

March 2023



MAPPING THE DIGITAL GAP

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

GÄNGAN, ARNHEM LAND, NT
COMMUNITY OUTCOMES REPORT 2022



Acknowledgement of Country

We respectfully acknowledge the Yolŋu (Dhuwala) people, and pay our respect to their Elders, past, present and emerging. 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 being undertaken through RMIT University as part of Centre of Excellence for Automated Decision Making and Society, in partnership with Telstra.

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The 'Mapping the Digital Gap' project received funding support from Telstra and the Australian Research Council Centre of Excellence for Automated Decision-Making and Society (CE200100005).

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Suggested citation: Featherstone, D, Ormond-Parker, L, Holcombe-James, I, Hawkins, L, Ganambarr, G, Ganambarr, D, Thomas, J & Kennedy, J (2023). Mapping the Digital Gap: Gangan, East Arnhem Land NT Community Outcomes report 2022. ARC Centre of Excellence for Automated Decision Making and Society: RMIT University, Melbourne. 10.25916/tqzj-wf36

Acknowledgements

We would like to thank the following key contributors to this research:

Community Research Partner

Laynhapuy Homelands Aboriginal Corporation
laynhapuy.com.au

Community Co-Researchers

Djamika Ganambarr
Guruwuy Ganambarr

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. As well as 31 community residents surveyed, we undertook 2 interviews with community leaders and 5 interviews with stakeholder agencies including:

- + Laynhapuy Homelands Aboriginal Corporation
- + Laynhapuy Homelands School
- + Laynhapuy Health
- + Yirralka Rangers

Research trip dates:

Gangan 16- 20 May 2022

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1. EXECUTIVE SUMMARY

Gängan homeland is a remote inland riverside community located in the East Arnhem region of the Northern Territory (NT). It is about 190km south of the regional centre of Nhulunbuy, 206km by road to Yirrkala and 900km to Darwin via the central Arnhem Highway. It is the ancestral land of the Dhalwaŋu clan whose moiety is Yirritja. Gängan is one of the largest of the 30 Laynhapuy homelands in East Arnhemland, and one of the first established by the traditional owners during the homelands movement from 1972 to provide a sustainable and independent future for their children on their ancestral country. Gängan has 13 residential dwellings and a permanent population of about 100 people (82 according to ABS 2021), with all identifying as Yolŋu (Aboriginal people) and speaking Yolŋu Matha dialects, primarily Dhay'yi, with Dhuwal or Dhuwaya dialects also spoken.

Most services to the Laynhapuy homelands are provided by Laynhapuy Homelands Aboriginal Corporation (LHAC), based in Yirrkala, and its various agencies - Laynhapuy Health, Yirrkala rangers, youth program, housing, community services. All services in Gängan (school, pre-school, clinic, shop, ranger base) are locally managed with support from staff from LHAC, Laynhapuy Homelands School and other agencies, who stay in short-term accommodation while visiting during the week.

Our first research visit to Gängan was undertaken from 23rd to 27th May 2022. We conducted additional stakeholder interviews in Yirrkala on the 27th May. The RMIT University team worked with community research partner LHAC and co-researchers Djamika Ganambarr and Guruwuy Ganambarr, with support from Youth Program Manager Rachel Godley and LHAC CEO Kerry Legge. The team had a productive week undertaking surveys with residents and conducting interviews with agencies and community leaders in Gängan and Yirrkala. We thank all residents and agency staff who participated in the research and made us feel welcome.

Based on 31 surveys and eight stakeholder interviews and discussions, this report outlines findings from our 2022 visit on access and use of media and communications, as well as the digital inclusion and service delivery challenges in Gängan and across the Laynhapuy homelands. This report is intended to assist local and regional agencies, including LHAC, East Arnhem Regional Council, Northern Land Council, as well as the Northern Territory Government (NTG), to better understand the key barriers to digital inclusion in Gängan and the region and community aspirations for the future. It is designed to provide a basis for a local digital inclusion plan, and to assist in identifying infrastructure and program needs to enable a targeted approach for advocacy with government and industry stakeholders. The report will be updated following research visits in 2023 and 2024.

This report is also part of our commitment to Indigenous data sovereignty, to ensure data collected and research findings resulting from this project are available to the participating communities to use for their own analysis, planning and advocacy. In line with this commitment, please note that this report provides initial findings from the raw survey data collected during our fieldwork. It is likely that, following data cleaning and weighting, the final results may differ slightly from that presented here. All Mapping the Digital Gap survey results, including Gängan, will be made publicly available via the Australian Digital Inclusion Index website and data dashboards, and it is this data that should be treated as authoritative.



31

surveys conducted



8

interviews
conducted

(6 agency representatives and
2 community residents)

Key Findings

The following key findings are based on initial analysis of the raw data from 31 surveys (30 Yolŋu residents, one non-Indigenous visitor) and observations and discussions during our visit.

With no 4G in Gängan currently, there is limited phone access but high use of Wi-Fi Calling.

- There is no mobile coverage in Gängan.
- 90% of survey respondents regularly use the public phone for phone calls. The free Telstra public phone and a public phone at the shop are the primary means of phone access for the community, with 61% also reporting using workplace phones in the school, clinic or shop¹. Only 23% of survey respondents said they used a fixed line telephone in their home.
- 19% of respondents said the public phone was reliable, with 81% describing it as 'sometimes reliable'.
- Despite the lack of mobile coverage in Gängan, 84% of survey respondents reported regularly using a mobile phone to make calls, either using Wi-Fi calling via the existing Wi-Fi hotspot or when visiting a community with mobile service.
- A broadband service is due to be installed in 2023 that will enable expanded Wi-Fi Calling. While residents have previously resisted having mobile coverage in Gängan, due to potential social and cultural impact, this attitude appears to be changing.

Despite the lack of mobile coverage, there is high smartphone ownership.

- 87% of survey respondents own or share a mobile phone, with an average of 4.1 mobile phones per household.
- 100% of those with mobile phones had smartphones and 100% used pre-paid services.

There is no fixed Internet in households, with limited public Wi-Fi the only means of Internet access.

- There is no fixed Internet services in any of the 13 residential households in Gängan.
- The only Internet access in Gängan is via the free Wi-Fi hotspot at the Gängan shop, which is only on for limited time from 2-8pm daily (longer on weekends).
- The Laynhapuy Health clinic and shop have NBN Sky Muster services, and the school uses the STARS satellite service. However, there is a lack of redundancy options in the case of signal loss during heavy cloud coverage.

The primary means of Internet access is via the public Wi-Fi hotspot.

- Despite the lack of home Internet access, 90% of survey respondents had used the Internet within the last three months. Of these, 58% had used the Internet in the previous week, 23% within the previous month and 10% within the previous three months. Only 10% said they had never used the Internet.
- 79% reported using the Internet in a public space with free Wi-Fi, with 21% having accessed the Internet at their place of work or a community office (i.e. school, clinic or shop).

¹ Fixed line phone services in Gängan are delivered via the Higher Capacity Radio Concentrator microwave repeater system, used throughout remote Australia to reach locations without fibre optic cable, with speeds of up to 19.2kbps.

- The smartphone was the most common device used for Internet access (89%).
- The main reasons survey respondents gave for not using the Internet more often were 'I do not have convenient access to the Internet' (71%).

There is a lack of TV access in Gängan and only one radio service available

- 97% of respondents said that the VAST direct-to-home satellite TV equipment was either not working at their house (55%) or their house did not have a VAST service (42%). While one respondent reported that their VAST satellite TV worked, it is likely this person was from another community as interviewees stated that no households had VAST services working.
- Despite the lack of VAST service, 81% of respondents reported watching videos on the TV (via DVD or USB). 23% watch online video content on their phone (via Wi-Fi). 13% said they never watch TV.
- The only radio service available in Gängan is Yolngu Radio. This is a First Nations service, delivered by Aboriginal Resource and Development Service (ARDS) from Nhulunbuy. 29% of survey respondents report that they listen to Yolngu Radio daily or weekly, and 29% listen occasionally.
- The most common way to listen to radio was through the car radio (68% of listeners), with 32% listening on a radio at home and 29% streaming via phone or tablet (via public Wi-Fi when available).

Most people use the Internet, primarily for online banking, entertainment and social media.

- Of the 90% of survey respondents who had used the Internet in the last three months:
 - 39% reported that they used the Internet at least once a day, with a further 32% saying they used it at least weekly.
 - In the previous six months, 79% of Internet users had used online banking services, 54% had accessed a government service online, 43% had done online learning or study and 32% had done online shopping.
 - 61% had used the Internet to keep in touch with family or friends in the previous six months, and 86% had used online entertainment services (e.g., streaming video/music, online games).
 - 54% said that the statement 'I know how to send and receive emails' is 'very true' or 'mostly true' of them. 57% chose 'very true' or 'mostly true' to 'I know how to open a new Internet browser tab'. Only 36% chose 'very true' or 'mostly true' to 'I know how to complete online forms'.
- The primary reasons given by the 10% of low Internet users (those who had not used Internet in the last three months) for not using the Internet was: low confidence (100%), not having access (66%), expense (66%), concerns about inappropriate content (66%), and lack of content in their own language (66%).

Affordability constrains Internet access and use of digital services, and costs are likely to increase.

- Of the 27 survey respondents with mobile phones, the average household cost for pre-paid mobile services was \$184/month, with 32% paying over \$200/month.
- These rates are similar to sites with full-time mobile access. With the Wi-Fi service at the shop free of charge, these costs are likely to come from online usage in town or when visiting another community with mobile access. Expenses are likely to increase when the pre-paid broadband service is installed in 2023.

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- 39% of those who used the Internet within the last three months indicated that the main reason they do not use the Internet more often is because “The Internet is too expensive for me”.
- 55% reported sacrificing essential household costs, such as food and bills, to afford Internet access within the past six months, with 71% compromising on connection speed and/or quality to prioritise affordability.

The full survey results are available in Appendix 1. A detailed audit of community demographics, relevant information, and communications and media services available in Gāngan at the time of this research is provided in Appendix 2.



Figure 1: Photo of research team - Left to right: Co-researcher Djamika Ganambarr, RMIT researcher Lyndon Ormond-Parker, Co-researcher Guruwuy Ganambarr, community leader and senior ranger Yinimala Gumana, and RMIT researcher Daniel Featherstone



Figure 2: Co-researcher Guruwuy Ganambarr does a survey with resident Alissia Wirrpanda



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, Thomas et al., 2021) is an annual 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 the level of digital inclusion. ADII scores are relative: they allow comparisons across different social groups and geographic areas, and over time.

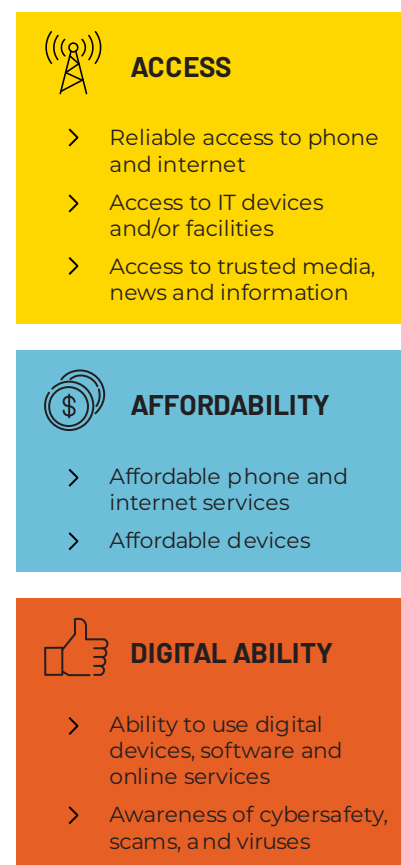
People living in Australia's 1100 remote Indigenous communities are likely to be among the most digitally excluded Australians. The ADII has previously found that people in remote communities often have extremely limited access to digital infrastructure and services and encounter very high costs for Internet access, especially in relation to their income (Thomas et al., 2018; Thomas et al., 2019).

