



# TCICA Region Telecommunications and Digital Connectivity Final Report 2021

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## Project Team

This work was undertaken for Torres and Cape Indigenous Councils Alliance (TCICA) by The Cairns Institute at James Cook University (JCU) and the Digital Media Research Centre at Queensland University of Technology (QUT). The project team comprises:

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## Acknowledgements

We acknowledge the Traditional Owners of the TCICA region. We recognise that the lands in the Cape, Torres and Gulf region are important meeting places of Indigenous clans and have ongoing cultural and social significance. We pay our respects to elders past, present and emerging.

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## Contents

|  |     |
|--|-----|
| List of Tables .....   | ii  |
| List of Figures .....  | iii |
| Executive Summary .....  | 1   |
| Introduction .....   | 4   |
| Project Background .....                                       | 6   |
| Policy and Program Context.....                                | 11  |
| Project Methodology .....                                      | 14  |
| Community Profiles and Needs .....                             | 17  |
| Aurukun.....   | 17  |
| Cook Shire .....   | 19  |
| Hope Vale.....   | 21  |
| Kowanyama.....   | 23  |
| Lockhart River .....   | 25  |
| Mapoon.....  | 28  |
| Mornington .....   | 31  |
| Napranum .....   | 33  |
| Northern Area Peninsula .....                                  | 35  |
| Pormpuraaw .....   | 37  |
| Torres Strait Islands (TSI) .....                              | 39  |
| Weipa .....  | 42  |
| Wujal Wujal.....   | 45  |
| Overall TCICA Region Infrastructure and Coverage .....         | 47  |
| Summary of Project Findings: Across the TCICA Region .....     | 51  |
| Considerations in Developing a Digital Strategy .....          | 66  |
| Strategies for Digital Connectivity for the TCICA Region ..... | 69  |
| 1. Address Digital Infrastructure Issues in the Region .....   | 71  |
| 2. Developing Awareness and Capabilities .....                 | 75  |
| 3. Develop Collaboration & Partnerships .....                  | 77  |
| 4. Robust Disaster & Emergency Telecommunications .....        | 77  |
| 5. Supporting vibrant TCICA economies .....                    | 78  |
| 6. Other .....   | 78  |
| Conclusion and Next Steps.....                                 | 79  |
| References .....   | 80  |
| APPENDICES .....   | 86  |

## List of Tables

|   |    |
|---|----|
| Table 1: ADII scores in 2020 (Thomas et al., 2020).....   | 10 |
| Table 2: Aurukun Snapshot Statistics (Qld Government Statistician’s Office, 2021). .....                | 17 |
| Table 3: Cook Shire Snapshot Statistics (Qld Government Statistician’s Office, 2021) .....              | 19 |
| Table 4: Snapshot Statistics (Qld Government Statistician’s Office, 2021) .....                         | 21 |
| Table 5: Kowanyama Snapshot Statistics (Qld Government Statistician’s Office, 2021).....                | 23 |
| Table 6: Lockhart River Snapshot Statistics (Qld Government Statistician’s Office, 2021) .....          | 25 |
| Table 7: Mapoon Snapshot Statistics (Qld Government Statistician’s Office, 2021).....                   | 28 |
| Table 8: Snapshot Statistics (Qld Government Statistician’s Office, 2021) .....                         | 31 |
| Table 9: Napranum Snapshot Statistics (Qld Government Statistician’s Office, 2021) .....                | 33 |
| Table 10: Northern Peninsula Area Snapshot Statistics (Qld Government Statistician’s Office, 2021)..... | 35 |
| Table 11: Pormpuraaw Snapshot Statistics (Qld Government Statistician’s Office, 2021) .....             | 37 |
| Table 12: Torres Strait Islands Snapshot Statistics (Qld Government Statistician’s Office, 2021) .....  | 39 |
| Table 13: Weipa Snapshot Statistics (Qld Government Statistician’s Office, 2021).....                   | 42 |
| Table 14: Wujal Wujal Snapshot Statistics (Qld Government Statistician’s Office, 2021).....             | 45 |



## List of Figures

|  |    |
|--|----|
| Figure 1: TCICA Map (TCICA, 2021)                                      | 6  |
| Figure 2: Remoteness Areas for Cape York and Torres Strait (ABS, 2016) | 8  |
| Figure 3: ADII scores in Queensland in 2020 (Thomas et al., 2020)      | 9  |
| Figure 4: Underpinning Digital Drivers (NT Government, 2019: 6)        | 66 |



## Acronyms

|        |  |       |  |
|--------|--|-------|--|
| ABS    | Australian Bureau of Statistics                                  | NAB   | National Australia Bank                                    |
| ACCAN  | Australian Communications Consumer Action Network                | NAIF  | Northern Australia Investment Facility                     |
| ACMA   | Australian Communications and Media Authority                    | NBN   | National Broadband Network                                 |
| ADII   | Australian Digital Inclusion Index                               | NDIS  | National Disability Insurance Scheme                       |
| ADSL   | Asymmetric Digital Subscriber Line                               | NPARC | Northern Peninsula Area Regional Council                   |
| AI     | Artificial Intelligence  | NT    | Northern Territory   |
| ARIA   | Accessibility and Remoteness Index of Australia                  | NWQ   | North West Queensland                                      |
| BIRRR  | Better Internet for Rural, Regional and Remote Australia         | OECD  | Organisation for Economic Development and Cooperation      |
| CEO    | Chief Executive Officer  | PPP   | Public-Private Partnerships                                |
| CRC    | Cooperative Research Centre                                      | QLD   | Queensland   |
| CSG    | Customer Service Guarantee                                       | QUT   | Queensland University of Technology                        |
| DATSIP | Department of Aboriginal and Torres Strait Islander Partnerships | RCP   | Regional Connectivity Program                              |
| DOGIT  | Deed of Grant in Trust   | RSP   | Retail Service Providers                                   |
| FNQ    | Far North Queensland   | RTR   | Regional Telecommunications Review                         |
| FNQROC | Far North Queensland Regional Organisation of Councils           | SEIFA | Socio-Economic Indexes for Areas                           |
| GDP    | Gross Domestic Product   | STAND | Strengthening Telecommunications Against Natural Disasters |
| GRP    | Gross Regional Product   | TCICA | Torres and Cape Indigenous Councils Alliance               |
| ICT    | Information and Communication Technologies                       | TSC   | Torres Shire Council                                       |
| IOT    | Internet of Things   | TSI   | Torres Strait Islands                                      |
| ISP    | Internet Service Provider  | TSRA  | Torres Strait Regional Authority                           |
| IT     | Information Technology   | USG   | Universal Service Guarantee                                |
| JCU    | James Cook University  | USO   | Universal Service Obligation                               |
| LGA    | Local Government Area  | WTA   | Weipa Town Authority                                       |
| MBSP   | Mobile Black Spot Program  |       |  |
| MSC    | Mornington Shire Council   |       |  |



*"We need a high level strategic coordinated long term approach. Yeah, we're talking about intergenerational disadvantage. This cannot be a policy decision that will flip at the next election, you need years of concerted ongoing consistent strategy."*

Cape York Resident



*"The world is moving on while we are still on constraints."*

Cape York Resident



*"We just want to have clear connectivity even in bad weather. It would be acceptable if it's a once in a 100 years storm but our communications should be able to stand up to our regular weather."*

Cape York Resident



## Executive Summary

Participation in the digital economy provides a major opportunity to diversify regional economies, develop improved global economic participation, improve workforce attraction and retention, and enable competitiveness. The deployment of digital infrastructure also has significant non-economic impacts such as facilitating enhanced wellbeing, improved service delivery, opportunities for education and training, and improved liveability and social connectivity. Key to this is high-speed reliable digital connectivity, effective planning for access, and localised digital capabilities (Marshall, Babacan & Dale, 2021).

Torres and Cape Indigenous Councils Alliance Inc (TCICA) commissioned studies suggest that broadband and mobile infrastructure and services will provide real opportunities for economic and social development in the Cape and Torres region (ARUP, 2019; Matson, 2020). ARUP (2019:86) concludes that poor digital connectivity “limits the ability to maximise economic opportunities, partake in e-learning or benefit from tele-health services, and generally impacts on social connectivity and quality of life”. These TCICA studies, along with this report, identify connectivity as one of the transformative strategies needed for the region.

As a consequence of that need, and as an alliance of 13 councils in the Cape York and Torres Strait, TCICA has commissioned The Cairns Institute at James Cook University (JCU) and the Digital Media Research Centre at Queensland University of Technology (QUT) to develop a Telecommunications and Digital Connectivity Strategy for the Torres and Cape region. This regional scope includes the Local Government Areas (LGA) of Aurukun Shire Council, Cook Shire Council, Hopevale Aboriginal Shire Council, Kowanyama Aboriginal Shire Council, Lockhart River Aboriginal Shire Council, Mapoon Aboriginal Shire Council, Mornington Shire Council, Napranum Aboriginal Shire Council, Northern Peninsula Area Regional Council, Pormpuraaw Aboriginal Shire Council, Torres Strait Regional Authority, Weipa Town Authority and Wujal Wujal Aboriginal Shire Council.

A range of methodologies were used to undertake the project, including focus groups in each of the LGAs, the development of technical audit and digital community profiles for the TCICA region, a focus group meeting with an expert technical panel and interviews with targeted telecommunication providers. The digital profiles for each LGA were developed, mapping out mobile, satellite and fixed internet and ADSL provision across the region and the extent and nature of coverage. Focus groups were undertaken with over 103 stakeholders from different sectors and agencies to gain an understanding of the nature of issues experienced. These contributions to the study uncovered key challenges relating to:

- *Infrastructure gaps:* The levels of service available and those enjoyed in the major metropolitan areas differ significantly. The economics of communications provision in remote areas militates against extensive provision of terrestrial backbone links, whether by microwave radio or optical fibre, and mobile phone coverage. While satellite internet can deliver acceptable service, it is recognised that the quality and reliability of services deteriorates particularly during cyclones and storms. Participants reported unreliability of internet and mobile services with slow speeds, inadequate network capacity, drop outs, black spots and lack of geographical coverage.
- *Service quality and social infrastructure gaps:* Limited or mismatched telecommunications services/plans to meet rural and remote consumer needs and the affordability of plans (particularly where there are redundancies and lack of access to local technical support).



- *Digital awareness and skills:* There is limited consumer knowledge about digital options, a lack of skills for problem solving, limited localised support for digital knowledge sharing and skills development, intergenerational digital skills gaps, and a lack of cyber security knowledge.
- *Safety Considerations:* Due to lack of digital connectivity, problems emerge during disasters and emergencies, times of isolation along major roads and routes, periods of high compliance with COVID-19 measures, and times when people need to respond to social issues (e.g. domestic violence, policing), border security and bio-security.
- *Equity and Rights:* Digital connectivity was seen as an issue of equity and rights across TCICA communities. Participants felt that the Universal Service Guarantee (USG) was either not adequately being met or was inadequate to meet the needs and expectations for social and economic development within the Torres and Cape region.
- *Emerging Impacts:* There were a range of impacts of digital connectivity challenges in areas such as work, employment, social connectivity, economic development, safety, education and training information needs, links with government agencies; options for remote digital service delivery, health and mental health, region's liveability and attracting professional staff.

While there are significant constraints on digital telecommunications, some progressive investments are being made into the region. These include investments under the federal Mobile Black Spot Program and the Regional Connectivity Program (RCP), where some LGAs have received funding to address specific issues. Additionally, NBN Co and Telstra have announced significant investment with a focus on regional and rural connectivity. From this broader context, a Telecommunications and Digital Connectivity Strategy for the TCICIA region was developed with six strategic focus areas, along with suggested initiatives and time frames (see Table below). The strategy was aligned to the three dimensions of digital inclusion (access, affordability and ability) and focused on different categories of enablement from (i.e. Category 1: Individual, family or business; Category 2: Community organisation or community; Category 3: Regional; Category 4: Cross-regional).

The implementation of the Strategy will require the development of an implementation plan and should involve the formation of working groups to drive investment development, delivery, monitoring and evaluation. TCICA should lead the development of such a plan, supported by its University and other partners and it should also be guided by a critical reference group as outlined in the Strategy. The engagement of telecommunication providers and other stakeholders is going to be critical to the successful implementation of the Strategy. Thought should be given to which stakeholders will be engaged, mechanisms and levels of engagement and which stage of delivery.

The communities in the Torres and Cape region have aspirations for economic and social and cultural development and wellbeing. This report concludes that a lack of regional-scale planning leaves individuals, families and communities to resolve complex digital planning and service development issues. At the local scale, digital connectivity enables people to earn a living, run a business, have social contact, access services, and participate in civic life. Evidence highlights the critical roles that digital connectivity plays, particularly in information exchange, decision making, building social capital, civic participation, and connection for long term recovery. A whole of region approach to resolving these issues can empower local communities, businesses, families and individuals to secure better access and to improve the benefit they derive from these emerging new opportunities. Digital participation can be strongly empowering, helping people to overcome their sense of helplessness, giving them a sense of control and agency for individuals, communities and businesses, and helping them fulfil economic and social aspirations and develop resilience in the long term.

|                                | Strategic Focus Areas   | Strategic Initiatives   | Time Frames            | Enablement Category |
|--------------------------------|---|---|------------------------|---------------------|
| Access                         | 1. Address Digital Infrastructure Issues in the Region                    | 1.1 Establish a TCICA region ICT infrastructure planning, coordination partnership or committee.  | Short term             | Category 3          |
|                                |   | 1.2 Explore the option for alternative ICT provision arrangements to improve public good outcomes and competitiveness.  | Medium term            | Category 3          |
|                                |   | 1.3 Through strong regional planning, address immediate service enablement, coverage, last and middle mile issues.  | Short-medium term      | Category 1 and 2    |
|                                |   | 1.4 Conduct a future digital demand analysis and develop a Regional Digital Investment Plan for TCICA and FNQ region.   | Medium to long term    | Category 3 and 4    |
| Ability                        | 2. Develop Awareness & Capabilities                                       | 2.1 Initiate digital literacy programs to individuals, families and communities.  | Short term             | Category 1          |
|                                |   | 2.2 Working with relevant telecommunication providers, develop a satellite and ICT awareness campaign.  | Short term             | Category 1          |
|                                |   | 2.3 Support the development of a pool of place-based technical staff and skills across the LGAs in the TCICA region to assist last-mile solutions.  | Medium to long term    | Category 1, 2, 3    |
|                                |   | 2.4 Facilitate a network of digital technology officers meeting, including ICT staff in TCICA regions and service providers who support the region as a platform for learning, knowledge sharing, problem solving and skills development. | Short to medium term   | Category 3          |
| Ability, Affordability, Access | 3. Develop collaboration & partnerships for improved digital connectivity | 3.1 Establish a TCICA Region Digital Connectivity Technical Planning and Reference Panel to assist with partnership building with telcos, councils, regional bodies and other critical stakeholders.                                      | Short term and ongoing | Category 3 and 4    |
|                                |   | 3.2 Develop an ecosystem of digital champions for the TCICA region.   | Short term             | Category 2 and 3    |
| Access, Ability                | 4. Robust Disaster & Emergency Telecommunications                         | 4.1 In line with TCICA regional disaster resilience strategy, develop regional disaster and emergency telecommunications solutions.   | Short to medium term   | Category 3          |
| Access, Ability                | 5. Supporting vibrant TCICA economies                                     | 5.1 Develop travel hotspots technology hubs along selected tourist routes.  | Medium term            | Category 1 and 3    |
|                                |   | 5.2 Develop initiatives to support small business to leverage benefits of e-commerce and explore future options for a digital economy.  | Medium Long term       | Category 1 and 3    |
| Access, Affordability          | 6. Other  | 6.1 Develop indicators and benchmarks for minimum service quality and meeting Universal Service Guarantees.   | Short to medium term   | Category 4          |

## Introduction

Participation in the digital economy provides a major opportunity to diversify regional economies, develop improved global economic participation, improve workforce attraction and retention, and enable competitiveness. Moreover, deployment of digital infrastructure has significant non-economic impacts such as facilitating enhanced wellbeing, improved service delivery, opportunities for education and training, and improved liveability and social connectivity. Key to this is high-speed digital connectivity, effective planning for access, and localised digital capabilities (Marshall, Babacan & Dale, 2021). A 2021 ACS Australia's Digital Pulse report states that "Australia's better-than-expected economic performance over the past year was partly due to technology enabling businesses to adapt to a dramatically changing and uncertain environment." The report indicates the increased importance of digital technologies and literacy since the COVID 19 pandemic and notes that in 2020 the technology workforce in Australia grew by 4.3% and forecast that by 2026, there will be 1.1million technology workers in Australia. Despite this growth Australia's digital economy is less advanced than some other developed countries (Deloitte Access Economics, 2021). Deloitte Access Economics estimates that in



2019, Australia's GDP was 6.5% or \$126 billion larger due to productivity benefits of digital technologies. A 2015 Deloitte's Connected Continent II report estimates Australia's digital economy could have grown to \$139 billion by 2020 (7.3% of GDP); Bolstering digital inclusion is an essential component of the task of developing economies and communities in Australia (Deloitte Access Economics, 2015). An article published by the World Economic Forum, suggest that studies indicate that countries with strong digital infrastructure can mitigate up to 50% of the negative economic impacts from pandemics and that just 10% increase in broadband activity can add 1% to economic growth (Burunciuc, 2021).

