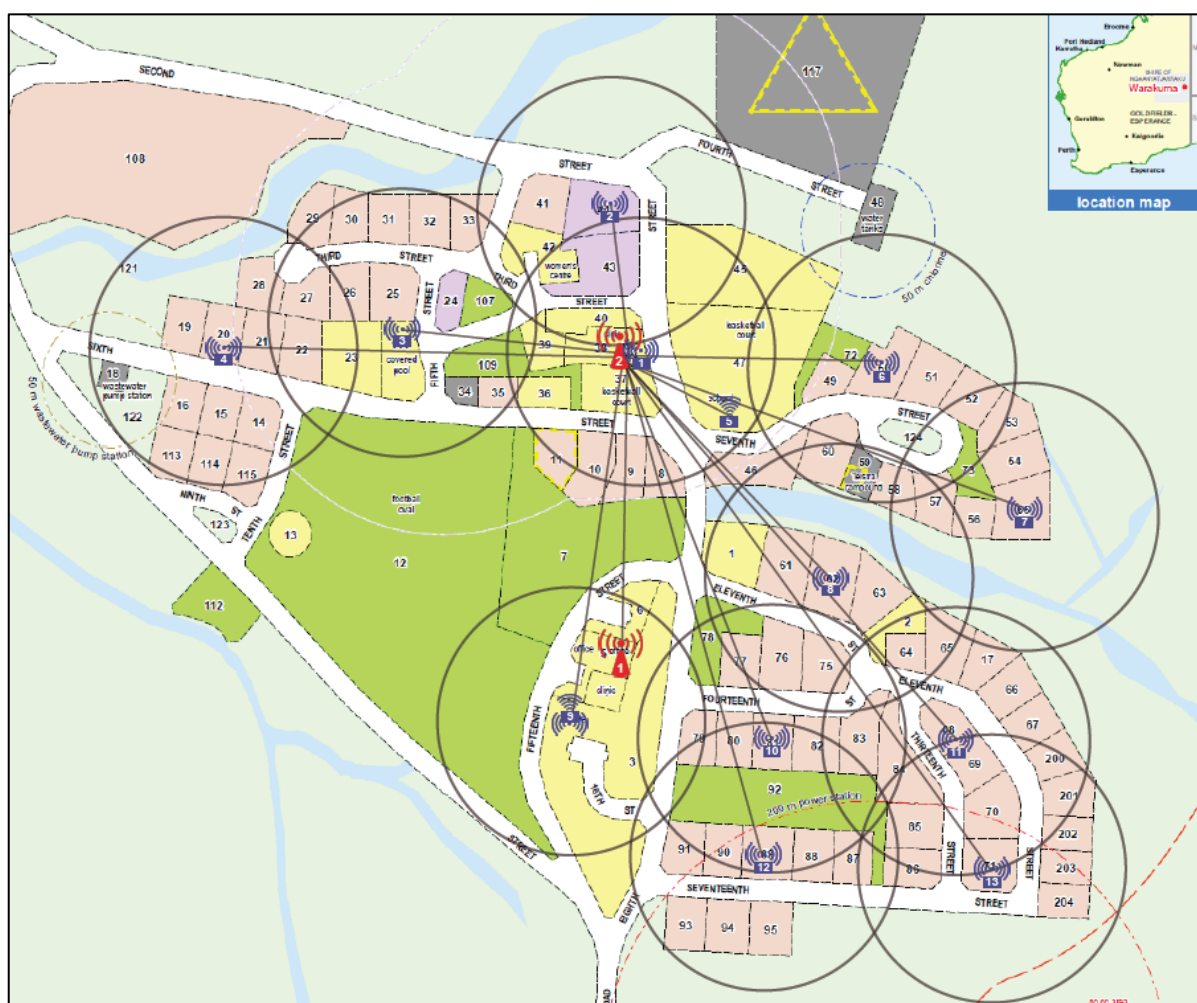


Figure 22: Community-wide Wi-Fi network map showing 13 Access Points connected to central hub

The service is provided free of charge to users.