The Mapping the Digital Gap project uses an amended version of the survey that underpins the ADII (the Australian Internet Usage Survey) to collect digital inclusion data. The Mapping the Digital Gap survey results will be available on the ADII website, with interactive charts that will provide insight into community-specific results as well comparison with other participating communities and national results collected by the ADII.

In 2021, access to information and services enabling participation in informed decision making regarding their own lives was introduced as a new Closing the Gap outcome (17). This new target 17 includes a goal of equal levels of digital inclusion for Aboriginal and Torres Strait Islander people by 2026.

The Mapping the Digital Gap project is targeted at remote First Nations communities and does not include digital inclusion of First Nations people living in urban and large regional centres. However, it is hoped this project will provide data that will help in measuring the scale and nature of this digital gap over time, as well as insights into strategies to address key obstacles and reduce the digital gap for all First Nations people.

DIGITAL INCLUSION



2. INTRODUCTION

Like most homelands, Gängan has very limited communications access

Gängan community is a homeland of about 100 Yolŋu / Dhuwaya people with strong local governance, typical of many homelands across the East Arnhem region. The community is largely off-line, with no mobile service and no Internet access in any of the 13 dwellings. Phone communications is primarily via the Telstra public phone near the school or the public phone at the shop during opening hours. A free public Wi-Fi hotspot at the shop, provided by Laynhapuy Health, enables Internet access and Wi-Fi Calling on mobile phones between 2pm to 8pm during the week, and for longer hours on the weekend.

Despite the lack of mobile coverage in Gängan currently, our survey found similar levels of mobile phone ownership to communities with 4G services, as well as expenditure on pre-paid services. Residents of all ages reported using mobile phones for Wi-Fi calling and accessing online use via the free Wi-Fi hotspot or when visiting Nhulunbuy or other large communities in the region with 4G services, such as Gapuwiyak or Yirrkala.

During our visit, there was no household take-up of Sky Muster satellite services, with the only satellite Internet services in Gängan at the School (using the NT Schools' STARS system) and Sky Muster services on the clinic and shop. While Sky Muster is used for basic tele-health at the clinic, mostly via Facetime on mobile phones, the domestic 25/5Mbps service available does not provide sufficient two-way speed or reliability to operate the high-end telehealth equipment installed in the clinic.

For similar reasons, an offline version of the Communicare patient records system is used by visiting health staff rather than the cloud-based online system. The STARS satellite system, installed in remote NT Schools about ten years ago, was described as highly congested and slow. Despite this, it was critical to keeping schools operating during the 6-week COVID-19 lockdown period in early 2022, for conducting remote meetings, lessons, and facilitating a regional assembly.

There are several communications upgrades planned for the East Arnhem region

To address ongoing issues with broadband availability and reliability across the East Arnhem region, Field Solutions Group (FSG), Telstra and Developing East Arnhem Land (DEAL) successfully sought Australian Government co-investment funding for three projects in the East Arnhem region through the first round of the Regional Connectivity Program (RCP). The RCP funded projects include²:

Applicant	Project name	Project description	RCP funding
Field Solutions Group	Satellite Backhaul Broadband Services for NT Remote Communities	The project will deploy a satellite backhaul broadband solution servicing the remote communities of Gängan, Wandawuy, Arawerr and Mungkarta. It will provide pay-as-you-go broadband data to residents, enabling improved access to telehealth and education services.	\$574,398
Developing East Arnhem Limited	Yirrkala Satellite to Fibre to the Premise Technology Switch	The project will upgrade the NBN access technology in the East Arnhem town of Yirrkala from Sky Muster satellite to Fibre to the Premises. The upgrade will support economic diversification in cultural tourism, creative industries and improved access to telehealth and education services.	\$2,342,266

² Adapted from spreadsheet of recipients at: <https://www.infrastructure.gov.au/departments/media/publications/round-1-regional-connectivity-program-funded-projects>

Applicant	Project name	Project description	RCP funding
Telstra	Arnhem Fibre Upgrade Project3	The project will upgrade core transmission equipment at Telstra sites across East Arnhem Land, increasing existing backhaul capacity between Darwin and Nhulunbuy from 5Gbps to 100Gbps, and upgrade Nhulunbuy's base station.	\$2,770,778

The first project, to provide a satellite backhaul broadband solution in four homelands including Gängan, also includes co-investment from FSG and NTG. This project is outlined further below and as a Case Study in Section 5 of this report.

NTG is currently planning the Remote Small Cells Program⁴ with Telstra to provide 4G satellite small cell mobile in 20 small communities in 2023, using the OneWeb low earth orbit (LEO) constellation as backhaul. Three of the identified sites are in the Laynhapuy homelands (Birany Birany, Donydji, Garrthalala), with several Marthakal homelands and homelands around Ramingining also listed. Consultation is underway to determine the final list of sites.

In a multi-agency meeting held at the Laynhapuy Homelands office in Yirrkala, NTG Regional Executive Director Jim Rogers outlined that the Arnhem Fibre Upgrade Project is planned to be completed in 2023. Following that, NTG is keen for the four microwave links to island-based communities of Minjilang, Galiwin'ku, Milingimbi and Waruwi to be upgraded, as these are currently heavily congested.

A satellite broadband / Wi-Fi Calling service is planned for Gängan in 2023

Installation of a satellite broadband solution is planned for Gängan and nearby Wandawuy homeland in 2023. The project description says the service 'will provide pay-as-you-go broadband data to residents, enabling improved access to telehealth and education services.'⁵ The project, which also includes two small communities in the Barkly region, is being coordinated by the NTG and undertaken by Fields Solutions Group, with funding through the Australian Government's Regional Connectivity Program.

Gängan residents and service providers are looking forward to the arrival of the service in the community. However, there is some concern about the impact that full-time connectivity may have on the community's peace, based on experience from other communities of cyber-safety issues and scams, as well as affordability issues of increased data use on pre-paid rates.



"We are waiting for the mobile to come but are worried about how much it will cost and making trouble with Facebook."

- Survey respondent, 2022

Gängan residents and service providers want input into the design and operation of the service. In particular, there are requests for content filtering and a nightly curfew on Internet access, similar to what is currently in place with the community's Wi-Fi service. The NTG have committed to consulting with the community to understand their needs and seek to address concerns (see Case Study in Section 5). There is also need for a change management plan to help the community prepare for the technological change, build awareness, and develop local strategies to reduce potential risks.

³ The Arnhem Fibre Upgrade project has co-investment from NTG (\$2.5M), Telstra \$2.5M, DEAL \$0.5M. The fibre itself does not need replacing, but exchanges, power supplies, batteries and other network elements will be upgraded.

⁴ Source: <https://dcdd.nt.gov.au/news/2022/remote-nt-communities-to-have-new-mobile-phone-service#:~:text=RESC%20programs%20target%20remote%20communities,by%20the%20end%20of%202023>.

⁵ Source: <https://www.infrastructure.gov.au/departments/media/publications/round-1-regional-connectivity-program-funded-projects>

Affordable access to communications and online services is critical to avoid 'digital poverty'

With digital transformation of government services, such as Centrelink, MyGov and MyHealth, to online delivery, reliable and affordable Internet access is increasingly necessary for accessing essential access. Our survey found that, while social media, online entertainment and Internet banking are well used, online government service use is relatively low. While the planned 4G service will provide much needed access, it is recommended that free public Wi-Fi be retained to avoid the cost of using online services being transferred to the user.



"It's crucial that Yolŋu that live out here have access to all the things that other people in town have access to. They really need access to Internet banking, news, reporting to Centrelink and all those things. But it has to be done in a really careful way, because there's potential for ... having a negative impact upon the way of life out here, which ... is really special, and that's why they live here, and it's crucial that we maintain that."

- Rachel Godley, LHAC Youth Program Manager, 2022

With the average personal income being only \$287 per week in Gängan (ABS 2021), and the average household cost for pre-paid data costs documented through our survey already at \$184 per month before the arrival of the planned broadband solution, the expense of pre-paid data and devices are likely to become a significant cost burden. This is on top of rising costs of food, fuel and other household needs. Local strategies to relieve household and community costs will be needed to reduce 'digital poverty'.



"Having access to communication now is pretty much tied to your standard of living ... I think people just expect it now."

- Kerry Legge, LHAC CEO, 2022

The COVID-19 pandemic limited travel for service delivery but some services continued

The COVID-19 pandemic had a significant impact on many remote Northern Territory communities, with remote area travel restrictions limiting access by service providers for health, education, municipal services and other activities. LHAC, which provides most services to the homelands - health, rangers, housing, municipal, youth programs etc. - and the Laynhapuy School were able to continue operations during 2020 and 2021 due to having staff based in the region, and a model of co-delivery by community-based Yolŋu staff. However, some services were unable to be delivered when the pandemic spread in early 2022, and the lack of fast, reliable communications services limited use of telehealth and online meetings and lesson delivery.

Gängan has very limited media and news access

There is very limited access to news or information services in Gängan currently, with the only freely available media being the popular Yolŋu Radio service. Yolŋu Radio provides full-time radio across the East Arnhem region in Yolŋu Matha language and local dialects. It played a crucial role during the pandemic in providing reliable information to counter misinformation spread via social media. Despite the service not working prior to our visit (we helped ARDS get it working again), Yolŋu Radio was cited as the most common source of emergency information (48%) and second most common source of news and information after in-person communications (87%).

There is no access to free-to-air TV services in Gängan, with none of the 13 households having the VAST direct-to-home satellite services working. Residents currently have very limited access to news,

information and entertainment, with young people using Wi-Fi to access entertainment and games online. The arrival of 4G will likely lead to high demand for data for online entertainment with associated costs using pre-paid services.



"No-one [in Gängan] has] got any free view TV ... and no-one can watch the news or TV or anything they'd actually like to watch."

- Rachel Godley, LHAC Youth Program Manager, 2022

Digital ability levels are relatively low due to limited access and support

There was a relatively low level of digital ability among the people surveyed, primarily due to limited Internet access, mobile-only use for most users, and preference for face-to face communications. Digital literacy tends to be lowest among people over 50 years of age, people with disabilities, and those with limited English literacy.

While most survey respondents had used the Internet in the last three months (90%), the main applications and online services used were Internet banking, social media and online entertainment and games. With little digital support currently available in Gängan, there is demand for community access computers and mentor support to help use online services, select mobile devices and plans, activate SIM cards, develop digital skills and build awareness of scams and cyber-safety issues. There was also demand for workplace digital skills training.



"I would like to learn more about computer. But at the moment we don't have an office to sit down and work. Without having a computer in this community [we can't prepare for the broadband coming] here at Gängan."

- (Billy Gumana, CDP Supervisor / traditional owner, 2022)

Suggestions for a local Digital Inclusion Plan

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 Gängan. Based on the audit of existing media and communications infrastructure and services outlined in section 3 (and Appendix 2), analysis of surveys and interviews with community residents and stakeholders in section 4, a list of potential strategies for consideration for a Digital Inclusion Plan are included in section 6. As part of our ongoing research work with the Gängan community in 2023-24, the Mapping the Digital Gap team can assist with developing this plan.