Broadband and mobile infrastructure and services are the bedrock of digital development. Without access to reliable, fast, and affordable internet, businesses and sectors in regional and rural Queensland cannot thrive. People who possess this essential combination of affordable access and essential digital skills are 'digitally included'.

The national Infrastructure Audit (Infrastructure Australia, 2019) has highlighted hard telecommunications and social infrastructure as essential to the Australia's progress. The audit acknowledged a range of challenges. For example, while Australia's mobile footprint includes over 99% of the population, it covers only one-third of total landmass, meaning there is limited service in some rural and remote areas. In a Northern Australia Communications Analysis (Marshall et al., 2020) undertaken for the Cooperative Research Centre (CRC) for Developing Northern Australia identified key issues including:

- Infrastructure gaps: The levels of service available in the north of Australia and those enjoyed in the major metropolitan areas differ significantly. The economics of communications provision in remote areas militates against extensive provision of terrestrial backbone links, whether by microwave radio or optical fibre, and mobile phone coverage. While satellite internet can deliver acceptable service, it

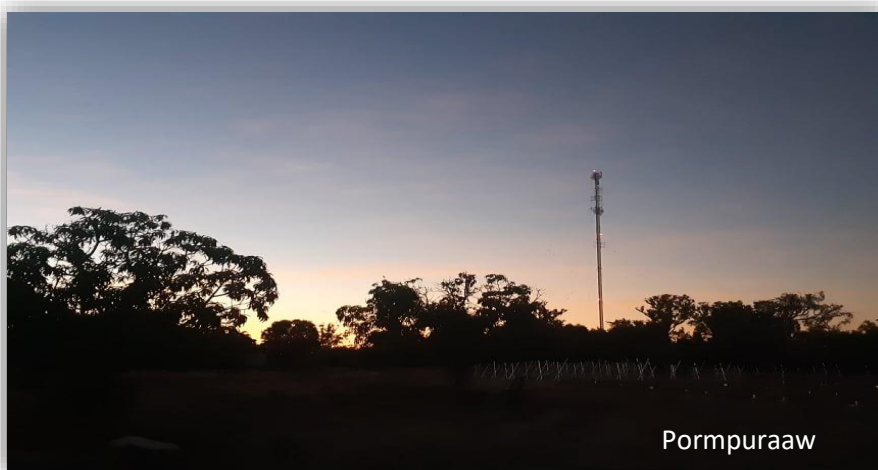


is recognised that the quality and reliability of services deteriorates under a range of conditions (Infrastructure Australia, 2015).

- Service quality and social infrastructure gaps: Limited or mismatched telecommunications services/plans to meet the needs of rural and remote consumers, inadequate network capacity, reliability and technical services, and limited localised support for digital knowledge sharing and skills development.

These infrastructure, service and skills gaps in digital connectivity and communication technologies has been found to result in the digital divide (Thomas et al, 2020). The term "digital divide" refers to the disparity between individuals (as well as households, businesses, sectors) in different geographic areas and socio-economic levels to access information and communication technologies (ICTs) and to their use of the Internet for a wide variety of activities (OECD,2020). Digital exclusion is interlinked with other forms of inequality, can compound existing disadvantage, and can create new forms of societal stratification and impact on life chances (Babacan et al., 2020).

Advances in computing, broadband, cloud connectivity, mobility, artificial intelligence (AI), information and communication technologies (ICTs), blockchain, internet of things (IoT), and data storage capacity offer opportunities for higher productivity, growth, and improved in living standards. Technological change can bring unprecedented potential if it can be capitalised. However, it can pose risks of higher inequality, such as dislocation from the workforce, services and opportunities, if the digital divide persists. Given the significance of digital connectivity economic and social development, the Torres and Cape Indigenous Councils Alliance (TCICA), an alliance of 13 councils in the Cape York and Torres Strait, commissioned The Cairns Institute at James Cook University (JCU) and the Digital Media Research Centre at Queensland University of Technology (QUT) to develop a Telecommunications and Digital Connectivity Strategy for the TCICIA region (i.e. Cape York and Torres Strait). This involved needs analysis, infrastructure gap analysis, identifying the digital aspirations of stakeholders and developing options for addressing the gaps and working collaboratively with technology providers. This report sets out the findings from the project and identifies strategies for digital connectivity in the Cape and Torres Strait.



## Project Background

The Torres and Cape Indigenous Councils Alliance Inc (TCICA) is an alliance of 13 councils in the Cape York and Torres Strait. TCICA commissioned The Cairns Institute at James Cook University (JCU) and the Digital Media Research Centre at Queensland University of Technology (QUT) to develop a Telecommunications and Digital Connectivity Strategy for the TCICIA region.

The aims of the project are to develop a:

- A community-by-community infrastructure gap analysis;
- Proposing solutions to address regional connectivity issues / investigation of digital technologies;
- Translating the digital connectivity ambitions of regional stakeholders;
- Identifying funding and resources to deliver on the strategy; and
- Identifying opportunities for collaboration with network and technology providers.

The project was undertaken within the geographical scope was aligned with the TCICA Local Government Areas (LGA) as outlined below:

- Aurukun Shire Council
- Cook Shire Council
- Hopevale Aboriginal Shire Council
- Kowanyama Aboriginal Shire Council
- Lockhart River Aboriginal Shire Council
- Mapoon Aboriginal Shire Council
- Mornington Shire Council
- Napranum Aboriginal Shire Council
- Northern Peninsula Area Regional Council
- Pormpuraaw Aboriginal Shire Council
- Torres Shire Council
- Torres Strait Regional Authority
- Weipa Town Authority
- Wujal Wujal Aboriginal Shire Council



Figure 1: TCICA Map (TCICA, 2021)

## TCICA Region Context

The TCICA region covers more than 131,000 square kilometres and is home to around 29,530 people, 65.7% of whom are Aboriginal or Torres Strait Islanders compared to 4% in Queensland. The region has a relatively younger population under the age of 19 years compared to the State average (35.6% compared to 25.6 % in Queensland).

The region faces significant socio-economic challenge with 71.1% of people classified as being in the most disadvantage quintile on the Socio-Economic Indexes for Areas (SEIFA), compared to the Queensland rate of 20.0% (ABS, 2016). The median total family income for the region is \$61,296 per year, compared to the Queensland average of \$86,372 per year. These figures include Weipa, which has a median family income of \$144,404 per year. The available unemployment at data for December 2020 indicates a Queensland unemployment average of 7.1%. The TCICA regions ranges from 2.65% in Weipa to 53.2% in Kowanyama with the majority of communities experiencing over 20% unemployment (Qld Government Statistician's Office, 2020).



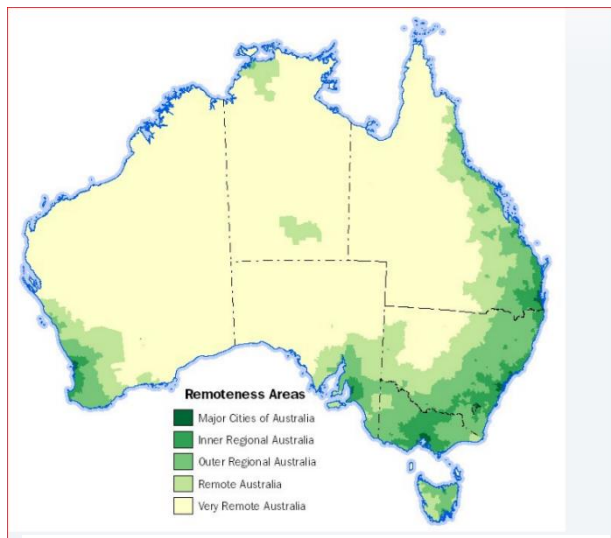
Wujal Wujal Art Center. Photo TEQ

The main industries in the region include mining, agriculture, public administration, health, education and cultural services. 18.1% of employed people work in the public administration and safety industry. The region contributes \$1.46 billion to the Queensland Gross Regional Product (GRP) (TCICA, 2021). A large proportion of the region is not connected to the national energy grid and reliant on diesel-generated power. The diesel is imported to the communities by road or sea (ARUP, 2019).

The majority of the population live in rental accommodation with only 10% of homes being owner-occupiers, and the region's homelessness rate that is 8.5 times higher than the Queensland average. The region has a relatively young population with the median age of 29.5 years compared to the Queensland average of 37.4 years. 48.4% of the population achieved Year 11 or 12 as their highest level of education. In 2016, only 68.9% of households had access to the internet (Qld Government Statistician's Office, 2020).

Aboriginal and Torres Strait Islanders living in remote Queensland experience higher rates of disease than their metropolitan counterparts, particularly communicable disease, maternal and neonatal conditions, and injuries. Aboriginal and Torres Strait Islander people living in remote parts of the State also experience 2.4 times the burden of disease and injury compared to the Queensland non-Indigenous rate (Queensland Health, 2019).





**Figure 2: Remoteness Areas for Cape York and Torres Strait (ABS, 2016)**

The entire region is classified as remote or very remote according to the Australian Statistical Geography Standard Remoteness Structure used by the Australia Bureau of Statistics. Access to services is measured using the Accessibility and Remoteness Index of Australia (ARIA). The region’s ARIA scores are high indicating poor access. For example, compared to Brisbane city score of zero, Torres Strait Islands score is 15, Lockhart 15, Mapoon 13, Weipa 12, Aurukun 12 and Wujal Wujal 7. ARIA score greater than 10.53 to  $\leq 15$  indicate very little accessibility to goods, services and opportunities for social interaction (UA, 2016).

The TCICA region is characterised by pristine environments, wide array of terrestrial and sea plant and wildlife diversity and unique and variable pristine landscapes (CYNRM, 2016, TSRA, 2016). The climate is tropical and the rainfall is variable throughout the year. The average rainfall is 1305mm in Cape York (Qld Government, 2016) and around 1750 mm in the Torres Strait islands (TSRA, 2016) mostly falling in the summer months. The region is characterised by monsoonal rainfalls, flooding, and tropical cyclones.

In a recent study of economic opportunities in the TCICA region, ARUP (2019:30) identified that “telecommunications coverage across the region is intermittent, with many blackspots reported. Both Telstra and Optus provide telecommunications services to the region to varied extents and quality of coverage”. An average of 68.6 % of households within the Torres Strait, Cape York and Gulf region has access to the internet, which is significantly less than the 83.7 % at the State level (ABS, 2016)

The Australian Digital Inclusion Index (ADII), The ADII is an annual ‘census’ of digital inclusion across Australia, defines digital inclusion as having three dimensions:

- Access (attaining connections and devices);
- Affordability (ability to sustainably afford connections/devices); and
- Digital ability (having the appropriate skills and knowledge to put connections/devices to use) (Thomas et al., 2020).

The ADII reveals substantial differences between Australians living in different states, and between rural and urban areas. Queensland’s ADII score in 2020 is 62.2. This score is 0.8 points below the national average (63.0) and ranks fifth out of Australia’s eight states and territories. In 2020, digital inclusion scores are 7.6 points higher in capital cities (65.0) than in rural areas (57.4). Indigenous Australians living in urban and regional areas have relatively low digital inclusion and recorded no increase over the past year. In 2020, Indigenous Australians’ ADII score remains at 55.1, 7.9 points below the national average. Affordability is a key issue, driven by a disproportionately high use of mobile-only and prepaid connectivity, which carries higher costs per gigabyte of data than fixed

connections. Other factors that impact on digital inclusion in Indigenous and other communities are age, disability, labour force participation, household income, and levels of education attainment (Thomas et al., 2020).

The Digital index scores for all of Cape York and Torres are not available. The ADII scores for the Cairns and North West region which are collected provide insights into digital divide.