"[This is] a pilot program for the Ngaanyatjarra Lands and it's free Wi-Fi. [It] doesn't actually go into their houses ... but it can be reached from the outside of the houses or on their porch."

- Gina Livesay Sutton, Warakurna Community Development Advisor, 2023

+ "Sometimes people have no credit, [now] they use the Wi-Fi. They are free."
(Jeannie Pegg, Co-researcher/ resident, Warakurna, 2023)



Yeah, good for them kids ... now they [can] get free internet, makes it easy for them [instead of paying the high cost of pre-paid mobile data]."

- DY, Warakurna Community Chairperson, 2023

The Wi-Fi data usage for Warakurna community from November 2022 to October 2023 is:

- Total data consumed: 5.2 TB
- Average devices (unique) connected to the network per month: 190
- Average data consumed per device per month: 2.9 GB (Source: nbn, 7/12/23)

While the data does not show the difference in usage since the Sky Muster Plus Premium service was switched on in June 2023, anecdotally we heard that usage has roughly tripled since that time.

Community access

Two locations in the community have been configured with internal wireless access points to provide in-building coverage: the School Library and the Community Hall. Beyond that, the system is primarily designed for access in public spaces, with limited ability to penetrate the walls of most houses. Usage is therefore primarily outside of houses within line of sight of the access points.

The limited internal household access is a point of difference from other Wi-Fi mesh networks established in four remote communities in WA (Tjuntjuntjara, Kalumburu, Mowanjum, Jigalong), funded by Regional Connectivity Program and WA Government, which include a local repeater and VoIP phone at each premise. (See case study in the [2022 Kalumburu Community Outcomes Report](#)).

However, in our interview with the Principal of the Warakurna RCS, we heard that the free Wi-Fi has enabled more home internet access for children, whose access is usually limited by high data costs.

Potentially, a Wi-Fi repeater could be used to help share the service inside houses. This would help to address demand for home internet connectivity.



Figure 23: Three Sky Muster dishes on roof of Warakurna Community office



"It will be good if the houses get internet connections ... I wouldn't mind having a connection because at the moment I just tether my phone to the laptop."

- Elizabeth Ellis, Cultural Curriculum Coordinator, Ngaanyatjarra Lands School, 2023

Community control

nbn co have designed the system to enable several aspects of community control in the setup and daily operations. This includes the ability to run off the whole network or only one of the three Access Points.

- + *"[For instance] the other day when we had that issue with the social media, with the people coming over to do payback on Facebook, our chairperson came down to my house actually and said, "Can you turn off the free Wi-Fi? ... It's making people upset [so] give people a chance to cool down and then turn it back on tomorrow." We can also turn it on and off into the various spots [such as having it only on] around the basketball court so that we know that that's where they all are. And we can make sure that the kids are safe." (Gina Livesay Sutton, Warakurna Community Development Advisor, 2023)*
- + *"[We] can switch the Wi-Fi off if there's a problem, we switch it off and people have to have a meeting before they switch it back on." (Elizabeth Ellis, as above)*

This is a point of difference to the mobile tower, which is unable to be switched off. At the time of our visit, the Wi-Fi was on fulltime, however some Council members had asked for a curfew time to be set.



"[There's no curfew time] but we can do that. And some of the board have actually come to me and asked me if we can switch it off at a certain time because the kids are using it all night and they're not getting up for school ... They can also filter it for content. So if the board come to me and say that they don't want gambling sites or any other sites that are not good for community or good for anybody, then we can certainly ask the nbn Sky Muster not to do that and put their bans on certain things."

- Gina Livesay Sutton, as above

- + *"I [think we should] turn the Wi-Fi off at a certain time so the kids can go to sleep and wake up early for school, because they're on TikTok at two o'clock, three o'clock, midnight. So, if we turn the Wi-Fi off [at night] and turn it on in the morning, [then] the kids have a sleep [and] come to school." (Elizabeth Ellis, as above)*

The system also enables content filtering, with the community able to choose the types of inappropriate content, or specific sites or applications, to block from access.