3. MEDIA & COMMUNICATIONS IN GÄNGAN

Telecommunications Services

Backhaul to community: Gängan currently only has telephony backhaul via the Higher Capacity Radio Concentrator (HCRC) microwave network. All Internet services are delivered via satellite.

Mobile coverage: There is no mobile coverage in Gängan with the nearest services available in Gapuwiyak 75km north. The planned satellite broadband service is due to be installed in 2023 (no date given as yet).

Landlines: There is a basic copper network providing phone services only (not ADSL) to the public phone, school, clinic, visiting officers quarters, and community shop, with limited residential access.

NBN services: Under NBN zoning, all communities and homelands in the East Arnhem region, outside of Nhulunbuy, are zoned as satellite delivery only (Note: Yirrkala is scheduled to get NBN fixed line services in 2023). In Gängan, there are NBN Sky Muster satellite services on the clinic and shop, however no households have Sky Muster services.

Public Phones: There are two public phones in Gängan, both free to use. The Telstra public phone is located near the school, and Gängan shop has a public use phone during opening hours.

Wi-Fi: There is a free public Wi-Fi hotspot available at Gängan shop from 2-8pm during the week, with longer hours on weekends. Since our visit, the Yirrkala Rangers office had a SkyMesh service installed in December 2022.

VHF / UHF Radio: The Yirrkala Rangers use UHF radios for communication between rangers and vehicles while undertaking land management work. VHF is used for air traffic and emergency communications by the Royal Flying Doctor Service. Beyond that, we did not identify any other use of VHF or UHF radio by other service providers in the region.

Telemetry: There is no known use of telemetry in Gängan.

Media Services

Radio services: Yolŋu Radio is the only radio service available in Gängan.

TV services: Free-to-air television services are only available via Viewer Access Satellite Television (VAST) direct-to-home equipment. However, none of the 13 Gängan households have VAST services working.

Regional and Local news: Being a small homeland, local news about upcoming events, meetings, and visiting agencies is primarily shared via word of mouth, the noticeboard at the Gängan shop and the shopkeeper's megaphone. Regional news is shared via Yolŋu radio, and LHAC and East Arnhem Regional Council Facebook pages.

Newspaper: There are no newspapers available in Gängan.



82

Population – ABS Census 2021
LHAC estimate 100



100%

Aboriginal and/or Torres Strait Islanders



206km

South-west of Yirrkala



35min

flight from Gove airport



13

Residential houses



6.3

Average people per ATSI household (ABS 2021)

Access and Support Facilities

Community Access facilities: There are no community access computers in Gängan.

IT Support: IT support is coordinated regionally by LHAC, Laynhapuy Health (undertaken in-house where possible) and the Laynhapuy School though the NTG. Contractors travel from Nhulunbuy or Darwin.

Mobile phones and recharge sales: There are no local sales of mobile phones or Telstra recharge vouchers, with sales primarily at Nhulunbuy or large communities in the region (Gapuwiyak, Yirrkala).

See the full Community Audit in Appendix 3 for more details.



Figure 3: Co-researcher Djamika Ganambarr uses the public phone in Gängan.



4. KEY FINDINGS

This section provides key findings from the eight interviews and meetings conducted with community leaders and stakeholders, as well as survey results and observational data.

See Appendix 1 for the full set of unprocessed survey results, based on initial analysis of 31 surveys undertaken. As outlined in the Executive Summary, the finalised survey results may differ from those presented here once data cleaning and weighting has been completed. The definitive results will be available via the Australian Digital Inclusion Index website and data dashboards in July 2023.

Communications Access

Improved communications are needed for safety in the East Arnhem region

Beyond Nhulunbuy and the major communities there is very limited communications access in much of the East Arnhem region. Most of the 30 Laynhapuy homelands have basic telephony delivered via HCRC microwave or satellite backhaul. In most homelands, the public phone is the only means of communications, making contacting people extraordinarily difficult. The only homelands currently with 4G coverage are Gultjangan on Bremer Island and Yilpara homeland.

- “[Currently] communications is pretty much restricted ... we’ve got fairly reasonable communications here [in Yirrkala], and then there’s not much mobile coverage once you leave here. So there’s a big focus on knowing where people are all the time to make sure that they’re safe, and also getting messages back in a timely way. Even here [at Yirrkala] the phones and the Internet aren’t as good as what they are in Nhulunbuy [15km away]. ... It deteriorates the further out you get from Nhulunbuy.”
(Kerry Legge, LHAC CEO, 2022)

Emergency communications and safety are critical factors for the needs for improved communications:



“One of the concerns that we have around lack of communication is personal safety, and we do have quite severe events. [Recently] a young boy was bitten by a crocodile at Bukudal ... fortunately they had access to communication so that we could respond and get the boy into hospital [in Darwin] ... it was quite a severe event. ... [Also a] young child who rolled in a fire and the parents had to drive him to Gapuwiyak ... [it took] hours before that child had medical attention. ... We’re lucky that more things don’t go wrong, [but] more equity in communication around here would be a great outcome.”

– Kerry Legge, LHAC CEO, 2022

Like many of the Laynhapuy homelands, Gängan becomes isolated during the wet season, with road travel often not possible between December and April each year.

- “In the dry season, it’s about 3 hours. But it can be up to 5 hours in the wet season, [or impassable if] the road’s all flooded over. And [even] then also you’ve got to have a reliable 4WD and fuel.” (Rachel Godley, LHAC Youth Program Manager, 2022)

The cost of travel to regional centres also makes communications services critical:

- “[A bush taxi] costs \$750 one-way, so it’s not ... easy to get into town for most people. ... There’s no regular passenger transport service out here. It’s all charters and therefore expensive. [It’s] also difficult to navigate the system, like a lot of other

things in the dominant culture that Yolŋu are still learning to navigate.” (Rachel Godley, LHAC Youth Program Manager, 2022)

History of communications access and upgrades in Gāngan

Traditional owner Yinimala Gumana outlined the traditional modes of communication, before colonisation:

- “[In early times] where people were ... moving around this country, [to communicate with another clan] ... especially for ceremonies, they [would] send someone to go out and talk to those people, and also, to light the grass to make a big smoke, so other people they know [that] people is coming from other places. That’s how they communicate ... from the very beginning, before the colonisation started.” (Yinimala Gumana, Ranger Coordinator Yirralka Rangers/ traditional owner, 2022)

When the homelands were being established in the 1970s, VHF radio became a primary communication tool:

- “Then [VHF] radios system were coming in ... they used that one to communicate to other places. ... They used to carry their own radio wherever they go. ... They always communicate to other homelands and talk to other leaders and other family. ... every village, they have been using the radios to communicate.” (Yinimala Gumana, Ranger Coordinator Yirralka Rangers/ traditional owner, 2022)

The public phones were introduced by Telecom in the 1990s:

- “Laynha [then] helped the homeland people to get ... Telecom, to come and to build a telephone. ... They have to build the tower first ... to connect it there to other wires ... then they put the telephone there, public telephone. ... I was kid, I used to help my community, and the people would make a trench from the tower ... for that telephone cable [to] run from tower to the payphone there.” (Yinimala Gumana, Ranger Coordinator Yirralka Rangers/ traditional owner, 2022)

The technology options have changed significantly today:

- “Now today, we on different technologies ... we can use phone, the Internet, to ... send a email or check message, whatever. ... [These days] we’re all connected, [using mobile] phones connecting to the Internet.” (Yinimala Gumana, Ranger Coordinator Yirralka Rangers / traditional owner, 2022)

With no mobile coverage, the public phone and Wi-Fi Calling are primary means of making calls

Gāngan has HCRC backhaul supplying limited phone services, including to the public phone and school, clinic and store, via a copper network from a small exchange by the tower near the school. There is no mobile coverage in Gāngan, with the nearest accessible coverage being in Gapuwiyak about 75km to the north by road. The phone options in Gāngan are:

- Public phones: There is one Telstra public phone close to the school, which is free to use (as with all Telstra public phones now). The shop also has a free public phone for use when the store is open.
- There is active use of Wi-Fi calling and texting to make phone calls due to the lack of home phones when the Wi-Fi is on between 2pm and 8pm each day.

The public phones are the primary means for calling for most Gāngan residents, with 90% of survey respondents reporting use of the Telstra public phone or public phone at the shop for phone calls. 23% said they used a fixed line telephone in their home. 61% also reported using workplace phones in the school, clinic, or shop.

Only 19% of survey respondents said the public phone was reliable, with 81% saying it was sometimes reliable. LHAC are responsible for monitoring of public phones:

- + “We have to advise [Telstra] when the public phones don’t work [which is often] because they’re always breaking down.” (Kerry Legge, LHAC CEO, 2022)

Given the lack of mobile coverage, Internet access is almost entirely via the Wi-Fi hotspot at the shop or via a workplace Wi-Fi (i.e. school, clinic, ranger base). None of the residential households have any form of fixed home Internet.

Beyond Gängan, some homelands have the Activ8me public phones, which were installed in the early 2010s under the Federal Government’s Indigenous Communications Program in small communities with under 50 residents. These provide Wi-Fi connectivity near the phone, enabling Wi-Fi Calling using a mobile device:

- + “[At Gurkawuy homeland] the public phones are satellite type phones, but it’s Wi-Fi enabled ... the community loves it ... you can just do simple text messages and they can get through. I don’t know if you’d be able to use FaceTime or anything like that.” (Lonnie Dentith, Nurse, Laynhapuy Health, 2022)

There are high rates of mobile phone ownership

87% of respondents said they owned or shared a mobile phone, with all of these being smartphones and all using pre-paid services. Despite the lack of mobile coverage in Gängan, 84% of survey respondents said they regularly used a mobile phone for phone calls. This is either through Wi-Fi Calling from the Wi-Fi hotspot or while visiting a community with mobile coverage.

Residents report using their pre-paid mobile services when they travel to larger communities, such as Gapuwiyak, Ramininging or Yirrkala, or the regional centre Nhulunbuy. There are no pre-paid vouchers available in Gängan, so these are purchased in the larger communities.



Figure 4: Community resident holds child as she plays on smartphone

Of the 90% of respondents who had used the Internet within the last three months, 89% said they use their smartphone as their primary means of Internet access. Some people also use a tablet (14%), with this reported predominantly by school staff who use tablets for their work. We observed very few computers in the community, only in the school and clinic.

Gängan is waiting for the satellite broadband service to be installed

As outlined above, a satellite-delivered broadband service is planned for installation in Gängan and nearby Wandawuy homeland in 2023, as well as two communities in the Barkly Homeland. This Telecommunications in Remote Aboriginal Communities project was initiated by NTG with co-funding through Regional Connectivity Program. Field Solutions Group are managing the project with planned installation in 2023.

When we visited, Gängan residents and agency staff were keenly awaiting the service to be installed.

- + “The community [wants the broadband service] here instead of ... using our pay phone ... [so] they can just use their own mobile to call their friends or families.” (Billy Gumana, CDP Supervisor / traditional owner, 2022)

- “[We want better coverage here] because this is the very remote area. ... [Currently] people were using their mobiles phone [via the Wi-Fi] ... [Sometimes] the public phone’s not working ... That’s why we need the [broadband].” (Yinimala Gumana, Ranger Coordinator Yirralka Rangers / traditional owner, 2022)

Previously there has been resistance to having any form of mobile coverage by Laynhapuy homelands residents due to potential social and cultural impact, however interviewees said this attitude is changing:

- “Homelands have been protected from that in a lot of ways but now that we’re starting to get access through Wi-Fi, we’re seeing that exposure growing. ... A few years ago community was speaking against mobile networks ... whereas now, most people have mobiles [and now want more coverage].” (Haidee Dentith, Laynhapuy School Principal 2022)
- “[Other homelands will] be looking at Gängan and they’ll probably want the same, so that will be interesting to navigate.” (Rachel Godley, LHAC Youth Program Manager, 2022)

Kerry Legge urged the need for a change management plan to enable people to be prepared for the new broadband access:



“You can’t just introduce something and not bring people along with the change. [You need to] talk about what you had before and what’s now and what you [need to] know.”