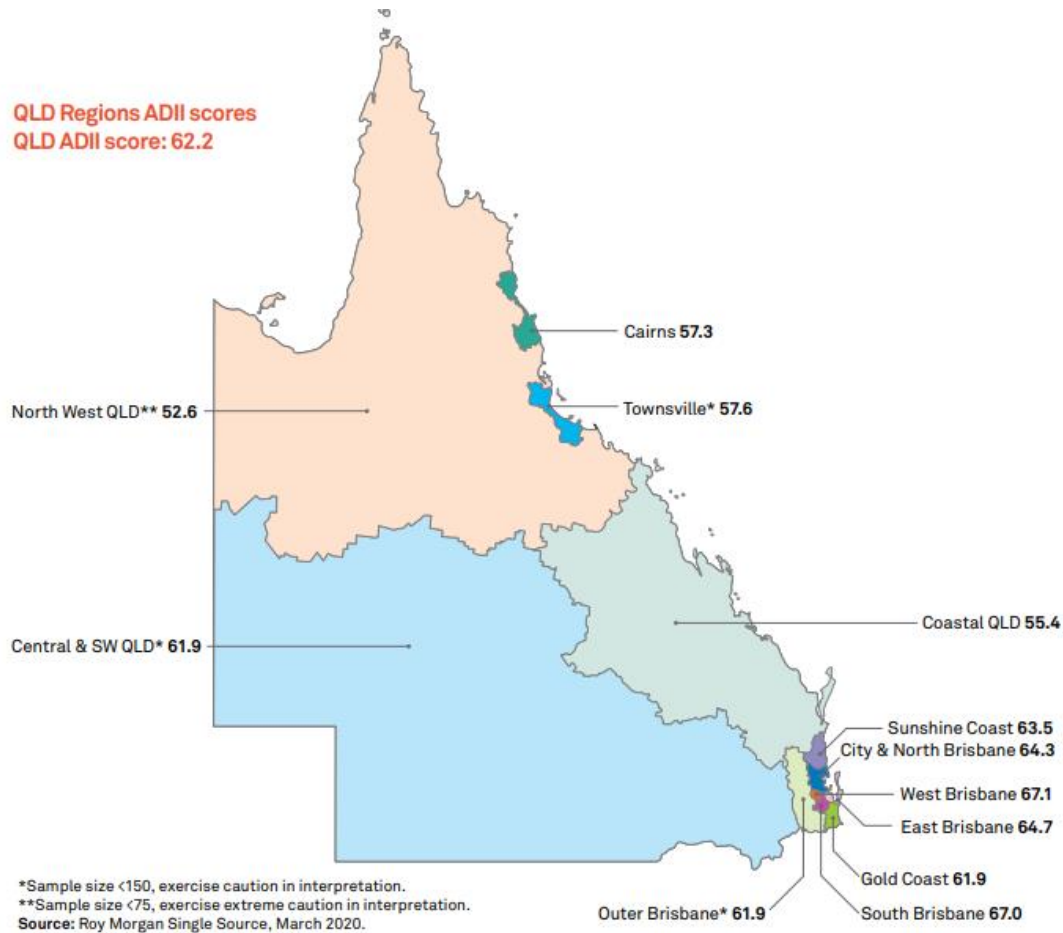


Figure 3: ADII scores in Queensland in 2020 (Thomas et al., 2020)

The North West Queensland (NWQ) region data, although a very small sample size, shows that North West Queenslanders are below the state and national averages in terms of their digital inclusion. There is a particular disparity in the *digital ability* scores between urban and rural Queenslanders, which is very pronounced in NWQ. This shows that the challenge to improve digital connectivity in the region should also be focused on promoting individual- and community-level capacity to make use of connections once they are in place.

|                                  | Australia | Queensland | Rural Qld | NWQ  | Indigenous Australia | Indigenous Queensland* |
|----------------------------------|-----------|------------|-----------|------|----------------------|------------------------|
| <b>Access</b>                    | 76.3      | 76.1       | 72.5      | 67.7 | 68.5                 | 63.2                   |
| <b>Affordability</b>             | 60.9      | 59.7       | 52.3      | 54.0 | 54.0                 | 45.0                   |
| <b>Digital Ability</b>           | 52.0      | 50.7       | 45.2      | 36.1 | 42.8                 | 38.2                   |
| <b>Overall Digital Inclusion</b> | 63.0      | 62.2       | 56.8      | 52.6 | 55.1                 | 48.8                   |

Table 1: ADII scores in 2020 (Thomas et al., 2020)

The importance of digital inclusion and key issues were highlighted in a number of studies in the Far North Queensland Region. Marshall et al (2019, and 2020) identified low levels of digital inclusion for pastoralist communities in North West Queensland (NWQ) and the nature of limited hard social infrastructure to support digital inclusion across Northern Australia and NWQ. The Far North Queensland Regional Organisation of Councils (FNQROC) commissioned a study of mobile coverage across Far North Queensland in 2019 (see Appendix 1). The study identified black spots in and between TCICA communities. As shown in the report no signal at all could be obtained along many roads throughout the Cape. The report concluded that “both 3G and 4G areas where there is no signal strength for any of the three carriers sits at 3,550klms or almost 70% of the total distance covered. In capital cities this would be less than 1%” (Digital Economy Group, 2019:1). TCICA-commissioned studies indicate significant opportunities for economic and social development in the Cape and Torres (ARUP, 2019; Matson, 2020). The ARUP study (2019:86) concludes that digital connectivity “limits the ability to maximise economic opportunities, partake in e-learning or benefit from tele-health services, and generally impacts on social connectivity and quality of life” and identifies addressing connectivity as one of the transformative strategies needed for the region.





## Policy and Program Context

The strategies laid out in this report consider the regulation; policy, programs, and funding that already exist. Below is a high-level review of the policy context as it relates to digital connectivity in the FNQ region. This is a summary and update of a more comprehensive policy analysis undertaken in 2019 (Marshall et al., 2019).

### Australian Government

In Australia, the telecommunications industry is governed and guided by three key pieces of legislation: Telstra Corporation Act, Telecommunications Act, and Competition and Consumer Act. This top-tier legislation outlines the Universal Service Guarantee (USG) (which replaced the Universal Service Obligation in 2020) that all Australians must have access to voice and broadband services regardless of where they live.

The Regional Telecommunications Review (RTR), undertaken every three years, is an independent assessment of the state of telecommunications infrastructure and services based on broad consultation with industry, government, community groups, advocacy bodies, and the general public. It helps to assess how well the USG is being implemented, though the formal regulatory body in the Australian Communications and Media Authority (ACMA). The independent Regional Telecommunications Committee was announced in June 2021.

Digital inclusion of remote Indigenous communities, such as those in the TCICA region, has been prioritised in several federal initiatives. In the most recent Regional Telecommunications Review (2018), Recommendation 8 outlines a commitment to a targeted Indigenous Digital Inclusion program with a focus on access, affordability, and digital ability be developed in partnership with Indigenous communities. More recently, in 2021, digital inclusion has been named as the 17th 'Closing the Gap' target.

Critical policy and funding responses to previous RTR's (and other advocacy efforts to improve mobile and internet services in the regions) are the Mobile Black Spot Program (MBSP) and the Regional Connectivity Program (RCP). The MBSP is a co-investment scheme that funds new mobile base stations to be built in black spots (where no mobile service from any provider is currently available). Since 2015, under the first five rounds of the MBSP, the federal government has generated more than \$836 million of investment (\$380 million in government contribution), which has delivered over 1,200 new base stations. Funding rounds are ongoing. It is important to note that the MBSP does not fund projects to improve backhaul capacity but aims to improve mobile coverage, mostly through funding of base stations (Australian Government Department of Infrastructure, Transport, Regional Development and Communications, 2020a).

Conversely, the more recently initiated RCP funds more diverse, telecommunications infrastructure projects in regional, rural, and remote Australia. In its inaugural round in 2021, the federal government awarded funding to 81 projects to the value of \$90.5 million. Shortly after, 51 meritorious projects were funded to the value of \$24.6 million (Australian Government Department of Infrastructure, Transport, Regional Development and Communications, 2020b). These projects range from improvements to mobile coverage and backhaul, to increased footprint of NBN fixed line/wireless services in the regions.

The Australian Government also supports telecommunications infrastructure projects through various disaster response and recovery initiatives. The recently amalgamated National Recovery and Resilience Agency has programs that support communities to improve telecommunications access and service during and after the 2019 monsoon flood disaster event, such as the North Queensland Telecommunications and Energy Improvement Grants (\$15 million specifically for the 14 hardest hit Local Government Areas). Also, in 2021/22, the Strengthening Telecommunications Against Natural Disasters (STAND) program funded temporary telecommunications infrastructure deployment to the value of \$7.7 million. Further telecommunications projects have also been funded through more general funding schemes related to disaster response and recovery (Australian Government National Drought and North Queensland Flood Response and Recovery Agency, 2021).

In recognition of the importance of human capacity development and following the recommendation of RTR, The Federal Government has funded the National Farmers' Federation, partnering with the Australian Communications Consumer Action Network (ACCAN), to establish a Regional Tech Hub in 2020. The Regional Tech Hub content is relevant to regional, rural and remote consumers and offers independent advice and support and helps regional Australians navigate often confusing phone and internet options and technical issues. The Regional Tech Hub continues the work of Better Internet for Rural, Regional and Remote Australia (BIRRR), who pioneered this outstanding work. While this is a welcomed initiative, the Hub's few staff members have limited capacity to assist all of regional Australia, and knowledge of the Hub across Cape York and Torres Strait communities is limited.

NBN Co has announced a \$300 million Regional Co-investment Fund, which invites expressions of interest from federal, state, territory, and local government agencies for the co-funding of projects to lift the digital capabilities of communities in regional and rural Australia. The fund is designed to uplift digital capability in regional and remote areas with eligible project types supporting transition from satellite or fixed wireless to fibre to the premise services (NBN Co, 2021).

Finally, Telstra announced \$200m co-investment fund in May 2021, to generate additional investment in improving regional mobile coverage, further to the \$150 million it will invest in the next 12 months to improve regional connectivity (Telstra, 2021)

## Queensland Government

Given that telecommunications are a federal-level responsibility, state-level policy, programs, and funding have traditionally tended to focus more on digital capacity and economy building. For example, [Advance Queensland](#) and [DIGITAL1ST](#) aim to assist Queensland to transition into the digital economy by facilitating pathways to digital business and service delivery.

Nonetheless, the Queensland Government has made investments and co-investments into nation-building digital infrastructure, including in FNQ. For example, in 2017 the Queensland Government partnered with Telstra and the Torres Strait Regional Authority for a \$7.3 mil project in 2018-19 to upgrade to 4G, which will see high-speed internet access for mobile device users across 14 of the region's islands. Telstra contributed \$3.66 million while \$2.26 million provided by the State Government and TSRA contributed the remaining \$1.4 million (Queensland Government, 2019).

Notably, in 2021, a Queensland Government subsidiary company, QCN Fibre, was established to trade in wholesale access to broadband in regional areas through fibre owned by the state's energy

providers. While the current QCN network only extends as far north as Cairns, the company has plans to expand, and there are further opportunities to leverage the co-placement of telecommunications and energy infrastructure. The Queensland Government is due to release a new Digital Strategy in late 2021.

Overall, the telecommunications deficits in FNQ, and the associated risks and disadvantages, are gaining increasing attention from policy makers. The current policy context is ripe for making bold, strategic recommendations for future-proofing FNQ through ongoing, targeted investment in place-based solutions that are for purpose.



Lockhart River Ranger Station

## Project Methodology

The research takes a critical inquiry lens that uncovers the relationship between people’s everyday experiences with the social and economic environment. This approach recognises the reality of the context of the TCICA region, and that meaning is produced and reproduced by people within their contexts and takes account of the lived experiences, cultures and environments of participants (Kinsella 2006). Our approach recognises that research is not a linear process, but a method of discovery that takes divergent pathways (Charmaz 2006).

The project was undertaken in four phases and brought together a wide range of stakeholders including councils, businesses owners, service providers, government representatives, and telecommunication providers.

### Phase 1: Needs Analysis

The characteristics of each of the LGAs and their digital experiences were mapped out through:

*Literature review:* Desktop-based literature of academic and grey literature relating to digital connectivity, digital inclusion and digital/telecommunications investment .to inform the project;

*Contextual review:* Desktop-based research the TCICA regions geo-socioeconomic profile and relevant digital inclusion and infrastructure challenges;

*Focus groups:* 13 focus groups (one in each LGA) were undertaken using Zoom or in-person within the LGA, with a total of 103 people across TCICA region (with 4-10 participants per focus group). The details of the focus group participants and the information flyer are provided in Appendix 2. The focus groups were used to canvas needs and lived experience of digital connectivity, validate findings from the literature review and identify the challenges and opportunities for digital connectivity in the region. All participants were recruited using purposive sampling methodology. Purposive sampling uses judgement in the selection of interviewee with a specific purpose in mind (Neuman, 2013) and utilises judgement in deliberate choice of a participant due to the qualities the participant possesses (Neuman, 2013; Etikan et al., 2016). Etikan et al. (2016:2) point to the benefits of this sampling methodology in their statement that this “non-random technique that does not need underlying theories or a set number of participants” and enables the “selection of individuals or groups of individuals that are proficient and well-informed with a phenomenon of interest”. Participants came from cross-section of the community and included rangers, business owners, health service providers, local and state government representatives, schools, farmers, and community representatives. Two additional focus groups were held: i) with agencies and service providers who are located outside the Cape and Torres but provide services into Cape York and Torres Strait including Queensland Police, Queensland Health, Queensland Fire and Emergency Services, Education Department, arts centres, technology providers and supermarket; ii) With the technical ICT officers and technology related staff working in agencies in Cape York and Torres Strait or providing technical support to the region.



Accommodation near Lockhart River



The needs analysis provided essential insights from end users about the kind of connections and services they require to pursue the economic and social opportunities of most importance to them.

## Phase 2: Technical audit and Construction of TCICA Digital Community Profiles

Digital community profiles were created for the LGAs within the TCICA region. This was undertaken using desk-top based research into infrastructure maps and other publicly available resources, available, carrier websites and discussions with industry and community. Service provision within each category was identified and mapped in a matrix for each LGA within the project region. Specific providers were not mapped out. Instead, data was gleaned from numerous sources to provide a holistic picture of the communications landscape within the TCICA region.

The TCICA project shared resources with another project focusing on Northern Gulf region (see Marshall et al. 2021) in which AirBridge Networks undertook a digital connectivity audit focused on mobile service coverage, satellite internet, fixed internet, and Internet of Things (IoT)<sup>1</sup> services in the Northern Gulf Region. This work provided a summary of the relevant telecommunications services for the Northern Gulf and helped to inform the way we constructed the digital community profiles for TCICA region and develop solutions.

## Phase 3: Expert Panel and Provider Interviews

A technical panel of service providers operating in FNQ was assembled to inform both the TCICA and Northern Gulf projects, comprised of representatives from Telstra, NBN Co, Optus, QCN Fibre, Wi-Sky, Field Solutions Group, and BIRRR. The panel were engaged in a group consultation on Zoom to share their expertise and provide feedback on the project's understanding of issues and possible solutions.

The intent of the panel was threefold: (1) to bring together major players in the region to generate a shared understanding of the challenges reported by locals about telecommunications service provision in the region; (2) to seek feedback from domain experts on the proposed solutions; and (3) to seek panel members' interest in ongoing collaboration to bring solutions to fruition in the future.

The process also established a basis for ongoing collaboration for delivery of the potential solutions identified through this work.

Individual zoom interviews were undertaken with telecommunication providers:

- Telstra (2 x reps);
- NBN Local; and
- QCN Fibre.

The interviews enabled detailed discussion about the provision of services, infrastructure and capacity of delivery specifically catering to the needs of the TCICA region.

## Phase 4: Data Analysis and Reporting

Inductive and deductive approaches to data analysis will enable linkages with the project principles, aims and the outcomes. Inductive methods enable us to move from specific situational analysis to

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<sup>1</sup> Not in scope for this study

more generalised learnings while the deductive methods enable us to use the generalised knowledge to gain more specific insights and theories. Utilising these approaches to data analysis removes preconceptions, remains open, and trusts in the emergence of concepts/learnings from the data. The key steps in data analysis includes data reduction, data coding, thematic analysis and interpretation (Babbie 2014).

A final report of the overall telecommunications and digital technologies for the TCICA region based on project was developed. Dissemination and knowledge translation including academic and non-academic outputs were developed including a report of preliminary findings.



Pompokuraaw State School and Communication Tower

## Community Profiles and Needs

This section provides a snapshot of the communities within Cape York and Torres Strait and a summary of the findings from the focus groups about the digital connectivity needs and experiences at the ground level.