- + *"Yes, [we] block some sites [like pornography and] gambling sites." (Elizabeth Ellis, as above)*

7. CONSIDERATIONS FOR LOCAL DIGITAL INCLUSION PLAN

Developing a local Digital Inclusion Plan would enable a coordinated whole-of-community approach to address the challenges outlined in this report. It would also provide a useful tool for advocacy to government, industry, and fundraising efforts.

Based on our 2023 interviews and discussions, the proposed Digital Inclusion Plan outlines key digital inclusion issues or needs identified by local stakeholders, potential actions or strategies to address these, and possible stakeholders. These are suggested options to consider in planning and advocacy and are not intended to be prescriptive, nor are they listed in order of priority.

Identified issue	Possible actions	Potential stakeholders
Communications access		
Demand for community access computers for learning and use.	Note: Ngaanyatjarra Media have set up community access computers in RIBS media centre, awaiting satellite connection and staff to support users – check status and funding needs.	Warakurna Community Council Ngaanyatjarra Media
nbn community-wide Wi-Fi network primarily available externally; community demand for in-house access.	Provide affordable Wi-Fi repeaters in store/ roadhouse to enable Wi-Fi signal to be boosted inside houses.	Warakurna Store Warakurna Roadhouse
Lack of public access videoconferencing facility.	Centrelink room to be changed to meeting room, videoconferencing facility installed.	Warakurna Community Council
Regular internet outages at Warakurna Store impact on EFTPOS/sales and ATM.	Consider installing Starlink or Sky Muster Plus Premium as primary broadband service at Store.	Warakurna Community Council Warakurna Store
Lack of timely and affordable technical support for Telstra services and IT.	Need for a Telstra technician based on the Ngaanyatjarra lands or nearby (e.g. Yulara NT). Need for coordinated technical/ IT support between agencies in community/region to reduce number and cost of technical trips.	Warakurna Community Council Ngaanyatjarra Council Telstra

Identified issue	Possible actions	Potential stakeholders
Need for improved connectivity at Tjukurla Community Office to enable outreach support by Ngaanyatjarra Council and health service and other agencies.	Consider installing Starlink or Sky Muster Plus Premium as primary or backup broadband service at Tjukurla Office.	Tjukurla Community Ngaanyatjarra Council
Affordability		
Primary use of pre-paid for data (high-cost data); limited awareness of changes to mobile pre-paid and post-paid plan options or satellite service options.	Provide easy-to-read materials in store/roadhouse (posters, brochures); broadcast radio messages outlining options for more affordable mobile and data services via Telstra, nbn Sky Muster and any other providers.	Warakurna Store Warakurna Roadhouse
Digital ability		
Need for more regular IT and mobile use training, particularly for seniors and people with vision and hearing impairment; cyber-safety issues and scams prevalent, as well as elder financial abuse.	Provide more regular training opportunities. Increased awareness and strategies to address cyber-safety, online privacy and security, online banking. Provide targeted learning resources for people with vision and hearing impairment. Get locally produced videos in language with e-safety information and what to do to avoid risks. Play on TV in community office.	Warakurna Community Council Ngaanyatjarra Council / CDP Ngaanyatjarra Media <i>Mani Wangka</i> (Money Talk, visiting financial counsellor) inDigiMOB ACCAN Office of e-Safety
Concerns around cyber-safety issues among young people especially online bullying, inappropriate content or posting.	Arrange cyber-safety awareness workshops in school and workplaces, as well as locally targeted posters and radio promos to build awareness.	Warakurna Community Council Ngaanyatjarra Council / CDP Ngaanyatjarra Media inDigiMOB