– Kerry Legge, LHAC CEO, 2022

The Case Study in section 5 outlines the community concerns and preferences for the new broadband service.

There is no uptake of NBN Sky Muster by Yolŋu residents

Despite the lack of mobile coverage, none of the 13 residential houses in Gängan had NBN Sky Muster services. The only Sky Muster services are on the clinic and store, both managed by Laynhapuy Health, and the ranger base since December 2022. There was very little awareness of Sky Muster being an option for home Internet and, with post-paid billing as the only option, this was not seen as an affordable means of access. Rather, residents said they wanted community-wide broadband coverage for Gängan, not just within the house.

Starlink satellite services are now available in northern Australia

At the time of our visit, Starlink services were not available in northern Australia. In November 2022, Starlink announced that they now provide coverage across all of Australia⁶. While Starlink services are more expensive than NBN Sky Muster⁷, the speeds are significantly faster (average over 100/25Mbps compared with 25/5Mbps) and lower latency (20-40ms compared with about 600ms) with unlimited download (compared with 150-300GB per month on Sky Muster⁸). While not generally affordable for residential use, Starlink provides an opportunity for improved service delivery, such as for tele-health and education purposes. It is yet to be seen how Starlink services are affected by rain fade.

⁶ For information about Starlink see: <https://www.ozbroadbandreview.com/blog/what-is-starlink/>

⁷ Starlink costs \$139/month plus equipment costs, compared with NBN Sky Muster costs which start at \$45/month.

⁸ On Sky Muster Plus data limits only apply to video and VPN use, with all usage unmetered from midnight to 4pm.

Last-Mile Access and Community Access Facilities

Community-managed Wi-Fi provides public Internet access and enables local control

Without 4G coverage in the community currently, the Wi-Fi service is the only affordable means of Internet access for Gängan residents. The Wi-Fi is set up at the Gängan Shop and operated by Laynhapuy Health as a free service with content filtering using Sky Muster satellite backhaul⁹. At the request of the community, it operates between 2pm (when school finishes) and 8pm during the week, with longer hours on weekends.

- “It is free and there’s no password or anything ... if lots of people are on it, it gets fairly congested, but otherwise it’s all right, and I don’t think we’ve run out of data yet.” (Rachel Godley, LHAC Youth Program Manager, 2022)

There is a similar public Wi-Fi service setup in six other Laynhapuy homelands:

- “The Wi-Fi is set up using Sky Muster in sites ... where all the health clinics are ... Dhalinybuy, Garrthalala, Gurrumuru, Wandawuy, Baniyala, Gängan and Birany Birany. ...The reason it’s limited is not to use up all the bandwidth on it, because [the clinics still need it] to do their main core job.” (Kerry Legge, LHAC CEO, 2022)

Jeff Cook, Operations Manager with Laynhapuy Health and Community Stores Coordinator, managed the Wi-Fi set up at the shop. He said this hot spot provides the Internet needed for the EFTPOS machine as well as free public Wi-Fi. The service is a domestic 25/5 Mbps plan with SkyMesh to keep it affordable¹⁰. However, if there is a fault, SkyMesh can take months to fix the service. Jeff said he would ideally like an NBN business plan that enables multi-site shared bandwidth so he can get one plan for the four sites. Jeff said that cloud cover had not had a major impact on the service, causing only temporary dropouts.

While there is demand for increased Internet access by some residents, especially young people, there are concerns by some elders about the Wi-Fi access:

- “Sometimes [the elders] want me to turn the whole Wi-Fi off and never want it again. ... Young people [say] “If something happens with the shop Wi-Fi, we want the clinic Wi-Fi password” ... [it] depends on who you’re speaking to.” (Rachel Godley, LHAC Youth Program Manager, 2022)

Some homelands have experienced issues of young people not attending school due to staying up late at night watching movies or playing online games:

- “When we’ve had students not coming to school ... it’s [often] because they’ve been up all night on the Internet. [So communities directed] Laynha Health to restrict the Wi-Fi [here and at] Garrthalala ... that seems to be addressing it.” (Haidee Dentith, Laynhapuy School Principal 2022)

However, the Wi-Fi time limit was raised as a limitation where this is the only means of Internet access:

- “We need to access emails for work so the Wi-Fi time limit makes it hard when it doesn’t start until 2 pm. We need access the whole day for work but we don’t want kids having access during school.” (Yananyumul Mununggurr, LHAC Director / Garrthalala resident, 2022)

⁹ The Wi-Fi was set up by eMerge in Sydney, and provides content filtering. Initially they had a solution that was too complicated but now use Unifi software.

¹⁰ This costs about about \$1500 per annum compared with a business plan cost of \$21,000 per shop per annum.

Even once the broadband service is installed in Gängan, the existing free Wi-Fi service at the shop will likely be continued to provide an affordable option for those without credit, as well as a vital back-up service in case of broadband service outages.

- “People [still need] Wi-Fi to do some banking, Internet ... in case we don’t have [pre-paid] credit in our community. ... it’s four hours drive from here to Nhulunbuy to go and buy a credit for their own mobile.” (Billy Gumana, CDP Supervisor / traditional owner, 2022)

There are currently no community access computers in Gängan

The only computers in the community are in the clinic, the school and the ranger office, however these are not available for public access. Our survey found that no residential households had a computer at home:

- “Some [Yolngu health workers] can use the computer in the clinic ... and I’ve shown the youth workers how to use that as well.” (Rachel Godley, LHAC Youth Program Manager, 2022)

Traditional owner Billy Gumana said that computers or laptops are needed in workplaces to enable people to do their work and conduct meetings via videoconference. He wanted a community access computer in Gängan to enable him to learn to use online services.

The community store is the communications hub in Gängan

The Gängan shop is the default communications hub for Gängan. It is open each day and is the location of the public Wi-Fi and phone, as well as the noticeboard for messages and upcoming activities. Shopkeeper Marakuku makes announcements of meetings, visitor arrivals, or weather warnings on his megaphone. When the mobile service arrives, this is where people will buy mobile phones and pre-paid vouchers. The centrality of the Gängan shop, and its existing communications role, makes it a suitable location for community access computer/laptop or iPad equipment for residents to access online services and learn digital skills.



Figure 5: Gängan shop

Previously the community office supported communications access, however the office is no longer operating.

- “The shops are ... a good [place] to make a hub. ... And that’s away from the school. ... It doesn’t have to be a computer. Like a couple of iPads that are just locked down and you can come and use for Internet banking or MyGov, which are the key things.” (Kerry Legge, LHAC CEO, 2022)

The shopkeeper could provide a level of supervision, and with appropriate training and support, may also become a digital mentor to support people with phone activation, use of online services and other digital skills needs. Alternately another person may be employed to provide the digital mentor role.

Service Delivery and Use of Online Services

Limited communications are a challenge for Laynhapuy School, especially during COVID-19

The Laynhapuy School manages nine homeland learning centres spread throughout the region, from Rorruwuy and Bremer Island down to Gängan. The School supports all ages from transition to Year 12, with senior students in Years 10 to 12 accessing a boarding program at Garrthalala homeland. Teachers are based in Yirrkala and visit the homelands during the week (from one to five days), with homeland-based Yolngu educators, who deliver lessons in language, running the school from Monday to Friday. When visiting staff were unable to travel to the homelands during the pandemic outbreaks in early 2022, the homeland-based educators ensured the schools remained operational.

The lack of communications access impacts on Laynhapuy School in arranging charter flights for students to attend high school in Garrthalala each week. Hopefully the broadband solution make this task simpler:

- “[It] would be a gamechanger ... [to be able to] contact families every week to let them know when the planes are coming and find out if] their child is [attending] this week. That sort of connectivity, communication, that’s vital. I’m excited about the opportunities that might come in that space.” (Haidee Dentith, Laynhapuy School Principal 2022)

In Gängan, there are phones in each classroom as well as the Families as First Teachers (FAFT) pre-school and the visiting officer’s quarters, all connected to the one line and phone number. Laynhapuy School Principal Haidee Dentith reported regular issues with the phone line, such as the Gängan line not having any dial tone for two days during our visit, and phone lines become very crackly. With Telstra reportedly taking a long time to respond to issues, the lack of reliability was described as a problem for staying connected with the homeland-based educators as well as a workplace health and safety issue.

As an NT Government school, Internet is provided to the school site via the STARS satellite network in seven of the nine homelands, with Bremer Island having 4G phone connectivity but no Internet. The STARS network was installed about 10 years ago and has reportedly not been upgraded since that time. The STARS network shares bandwidth across all NT schools and so can become highly congested.

During the pandemic outbreak in early 2022, School staff were restricted from travel to homelands for a five to six week period. The teachers supported local educators via phone, sending packages of resources by plane, and video calls. A number of video conferencing platforms were trialled for delivering lessons remotely, including Zoom and Skype. Ultimately the school settled on Microsoft Teams as the most reliable platform, with this available on all devices including iPads, and supported by the NT Education department. While email was often unreliable due to limited bandwidth, Microsoft Teams still enabled teachers to send a chat message. The School trialled a school assembly via video link with all sites and found that Teams worked over the limited bandwidth. However, teachers are typically unable to show an online video over the STARS network.

During our visit, NAPLAN tests were being conducted at the school using an offline version of the test on iPads. While this removed poor connectivity issues, other factors such as limited English and digital literacy make for uneven comparison with mainstream school students using the online NAPLAN test.

The School’s IT contractor is trialling Sky Muster at one of the smaller homelands, Birany Birany, where there is currently no Internet. This service was described as relatively reliable and fast compared with STARS.

Senior school students are using laptops and developing keyboard skills and use of PC-based applications. Digital skills and comfort with online applications are increasingly necessary life skills that

are critical for work readiness. Senior school students are introduced to workplace applications, such as the iTracker application used by rangers, as well as Internet banking, search techniques, and so on.

Younger students have some access to iPads within the classroom. Laynhapuy School has partnered with Apple Australia over the last four years around using iPads as a tool for learning and work within schools. Community educators use resources provided by Apple to learn a digital skill or an iPad app and then share it with the students. This includes creating movies and multi-media projects and doing learning assessments.

Once connectivity improves, the School is planning to introduce more desktop machines for use by both students and community members to learn about Internet banking and other practical applications.