### Aurukun















|   |   |       | Qld                     |   |   |       |
|---|---|-------|-------------------------|---|---|-------|
|    | Population as at June 2020  | 1,370 | 5,176,186               |    | Number of Occupied private dwellings in 2016                                      | 259   |
|    | Median Age as at June 2019  | 28.3  | 37.4                    |    | % of rented occupied dwellings 2016   | 96.5  |
|    | % of Aboriginal peoples or Torres Strait Islander peoples           | 90.4% | 4%                      |    | % of one parent families 2016   | 38.5% |
|    | % of people who speak a language other than English at home in 2016 | 86.6% | 12%                     |    | % Developmentally vulnerable children by Communication skills & general knowledge | N.A   |
|    | Index of relative Socio-economic disadvantage via (SEIFA) 2016      | 504   | 996<br>National 1,001.9 |    | Median total family weekly income 2016  | \$678 |
|   | % Internet access in occupied private dwellings 2016                | 63.3% | 83.7%                   |   | Registered business   | 4     |
|  | Unemployment rate Dec 2020  | N.A   | 7.1%                    |  | Number of people receiving disability support pension                             | 63    |

Table 2: Aurukun Snapshot Statistics (Qld Government Statistician's Office, 2021).

Telstra Mobile Limited, Non Uniform 3/4G coverage focused on township

Optus Mobile No coverage

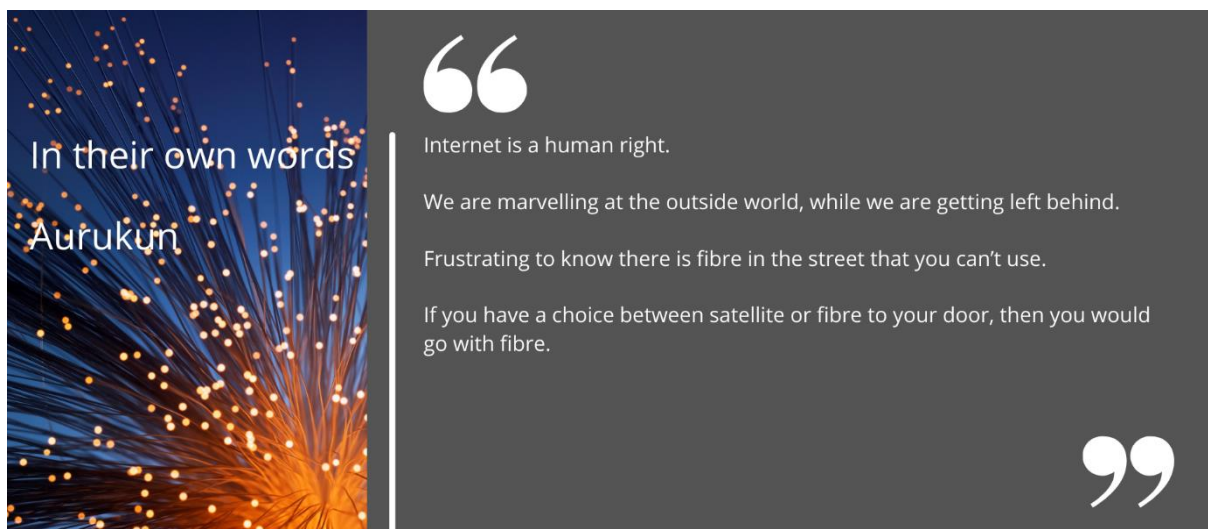
NBN Satellite or legacy ADSL only

The Aurukun community is divided into five spiritual clan groupings: Wanam, Winchanam, Puch, Apalech, and Sara. The town is situated on the north-west coast of the Cape York Peninsula, 178km (2hrs 30mins) by road south of Weipa and 811km (11hrs) from Cairns. The shire covers 7,500 square kilometres and although over 99% of the population live in the township, there are also 15 outstations (Aurukun Shire Council, 2021). The current township is on the site of the original Presbyterian mission established in 1904, formerly known as Archer River Mission Station. Over several decades, Aboriginal people were relocated to areas around the mission. Council provides and maintains housing services in Aurukun, including houses for 41 employee housing tenancies and 91 commercial leases for offices and accommodation. The Accessibility/Remoteness Index of Australia (ARIA) rates Aurukun in the highest category of remoteness. Being a Welfare Reform Community alcohol is illegal. The Shire experiences extremes heat, annual wet seasons and a cyclone season each year and the extreme isolation for nearly half of the year also causes social and community stresses. The Council also maintains an office and staff in Cairns to help with a number of council operations including financial management (Aurukun Shire Council, 2020).

## Focus Group Findings















A focus group was conducted via zoom and included council employees, community and business representatives and participants from the Indigenous Knowledge Centre. The key issues identified were:

- The Telstra fibre upgrade completed in 2016 improved mobile connectivity but now seen as insufficient for needs as there is high reliance on mobile connectivity and identified as “way beyond capacity” for the needs in Aurukun;
- Slow speeds, unreliability and coverage;
- NBN satellite and community Wi-Fi installed for free during COVID but the future plans are uncertain. Many community members were going into the two public Wi-Fi sites supported by NBN to get things done;
- Participants identified difficulty and frustration of getting support from telecommunication providers on the ground;
- Difficulties associated with last mile connectivity;
- Lack of digital knowledge and technical skills for problem shooting;
- Lack of other options and alternatives when things don’t work;;
- Data capacity of plans identified as limited for needs and affordability;
- Major barriers identified with internet for working from home, attending online professional and educational services and access to online services;
- Younger generations were identified as being digital savvy but older generations lacking digital skills;
- Geographical coverage outside and last mile problems in some areas were identified. There was acknowledgement that Telstra was negotiating with Traditional Owners for additional tower sites;
- Participants pointed out that interdependency between mobile, internet and power connectivity meant that there were risks and all three can fail at once;
- Reliance on generators for energy links digital connectivity with outages of power and energy reliability; and
- Overall felt digital connectivity was holding them back, hindering economic and social development.





## Cook Shire

|   |   | Qld   |                            |   |   |        |
|---|---|-------|----------------------------|---|---|--------|
|  | Population as at June 2020  | 4,604 | 5,176,186                  |  | Number of Occupied private dwellings in 2016                                      | 1,499  |
|  | Median Age as at June 2019  | 41    | 37.4                       |  | % of rented occupied dwellings 2016   | 40.3   |
|  | % of Aboriginal peoples or Torres Strait Islander peoples           | 21.9% | 4%                         |  | % of one parent families 2016   | 18.4%  |
|  | % of people who speak a language other than English at home in 2016 | 86.6% | 12%                        |  | % Developmentally vulnerable children by Communication skills & general knowledge | 6.8%   |
|  | Index of relative Socio-economic disadvantage via (SEIFA) 2016      | 917   | 996<br>National<br>1,001.9 |  | Median total family weekly income 2016  | \$1341 |
|  | % Internet access in occupied private dwellings 2016                | 65.6% | 83.7%                      |  | Registered business   | 322    |
|  | Unemployment rate Dec 2020  | 20.3  | 7.1%                       |  | Number of people receiving disability support pension                             | 183    |

Telstra uniform 3/4G coverage in Cooktown, Coen and other townships, very limited on arterials and elsewhere

Optus G – Uniform 3G coverage in Cooktown and surrounds, 4G in Cooktown center, very limited on arterials and elsewhere

NBN Fixed line in Cooktown center and fixed wireless in outskirts, Satellite or ADSL legacy elsewhere

*Table 3: Cook Shire Snapshot Statistics (Qld Government Statistician's Office, 2021)*


Cook Shire is 331km from Cairns and stretches from Bloomfield River in the south to Jardine River in the north. It is the largest land shire in Queensland being roughly the size of Victoria and occupies 80% of Cape York Peninsula. It encompasses several islands and includes two UNESCO World Heritage areas. Approximately half of the Shire population lives in Cooktown with the remainder living in Ayton, Coen, Lakeland, Laura, Lizard Island, Marton and Portland Roads (Cook Shire Council, 2021). Cooktown lies in Guugu Yimithirr country, a tribal nation which stretches from the Annan River, south of Cooktown, to Princess Charlotte Bay in the north. In 2016 22% of the population identified as Indigenous and almost 44% of the population was under 35 years of age (idcommunity, 2021).

### Focus Group Findings

A focus group was conducted via zoom and included council employees, the Mayor, Queensland government departments (2), progress association, chamber of commerce, community services, business owners, education and health providers. The key issues identified were:

- Significant issues of mobile coverage and poor internet access, unreliability and outages;
- Cooktown is the largest town in Cape York, and feeling that they are not able to maximise the social and economic benefits of the digital age;

- Reported NBN fibre is there but no access to the node;
- Unreliability of services with most participants reporting slow speeds, drop outs, short range of towers, and blackouts;
- 2-speed internet service delivery was mentioned (e.g., connections that some agencies can access versus and the rest of community);
- Weather impacts on satellite reliability was a major issue as the region is prone to heavy rain and cyclones;
- Outside of town NBN SkyMuster is popular, sometimes hotspots to phone but is slow;
- Last mile issues in Cooktown, with participants giving examples of not being able to connect;
- Difficulty of access and connectivity out of Cooktown e.g. Lakeland, Laura;
- Low socio-economic community was seen as most vulnerable, impacting on affordability as a key concern for individuals, households and microbusinesses;
- Geography pointed to a barrier in digital technology functionality and erection;
- Black spot areas along major routes were identified;
- Some participants explained that trying to use mobile phones to do business and study in many did not work due to size of documents, slow downloads and lack of connectivity;
- Difficulty of getting on-ground technical and service support from telecommunication providers;
- Unhappiness expressed with monopoly of one telecommunication provider;
- Major challenges of doing business, banking, business promotion, tourism accommodation; and
- Impacts daily life e.g. government information services, COVID-19 check in; funding applications, online training and education, access to services.



**In their own words**  
**Cook Shire**

“

I live 2ks out of town and only have ADSL, which is on 40 year old copper. I can get Skymuster but its \$90 a month for 20GB, I mainly hotspot of my phone but often have only 1 bar. I am waiting for Skylink as I don't see anything g else offering a solution.

During all this time of waiting our daughter was in high school and doing subjects that were by distance education. To do her homework after school, she was riding a 4 wheeler motor bike up a bush track to the highest hill which is about 3 kilometres away to get phone coverage so that she had internet connection by a dongle with limited connectivity and usage. Satellite internet is expensive compared to what is available by NBN landline and NBN Wireless. There is no satellite internet plan that is unlimited.

You're held to ransom to a large extent by the fact that Telstra does have a stranglehold on remote regional the bush and the cost structures for it obviously significantly more than with some of the other carriers if you're based in a larger Metro or larger regional area. So there's almost a discrimination I suppose against the bush .

I live 16 kilometres south of Cooktown and in a black spot. There is no mobile coverage, ADSL or NBN fixed line / wireless. When we first moved to our new home it took 18 months to get our landline phone connected and probably longer to get the internet as this is only available by satellite.

”

## Hope Vale















|   |   | Qld   |                         |   |   |       |
|---|---|-------|-------------------------|---|---|-------|
|  | Population as at June 2020  | 1,240 | 5,176,186               |  | Number of Occupied private dwellings in 2016                                      | 231   |
|  | Median Age as at June 2019  | 28.3  | 26.7                    |  | % of rented occupied dwellings 2016   | 88.7  |
|  | % of Aboriginal peoples or Torres Strait Islander peoples           | 92.9% | 4%                      |  | % of one parent families 2016   | 28.8% |
|  | % of people who speak a language other than English at home in 2016 | 74.4% | 12%                     |  | % Developmentally vulnerable children by Communication skills & general knowledge | 4.8%  |
|  | Index of relative Socio-economic disadvantage via (SEIFA) 2016      | 621   | 996<br>National 1,001.9 |  | Median total family weekly income 2016  | \$759 |
|  | % Internet access in occupied private dwellings 2016                | 71.4% | 83.7%                   |  | Registered business   | 14    |
|  | Unemployment rate Dec 2020  | 20.4  | 7.1%                    |  | Number of people receiving disability support pension                             | 38    |

Table 4: Snapshot Statistics (Qld Government Statistician's Office, 2021)

Telstra  
Uniform 3/4G in township/  
community, very limited on  
arterials and elsewhere

Optus  
Non-uniform 3/4G only in township/  
community, very limited on  
arterials and elsewhere

NBN  
Satellite or legacy  
ADSL only

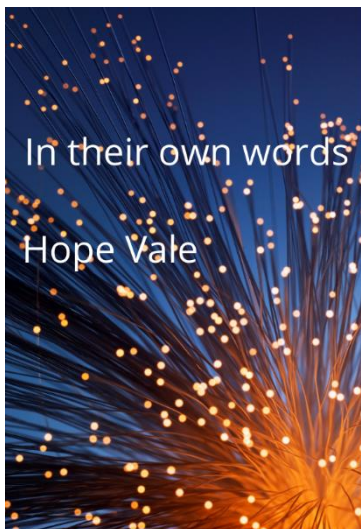
Hope Vale is situated 46km west of Cooktown or around 6 hours from Cairns. It was first established as a Lutheran mission (Hope Valley) at Cape Bedford east of the current location. During World War II the Indigenous population was relocated with the population eventually being resettled at the current site in 1949. The mission remained until 1986, when a deed of grant in trust was made in favour of the Aboriginal community. The Hope Vale Shire was formed in 2004. The Shire also includes Cape Flattery where Mitsubishi has mined high quality silica since 1967. Royalties go to the Hope Vale Community Council (Centre for the Government of QLD, 2021). Hope Vale is home to thirteen clan groups who mostly speak Guugu Yimithirr and other related languages, as well English and has a well-established and highly regarded art centre (Hope Vale Shire Council, 2021). In 2016, 43% of the population was below 35 years of age (idcommunity, 2021)

### Focus Group Findings

A focus group was conducted via zoom and included council employees, IT officer, CEO of Council, business owners, education and health providers. The key issues identified were:

- Telstra upgrade to optic fiber but not even Council can connect to new system- long and drawn out process;
- Rely on Skymuster for internet;

- Reliability of satellite on slightly rainy days;
- Lack of ICT capacity and skills and expertise at the local level, use of companies outside of the region e.g. Fourier IT services;
- Critical infrastructure is planned and protected e.g. cable burnt by fire, or floods, causing long delays in repair as crews are not in town;
- Use of separate systems to cover the town for mobile;
- Significant issues with speeds, latency and slow downloads/uploads;
- Black spots and coverage in major roads e.g. between Cooktown and Hopevale;
- Lack of digital connectivity adding to workplace stress (e.g. upload/download of documents, lack of technical support, cannot use zoom/teams);
- Frequent power outages - Interdependency between mobile, internet and power connectivity means all three can fail at once; and
- Lack of digital knowledge at individual and professional level.



“

The internet is a very stressful situation for staff.

Some upgrades have happened to optic fibre but we are not able to connect to it.

Power outages affect the system.

Many areas are not covered such as the beach area.