Identified issue	Possible actions	Potential stakeholders
Need for mentor support in use of government and online services.	Employment of digital mentor / IT support roles to support people to learn / use government and online services. Could be located in community office / Centrelink or at Media Centre.	Warakurna Community Council Ngaanyatjarra Council / CDP Ngaanyatjarra Media Department of Social Services / Centrelink
Demand for IT skills for workforce readiness and use of online services.	Provide specific training workshops or one on one support in workforce readiness skills as needed (e.g. MS Office, keyboard / typing skills, file management, search and online tools, preparing a CV, letter writing, email use, job search etc).	Ngaanyatjarra Council / CDP
Media access and production		
Low number of VAST direct-to-home satellite TV services working; high cost for households to repair equipment and replace set-top boxes; no maintenance program in place.	Advocate for funding to install digital TV broadcasting of required services (16 Freeview channels, ICTV and local community channel) to replace VAST home TV services.	Warakurna Community Council Ngaanyatjarra Council / CDP Ngaanyatjarra Media
Demand for return of local RIBS radio service in Warakurna, plus regular contribution to regional Radio NGM program.	Identify local radio broadcaster to train to do radio broadcasting and other media work with Ngaanyatjarra Media. Ensure radio studio set up for local broadcasting and sharing to Radio NGM.	Ngaanyatjarra Media Warakurna Community Council
Low household access to radio services.	Install speaker outside community office and in store for residents to hear Radio NGM. Promote the radio app on Android phones that enables access to local radio broadcast.	Warakurna Community Council Ngaanyatjarra Media

Identified issue	Possible actions	Potential stakeholders
Strong interest in media production of local language and cultural content, including for use in cultural curriculum in school.	Re-establish the Warakurna RIBS as a media production and broadcast facility. Ngaanyatjarra Lands School could collaborate with Ngaanyatjarra Media on video content for the <i>Yarnangu Connections</i> curriculum.	Ngaanyatjarra Media Ngaanyatjarra Lands School Warakurna Community Council
Need for archiving of locally produced cultural and historic content.	Access to archiving system for multi-media content (local content, language and cultural recordings, historic content). Notes: Ngaanyatjarra Council (Land and Culture) has a regional archive collection; Ngaanyatjarra Media has contributed content to Ara Irititja archive collection; First Nations Media Australia and AIATSIS are opening an archiving / digitisation facility in Alice Springs.	Ngaanyatjarra Council Ngaanyatjarra Media First Nations Media Australia AIATSIS



Figure 24: Painting by Glenn Cooke of Rawlinson Range (on inside wall of Warakurna Store)

Appendix 1: Summary of survey results

Note: Not all respondents answered all questions so % are based on number of responses to that question.

Demographics	2023 (48 respondents)
Gender	69% female; 31% male
% Aboriginal and / or Torres Strait Islander	100%
Education	27% year 12 58% year 10 or below 15% with tertiary education (certificate, diploma, degree)
Employment	17% employed (25% full-time) 35% on CDP activities 13% unemployed 15% retired or on a pension
Welfare	94% received Centrelink payments (primarily JobSeeker or Youth Allowance)
Housing	90% in multi-generational or shared households Average 5.6 people per house
% with long-term disability or health condition	25%
% who speak a language other than English at home	100%
ATSI Languages spoken (multi-choice question)	88% Ngaanyatjarra 25% Pitjantjatjara 6% Ngaatjatjarra 8 others
Understanding of English (very and quite well)	Written English: 67% Spoken English: 85%
Average weekly household income	\$1,041
Income breakdown	4% \$1-\$399 29% \$400-\$999 63% \$1000-\$1999 4% above \$2000
Phone use	2023 (48 respondents)
Primary devices used for phone calls (multi-choice question)	90% mobile phone (own or shared) 35% public phone 25% phone in community office or workplace 4% fixed line home telephone
Reliability of public phone	67% said it was reliable 2% said it was not reliable 31% don't know
Rate of mobile phone ownership	79% own or share (100% of these were smartphones)
% of phone owners on prepaid services	100%