Laynhapuy Health has limited phone and Internet connectivity

There is a mix of communications services in the Laynhapuy Homelands clinics. Clinics are staffed by local health workers and supported by roving nurses, who visit each homeland at least once a week. While a few very small homelands do not have a clinic, the larger homeland clinics are connected to Sky Muster services:

- + “We have landlines which are on and off, but satellite Internet is our main communication. We use that for all sorts of things within the clinic, FaceTime-ing doctors for medical consults or communication with the office and other people. ... Internet-based email [and Internet access is] through the Sky Muster network. ... It’s not particularly fast and it comes and goes ... if there’s bad weather [heavy cloud] around it doesn’t work.” (Lonnie Dentith, Nurse, Laynhapuy Health, 2022)

There have been numerous satellite services installed on the clinics over the last 20-30 years:

- + “On top of the roof [there’s] literally five satellite dishes ... [mostly] obsolete. There’s one working out of all of those. ... We’ve gone through a lot of services in the time that I’ve been here.” (Lonnie Dentith, as above)

Lonnie said that high-definition tele-health camera equipment was installed in the clinic at Gāṅgaṅ several years earlier to enable remote access by General Practitioners. It worked for a couple of years, however the connection was discontinued due to difficulties accessing technical support. Nursing staff have found the most reliable means of tele-health is via FaceTime on the mobile phone using the Wi-Fi:

- + “None of that [high-end equipment] works anymore. So we’re just back to standard NBN type Internet [with] the basic iPhone [which] seems to be the easiest thing to do. ... We’re just using FaceTime [or WhatsApp] depending on what the other person [has]. ... [It works pretty well] but occasionally it will bomb out [if] there’s not enough data or ... cloud cover or whatever.” (Lonnie Dentith, as above)

Simbani Research have recently undertaken a tele-health research project¹¹, working in NT homelands with Laynhapuy Health as a partner. The project found that Sky Muster Plus can be used effectively for remote tele-health using basic equipment that works with limited bandwidth and latency, including Facetime and videoconferencing software (Teams, Zoom etc) ,and only short outages during monsoonal weather.

Wi-Fi Calling is used extensively by nurses in the homelands:

¹¹ See <https://simbani.com.au/> and presentation on telehealth trial and equipment at: <https://www.crcna.com.au/file-download/download/public/582>

- “[Most] nurses ... use [Wi-Fi Calling] quite often. The quality is okay most of the time. Sometimes there’s a bit of a delay [due to latency via the satellite]. Today there was quite a bit of delay when I was talking to the office.” (Lonnie Dentith, as above)

The landline or mobile phone is used for calling emergency communications:

- “[For] emergency retrieval stuff we [mostly use the landline phone or] the Wi-Fi enabled phone through our mobiles ... depending on how things are going with the Wi-Fi.” (Lonnie Dentith, as above)

The clinic Wi-Fi is intended for health service use only to preserve monthly data limits, however it does get some public use if the Wi-Fi password gets shared with community residents.

- “We try not to give the password out [but] you’ll probably [see] people sitting around the clinic after hours playing with their phones. ... Some health workers turn our Wi-Fi off when we’re not there because they don’t like kids accessing it.” (Lonnie Dentith, as above)

The Communicare cloud-based patient records database requires high speed and low latency for reliable access. It does not work well over the domestic Sky Muster services, with nurses using an offline version when visiting homelands due to limited speeds:

- “[In Gāngan today] I couldn’t even log in. ... [So we use an] offline version ... [W]hen we get back to the office [we] synchronise that back up onto our server. That’s how we operate because the Internet is way too slow for that sort of stuff and too unreliable as well.” (Lonnie Dentith, as above)

However, the Sky Muster connectivity was sufficient for remote IT support using TeamViewer:

- “We had Communicare technical support do a remote session on my computer to fix it ... it was enough for them to do what they needed to do. ... a bit slow but it was functional.” (Lonnie Dentith, as above)

Communications technologies are used for undertaking land management work on country

The Yirralka Rangers are living and based on more than 14 homelands. They have 55 people on the team, 48 of whom are based in the homelands. They have recently been through a significant restructure and now have two coordinators one Yolŋu (Yinimala Gumana) and one non-Indigenous (formerly Sarah Kemp, now Lachy Sutherland following Sarah’s resignation in November 2022).

Co-Coordinator Sarah Kemp said it is difficult to contact people for meetings or work due to public phones being the only means of contact in many sites. In December 2022, Yirralka Rangers set up NBN Sky Muster services (through SkyMesh as retail service provider) in the Ranger stations in the five larger communities (Gurrumurru, Barraratjpi, Dhalinybuy, Baniyala and Gan Gan) to improve communications and enabling weekly online meetings. Rangers can now use Wi-Fi Calling to make calls at these sites.

The Yirralka Rangers use the iTracker database to collect land management records:

- “In regard to the work, we have to ... capture all the information, and put it into our [iTracker] database ... [this is] what we’ve been using for our animals and for weed spraying, fire. ... If we find someone there doing wrong thing in our country, we ... record on our database and send it over to the main office.” (Yinimala Gumana, Ranger Coordinator Yirralka Rangers / traditional owner, 2022)

IPA Rangers Co-Coordinator Sarah Kemp advised that that Laynhapuy Rangers have \$80,000 worth of VHF equipment that was previously purchased but not rolled out due to lack of towers to put the

equipment on. Her concern is that the equipment is now redundant and there is no funding to roll out and maintain a VHF network across the region.

Access to services and democratic processes is difficult without communications access

Some government agencies have to travel out to the homelands to deliver services in person due to the lack of access to phone or Internet communications. For example, Centrelink flies out to homelands to do fortnightly reporting with clients. Other agencies partner with LHAC to deliver services.

The Electoral Commission drive or fly to each community to conduct pre-voting for Federal and Territory elections. Voting for the 2022 Federal election was underway just prior to our visit. There were calls for a means of online or postal voting to reduce the resources needed and the impact of visits on communities.

The Australian Bureau of Statistics also struggle to undertake the Census in remote homelands. The 2021 Census, conducted during COVID-19 lockdowns, was reportedly impacted by limited access to homelands and administration issues in collecting the Census forms.

Access to media and new services

No Gängan households have TV services working

According to residents and agency staff, none of the 13 residential houses in Gängan have VAST direct-to-home TV services working. This was reflected in our survey, with 97% of respondents reporting that their VAST direct-to-home satellite TV equipment was either not working at their house (55%) or not in place at all (42%). The one respondent who reported having VAST satellite TV working most likely does not live in Gängan.

Of those survey respondents reporting that the VAST did not work, 71% said it was because the set-top box was not working, 53% had a damaged dish or cabling, and 29% did not know why.

- + “At the moment, it’s nothing at all [no TV services] ... set top box, they’ve got like damage ... who [is] responsible to manage that one?” (Yinimala Gumana, Ranger Coordinator Yirralpa Rangers / traditional owner, 2022)
- + “[TV] not on [in] Gängan at the moment. It’s very hard, wishing for to see TV that’s happening here.” (Billy Gumana, CDP Supervisor / traditional owner, 2022)

The lack of working VAST television services is common in other Laynhapuy homelands:

- + “I don’t think there’s TV anywhere that I can think of, maybe Gutjangan [on Bremer Island] which is near town [Nhulunbuy]. But as far as I’m aware there’s no TV anywhere else. Some people seem to have Foxtel, they [set up] pay TV set up in their house. ... But I haven’t actually seen any of them working lately.” (Lonnie Dentith, Nurse, Laynhapuy Health, 2022)

The VAST direct-to-home satellite TV service was installed on all premises in remote communities by the Australian Government in about 2014, replacing local television broadcasting, with the ongoing maintenance a householder responsibility. However, under the Digital Switchover program, there was no funding allocation or planning undertaken for a coordinated maintenance program of VAST equipment for remote First Nations communities. The expense of getting technical contractors to travel from Nhulunbuy, over 200km or 5-hours drive away, is unaffordable for residents.

The most common problem is with the VAST set-top boxes, which is prone to damage by surges in the community electricity grid when generators are re-booted. VAST set top boxes are not available at the Gängan store. They can be purchased in Nhulunbuy for about \$400 or online for about \$320. Even when

people buy a new set top box, it is very difficult to activate the smart card without phone or Internet access at home.

There is demand for assistance to get TV services working again:

- + [Having TV working again] would be really good. ... Young people wouldn't have to sit around on their phones all the time. Maybe they could watch sports on a bigger screen ... It would probably create better community atmosphere if people could watch TV together rather than on a small [mobile] screen." (Rachel Godley, LHAC Youth Program Manager, 2022)
- + "It's good for the community to able to look at news, what happening around the country ... It's good to see television and movies. ... That is something maybe Layna might look at." (Yinimala Gumana, Ranger Coordinator Yirralka Rangers / traditional owner, 2022)

Improved access to broadcast television would likely reduce demand on the mobile services and expense for users in accessing online entertainment. However, with no agency responsible for ensuring TV services are working in communities, this will require external financial and technical support.

The First Nations radio service is the primary source of local news and information

The only radio service available in Gāṅgaṅ is the First Nations radio service Yolṅu Radio, which broadcasts programming in Yolṅu Matha languages. This popular service is as a primary source of news and information.

- + "[We] listen to the news and other messages, what government people say about the law and whatever. ... Yolṅu Radio [is all] we have here, and nothing else. [Some people might] use their Wi-Fi to listen [to] news and weather." (Billy Gumana, CDP Supervisor / traditional owner, 2022)
- + "[There's Yolṅu Radio and] nothing else. People listen to the radio a fair bit, especially the older people will have it on." (Lonnie Dentith, Nurse, Laynhapuy Health, 2022)

Yolṅu Radio also provides emergency information, particularly with cyclones prevalent in wet season. Our survey found that 48% of people used Yolṅu Radio as a primary source of emergency information, second only to direct and in-person communications (87%).

The Yolṅu Radio service was not working when we arrived in Gāṅgaṅ, with local demand for its return:

- + "We need Yolṅu Radio to come back on. That's really important to all the community." (Rachel Godley, LHAC Youth Program Manager, 2022)

ARDS sent out a replacement transmitter and we were able to assist in reinstating the Yolṅu radio service during our visit. The community were pleased to have the service back on.

Beyond Yolṅu radio, there is a lack of other reliable sources of news. When we arrived in Gāṅgaṅ and held a community meeting, we mentioned the outcome of the Federal election two days beforehand. Nobody present had heard the results, an indication of the lack of access to news and information services.

- + " [When they found out we] had a new Prime Minister, everyone cheered. No-one had heard anything about that, which ... [it] does show you how people lack services out here [and] access to current events. They [want] to know what's happening in the world ... so it highlights a need." (Rachel Godley, LHAC Youth Program Manager, 2022)

Word of mouth is the primary source of news and information

There are limited sources of local news and information in Gāngan to provide relevant, trusted information about meetings and events, service provider visits, news and weather or emergency situations. Local information sources include:

- + Yolŋu Radio (see above)
- + Noticeboard at the shop
- + LHAC and East Arnhem Regional Council Facebook pages.

However, the primary source of news and information across the Laynhapuy Homelands is face to face delivery, known locally as the 'Yolŋu telegraph':

- + "It's pretty much the radio and the Yolŋu telegraph ... the talk. ... I don't know how people find out but people know stuff really rapidly ... cultural things mainly. I don't think it would include politics and all those sorts of things. ... I don't know how it works but it's pretty quick that people get told things." (Lonnie Dentith, Nurse, Laynhapuy Health, 2022)

Our survey found that the most common source of news and information was direct and in person (77% daily), followed by Facebook and other social media (29% daily), Yolŋu radio (32% occasionally¹²), and community noticeboards (32% occasionally). The most common sources of emergency information were direct and in-person (87%), Yolŋu Radio (48%) and Facebook (42%).

Affordability

Affordability of mobile data and devices may increase as an issue

Affordability of mobile and Internet access is likely to become a significant issue as Internet use increases. , 39% of survey respondents who used the Internet within the last three months gave the reason "The Internet is too expensive for me" for not using the Internet more often. However, given the primary means of internet access is currently via the free public Wi-Fi, expenditure is likely to increase substantially once Internet is more readily available with the pre-paid broadband solution.