”



## Kowanyama















|   |   |       | Qld                     |   |   |       |
|---|---|-------|-------------------------|---|---|-------|
|  | Population as at June 2020  | 1,003 | 5,176,186               |  | Number of Occupied private dwellings in 2016                                      | 241   |
|  | Median Age as at June 2019  | 27.9  | 37.4                    |  | % of rented occupied dwellings 2016   | 96.7  |
|  | % of Aboriginal peoples or Torres Strait Islander peoples           | 90.7% | 4%                      |  | % of one parent families 2016   | 32.8% |
|  | % of people who speak a language other than English at home in 2016 | 4.3%  | 12%                     |  | % Developmentally vulnerable children by Communication skills & general knowledge | 14.3% |
|  | Index of relative Socio-economic disadvantage via (SEIFA) 2016      | 580   | 996<br>National 1,001.9 |  | Median total family weekly income 2016  | \$841 |
|  | % Internet access in occupied private dwellings 2016                | 75.9% | 83.7%                   |  | Registered business   | 6     |
|  | Unemployment rate Dec 2020  | 53.2  | 7.1%                    |  | Number of people receiving disability support pension                             | 49    |

Table 5: Kowanyama Snapshot Statistics (Qld Government Statistician's Office, 2021)

The township is located within the Aboriginal Shire of Kowanyama, which covers a land area of 2,516.1 square kilometres. The community is 600kms North West of Cairns and is located on the banks of Magnificent Creek, which joins the South Mitchell River. Kowanyama means “place of many waters” in the Yir Yoront language and the community includes the Kokoberra, Yir Yoront [or Kokomenjen] and Kunjen clan (Kowanyama Aboriginal Council, 2021). Kowanyama is a place of unique wetlands and delta mangroves in the north, with forests in the central peninsula. During the wet season, the community is isolated and the only access is by plane. While ABS 2016 have the population at 994, according to the 2019 Kowanyama Master Plan the Council estimates the population to be 1300. One of the aspirations of the Plan is to address housing overcrowding (Cardno, 2019).

Telstra  
Uniform 3/4G in township, limited on arterials and elsewhere

Optus  
No coverage

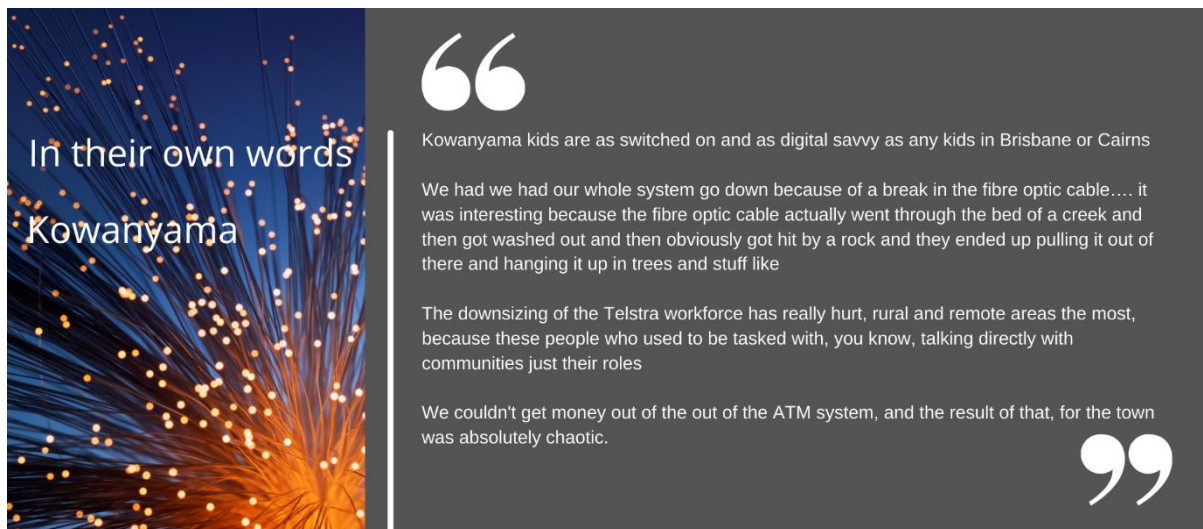
NBN  
Satellite or legacy ADSL only

### Focus Group Findings

A focus group was conducted via zoom and included Council, education and health providers, women’s group and government agency. The key issues identified were:

- Majority of the community (individuals and households) were reliant on mobile phones;
- Uptake of satellite options has been limited due to cost, knowledge and unreliability during rainy weather;

- Lack of reliability of service as usage increases at particular peak times;
- Mobile phone coverage identified as limited with no coverage a few kms out of town. This was a major safety risks for tourists, local travellers and people who are flying in for work and not familiar with the environment;
- Council owned infrastructure through the optic fibre direct plug able to support services core businesses e.g. post office, library, shop;
- 2-speed internet service delivery (e.g., connections that some agencies can access versus and the rest of community);
- Difficulty of getting technical support on the ground and via phone;
- Lack of competition was seen to be rendering poorer service outcomes- views that there is no carrot and stick in a monopoly situation;
- Perception that no one is enforcing Universal Service Obligations/Guarantee and views that business/profit motive provides little incentives to bring services to smaller, less populated regions;
- Belief that there is a lack of capacity at the local level to influence change;
- Capped plans are seen as limiting meeting of need and is not affordable;
- Council is seen to be the go to place when things go wrong but lack capacity was also identified e.g. technical staff, backhaul to supply free Wi-fi spots;
- Cumbersome processes described to get technical help e.g. Telstra online forms;
- Businesses stated they were using supports from Cairns or elsewhere for functions such as payroll. This was also identified as having problems e.g. it can be disrupted during weather events and periods of outage; and
- Barriers to using government services online e.g. Centrelink when increasingly governments are providing assistance in online formats.



In their own words  
Kowanyama

“  
Kowanyama kids are as switched on and as digital savvy as any kids in Brisbane or Cairns

We had we had our whole system go down because of a break in the fibre optic cable.... it was interesting because the fibre optic cable actually went through the bed of a creek and then got washed out and then obviously got hit by a rock and they ended up pulling it out of there and hanging it up in trees and stuff like

The downsizing of the Telstra workforce has really hurt, rural and remote areas the most, because these people who used to be tasked with, you know, talking directly with communities just their roles

We couldn't get money out of the out of the ATM system, and the result of that, for the town was absolutely chaotic.  
”

## Lockhart River















|   |   |       | Qld                                    |   |   |       |
|---|---|-------|--|---|---|-------|
|  | Population as at June 2020  | 801   | 5,176,186                              |  | Number of Occupied private dwellings in 2016                                      | 155   |
|  | Median Age as at June 2019  | 26.7  | 37.4                                   |  | % of rented occupied dwellings 2016   | 90.3  |
|  | % of Aboriginal peoples or Torres Strait Islander peoples           | 88.3% | 4%                                     |  | % of one parent families 2016   | 35.6% |
|  | % of people who speak a language other than English at home in 2016 | 36.2% | 12%                                    |  | % Developmentally vulnerable children by Communication skills & general knowledge | na    |
|  | Index of relative Socio-economic disadvantage via (SEIFA) 2016      | 100%  | 996<br><small>National 1,001.9</small> |  | Median total family weekly income 2016  | \$810 |
|  | % Internet access in occupied private dwellings 2016                | 41.3% | 83.7%                                  |  | Registered business   | 15    |
|  | Unemployment rate Dec 2020  | 20.2  | 7.1%                                   |  | Number of people receiving disability support pension                             | 15    |

Table 6: Lockhart River Snapshot Statistics (Qld Government Statistician's Office, 2021)

Telstra  
Non-uniform 3G  
in township  
limited on  
arterials and  
elsewhere, No  
4G coverage

Optus  
No coverage

NBN  
Satellite or legacy  
ADSL only

Lockhart River is a community is around 800 kilometres from Cairns on the east coast of Cape York. The Lockhart River Aboriginal Shire, established in 2005 encompasses 354,000 km<sup>2</sup> and the township is surrounded by the Kutini-Payamu (Iron Range) National Park. There are six traditional family (language) groups living in Lockhart River: the Kuuku Ya'u, Wuthathi, Kanthanumpu, Uutaalnganu, Umpila and Kaanju peoples. Lockhart River was established in 1924 when people from five traditional territories were coerced into a new Anglican mission at Orchid Point. In 1925 the mission was moved into Bare Hill (putchiwu'chi) as it had a better water supply and increased potential to grow some crops. During World War II the area played host to a number of allied troops.

During December to April roads are often closed and access into Lockhart River is only by sea or air. This dramatically increases the cost of goods and services for Lockhart River.

Australia Post and Centrelink operates from the Council offices. The Council also maintains and staffs an office in Cairns, so important activities such as payroll are not hindered by poor connectivity. (Lockhart River Shire Council (2020).

## Focus Group Findings

A focus group was conducted face to face and included council employees, business owners, health and social service provider, rangers, airport, school, art centre and community centre. The key issues identified were:

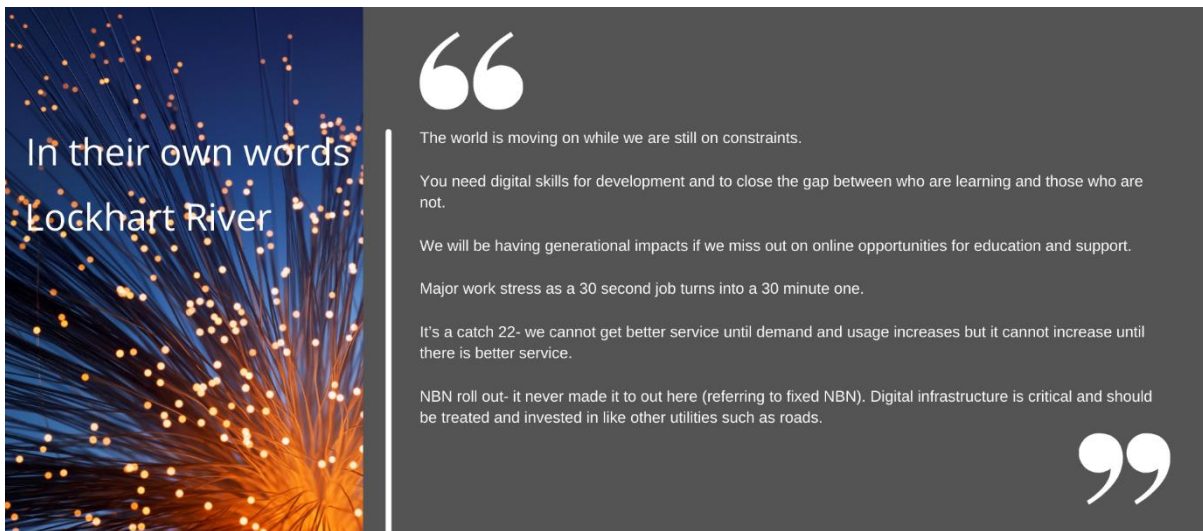
- Reliance on Telstra but coverage is identified as severely limited within and outside of town, Optus is also available but has limited coverage and does not work in places such as Archer River;
- Fixed wireless operates within the centre of town;
- Mobile phones coverage is limited, use of mobile for the internet is slow and is limited to 3G;
- Affordability concerns for individuals and businesses of mobile and satellite plans, concerns that the plans are capped. At the same time, data plans are not fully utilised as the system is “choked” and cannot stream;
- Black spots in main places such as Archer River and Portland Road; and coverage in Batavia and Wattle Hill;
- Satellite is costly and subject to weather conditions;
- Redundancy for businesses and service agencies to be able to run;
- Frequent outages, unreliability, coverage and slow speeds impacts on many aspects of economic and social life e.g. could not use ATM at supermarket, bowser for service station, cannot process credit cards, cannot pay staff; online sales at the arts centre, relied on paper base systems during COVID-19 lockdown, tourism bookings; online orders, access to online government services, telehealth;



- Lack of options for online education and professional development. Staff are frequently sent to Cairns or Brisbane for training as they are unable to capitalise on online options to lack of internet bandwidth capacity (both volume of data and speed);
- Digital literacy and skills and awareness identified as major gap. Development is required between who have the skills and who do not if there is to be social and economic development. Older generation are particularly vulnerable, e.g. theft of funds from Centrelink accounts due to password sharing while seeking help;
- Inter-generational impacts if missing out on potential digital opportunities including online education, training and economic opportunities;
- Significant work stresses such as inability to upload reporting data (e.g. for health), cannot access shared cloud base data sharing arrangements, cannot use virtual meeting platforms such as zoom/teams; cannot undertake online professional development, cannot link into teams based elsewhere for staff meetings). Health Service – uses the “River system” – files not downloading, Tamzu for critical emergency not working at times; HACC services data take a long time to upload/download. Health staff cannot get connectivity in the building and need to go outside to use satellite phones.
- Council has fibre optic only on intranet which goes through relay station as there is fixed optical fibre, experience up and down speed has been a key barrier;



- Much of the employment is in country, major safety concerns for staff when they are out bush. Concerns also exist for service providers who send their staff into Lockhart. As employers they have a duty of care but are often unable to contact staff when they are working in community;
- When systems are down, they stay down for long periods as it takes time to bring crews to Lockhart River. Infrastructure was damaged by fire, grader vehicle accident, flooding which caused major outages for long periods of time;
- Major challenges during wet season and linked with energy issues (supplied through diesel generators or solar);
- Access to digital communication for communities such as Lockhart River needs to be viewed as a public good issue and not as market driven process.



In their own words  
Lockhart River

“

The world is moving on while we are still on constraints.

You need digital skills for development and to close the gap between who are learning and those who are not.

We will be having generational impacts if we miss out on online opportunities for education and support.

Major work stress as a 30 second job turns into a 30 minute one.

It's a catch 22- we cannot get better service until demand and usage increases but it cannot increase until there is better service.

NBN roll out- it never made it to out here (referring to fixed NBN). Digital infrastructure is critical and should be treated and invested in like other utilities such as roads.

”

## Mapoon















|   |   |       | Qld                     |   |   |        |
|---|---|-------|-------------------------|---|---|--------|
|  | Population as at June 2020  | 339   | 5,176,186               |  | Number of Occupied private dwellings in 2016                                      | 84     |
|  | Median Age as at June 2019  | 29.3  | 37.4                    |  | % of rented occupied dwellings 2016   | 90.5   |
|  | % of Aboriginal peoples or Torres Strait Islander peoples           | 89.4% | 4%                      |  | % of one parent families 2016   | 31.3%  |
|  | % of people who speak a language other than English at home in 2016 | 8.7%  | 12%                     |  | % Developmentally vulnerable children by Communication skills & general knowledge | na     |
|  | Index of relative Socio-economic disadvantage via (SEIFA) 2016      | 688   | 996<br>National 1,001.9 |  | Median total family weekly income 2016  | \$1015 |
|  | % Internet access in occupied private dwellings 2016                | 57.1% | 83.7%                   |  | Registered business   | na     |
|  | Unemployment rate Dec 2020  | 20.4  | 7.1%                    |  | Number of people receiving disability support pension                             | 16     |

Table 7: Mapoon Snapshot Statistics (Qld Government Statistician's Office, 2021)

Telstra uniform 3/4G in township, limited on arterials and elsewhere, 3G has greater footprint

Optus  
No coverage

NBN  
Satellite or legacy  
ADSL

Mapoon is located over 860kms from Cairns, 85kms from Weipa on western Cape York. Access is usually via Weipa, but the partially sealed road is largely inaccessible during the wet season. Mapoon has an air strip that is used regularly by the Royal Flying Doctors. Alcohol restrictions are in place. Mapoon is on the traditional lands of the Tjungundji people and covers 1,839 square kilometers. Mapoon Mission was established under the name Batavia River Mission at Cullin Point in 1891 by the Presbyterians. Mapoon continued to be administered by the Presbyterian Church until 1963. In 1954, a policy decision was made to close Mapoon and evacuate the people to Weipa or other stations. After the 1964 closure, former residents continued to lobby for the re-opening of their community. In 1974 several families had returned and ten years later the Marpuna Community Aboriginal Corporation was established. In 1989 a DOGIT for 'Aboriginal Reserve Purposes' under the Land Act (Qld.), was handed over to the Mapoon people by the Queensland Government.