Average pre-paid data allowances	76% pay for 6-10 GB / fortnight 24% 11-20 GB / fortnight
Times per year respondents exceed data limit	86% 1-5 times / year 3% 6-11 times / year
Average number of prepaid services per household	2.8
Household pre-paid mobile expenditure	48 responses Average household cost of \$93 / fortnight 56% pay up to \$100 / fortnight 40% pay \$101-\$200 / fortnight 4% pay over \$200 / fortnight
Media use	2023 (48 respondents)
Radio Access (multi-choice question)	90% listen via car 21% through the TV / VAST 21% via phone / tablet 16% listen to a radio at home 21% never listen to radio
Primary radio stations listened to	Radio NGM (33% listen daily or weekly, 40% occasionally) ABC Radio (23% daily or weekly, 23% occasionally)
TV Access (multi-choice question)	69% on TV via VAST satellite 49% via phone 22% only via USB / DVDs on TV 7% never watch TV
VAST TV Access	44% have VAST service working 46% VAST not working (55% due to set-top box not working, 21% due to damaged dish or cabling) 10% do not have VAST installed at house
Most popular sources of TV and online content (multi-choice question)	YouTube (63% daily, 21% weekly) Streaming services (52% daily, 10% weekly) Commercial television (7,9,10) (23% daily, 29% weekly) ABC TV & NITV (33% weekly) NITV (33% weekly) ICTV (29% weekly)
Primary sources of news and information (multi-choice question)	Direct/ in person communication (90% daily) Facebook (38%) Commercial TV (25%) Local noticeboards (60% weekly) ABC TV (31% occasionally) NITV (26% occasionally)
Primary sources of emergency information (multi-choice question)	Direct/ in person communication (98%) Facebook (42%) First Nations radio, noticeboards & text message from emergency services (38%) ABC TV (35%)

Internet use		2023 (48 respondents)
Latest internet use		77% used internet in past week 2% in past month 10% never used the internet
Rate of internet use (of respondents who had used the internet within the last three months)		26% use the internet almost constantly 29% several times a day 34% about once a day or several times a week
Regular internet users (The following indented sections refer to respondents who had used the internet within the last six months)		83%
Primary online devices (multi-choice question)		Smartphone (93%) Smart TV (28%) Desktop computer (25%) Games console (18%)
Use of internet provided by others (multi-choice question)		78% in public space with free Wi-Fi 58% community or Shire office 28% community access centre
Reasons given for not using the internet more (multi-choice question)		"I do not need to use the internet more often" (68%) "The internet is too expensive for me" (40%) "I am concerned about inappropriate content and causing conflict" (40%) "I am concerned about privacy or scams" (28%)
Concern about amount of time spent online		5% moderately concerned 18% slightly concerned 75% not at all concerned
Low internet users		17%
Reasons given for not using the internet more (multi-choice question)		"I am not confident using the internet" (63%) "I have no need to use the internet" (39%) "The internet is too expensive for me" (38%)
Fixed broadband services		96% did not have any form of fixed internet 4% on nbn service (Sky Muster satellite)
Mobile broadband services		0% of respondents used mobile broadband services such as a Wi-Fi dongle or laptop/tablet SIM
Affordability		2023 (48 respondents)
How often cut back on essential household costs to afford personal or household internet		19% often or always 38% sometimes 44% rarely or never
Respondents who compromise on internet speed and/or quality to prioritise affordability		50%

Digital Ability	2023 (48 respondents)
Regular internet Users (The following indented sections refer to respondents who had used the internet within the last six months)	83%
Basic digital ability metrics (very true or mostly true of me)	Connect to a Wi-Fi network (85%) Use a mobile device as a Wi-Fi hotspot (83%) Able to download and open a file (48%) Find and install apps (68%) Complete online forms (58%) Open a new browser tab (60%) Send and receive emails (50%) Use keyboard shortcuts on computer (28%)
Online security and cyber-safety awareness (very true or mostly true of me)	Set secure passwords (75%) Set privacy settings (56%) Check if information is trustworthy (33%) Decide what personal information to share online (53%) Add or remove friends or followers on social media (68%)
Online content creation (very true or mostly true of me)	Create websites (0%) Produce online content (43%) Post videos (48%) Awareness of online copyright law (10%)
Smart devices (e.g. smart TV) (very true or mostly true of me)	Connect smart devices (e.g. smart TV) to the internet (63%) Adjust privacy and security settings (28%)
Primary online activities (activities undertaken in past six months)	Online banking (93%) Accessing government services (73%) Comparing prices of products or services (48%) Online learning/study (38%) Online shopping (28%)
Social media use (activities undertaken in past six months)	Keeping in touch with family or friends (60%) Meeting new friends or reconnecting with old friends online (55%) Engaging with community (60%)
Online entertainment (activities undertaken in past six months)	95% used online entertainment services 88% played online games 33% attended an online music, arts, or cultural event online
Online navigation and transport (activities undertaken in past six months)	48% had navigated a route via maps on a smartphone