Our survey found that the average household cost for pre-paid mobile users is \$184/month, with 32% paying over \$200/month. These rates are similar to sites with consistent mobile access, even though the primary usage in Gāngan would be restricted to when visiting Nhulunbuy or other communities.

55% of survey respondents reported sacrificing essential household costs, such as food and bills, to afford Internet access within the past six months, with 71% compromising on connection speed and/or quality to prioritise affordability.

Despite pre-paid data being more than ten times the rate of most post-paid plans, 100% of those surveyed with mobile phones use pre-paid services. Pre-paid services enable people to pay what they can afford and when they have money, rather than commit to a billed service that they may not be able to pay when it is due.

With the new pre-paid broadband service scheduled to be installed in Gāngan in 2023, data costs are likely to increase significantly.

- + "I do foresee that as a problem actually, because if people are having to purchase data, which they're currently not having to do ... that's obviously an expense that they don't currently have ... [If] you're living in poverty, it's obviously going to affect you." (Rachel Godley, LHAC Youth Program Manager, 2022)

¹² The survey was done at a time that Yolŋu radio had not been working for some time, so it was not a current source.

There were calls to retain the free Wi-Fi service once the broadband service is installed to ensure a means of affordable access to online services:

- “I would like to think that there would be a level of free data available ... [and for] Laynha Health, to keep that Wi-Fi going ... I think that’s only fair.” (Rachel Godley, LHAC Youth Program Manager, 2022)

The service provider is Field Solutions Group with backhaul via an NBN Sky Muster satellite service. It is not yet clear what the pre-paid rates will be for data use, and if these will differ between peak use (4pm to midnight) and off-peak times.

- “We don’t know how much we will be costing. How much the bills will be going up. ... [when the kids use Facebook and YouTube and Tik Tok] ... they love it ... they watch it non-stop.” (Yinimala Gumana, Ranger Coordinator Yirralka Rangers / traditional owner, 2022)

There is currently no consumer information available in the community on options for household broadband plans, devices or strategies for managing costs. Ensuring access to this information will be important once the broadband service arrives.

Digital Ability

Digital literacy levels are relatively low currently

Digital literacy is rapidly becoming a necessary life skill for accessing online services and information, communicating, learning, and using digital technologies in the workplace and at home. Our survey found that most people used the Internet (90%) but for a limited range of applications and online services. This is largely due to the restricted Internet and device access in Gāngan, and usage being almost entirely mobile only.

Of the 90% of respondents who used the Internet within the last three months, 86% said they knew how to connect to a Wi-Fi network (indicated ‘very true’ or ‘mostly true’), 65% said they could find and install apps, 57% could open a new Internet browser tab, 54% were able to send and receive emails, and 36% could complete online forms. For the 90% of regular Internet users, the most commonly used online service was online banking (79%). More than half (54%) reported using government services, 43% doing online learning or study, 39% accessing health information, and 32% doing online shopping.

Digital literacy tends to be lowest among people over 50 years of age, people with disabilities, and those with limited English literacy. While 100% of Yolŋu residents surveyed speak a dialect of Yolŋu Matha at home in Gāngan, 97% indicated that they understand spoken English very or quite well.

The three survey respondents who never used the Internet gave the following reasons for not using the Internet: low confidence (100%), expense (66%), not having access (66%), concerns about inappropriate content (66%) and lack of content in their own language (66%).

Despite the limited connectivity, young people are increasingly using mobile phones and devices.



“In the last two or three years ... every kid’s got a device [now], everyone’s listening to music, TikTok’s a thing, Facebook. And a shift in communities talking about cyber bullying and cyber safety. ... That really wasn’t on our radar [previously] because students didn’t have their own devices.”

– Haidee Dentith, Laynhapuy School Principal, 2022

Need for digital literacy training and support

With restricted access to computers and support outside the school, there are limited opportunities to develop more advanced capabilities and workplace readiness digital skills. With the broadband service coming to Gāngan there is increased need for digital skills to learn to use digital devices and online services:



“With digital inclusion there still needs to [support for people in] moving toward that equity ... I remember when I didn’t have a smart phone and all the education that I received around correct use of social media. ... I hope we don’t just give people something and not also give them the means to make the change towards that.”

– *Kerry Legge, LHAC CEO, 2022*

Yinimala Gumana urged that training be delivered in person, not online:

- + “[We need] that to educate the people on the ground about this technology. ... because [the Internet] is something new for the communities and for the Yolŋu people really.” (Yinimala Gumana, Ranger Coordinator Yirralka Rangers / traditional owner, 2022)
- + “Yes [we need that training]. Layna might help and do the training.” (Billy Gumana, CDP Supervisor / traditional owner, 2022)

For those without digital skills, there is limited Internet access or support available. The Laynhapuy School provide basic digital skills for students:

- + “A lot of schools teach keyboard skills. They want kids to learn to touch type [from] very young.” (Kerry Legge, LHAC CEO, 2022)

There is no agency currently delivering IT training or support in the region, with a question about who would be the appropriate agency to do this:

- + “Often ARDS is talked about is a good communicator up here, and are doing that, but I think whoever is bringing this technology needs to think of the other side as well. [And it’s] progressive learning [so] It could also sit with the education and the schools. [But schools not able to support adult education] ... probably something like CDU.” (Kerry Legge, LHAC CEO, 2022)

The Laynhapuy School said they may be able to provide a role in providing basic online skills for community members if they have improved connectivity and get computers in schools. The LHAC youth program or Yolŋu Business Enterprises were also suggested as other possible delivery agencies.

There is a regional focus on increased vocational training, so digital skills could become a role of the CDP provider (Arnhem Land Progress Association/ALPA) in the future:

- + “I think there’s quite a few providers trying to work in that space now because this Gove Peninsula with the exit of Rio Tinto by 2030, completely, it is possible that this area could be a bit more of an education hub for the region ...so it’s going to be a very different type of focus up here [with more vocation specific digital training for rangers, cultural and media production, health, education etc]” (Kerry Legge, LHAC CEO, 2022)

Cyber safety and scams are a significant concern. Training and awareness raising is required

While there is general community support for the broadband solution in Gāṅgan, local residents and agency staff raised concerns about the potential for cyber-safety issues once the service is installed, based on the experience of mobile services in other communities in the region. This led to requests for increased cyber-safety awareness in preparation:

- + “People sometimes use a phone, they text the message across and talk to other mob. ... [Sometimes they] argue each other through the phone ... bullying and other things. ... That makes trouble. ... That is not [good] for the community and for our wellbeing. ... [People] need to learn and get the skills ... to understand [about online safety].” (Yinimala Gumana, Ranger Coordinator Yirralka Rangers/ traditional owner, 2022)
- + “Sometimes, it’s very hard [for us] talking with the kids about using their mobile, and when ... [the broadband service] is on here at Gāṅgan ... they might use ... bad languages on friends or whatever, living in other communities. ... [we] can get help from the school, from Laynha, [from] elders, or even their own parents ... [to tell them about] languages that they shouldn’t be doing.” (Billy Gumana, CDP Supervisor / traditional owner, 2022)

The risk of cyber-safety issues were raised as an issue across the region, particularly with satellite small cell mobile services being planned in several other homelands:

- + “We would like to see parental control system over kids use of Facebook. Our main concern is cyber bullying, people having a go at each other through Facebook. We need this to be addressed before putting mobile into communities.” (Yananyumul Munungurr, LHAC Director /Garrthalala resident, 2022)

The Laynhapuy School provide awareness around cyber-safety:

- + “Certainly in our senior years program we’ve talked about it quite a bit ... last year [there was] a significant incident that had an element of cyber bullying. ... those conversations [need to be done] in a really sensitive way ... in the senior years program [it’s] easier to talk about ... we’re still working on [it for younger year levels].” (Haidee Dentith, Laynhapuy School Principal 2022)

The Laynhapuy youth program can assist in cyber-safety awareness, with cultural guidance from elders:

- + “As part of the youth program, we can definitely incorporate that. ... [I work] closely with the school. We’re having wellbeing camps in Term 3 [and] will be discussing online safety ... [it] needs to be worked in with a cultural framework [of] what’s appropriate and what’s not. ... You would need to go through the elders.” (Rachel Godley, LHAC Youth Program Manager, 2022)

With scam calls, texts and online messages becoming more commonplace, it would be timely to have cyber-safety awareness training in advance of the introduction of new broadband or mobile services.

In a region that has strict cultural protocols around how news of someone passing away is communicated, there is concern about the erosion of cultural protocols via social media:

- + “There was recently a fella died ... in town and that was put on Facebook before people were told ... there was a huge stir up over that. ... [Transferring cultural protocols to the online world is] one of those things [Yolŋu will] have to consider. ...It’s happened a few times over the years ... people becoming aware of people passing away before they’re even told culturally appropriately.” (Lonnie Dentith, Nurse, Laynhapuy Health, 2022)

5. CASE STUDY – PLANNED BROADBAND SERVICE FOR GÄNGAN

Community hopes and concerns about the planned broadband service

While Gängan residents and elders are looking forward to the new broadband service providing improved communications and Internet access, they also expressed concern about its potential impact on the strong social and cultural cohesion of their homeland:



“The good things that I can see is ... it’s good to be able to communicate others. [But] there’s bad things happening as well ... our kids [are] going to use the mobile every day [and] the adults too ... to look at Facebook or [other social media] ... That is very worrying for me ... If the kids or us as adults can sit around [and] play with the phone, all night or all day, then we’ll miss the other parts, other important things like learning, schooling, work ... culture. Mainly the culture because in Yolngu world we have a [strong] culture. ... We’re still connecting to this country ... and we got kinship and law system. ... We don’t want to lose everything ... because [people are using] phones or technology for the first time [and become] addicted [to] games or whatever.”

– Yinimala Gumana, Ranger Coordinator Yirralka Rangers/ traditional owner, 2022

The traditional owners of Gängan have governance over all aspects of the community’s operations. The elders are keen to ensure that their cultural authority also extends to decisions about telecommunications services for the community.

Gängan community currently have free Wi-Fi, set up by Laynhapuy Health, which is available from 2 - 8 pm at the local shop each day with longer hours on weekends. While limited in range and hours, this has been an effective self-managed model of Internet access. There is concern, based on experience in other communities, that the sudden availability of 24/7 Internet access would have a detrimental impact on this peaceful homeland. A phased-in approach which allows a level of community governance will help to reduce that impact.



“The reason why we [restrict the Wi-Fi time is] we don’t like kids waking up late ... We like our kids to have a better school instead of sitting down on Wi-Fi all the time. ... [When the broadband comes] we don’t want to see kids wake up all night, we don’t want to see that happening in our community. ... Maybe [we turn the Internet off] a bit late, maybe 10:00. ... We want our community to live in peace, and to have respect ... [and] for the kids to learn the culture.”

– Billy Gumana, CDP Supervisor / traditional owner, 2022)

- + “ [When the broadband comes we want people] going to the bed at night ... [we want to be] able to stop the Internet, maybe use it only for the [daytime] ... for our work ... to communicate and send email and check [our] online services. ... We have to manage [that ourselves] ... otherwise we might fail ... like don’t go to work or to schooling [if kids] sit all night.” (Yinimala Gumana, Ranger Coordinator Yirralka Rangers / traditional owner, 2022)

The Laynhapuy School also raised concerns about children potentially staying up late and not attending school:

- “The biggest risk is if its not limited access, kids accessing Internet all night. I think the only way we’ve managed that is where communities have [limited] the Wi-Fi ... to turn it off after 8:00pm. Whereas if it’s a 4G mobile tower and you can’t turn off the 4G data ... [then] we’ll see a spike [in] absence with kids staying up all night on the Internet.” (Haidee Dentith, Laynhapuy Homelands School Principal 2022)

This project is being coordinated by NTG as a trial of a scalable low-cost broadband service for homelands that enables Wi-Fi calling, so it is hoped that this feature is feasible. The technology is being designed and installed by Field Solutions Group, who are consulting with the community on the design.