The Mapoon Aboriginal Council was formed after elections in 2000. Some of the traditional owner groups who eventually came to live at Mapoon included the Mpakwithi, Taepithiggi, Thaynhakwith, Warrangku, Wimarangga and Yupungathi people. The majority of the population is below

34 years of age (DATSIP, 2019).

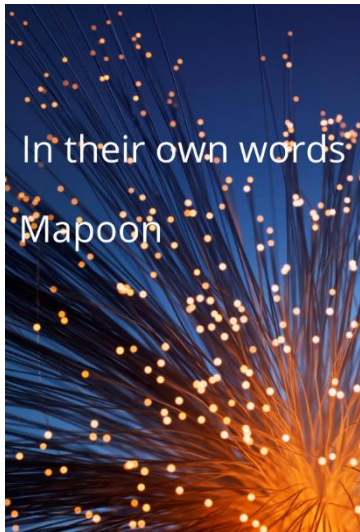
According to the Mapoon 2020-2024 Corporate Plan (2020) one of the major causes of unemployment is the lack of enterprise to boost the economy.

## Focus Group Findings

A focus group was conducted via zoom and included community and employment provider, Council staff and small business owner. The key issues identified were:

- Majority of people rely on 4G Telstra phone and satellite Wi-Fi;
- Key issues of satellite and mobile phone were slow downloads, poor coverage (e.g. 5kms out of town for mobiles), dropping out frequently, on most weekends, and blind spots in certain parts of town and certain spots where reception is possible (e.g. one spot across the river and tower in wildlife reserve);
- Affordability of plans is a major issue. Due to lack of affordable plans, some young people come to Council, the library or other services to use their Wi-Fi, affordability of plans is a major issue. Many people use the cheaper pre-paid plans which have limited data;
- There are also issues with access to devices, particularly laptops, both in affordability to purchase but also having skills to use one;
- Council is able to have repeater stations and there is a tower town;
- Road safety concerns e.g. driving from Mapoon to Weipa;
- Weather ( e.g. rain and wind ) affects the satellite, even on overcast day;
- Disasters impact the area frequently in the wet season and digital connectivity is interlinked with power cuts;
- Internet is identified as slow to download and cannot do basic functions such as printing, e.g. print to Weipa office for one agency, emails are slow to open;
- Social frustrations of young people at speeds reported e.g. smashing of phones and anti-social behaviour;
- Digital skills are challenging for many. Older people are not able to use the technology well, mainly using it for phone calls and needing to ask for help from others to access online systems such as Centrelink. Cyber security, forgetting and sharing of passwords have caused challenges are put Elders at risk of abuse. Many instances of family conflict as younger people seek to get the unused data from plans of older family members;
- Difficulty for young people to connect to job network and job training options. Often they do not know how to get connect or have problems with connectivity during online job applications;
- Women's group has identified digital skills as one of the priority areas, how to use computers but also for education of children and to keep an eye on the younger generation as they are worried about online safety;

- Business and economic development impacts of digital connectivity were highlighted. There have been instances of when connectivity is lost the ATM goes down, and you cannot get fuel, food or other necessities. This was seen as additional burden and cost to businesses and creates difficulty in setting up new business.



In their own words

Mapoon

“

Technology is more important to us being remote.

We need digital skills. I am still a two finger typist!

Women's group has identified IT skills as a major area for them. They want to be able to use computers but also worried to keep an eye on the children for cyber security

”



## Mornington















|   |   |       | Qld                     |   |   |       |
|---|---|-------|-------------------------|---|---|-------|
|  | Population as at June 2020  | 1,231 | 5,176,186               |  | Number of Occupied private dwellings in 2016                                      | 261   |
|  | Median Age as at June 2019  | 28.1  | 37.4                    |  | % of rented occupied dwellings 2016   | 93.9% |
|  | % of Aboriginal peoples or Torres Strait Islander peoples           | 86%   | 4%                      |  | % of one parent families 2016   | 37.7% |
|  | % of people who speak a language other than English at home in 2016 | 9.3%  | 12%                     |  | % Developmentally vulnerable children by Communication skills & general knowledge | 14.3  |
|  | Index of relative Socio-economic disadvantage via (SEIFA) 2016      | 624   | 996<br>National 1,001.9 |  | Median total family weekly income 2016  | \$776 |
|  | % Internet access in occupied private dwellings 2016                | 49.4% | 83.7%                   |  | Registered business   | 12    |
|  | Unemployment rate Dec 2020  | 25.7% | 7.1%                    |  | Number of people receiving disability support pension                             | 63    |

Table 8: Snapshot Statistics (Qld Government Statistician's Office, 2021)

Telstra  
Uniform 3/4G  
coverage in  
township, no  
coverage on  
4/5ths of the  
main island

Optus  
No coverage

NBN  
Satellite or legacy  
ADSL only

Mornington Shire Council in the Gulf of Carpentaria and is northernmost and largest of 22 islands that form the Wellesley Islands group. Mornington Island is around 680kms in a straight line from Cairns, or 200kms west of Karumba. The Shire is over 1,200 km<sup>2</sup> (MSC, 2020). The islands and surrounding seas are the traditional lands and waters of the Lardil, Yangkaal, Kaiadilt and Gangalidda people with the Lardil people being the original custodians of Mornington Island and the largest tribal group. Prior to the 1900s Lardil had little to no contact with Europeans. The town of Gunana is the service hub for the Shire and was founded in 1914. Mornington Island is serviced by regular flights from My Isa and Cairns and a weekly barge service (MSC, 2020).

Information for visitors on the Council website includes the following

“Mornington Island is serviced by the Telstra Network. If you use Optus, you will need to bring your own Telstra modem/dongle to connect to W-Fi. Interruptions can occur and in the evenings internet connections can be slower due to high demands.

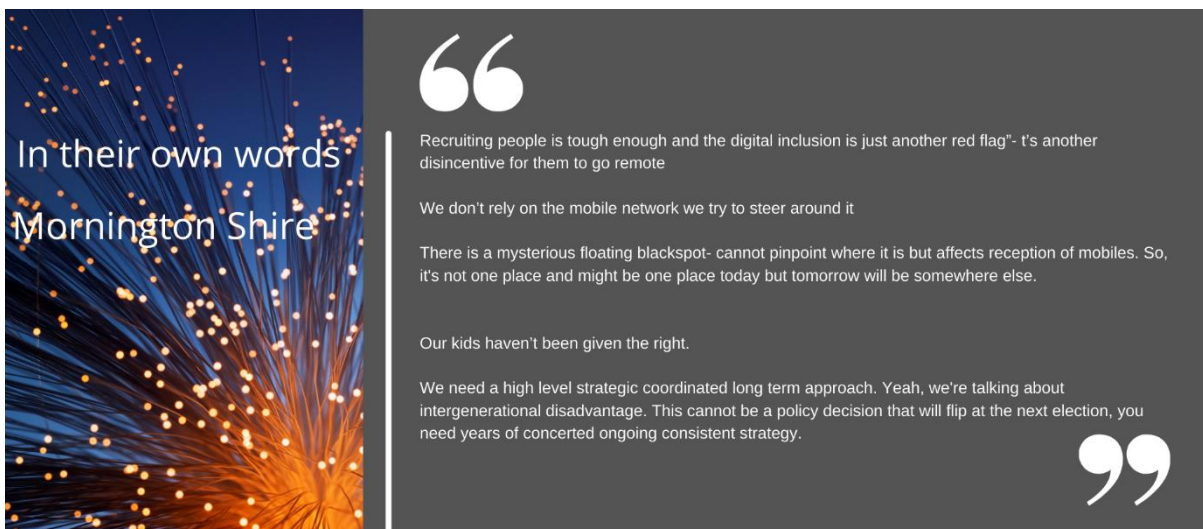
TIP: If you subscribe to Netflix or have other subscriptions that you stream on the internet, you may consider downloading these files, before you arrive on

Mornington Island due to the slow internet bandwidth connections.” (Mornington Shire Council, 2021).

### Focus Group Findings

A focus group was conducted via zoom and included council employees, interagency representative, Queensland Government and arts centre. It must be noted that there was difficulty in connecting and cameras had to be turned off and some had to dial in using phones. The key issues identified were:

- Most people are reliant of Telstra 4G although one fifth of the Island has mobile coverage. The 'Homeland' areas have no coverage;
- None of the participants identified use of NBN satellite;
- Major problems with reception for mobile and the need to come into town to do basic tasks;
- The school is supported by Education Queensland with copper link ADSL, identified as having problems with speed;
- There has been an increased reliance on online and digital business, particularly COVID-19, and many aspects are perceived to be affected e.g. disruption to supply chains, shipping costs, delays in payments and orders, delays to payment of artists (at arts centre) and transaction costs of doing business is increasing due to disruption;
- Belief there is a floating blackspot- cannot pinpoint where it is but affects reception of mobiles;
- Difficulty of undertaken staff and professional training online ;
- Lack of IT support, technical skills and access to ICT hardware at the local level. Some business and Council being supported by IT providers in Cairns but this was seen as expensive and an additional cost burden;
- The digital challenges were seen to impact liveability and productivity outcomes. Examples identified included attracting professional and skilled staff to the region and this further perpetuating to fly-in-fly-out cycle;
- Compounding barriers: cannot build digital capacity because of lack of computers, lack of adequate connectivity and lack of skills which compounds the lack of digital and other skills in a cyclical way;
- Young people are playing games but this is does not equate to other digital skills e.g. examples were given where young people do not know how to use computer for purposes such as work;
- Concerns about inter-generational disadvantage and perpetuating cycles of exclusion;
- Major concerns for security, at times unable to contact emergency services such as police; and
- Perception of inequity and inequality, loss of opportunity and access to critical services, education, health and employment. Inequality between what is offered mainstream and metropolitan areas and remote and Aboriginal Australia.



In their own words  
Mornington Shire

“ Recruiting people is tough enough and the digital inclusion is just another red flag"- t's another disincentive for them to go remote

We don't rely on the mobile network we try to steer around it

There is a mysterious floating blackspot- cannot pinpoint where it is but affects reception of mobiles. So, it's not one place and might be one place today but tomorrow will be somewhere else.

Our kids haven't been given the right.

We need a high level strategic coordinated long term approach. Yeah, we're talking about intergenerational disadvantage. This cannot be a policy decision that will flip at the next election, you need years of concerted ongoing consistent strategy.

”

## Napranum















|   |   | Qld    |           |   |   |       |
|---|---|--------|-----------|---|---|-------|
|  | Population as at June 2020  | 1,3099 | 5,176,186 |  | Number of Occupied private dwellings in 2016                                      | 235   |
|  | Median Age as at June 2019  | 25.1   | 37.4      |  | % of rented occupied dwellings 2016   | 98.7  |
|  | % of Aboriginal peoples or Torres Strait Islander peoples           | 94.8%  | 4%        |  | % of one parent families 2016   | 29.8  |
|  | % of people who speak a language other than English at home in 2016 | 34%    | 12%       |  | % Developmentally vulnerable children by Communication skills & general knowledge | 78.9  |
|  | Index of relative Socio-economic disadvantage via (SEIFA) 2016      | 570    | 20%       |  | Median total family weekly income 2016  | \$678 |
|  | % Internet access in occupied private dwellings 2016                | 46%    | 83.7%     |  | Registered business   | 3     |
|  | Unemployment rate Dec 2020  | 20.4   | 7.1%      |  | Number of people receiving disability support pension                             | 51    |

Table 9: Napranum Snapshot Statistics (Qld Government Statistician's Office, 2021)

Telstra  
Uniform 3/4G in  
township, limited  
on arterials and  
elsewhere

Optus  
Uniform 3/4G in  
township, limited  
on arterials and  
elsewhere

NBN  
Satellite or legacy  
ADSL

The community of Napranum is 6 kilometers from Weipa and 800 kilometers from Cairns on the west coast of Cape York. It is only accessible by road for 4-6 months of the year but has a sealed road access to Weipa. The traditional owners are the Anathangayth, Alngith, Peppan, Thanakwithi, Wathyn and Wik Waya people (National Indigenous Australian Agency, 2021). Formerly known as Weipa South, Napranum which means 'meeting place' was established in 1898 by the Presbyterian Church.

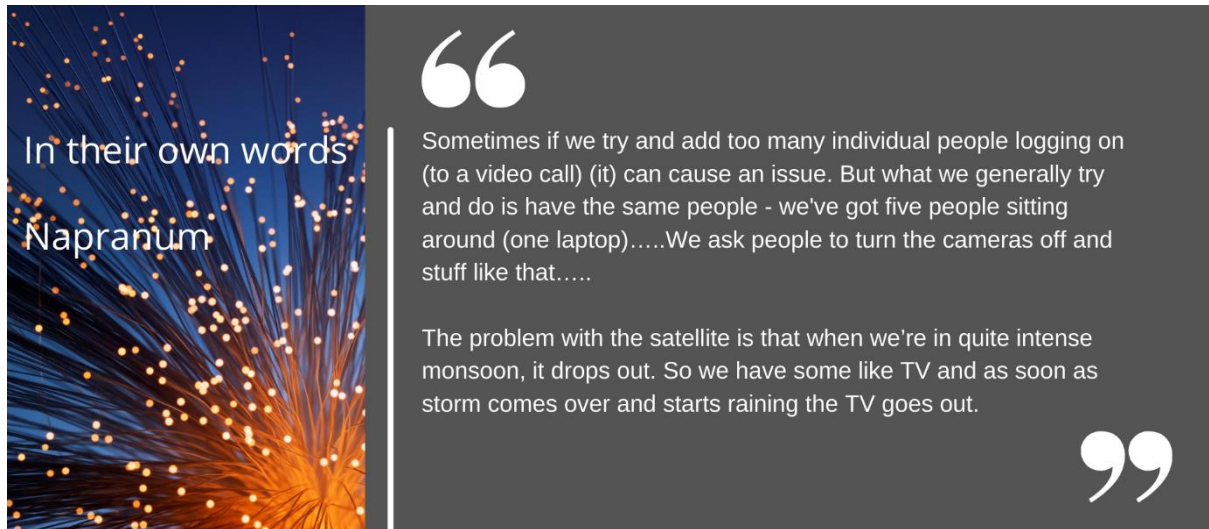
In 1957, Comalco was granted a mining lease covering the majority of mission reserves with no compensation to Aboriginal communities.

### Focus Group Findings

A focus group was conducted via zoom and included Council representatives and education and health providers. The key issues identified were:

- Council as Satellite redundancy;
- Council has a dedicated Telstra case manager;
- ADSL for homes- being phased out at the end of 2021;
- Other homes on NBN satellite;
- Council has NBN satellite due to COVID-19, it is free now but the future arrangements are unknown;

- Weipa town authority nearby supports infrastructure requests;
- The key issue is the unreliability of digital connectivity including services provided mobile 4G, satellite, and ADSL;
- Affordability and capped data plans was identified as a significant issue. Data plans are not unlimited, when ADSL is turned off this will have major limitations for streaming;
- Zoom works but for MS Teams need to turn the camera off;
- Some agencies who are service providers across Cape York have had to set up different regimes of ICT to digital connectivity challenges of each community.