Comments:

Mobile service quality / cost

- + We used to use the UHF radio but now we have mobile phone. The UHF radio was free but now we have to pay

Free Wi-Fi usage

- + The nbn Wi-Fi is really good to have free internet. I can use it for Centrelink reports and banking and use it for watching YouTube or movies
- + It's good having free Wi-Fi to save money. It works OK for YouTube



We just got nbn Wi-Fi and sit outside to use it. It's really good but doesn't work inside the house

- + I have to go outside to access the free Wi-Fi
- + We only use Wi-Fi to stream Netflix and mirror on the TV, and also YouTube
- + Mostly watch via Wi-Fi Netflix – USB – YouTube
- + Using free Wi-Fi is good
- + The nbn Wi-Fi isn't as strong as the Ng Media Wi-Fi used to be. Trees are in the way.
- + No phone – only free internet at home with white box
- + Use Telstra only for data – wanted to connect to the local Wi-Fi
- + Wi-Fi at the pool weak and not working properly – ongoing issue since installed – works inside but not outside
- + The Wi-Fi is provided to community houses
- + Free Community Wi-Fi on homes
- + Wi-Fi box free community Wi-Fi
- + nbn Wi-Fi not working where I live

Digital ability and online safety support needs

- + I want help to learn to use computers so I can get a job
- + I would like to learn to use the internet and learn reading
- + I don't use the internet. My daughter helps me do Centrelink reports and banking. We don't have TV or radio working
- + Like to learn internet on phone
- + It would be good to have computers to learn on, like the telecentre in Irrunytju. And I want to learn more about using computers for my work at the art centre. I share a mobile phone so I use the public phone for my Centrelink reporting



I want to learn more about using computers and online services, I could get a better job

- + I know how to do banking – tried to learn myGov but doesn't work
- + I would like to learn to use the internet and learn reading
- + I want more help to use computer and online services
- + Older people need someone to help them to use the internet and online services
- + We need more training in being safe online and scams and saving money



I don't use the internet, mostly I do cultural work. People swear each other on Facebook, makes trouble and families fighting. That is wrong way for culture. We need the community to have a meeting about it, to stop it. Fight videos are no good too. Young people use Facebook, not the old people. We want to close the Facebook out here

- + We need more help to use computers
- + Too much trouble on Facebook, people arguing
- + Want to Bluetooth videos and music to mobile phone to watch
- + I need more help to use phone and online services so I can do my own banking and use services

Media services

- + I want to get the RIBS radio going again in Warakurna and make more videos and cultural stories
- + I want to start doing the radio broadcasting again in Warakurna



I used to do media work. I want to see Ng Media going strong again to help keep our culture and language going



I live in Warburton and they have good mobile and free Wi-Fi. I want to get a TV. They have a transmitter there which is really good, don't need to buy set top boxes



Figure 25: Elder Simon Butler using mobile



Figure 26: Meeting shelter outside community office with Rawlinson Range in background



Figure 27: Co-researcher Jeannie Pegg doing survey with resident Chriselda Stevens