The community have requested content filtering to reduce access to inappropriate content by young people:

- “The majority of community, particularly the elders [and] parents, do not want access to [inappropriate content] which youth are downloading and watching on their phones, on social media. There’s a lot of concern about pornography as well, and kids staying up all night on their phones. From my discussions with community members, [they want a] cut-off time at night ... and some content filtering, and maybe [they can only] call at night, and text ... The community have to be empowered to make these decisions for themselves ... not just one size fits all. [What Gāngan want] might not be the same as Wandawuy.” (Rachel Godley, LHAC Youth Program Manager, 2022)

While most mobile base stations do not have content filtering, there is a precedent. Optus have enabled content filtering on several satellite small cell services in remote WA communities. Also, at the request of community residents in Kiwirrkurra in WA, Telstra recently provided content filtering on the new mobile service there.

There are concerns about online safety and misuse of social media, based on experiences of large communities:

- “I don’t want ... people to use [the mobile service] for bad things ... texting messages, bullying and other things in bad words We should respect one another and respect for the community ... in this world, there’s too many things that affected our life. ... We want to use for good purpose and for good reason, to able to send a message, text, get email and send email, or take photos or do video recording.” (Yinimala Gumana, Ranger Coordinator Yirralka Rangers / traditional owner, 2022)

There was also concern raised about who is responsible for the ongoing maintenance of the infrastructure:

- “But my concern, if we get damage [to the equipment, who is responsible for] the cost. That is my question is, if we’ll damage it, [is it] up to us to able to manage it. As I said, it is new thing for Yolŋu.” (Yinimala Gumana, Ranger Coordinator Yirralka Rangers/ traditional owner, 2022)

Community request for measures to limit impact of the broadband service

At the community’s request, our team drafted a summary of requests about the broadband service design for LHAC, to distribute to NTG and other stakeholders. The document stated that Gāngan residents are looking forward to the service, but outlined a number of concerns raised by Gāngan community members,

including potential impacts of full-time Internet access, cyber-safety issues, and the cost of pre-paid data to access essential online services.

As the Gängan homeland is community run, they would like to implement a cultural authority approach to the communications as well. In particular, they are requesting that the broadband service have some of the features of the current Wi-Fi service, including the ability to switch off Internet access at night and allow calls only.

The document outlined the following requests in the setup of the new broadband service:

- ✦ Data access to be restricted overnight, with a curfew time to be determined by the community, allowing only phone calls and texts overnight;
- ✦ Content filtering on all DNS traffic through the service;
- ✦ The ability to locally 'switch off' data access, if there is misuse, to allow time for the community to address the situation before reinstating it;
- ✦ A means for government services, banking and other key services to be unmetered (free of charge);
- ✦ The cost of pre-paid data or vouchers be affordable.

While some considerations may be technically challenging or have cost impact beyond the scope of the project, the paper proposed a partnership approach with LHAC to ensure an effective model for the community.

If the community's requests are implemented, Gängan's experiences would offer a culturally appropriate model of broadband and phone service that other communities and homelands across Australia may want to consider.



Figure 6: Welcome sign at Gängan airstrip

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6. CONSIDERATIONS FOR LOCAL DIGITAL INCLUSION PLAN

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

Strategies proposed during community and agency consultations are outlined below to assist community stakeholders in planning efforts to improve communications services and digital inclusion in Gängan. These are not intended to be prescriptive, nor are they listed in order of priority.

Identified Issue	Possible Actions	Potential Stakeholders
Access		
Need for change management plan to prepare for new technology access	LAYNHA to work with Board and homelands representatives to develop and circulate a communications change management plan, to empower people to have input into communications delivery models, maximise benefits and reduce risks of introduction of mobile and broadband services.	Laynhapuy Homelands A.C. (LHAC)
Need for community input on broadband and 4G small cell services planned for Gängan, Wandawuy and homelands getting small cell mobile services	Establish a coordinated regional process for community consultation with NTG and telcos regarding the design and operation of the broadband and small cell 4G services (planned for three sites), with consideration to the concerns outlined in Section 5.	LHAC, NTG (NTG), Field Solutions Group, Telstra
NTG planning to develop an East Arnhem Digital Connectivity Strategy to address regional needs	Advocate for a process for Laynha and community input into the Strategy and needs/ connectivity models for Laynhapuy homelands	LHAC, NTG, Developing East Arnhem Limited (DEAL)
Ongoing need for Wi-Fi access beyond installation of broadband solution	Continue provision of free Wi-Fi at Gängan Shop to ensure affordable Internet access beyond installation of the broadband service.	LHAC, Laynhapuy Health
Demand for access computers for digital skills development, access to online services, meetings, and remote learning.	Identify appropriate space/s for community access computer/laptops and peripherals (printer/ scanner, monitor etc.) to meet different community needs, including privacy for meetings.	LHAC, Laynhapuy Health, Laynhapuy Homelands School, ALPA (CDP provider)
Need fast, low latency broadband for tele-health.	Consider trial of Starlink satellite service for Gängan clinic.	Laynhapuy Health, NTG
Reports of some Laynhapuy homelands having limited or	Review of communications infrastructure in Laynhapuy homelands;	LHAC, Laynhapuy Health, NTG

Identified Issue	Possible Actions	Potential Stakeholders
no connectivity and/or existing infrastructure not working reliably	Develop Communications Infrastructure strategy to guide future infrastructure planning, upgrades, co-design policy and shared use policy. Review maintenance processes including remote monitoring and support to reduce outage times; coordinate maintenance/IT support between agencies where possible.	
Affordability		
Concerns about affordability of data using broadband service when installed in 2023	Advocate for affordable pre-paid data rates for the upcoming broadband service. Provide accessible information in store (posters, brochures) and on Yolŋu Radio outlining ways to minimise costs of data usage via mobile and satellite services	LHAC, NTG, Field Solutions Group, NBN Co
Need for consumer information to limit financial impact of new broadband service	Provide independent consumer information about telecommunications plans, devices or strategies for managing data use and costs.	LHAC, Anglicare, ACCAN, inDigiMOB, Regional Tech Hub
Digital Ability		
Limited digital skills, use of online services and cyber-safety awareness	Delivery of informal digital skills workshops, possibly at Gāngan School. Ongoing support in using online services by a local digital mentor, possibly located at the Gāngan shop. Discuss with NBN Community Engagement team and inDigiMOB on options for delivery of digital skills workshops.	LHAC, Laynhapuy Health, Laynhapuy Homelands School, NBN Co, inDigiMOB
Demand for workforce readiness IT skills	Incorporate digital skills training into workforce readiness training and on-the-job training by local agencies as needed	Laynhapuy Health, Laynhapuy Homelands School, Yirralka Rangers, ALPA, Yolŋu Business Enterprises
Media Services and Production		
VAST direct-to-home satellite TV services not working in all Gāngan households; high cost to repair/replace equipment	Advocate for funding to upgrade or install VAST satellite services in all residences, replace VAST set-top boxes in homes where not working, and provide shelf unit and power surge protectors for all set-top boxes.	LHAC, NTG, Australian Government (DITRDC)

Appendix 1: Summary of Survey results

The following results are based on the initial analysis of surveys with 31 residents, 30 of whom identified as Aboriginal and one as non-Indigenous, not living in Gāṅgaṅ. As outlined in the Executive Summary, the final results may differ from these results after data cleaning and weighing against ABS statistics. These authoritative results will be available via the Australian Digital Inclusion Index website and data dashboards in mid-2023.

Demographics

- **Gender:** 58% of respondents were female and 42% male.
- **Education:** 42% have completed up to year 12, three people (10%) had completed a Certificate course or diploma, 10% completed up to Year 10 and 19% attained year 9 or lower.
- **Employment:** 81% of respondents were employed or engaged in CDP activities (35% full-time), 13% (four people) were unemployed or had given up looking for work. 32% had been looking for work in the last month.
- **Welfare:** 55% received some form of government pension or benefit, primarily JobSeeker/ Youth Allowance, Family Tax Benefit Part A or Part b, and Parenting Payment (Single or Partnered).
- **Housing:** 97% live in multi-generational or shared households, with an average of 6.3 people per house. 74% of respondents said they pay rent to the public housing authority, with the other 26% boarding or living at home.
- **Health:** 26% (eight respondents) had a long-term disability or health condition.
- **Language:** 100% of survey respondents indicated they spoke a language other than English at home. 100% of Yolṅu respondents speak a Yolṅu Matha dialect, mostly Dhay'yi, Dhuwaya and Dhuwal, with the single non-Indigenous respondent speaking English only. Most respondents indicated they understand written English (84%) and spoken English (97%) very or quite well, 16% (five respondents) said they only understand a few words of written English.
- **Income:** The average weekly household income was about \$1100. 7% of respondents' household income was between \$150 to \$400 per week, 16% between \$650 to \$1000 per week, 18% between \$1000 to \$1250 per week, and 27% between \$1250 to \$2000 per week.

Phone use

- **Phone Use:** 90% of respondents regularly use the public phone for phone calls, 84% use their mobile phone, 61% use the phone at a



58%

female respondents



81%

Employed or engaged in CDP activities



35%

Of employed respondents work full-time



87%

Own or share a mobile phone



\$184

Average monthly household mobile expenditure



29%

Listen to Yolṅu Radio and TEABBA daily or weekly



77%

Get news and information direct and in person daily



87%

Get emergency information direct and in person

community office or workplace, and 23% use the fixed line telephone in their home.

- + **Public Phone:** 81% said the public phone was sometimes reliable and 19% said that it was reliable.
- + **Phone ownership:** 87% of respondents said they owned a mobile phone (11% of these shared with others). Of those with phones, 100% had smartphones as their main mobile phone, and 100% used pre-paid services. There is an average of 4.1 mobile phone services per household.
- + **Data use:** Of the 27 responses on data use, the average monthly data allowances were: 7% used between 1-5GB/month, 63% used 6-10GB/month, and 30% used 11-20GB/ month. However, 48% reported exceeding their data limit up to five times over the past year, and 30% six times or over, suggesting that actual data use is higher than reported.
- + **Household Expenditure:** The total household mobile expenditure was \$5700/month, an average household cost of \$184/month. 32% of respondents indicated their household paid up to \$100/month, 35% paid \$101 - \$200/month, 19% paid between \$201-\$300/month, and 13% paid over \$300/month.