In their own words  
Napranum

“  
Sometimes if we try and add too many individual people logging on (to a video call) (it) can cause an issue. But what we generally try and do is have the same people - we've got five people sitting around (one laptop).....We ask people to turn the cameras off and stuff like that.....  
The problem with the satellite is that when we're in quite intense monsoon, it drops out. So we have some like TV and as soon as storm comes over and starts raining the TV goes out.  
”



## Northern Area Peninsula















|   |   |       | Qld                     |   |   |        |
|---|---|-------|-------------------------|---|---|--------|
|  | Population as at June 2020  | 3,224 | 5,176,186               |  | Number of Occupied private dwellings in 2016                                      | 676    |
|  | Median Age as at June 2019  | 23.4  | 37.4                    |  | % of rented occupied dwellings 2016   | 91.3   |
|  | % of Aboriginal peoples or Torres Strait Islander peoples           | 87.2% | 4%                      |  | % of one parent families 2016   | 34.1%  |
|  | % of people who speak a language other than English at home in 2016 | 81%   | 12%                     |  | % Developmentally vulnerable children by Communication skills & general knowledge | 19.4%  |
|  | Index of relative Socio-economic disadvantage via (SEIFA) 2016      | 694   | 996<br>National 1,001.9 |  | Median total family weekly income 2016  | \$1064 |
|  | % Internet access in occupied private dwellings 2016                | 75.6% | 83.7%                   |  | Registered business   | 52     |
|  | Unemployment rate Dec 2020  | 21%   | 7.1%                    |  | Number of people receiving disability support pension                             | 44     |

Table 10: Northern Peninsula Area Snapshot Statistics (Qld Government Statistician's Office, 2021)

Telstra  
Uniform 3/4G in township, limited on arterials and elsewhere

Optus  
Uniform 3/4G in township, limited on arterials and elsewhere

NBN  
Satellite or legacy ADSL

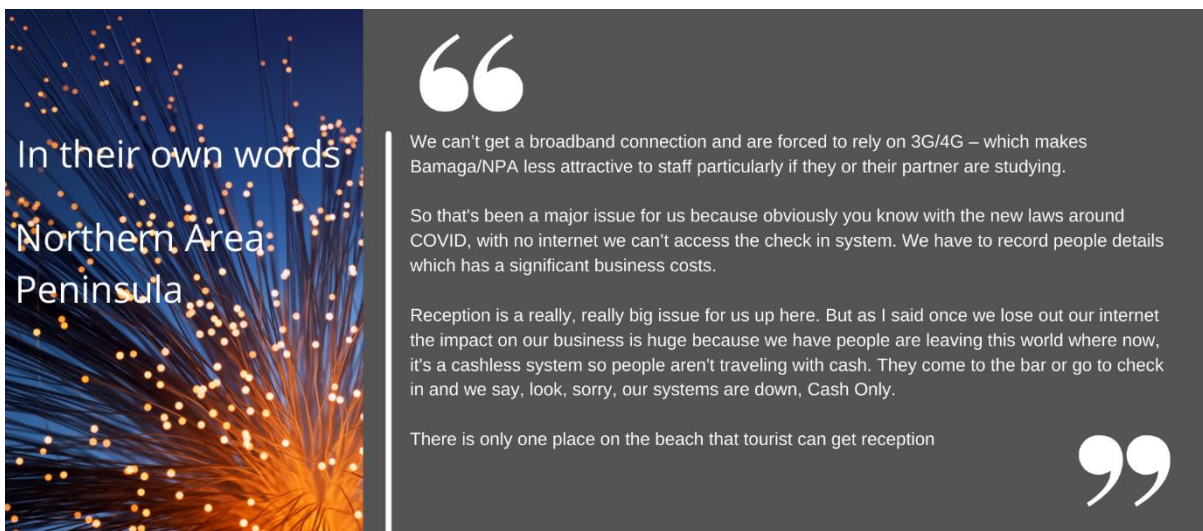
Northern Peninsula Area Regional Council (NPARC) is comprised of five Indigenous communities: Injinoo, Umagico, Bamaga, New Mapoon, and Seisa. The region is on the very tip of Cape York and only 130kms south of PNG and over 1,000 Kilometers from Cairns. The Injinoo community established in the 1910s, was the first township in the area. The other communities were formed between 1910 and the 1960s, some of the communities were created due to resettlement of Aboriginal people from Mapoon (to allow for mining) and Lockhart River. In the mid-1980s, the five townships were given ownership of a parcel of land containing their township. A large percent of the population is from Torres Strait Islander decent. Due to the large amount of unsealed roads, NPARC is largely in assessable during the wet season, except by air or sea (National Indigenous Australian Agency, 2021).

### Focus Group Findings

A focus group was conducted via zoom, an email response and included council employees, police and tourism business operator. The key issues identified were:

- Bamaga Copper upgraded to 10mb fibre this year;
- New tower at Umagico has improved Injagoo mobile coverage;

- Slow internet speeds and lack of access at times causing productivity losses for staff and businesses;
- Instances of health and emergencies and lack of connectivity e.g. lack of mobile reception has resulted in untimely response and death of a person; seeking help during domestic and family violence and during disasters;
- Poor communication and service responses from service providers and lack of technical support at local level;
- Access to mobile phone important for social life such as accessing Centerlink, social services and online information and youth engagement. Council is exploring how it can provide free Wi-Fi for disengaged youth to curb anti-social behaviour;
- Impacts on business provided e.g. tourism business impacts, customer online bookings (accommodation and tours), providing Wi-Fi customers in tourism accommodation, safety of tourists. Issues of reliability of satellite and mobile service coverage and plans being expensive and generally did not support business needs;
- Poor digital infrastructure has impacts on border security;
- Difficulty of attracting staff to the region, particularly if they or partners are studying;
- Barriers to complying with adherence to COVID requirements e.g. not able to do online transactions and using cash transaction with customers.



In their own words  
Northern Area  
Peninsula

“

We can't get a broadband connection and are forced to rely on 3G/4G – which makes Bamaga/NPA less attractive to staff particularly if they or their partner are studying.

So that's been a major issue for us because obviously you know with the new laws around COVID, with no internet we can't access the check in system. We have to record people details which has a significant business costs.

Reception is a really, really big issue for us up here. But as I said once we lose out our internet the impact on our business is huge because we have people are leaving this world where now, it's a cashless system so people aren't traveling with cash. They come to the bar or go to check in and we say, look, sorry, our systems are down, Cash Only.

There is only one place on the beach that tourist can get reception

”

## Pormpuraaw















|   |   | Qld   |                         |   |   |       |
|---|---|-------|-------------------------|---|---|-------|
|  | Population as at June 2020  | 856   | 5,176,186               |  | Number of Occupied private dwellings in 2016                                      | 218   |
|  | Median Age as at June 2019  | 30.1  | 37.4                    |  | % of rented occupied dwellings 2016   | 92.7  |
|  | % of Aboriginal peoples or Torres Strait Islander peoples           | 84.1% | 4%                      |  | % of one parent families 2016   | 28.1% |
|  | % of people who speak a language other than English at home in 2016 | 60.2% | 12%                     |  | % Developmentally vulnerable children by Communication skills & general knowledge | na    |
|  | Index of relative Socio-economic disadvantage via (SEIFA) 2016      | 652   | 996<br>National 1,001.9 |  | Median total family weekly income 2016  | \$747 |
|  | % Internet access in occupied private dwellings 2016                | 63.3% | 83.7%                   |  | Registered business   | 52    |
|  | Unemployment rate Dec 2020  | 52.8% | 7.1%                    |  | Number of people receiving disability support pension                             | 4     |

Table 11: Pormpuraaw Snapshot Statistics (Qld Government Statistician's Office, 2021)

Telstra  
Uniform 3G in  
township limited  
on arterials and  
elsewhere.

Optus  
No coverage

NBN  
Satellite or legacy  
ADSL only

Pormpuraaw is on the western Cape York Peninsula, south of the Edward River and 660 kilometres from Cairns. It is the home of the Thaayore, Wik, Bakanh and Yir Yoront People. The word "Pormpuraaw" means entranceway to a house in the Thaayorre language. Formerly known as Edward River, Pormpuraaw was established as an Anglican Mission in 1938.

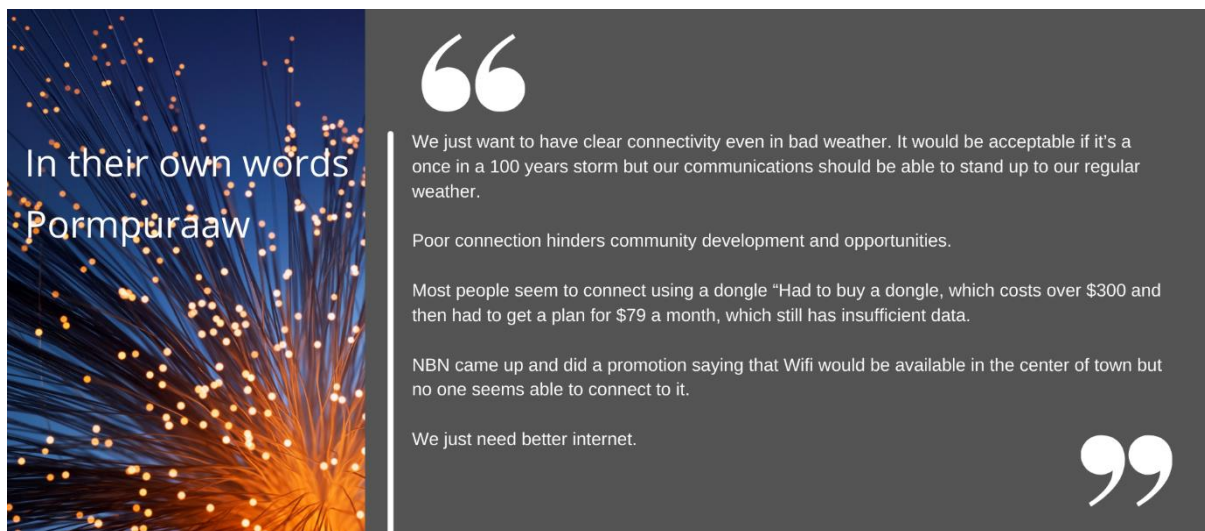
In 1986, the Pormpuraaw Aboriginal Community Council gained title to the area by way of a DOGIT. The Council governs and area of 466,198 hectares. The Council operates the Post Office, Bank Agency, Library and age car services. Pormpuraaw has an alcohol management plan in place (Pormpuraaw Aboriginal Shire Council, 2020). Pormpuraaw has one of the oldest crocodile farms in Australia and is well known for its cultural art and artefacts.

### Focus Group Findings

A focus group was conducted face to face and included Council representatives, police, justice, health, education, employment, social services, business owners, post office and airport representatives. The key issues identified were:

- Although improved since a 2019 upgrade there are still problems with dropouts and reliability for phone and internet;

- A range of difficulties of engaging with government online processes in individual or work situations. Examples were provided of the challenges at the individual level such as trying to use Centerlink portals on their mobile phones and going to Council to seek technical support as they do not have any other point of call. In work situations, difficulty of agencies to do government reporting, trying upload, download data, dropping out during uploading and size of documents creating challenges;
- Outages periods can be long. For example, one outage was for 5 days. Council had no option but to give elderly \$200 each as they could not use cards or get any cash from ATM. This meant issues with perception problems and breaches of local government processes and audits but was based on a feeling that there was absolutely no other choice;
- The school and health centre has no real problems with connectivity except for town wide outages but staff all experience slow speed and dropouts when they are at home and during peak times;
- There is no high school in the community and students need to leave to complete their education. Poor internet was noted as hindering the possibility of remote learning;
- A number of the services complained about poor download and upload speeds. They often had to give up downloading or opening documents. This all means a big loss in productivity;.
- Training was much more expensive as they had to fly a trainer in or send staff away; and
- Police mentioned very poor connectivity, which they hoped would improve when their new building was completed. They mentioned that they often experience dropouts and rely on satellite phones, which can have poor reception “It can be scary when you can’t call for back up”.



**In their own words**  
**Parmpuraaw**

“ We just want to have clear connectivity even in bad weather. It would be acceptable if it's a once in a 100 years storm but our communications should be able to stand up to our regular weather.

Poor connection hinders community development and opportunities.

Most people seem to connect using a dongle “Had to buy a dongle, which costs over \$300 and then had to get a plan for \$79 a month, which still has insufficient data.

NBN came up and did a promotion saying that Wifi would be available in the center of town but no one seems able to connect to it.

We just need better internet.

”



## Torres Strait Islands (TSI)















|   |   | Qld   |                         |   |   |       |
|---|---|-------|-------------------------|---|---|-------|
|  | Population as at June 2020  | 5,178 | 5,176,186               |  | Number of Occupied private dwellings in 2016                                      | 988   |
|  | Median Age as at June 2019  | 26.2  | 37.4                    |  | % of rented occupied dwellings 2016   | 91.8  |
|  | % of Aboriginal peoples or Torres Strait Islander peoples           | 91.8% | 4%                      |  | % of one parent families 2016   | 36.8% |
|  | % of people who speak a language other than English at home in 2016 | 83.1% | 12%                     |  | % Developmentally vulnerable children by Communication skills & general knowledge | 43.5% |
|  | Index of relative Socio-economic disadvantage via (SEIFA) 2016      | 672   | 996<br>National 1,001.9 |  | Median total family weekly income 2016  | \$856 |
|  | % Internet access in occupied private dwellings 2016                | 67.4% | 83.7%                   |  | Registered business   | 63    |
|  | Unemployment rate Dec 2020  | 31.6% | 7.1%                    |  | Number of people receiving disability support pension                             | 54    |

Table 12: Torres Strait Islands Snapshot Statistics (Qld Government Statistician's Office, 2021)

Telstra  
Non-uniform 3/4G  
focused on  
townships

Optus  
Non-uniform 3G  
only coverage  
focused on  
townships

NBN  
Satellite or legacy  
ADSL

The Torres Strait Islands is Australia most northern frontier and borders Papua New Guinea. The Torres Strait consists of over 200 islands of which 17 are inhabited. It falls under three Local Government Areas, the Torres Shire Council, Torres Strait Regional Authority and the Torres Strait Island Regional Council. The region is divided into five traditional islands clusters, Top Western Islands, Westerns islands, Central Islands, Eastern Islands, and Inner Islands The sea country is the recognised Native Land and Waters of Guda Maluyigal, Maluyigal, Kulkalgal, Kemer Kemer Meriam, Kaiwalagal - the seafaring nations of Zenadth Kes (Torres Shire Council, 2020). The Torres Strait includes islands includes, Saibai Island, Murray Island, Poruma, Horn Island, Prince of Wales Island and Thursday Island.

Thursday Island located 40kms from the mainland, is the main commercial, services and business hub and is accessible via a flight to Horn Island and then a ferry to Thursday Island. It is also accessible via barge. Thursday Island is known as 'Waibene' to the Traditional Owners the Kaurareg people. Torres Strait is named after a Spanish Captain, Torres who sailed through the region in 1606. (TSRA, 2021) Prior to 1864, Traditional Owner groups had little contact with Europeans. Thursday Island was chosen as a port in 1875 and was opened to private settlement in 1885, which encouraged thousands of immigrants from Asia, the South Pacific and Europe to settle on the mainland to work in the pearling industry. In 1887 an underwater telegraph cable was laid between Thursday Island and Cape York. In 1918, a 'Protector of Aboriginals' was appointed and harsh rules and restrictions were applied, including forced removals and relocations. In 1974, the previous the system governing Thursday Island under the direction of a government appointed

administrator was replaced with an elected council. Torres Shire Council has been governing under the *Local Government Act 1994* (Queensland Government, 2021).