Appendix 2: Community communications audit

About the community	
Community Name	Warakurna
Alternate name	Giles
Traditional owners / Language group	Ngaanyatjarra / Ngaatatjarra
Location (coordinates)	25.0012° S, 128.2877° E
Region	Ngaanyatjarra Lands, Western Australia
LGA / Shire / Regional Council	Shire of Ngaanyatjarraku
Land Council	Ngaanyatjarra Council
Regional Service Centre, distance	Alice Springs – 780 km northeast, Kalgoorlie 1130 km southwest
Remoteness (ABS)	Very remote
Population data – ABS 2021	
ABS 2021 Census All persons QuickStats	https://abs.gov.au/census/find-census-data/quickstats/2021/SAL51528
ABS 2021 Census Aboriginal and/or Torres Strait Islander (ATSI) people QuickStats	https://abs.gov.au/census/find-census-data/quickstats/2021/ILOC50300408
Total population	185 (159 ATSI)
ATSI population	85.9%
Gender breakdown (ATSI)	48.4% male, 51.6% female
Median Age / breakdown (ATSI)	33 (30 for ATSI population); Children aged 0–14 years made up 23.1% of the population and people aged 65 years and over made up 3.9% of the population
Families	44 families; Average children per family – 1.9 for families with children, 1.1 for all households
Language groups / number of speakers	Ngaanyatjarra – 148 (80%); Pitjantjatjara – 10 (5.4%)
% ATSI people who speak an ATSI language	85.4%
% ATSI people who speak English at home	8.1%
Employment levels	38 people (26.6%) were in the workforce, 90 (62.9%) not in the workforce. Of those working, 31.6% (12) were employed full time, 63.2% (24) part-time. 5 people were unemployed
Education levels – No of people reached	47 (20.1% of people) were attending primary or secondary school. Educational attainment was: Bachelor Degree level and above – 8.4%; Year 12 – 9.8%; Year 11 – 11.9%; Year 10 – 32.9%; Year 9 or below – 18.9%
Number of dwellings, people/household	69 private dwellings; 3.9 people / household (4.4 ATSI households)
Housing suitability	Average 1.3 person per bedroom (1.5 for ATSI households)
Median Weekly ATSI household income	\$900 (\$706 for ATSI households)
Median Weekly ATSI personal income (15+)	\$305
Average weekly rent	\$70 (\$70 for ATSI households)
Average motor vehicles per dwelling	0.7

Community services and plans

Community layout plan	https://www.wa.gov.au/system/files/2021-07/LOP-Warakurna-LP1-Amendment-10-map-set.pdf
Agencies in community	Warakurna Community Inc, Ngaanyatjarra Council, Shire of Ngaanyatjarraku, Warakurna Store and Warakurna Roadhouse / campground (both operated by Warakurna Community), Warakurna Remote Community School, Ngaanyatjarra Lands School office, Warakurna Clinic and Community Care Centre (both managed by Ngaanyatjarra Health Service), Ngaanyatjarra Council Training Facility, Warakurna Multi-function Police Facility (MFPF), NPY Womens Council (Tjanpi project, nutrition program), Nirrumbuk Environmental Health Services, Ngaanyatjarra Rangers (Land and Culture), Warakurna Artists, Ngaanyatjarra Media / RIBS, Giles Meteorological Station
Business / other stakeholders	WA Government agencies, National Indigenous Australians Agency, Water Corporation, Horizon Power, Commonwealth bank, Department of Human Services / Services Australia
Community development plan/s	See Shire of Ngaanyatjarraku and Ngaanyatjarra Council Strategic Plan 2018-21 for regional plans
Power supply / type / backup in community	Diesel generator, with backup generator for roadhouse and MFPF, solar panels on roadhouse
Use of power cards in households	Yes
Communications services available	
Public phones – number / location	2 – one near women's centre, one at roadhouse; both working
Home phones	Primarily in staff houses and agencies; only 4% of residents surveyed had home phones, most are mobile only
Mobile service	4G macro cell tower in community, installed 2012-13 as 3G, upgraded to 4G in 2019; 59 metre tower located at northern end of community (ACMA Site ID: 9015757)
Mobile coverage and reliability	Good signal in community, only one bar at roadhouse and coverage only 5-10km out of town, some congestion in afternoons, good coverage at time of visit. Reports of previous dropouts due to fibre optic cable damage and power outages
ADSL usage	There are 40 ADSL ports available, however most are not being used. Some local agencies (Warakurna Community Office, Ngaanyatjarra Council office, Warakurna Clinic) have business-grade DSL services, and Warakurna Store has ADSL. According to our survey, no First Nations households have ADSL services
Business grade or fibre optic services	Warakurna Community School/ Ngaanyatjarra Education Area office and the Warakurna MFPF have fibre optic connections with business grade services. Ngaanyatjarra Health have fibre optic connections shared via microwave link (from top of Rawlinson Range) to the women's centre, training centre and staff houses