Media use

- + **Radio Listening:** The most popular radio stations were local, with 29% listening to ARDS' Yolŋu Radio service daily or weekly, and 29% listening to it occasionally. While ABC Radio is not available in Gāṅgaṅ, 23% listen to ABC radio occasionally, most likely online or when in another community.
- + **Radio Access** (multi-choice question): The most common way to listen to radio was through the car radio (68%), with 32% listening on a radio at home and 29% streaming via phone or tablet. 29% said they never listen to radio.
- + **TV Access** (multi-choice question): 81% of respondents reported only watching DVDs on their TV, with 23% watching TV via their phone and only one person watching TV via VAST satellite. 13% reported never watching TV.
- + **VAST TV Access:** 55% of respondents said that VAST satellite TV was not working at their house and 42% said their house did not have a VAST service. Only one respondent reported having VAST satellite TV working. Of those with VAST not working, 71% said it was because the set-top box was not working, 53% had a damaged dish or cabling, and 29% did not know why.
- + **TV and Online Content:** YouTube was most popular (39% watch daily, 13% weekly), followed by streaming services (e.g., Netflix, Stan etc. – 23% daily, 3% weekly), NITV (32% occasionally), ABC TV (29% occasionally), SBS TV (29% occasionally).
- + **News and Information Services:** The most popular source of news and information was direct and in person (77% daily), followed by Facebook (29% daily), other social media (e.g., Twitter, TikTok, AirG etc. – 29% daily), Yolŋu Radio (32% occasionally) and community noticeboards (32% occasionally).
- + **Emergency Information:** The most common sources of emergency information were direct and in-person (87%), Yolŋu Radio (48%), and Facebook (42%), with 26% indicating receiving emergency information through calls from mobile, telephone, or the public phone.

Internet use

- Latest Internet Use:** 58% (18 of 31 people) had used the Internet in the last week, with an additional 23% (seven people) having used it within the previous month, 10% (three people) in the last 3 months and 10% (three people) having never used the Internet.
- Regular Internet Users:** Of the 90% (28 of 31 respondents) who had used the Internet within the last three months:
 - 21% said they used the Internet several times a day, 18% once a day, 25% several times a week, 7% at least once a week, and 29% less than once a week.
 - The most common online device used is the smartphone (89%), with some people using a tablet (14%), and smart TV (14%).
 - 79% reported using the Internet in a public space with free Wi-Fi, 21% at their place of work or education, and 21% at a community office.
 - The main reasons people gave for not using the Internet more often were 'I do not have convenient access to the Internet' (71%), 'I am not confident using the Internet' (43%), 'The Internet is too expensive for me' (39%), 'I do not need to use the Internet more often' (35%) and 'I do not have access to content in my own language' (35%).
 - 79% of respondents said they were not concerned about the time they spent online, with 14% moderately concerned about how it affected their wellbeing and relationships.
 - In the past six months, 43% indicated that access to community access facilities or Wi-Fi had increased in Gāngan, and 39% said that the importance they placed on having quality Internet access had increased.
- Low Internet Users:** The three people who never used the Internet cited low confidence (100%), expense (66%), not having access (66%), concerns about inappropriate content (66%), and no access to content in their own language (66%) as their main reasons for not using the Internet. Two respondents had considered using the Internet since social and physical distancing restrictions were introduced due to COVID.
- Impact of COVID-19 on Use:** There was low indication that COVID-19 led to major increased Internet use, though some



58%

Of survey respondents used the Internet in the past week



10%

Never use the Internet



71%

Of regular users gave the reason "I do not have convenient access to the Internet" for not using the Internet more



43%

Of regular users gave the reason "I am not confident using the Internet"



100%

Of households do not have any form of fixed home Internet



54%

Can send and receive emails



79%

Use online banking

residents indicated that lockdowns (13%) and public health messaging or COVID-19 updates (13%) had led to a slight increase in their use.

- + **Fixed Broadband Services:** 100% of survey respondents do not have any form of fixed home Internet.
- + **Mobile Broadband Service:** Only two respondents (6%) used a form of mobile broadband other than phone data (laptop SIM), with both pre-paid, and both exceeding their data limit between 1-5 times over the last year.
- + **Affordability of Internet:** 55% of respondents said that they sometimes have to cut back on essential household costs in order to afford Internet (i.e., pre-paid mobile) within the past six months, with only 3% (one) saying they often have to cut back. 71% said they compromise on speed and/or quality on their connection to prioritise affordability.

Digital Ability

- + **Overall Digital Ability:** Digital literacy is relatively low in Gāngan.
- + **Regular Internet Users:** Of the 90% of respondents (28 out of 31) who regularly or semi-regularly use the Internet:
 - Most people reported being able connect to a Wi-Fi network (86% said 'very true' or 'mostly true'), use a mobile phone or device as a Wi-Fi hotspot (75%), and find and install apps/software (65%), with about half able to send and receive emails (54%), open a new Internet browser tab (57%), navigate most websites and apps (50%), and download and then open a file (46%). There was lower confidence in completing online forms (36%).
 - For online security and cyber-safety awareness, most people know how to set and manage secure passwords (61%) and add or remove friends or followers on social media (61%), with some able to identify which apps/software are safe to download (46%), and adjust privacy settings (54%), but there was low confidence in checking if information is trustworthy (18%), and manage and decide what personal information to share online (36%), and managing how personal information is collected (21%).
 - There is some confidence in content creation – 57% reported confidence in posting videos, 46% in creating online content, and 21% know how to create a website. There is low awareness of online copyright law (14%).
 - About half know how to connect smart devices (e.g., smart TV) to the Internet (50%) and adjust privacy and security settings (46%).
 - The main online activities used in the last six months include online banking (79%), accessing government services (54%), online learning or study (43%), accessing health information (39%), comparing prices (36%) and online buying and selling (e.g., through Amazon, eBay, Gumtree – 32%)
 - 61% used the Internet to keep in touch with family or friends in the last six months, 54% engaged with a community online, and 50% met new friends or connected with old friends online.
 - 86% of respondents had used online entertainment services in the past six months (e.g., streaming video/music, playing online games).
 - In the past 6 months, 32% had navigated a route via maps on a smartphone.

Comments

Survey respondents added the following comments at the end of the survey with some key themes:

Calls for Mobile coverage:

- + Telstra mobile access in Gängan



Mobile coverage for Gängan – people go out and need mobile phone coverage – if people go fishing or hunting

- + Telstra mobile coverage for Gängan.
- + Telstra service
- + Telstra mobile in Gängan.
- + Telstra tower
- + Good to have mobile here, save going to public phone. Should have limit on Internet so kids don't stay up all night.

Access to TV, radio and Internet services:



We want TV working at our house to see sports. We want Yolngu Radio working again to find out what's happening around the region

- + Radio tower @ good Internet and radio
- + We want to have TV and radio to find out the news from around the world
- + We need TV at Gängan. VAST Satellite not working on any houses.



I don't have a home phone or mobile coverage in Gängan, just the Wi-Fi at the store. I've got a TV but no satellite working to watch TV channels.

- + We need better Internet and TV in Gängan.
- + We need the mobile in Gängan and TV working on the houses and radio working.



We need the TV working again so we can watch the football, news, and get cyclone information in wet season or find out if roads are closed.

Digital training and support:

- + Training for email and digital skills
- + I would like to learn more about using phone and computers

Appendix 2: Audit of demographics and communications services

About the Community	
Community Name:	Gāngan
Alternate name	Yolngu Matha (Dhuwaya)
Traditional owners/ Language group	Longitude: 135.944 Latitude: -13.046
Location (Coords)	East Arnhem
Region	East Arnhem Regional Council
LGA/Shire/ Regional Council	Northern Land Council
Land Council	206km from Yirrkala; 220 km from Nhulunbuy; 35 min flight from Gove airport
Regional Service Centre, distance	Very remote
Remoteness (ABS)	Gāngan
Demographic Data - ABS 2021	
ABS link - All persons	https://abs.gov.au/census/find-census-data/quickstats/2021/SAL70300
ABS link - Aboriginal and/or Torres Strait Islander people QuickStats	https://www.abs.gov.au/census/find-census-data/quickstats/2021/ILOC70600302
Total population	82 (LHAC estimate 100)
Aboriginal and Torres Strait Islander population	100%
Gender breakdown	50% male, 50% female
Median Age / breakdown	21
Families	17
Language group- number of first language speakers	Yolngu Matha dialects – primarily Dhay'yi, Dhuwaya and Dhuwal
% ATSI people who speak an ATSI language	100%
% who speak only English at home	0%
Employment levels (of people in workforce)	No data
Education levels - % of people attained	No data
Number of buildings, number of households, average people/household	13 residential houses
Housing suitability- total persons living in overcrowded dwelling requiring more bedrooms	6.3 (7.6 if using population of 100)
Median Weekly ATSI household income	\$1,812

Median Weekly personal income - over 15 year	No data
Average weekly rent	\$90
Number motor vehicles per dwelling	No data
Community Services and Plans	
Community Layout Plan	See: https://bushtel.nt.gov.au/profile/498?tab=detail
Agencies in community	Laynhapuy Homelands Aboriginal Corporation - Yirralka Rangers, LHAC Youth program, municipal services Laynhapuy Health Services, stores, Ganybu Housing AC; Laynhapuy Homelands School; CDP - Arnhem Land Progress Association (ALPA)
Visiting agencies	Northern Land Council; Anglicare- money management; AFL; contractors
Community development plans	Through Laynhapuy Homelands A.C. - https://www.laynhapuy.com.au
Power supply/type in community	Local diesel generator
Use of power cards in households- monthly expenditure	Power cards were used, not since COVID - covered by Layna
Basics card site?	Yes, can't use online shopping with Basics card (c.f. cashless welfare card, can do online shopping)
Types of Communications Available	
Public phones- number/ location	1 public phone and 1 free call phone in shop
Home phones- number	Yinimala has phone at home and provided with a work mobile phone.
Mobile - 3G, 4G, 5G, small cell (satellite backhaul), provider, location of base station	No
Coverage description	HCRC phone system for phone/ fax; Sky Muster for broadband
ADSL- number of connections	No
Business grade services - number of connections	No
Fibre to community	No, satellite
Satellite services - number, locations, provider	Sky Muster for school and clinic and VOQ/training centre; eMerge satellite for Wi-Fi on shop; no other staff houses in community
UHF or HF Radio	No
Status of services- faults, issues, speeds during peak use time etc	HCRC phone system regular dropouts/ outages, especially during rainfall events; Regular generator outages.

Communications Programs - Mobile Black Spots, Regional Connectivity Program, ICP, etc	Regional Connectivity Program- satellite backhaul broadband solution due 2023.
Any planned upgrades?	No
Emergency information system	Word of mouth primarily; Marakuku's megaphone at the Gāngan shop
Telemetry network	Unknown
Media Services Available	
Radio services broadcast- AM or FM	Yolŋu Radio (FM) is the only radio service
TV services -local broadcast, number of DTH services, number working	VAST DTH TV not working on any houses in community
RIBS radio station- location, staff, roles	No
RIMO- regional provider	ARDS
Other media services- newspaper etc	No
Community Access Facilities	
Internet access facility- where located, number of computers, server, printers, other facilities, videoconferencing	No
Public Wi-Fi availability, free or voucher system, agency, RSP, monthly download limit	Free public Wi-Fi at store, available 2-8pm - provided by Laynhapuy Homelands
Access computers available in other facilities - art centres, store, community office, youth centre etc	No
Any programs running to support community access- provider	No



Figure 7: (left) Satellite service for Laynhapuy Homelands School in Gāngan.

Figure 8: (right) Telstra tower with microwave (HCRC) link supplying backhaul for telephony in Gāngan.

Appendix 3: Photos of Research Activities



Figures 9 and 10: Co-researcher Guruwuy Ganambarr doing survey with resident Alissia Wirrpanda; Co-researcher Djamika Ganambarr learning to do surveys with Lyndon Ormond-Parker.



Figures 11 and 12: Daniel Featherstone doing interview with traditional owner Billy Gumana; Community meeting at beginning of visit.



Figures 13 and 14: Tele-health equipment in Gānggañ clinic; Kerry Legge, LHAC CEO showing map of Laynhapuy homelands.



Figures 15 and 16: Laynhapuy Health clinic in Gānggañ; LHAC central office in Yirrkala.