Fibre to community	Yes, the fibre optic is delivered via the APY Lands connecting six Ngaanyatjarra communities including Warakurna
nbn Sky Muster satellite services	Some local agencies (Warakurna community office, Roadhouse, Warakurna Artists, NPY Womens' Council) have Sky Muster services, as well as most staff houses. According to our survey, about 4% of First Nations households have Sky Muster services
Starlink satellite services	Staff at Warakurna Roadhouse and the Police station had Starlink services. Ngaanyatjarra Media were waiting to install Starlink at the media centre at the time of our visit. The MFPP were planning to install an enterprise-grade Starlink service
UHF or HF Radio	HF radio is only used for aviation, police and emergency services. There is limited use of UHF radio as the local repeater tower is no longer operational
Status of services – faults, issues, speeds during peak use time etc	There were reports of recent network outages, with occasional mobile service outages due to damage to fibre optic cable or local exchange or mobile tower. There was an extended Telstra outage for about two weeks in mid-2022, with no phones or internet, due to fibre being cut near Kanypi. Satellite services still worked, enabling offices to continue and use of EFTPOS and ATM at the store and roadhouse
Communications programs history (Mobile Black Spot Program, Regional Connectivity Program etc)	nbn community-wide Wi-Fi pilot network (funded by nbn); Ngaanyatjarra Lands Telecommunications Project (2004-8) – \$5.8m co-investment from Australian Government Coordination Communications Infrastructure Fund/ WA Government, Shire of Ngaanyatjarraku and Ngaanyatjarra Council; WA Government Regional Mobile Communication Project (2012-14)
Any planned upgrades?	None known
Emergency information system	Emergency services managed by WA Police; a local SES team is being set up between police and community agencies due to police not always being on-site. Emergency communications currently mostly via mobile
Telemetry network	Monitoring of water tanks, power generator and other services by Power Water WA; remote monitoring system of RIBS broadcast and studio equipment by Ngaanyatjarra Media
Media services available	
Radio services broadcast – AM or FM	Ngaanyatjarra Radio (107.7FM), ABC Radio FM (not working at time of visit)
TV services – local broadcast, number of DTH services, number working	VAST direct-to-home satellite access only, but 56% of those surveyed did not have VAST TV working
RIBS radio station	Located in RIBS facility adjacent to Warakurna Artists; broadcaster Cynthia Burke (not staffed at time of visit)
RIMO – regional provider	Ngaanyatjarra Media
Other media services – newspaper etc	None

Community access facilities	
Internet access facility (location, number of computers, server, printers, other facilities, videoconferencing)	Two computers in Centrelink office provided by DHS for use of government services and banking; videoconferencing in community office
Public Wi-Fi availability, free or voucher system, agency, RSP, monthly download limit	nbn set up community-wide Wi-Fi pilot across Warakurna on 18 October 2022. Warakurna community office have public Wi-Fi available during work hours
Access computers available in other facilities – art centres, store, community office, youth centre etc	Ngaanyatjarra Media have installed six community access computers and Wi-Fi hotspot at media centre, with Starlink backhaul
Any programs running to support community access – provider	Not currently; Ngaanyatjarra Council training centre has computer for literacy and digital skills training; Ngaanyatjarra Media have previously run IT training programs in Warakurna (Future Skilling Outback 2005-7, RIPIA 2013-14)



Figure 28: Aerial photo of Warakurna community at dawn

Appendix 3: Photos of research activities



Figures 29 and 30:
Lyndon and the
team at work; Sign
on road to
Warakurna



Figures 30 & 31:
Warakurna
Roadhouse and
Warakurna Clinic



Figures 32 & 33:
Elders Roma and
Simon Butler; Daniel
doing interview with
Warakurna CDA Gina
Livesay-Sutton



Figures 34 & 35:
Daniel doing survey
with elder Dorothy
Richards;
Warakurna Media
Centre and radio
broadcast tower