## Focus Group Findings

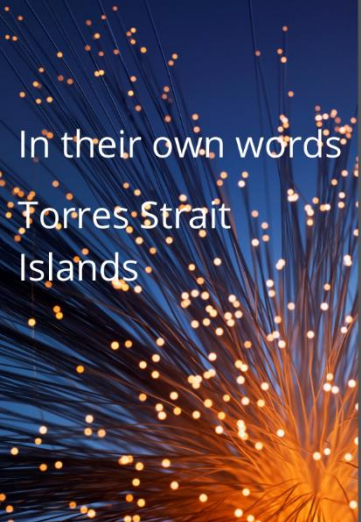
A focus group was conducted face to face and included the representatives of TSRA and Torres Shire Council, NDIS, National Australia Bank (NAB), JCU students located at Thursday Island, Queensland Health, technology provider based in Cairns but support Torres Strait and community radio. The key issues identified were:



- TSRA and TSC has good links with Telstra and a major mobile upgrade from 3G to 4G has been completed with government funding;
- Identified use of mobile phones, ADSL is limited with no ports available. TSC indicates that they have a good connection with ADSL and automated backup satellite. This system is in place as the Council building acts as the Disaster Management Centre;
- Major issues of mobile coverage and many locations with black spots across the islands. There are many islands that are hilly and where the hills block coverage. Examples were half of Hammond Island not covered and there is poor connectivity in small specific points on Warrebur and Mabuia Islands;
- Long delays, up to 9 months waiting period identified for satellite dish installation, particularly difficult for people coming to work in TSI and staff working on TSI cannot be guaranteed connectivity to their families;
- Concerns with the perception that Telstra is cutting back service provision on TSI;
- There is one bank NAB- single ATM -4th highest traffic in country for NAB- frequent closures due to dropouts caused by weather and other factors such as a fire on the mainland. There is no way to get cash on the islands outside from the two ATMs on TSI. Banking stops when ATMs do not work. Lending is affected. Major chaos as people carry cash across TSI and impacts on tourism of operating on cash basis;
- Affordability is a major factor for plans and not being able to buy unlimited satellite plans. Some outer islands reported being charged international roaming rates;
- Work impacts including limitations on online staff development, impacts on work productivity, slow upload/download time for staff reports and relevant documents, loss of documents on cloud based systems, difficulty of accessing reporting and shared drives of their organisations, missing out on opportunity for promotions, unable to use zoom/teams and working from home option is not possible. TSRA rangers identified the lack of connectivity as one of the top three issues that impact on their work;
- Weather impacts including severe rain, cyclone and cable cut by fire from mainland;
- Difficulty of providing health services, particularly telehealth, e.g. 120 NDIS clients are in the area with only support through telehealth. No way to guarantee getting into therapy sessions. If you have booked into and cannot get on you still have to pay for it. Some have missed 3-4 sessions due to connectivity challenges. Primary health centre closed for half day to catch up on paperwork due to rely on manual

systems. Clinicians cannot get connectivity in the building and need to go outside to use satellite phones;

- Justice system is frequently affected, particularly the availability of online courts;
- Safety concerns within and across TSI: risks to tourists, frequent risks to fishermen (cannot report breakdown), border security risks (e.g. illegal entry from PNG), bio-security risks. There was discussion about whether the defence forces could support the TSI region given the high security issues in the region. During COVID-19, study packs had to be physically picked up as online learning was not possible;
- Due to lack of mobile coverage, the radio station is investing in their own connectivity which is a dial up box VOIP system;
- Lack of digital skills and knowledge was identified as a major issue. Also, people have used mobile phones which means they missed out on stages of digital learning such as laptops which further affects skills levels;
- Lack of reliability in connectivity was identified as key inhibitor of training and development options.



In their own words  
Torres Strait  
Islands

“

I mean the whole COVID thing has really brought to the head how much we actually rely on the Torres Strait islands to actually be that first level of protection from Papa New Guinea. But the digital connectivity ... is absolutely atrocious... for basically a border type area... for military, for police also for bio security that sort of stuff we really don't have that high quality digital connectivity... In 2021 you would think that you would have ample bandwidth up there for basically a garrison that's sitting there protecting the top end of Queensland in Australia.

We are such a disadvantaged community that it seems to me, it is more important that you know connectivity issues shouldn't add this. Drawing on Clinton's speech in a South African country to say) Lets jump generations and move to the very latest technology. That would make a big difference to remote areas that we live in.

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## Weipa















|   |   | Qld   |           |   |   |         |
|---|---|-------|-----------|---|---|---------|
|  | Population as at June 2020  | 4,445 | 5,176,186 |  | Number of Occupied private dwellings in 2016                                      | 1148    |
|  | Median Age as at June 2019  | 33.2  | 37.4      |  | % of rented occupied dwellings 2016   | 59.5%   |
|  | % of Aboriginal peoples or Torres Strait Islander peoples           | 19.5% | 4%        |  | % of one parent families 2016   | 8.7%    |
|  | % of people who speak a language other than English at home in 2016 | 8.9%  | 12%       |  | % Developmentally vulnerable children by Communication skills & general knowledge | 16.2%   |
|  | Index of relative Socio-economic disadvantage via (SEIFA) 2016      | 1064  | 20%       |  | Median total family weekly income 2016  | \$2,777 |
|  | % Internet access in occupied private dwellings 2016                | 86.9% | 83.7%     |  | Registered business   | 170     |
|  | Unemployment rate Dec 2020  | 2.6%  | 7.1%      |  | Number of people receiving disability support pension                             | 15      |

Table 13: Weipa Snapshot Statistics (Qld Government Statistician's Office, 2021)

Telstra  
Uniform 3/4G  
coverage focused  
on townships

Optus  
Uniform 3/4 G  
coverage in all  
areas

NBN  
Fixed line in  
Nanum,  
Trunding, and  
Rocky Point.  
Satellite or legacy  
ADSL elsewhere

Weipa is located on the Albatross Bay on the West Coast of Cape York. The township is around 800km from Cairns and has extremely rich deposits of bauxite. The township is located on the traditional lands of the Alngith people. The town differs from others on the Cape as it was created under the Commonwealth Aluminum Corporation Pty Limited Agreement Act 1957 (Qld) and the Comalco Aluminum Corporation Pty Ltd Agreement. Rio Tinto operations including three bauxite mines, processing facilities, two ports and power stations. The town was originally built to house Comalco employees, families and support people for the bauxite mining. The Weipa Town Authority (WTA) acts in the role of local council on behalf of Rio Tinto (Weipa Town Authority, 2020). The town has facilities that are funded through Rio Tinto mining company and outperforms both the National and State social economic indicators for the index of relative socio-economic disadvantage (Qld Government Statistician's Office, 2021).

The Weipa Town Authority (WTA) governs Weipa and Rio Tinto appoints two of its seven members. Despite critical infrastructure being supplied by Rio Tinto there is a growing call for the town to break away from Rio to become more self-determining, which would enable access to government funding and more security in the future. Currently the town is restricted to 12kms with the majority of the town being surrounded by mining leases (Burt, 2021).



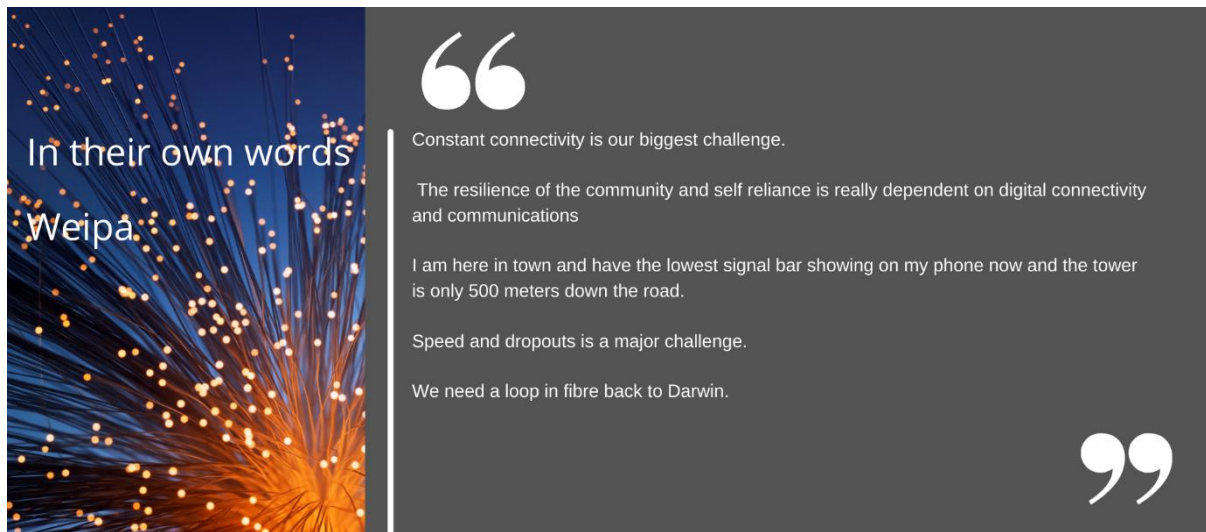
## Focus Group Findings

A focus group was conducted via zoom and included Weipa Town authority, disaster management, Rio Tinto, and local business. The key issues identified were:

- Low speeds, delays in downloading and frequent dropout for internet, fibre optic cables are old and there is poor connectivity;
- Phone coverage is a mix of 3G and 4G;
- Satellite connectivity is poor in rainy and bad weather;
- Peak times, particularly after school, slowness of internet;
- There are black spots within the town and across many of the surrounding areas. No connectivity along major roads and routes to other towns, particularly along the PDR where there are many tourists;
- Outages lasting longer than 5 days: Outages affect up to 20,000 people in Cape York and Torres Straits. The Western Cape has had 13 outages in the last 12 years ranging up to 5 days (record kept by member of WTA). Impacts identified as emergency and health risks, children unable to contact parents, lack of cash when cards are not working (cashless economy) and not able to access food, fuel and medicines;
- Digital infrastructure is not to be treated like other infrastructure developments;
- Limited mobile and satellite plans, capped data and fee structures, not suited to the needs of the community and businesses;
- Suggestion to create redundant fibre pathway via Northern Australia and Darwin to reduce risks of major outages as a fire burnt out all of Cape York;
- Impacts of lack connectivity on 40,000 tourists that come to Cape York. Affecting bookings, eftpos, fuel purchase and feeling that businesses could be self-sufficient if the digital technologies were reliable;
- Rio Tinto uses a different satellite, C grade, lower frequency and lower bandwidth but more reliable and less affected by weather conditions. This is more expensive to run and many businesses/agencies cannot afford it. Rio has advised that while one mine is closing there are two others and they will be in the region for a long time to come and invested in community benefit;
- Rio Tinto not looking to get out of Cape York in the short term. One mine is closing in the next 5 years in East Weipa but the new Amrum mine will have a life of 40-50 years and Andoom mine, north Weipa, still has a lot of life. The infrastructure will remain in Evans Landing and Lorim Point; discussions are taking place between the Qld Government and Traditional owners about how the land will be handed back and rehabilitated;
- Town power is great, Rio has provided fantastic support to energy infrastructure, and very short outages when it does occur; Rio rolling out smart grid and integrated battery options which will benefit Weipa region;
- Significant co-investment in digital community and community benefit from Rio Tinto;
- Disaster periods are difficult as many systems do not work and telecommunications vans have limited range;
- In the context of resilience, digital connectivity is essential at critical times such as during cyclones. There is a need for redundancy;
- Different elements of what can be improved: Capacity of the network, resiliency and redundancy and the capacity to get access to it from pole or pit to the property which is still copper in the region and getting fibre to premises is needed. Resiliency should consider the number of repeater stations up the Cape. For example, in relation to a recent outage, one participant said "there is a solar powered repeater station near Batavia Downs. The station takes the fibre feed, all in one hop from Coen and

needs to regenerate the signal to get it to Weipa. When the storms rolled in the gensat did not kick in, the batteries ran flat and dropped offline in the middle of the cyclone. It took a long period of time to get technical staff on site due to the weather constraints, so stabilizing those repeater sites across the Cape is an important element of immediate solution”;

- Suggestion was made to NBN to put up two SkyMuster points for Local Area Disaster Committee and one near the bank to have continuity of service; and
- Suggestions from participants to put a fibre optic loop in from Darwin to Torres Strait and northern part of Cape York. It was pointed out that this fits in with Northern Australia development agenda, reciprocal benefits, development of cutting-edge space research, and supply chains -connecting the loop at the top end will bring a lot of benefits. A loop was suggested by Telstra at a Weipa Disaster Management meeting in 2014 during a communications outage.



In their own words  
Weipa.

“

Constant connectivity is our biggest challenge.

The resilience of the community and self reliance is really dependent on digital connectivity and communications

I am here in town and have the lowest signal bar showing on my phone now and the tower is only 500 meters down the road.

Speed and dropouts is a major challenge.

We need a loop in fibre back to Darwin.

”

## Wujal Wujal















|   |   | Qld   |                         |   |   |       |
|---|---|-------|-------------------------|---|---|-------|
|  | Population as at June 2020  | 316   | 5,176,186               |  | Number of Occupied private dwellings in 2016                                      | 78    |
|  | Median Age as at June 2019  | 31.9  | 37.4                    |  | % of rented occupied dwellings 2016   | 98.7% |
|  | % of Aboriginal peoples or Torres Strait Islander peoples           | 92.2% | 4%                      |  | % of one parent families 2016   | 37.5% |
|  | % of people who speak a language other than English at home in 2016 | 65.2% | 12%                     |  | % Developmentally vulnerable children by Communication skills & general knowledge | na    |
|  | Index of relative Socio-economic disadvantage via (SEIFA) 2016      | 596   | 996<br>National 1,001.9 |  | Median total family weekly income 2016  | \$682 |
|  | % Internet access in occupied private dwellings 2016                | 62.8% | 83.7%                   |  | Registered business   | na    |
|  | Unemployment rate Dec 2020  | 20.3% | 7.1%                    |  | Number of people receiving disability support pension                             | 22    |

Table 14: Wujal Wujal Snapshot Statistics (Qld Government Statistician's Office, 2021)

Telstra  
Non-uniform 3/4G  
across region

Optus  
No coverage

NBN  
Satellite or legacy  
ADSL only

Wujal Wujal means 'many falls' in the local Kuku-Yalanji language, highlighting the many sacred waterfalls in the region. The community is located in eastern Cape York, around 350km from Cairns and around 70km south of Cooktown. Wujal Wujal local clans are the Kuku Nyungul, Jalunji peoples and the Eastern Kuku Yalanji who have native title to the Wujal Wujal area.

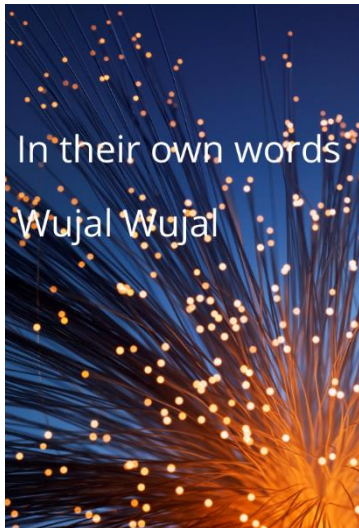
While the community has existed for hundreds of years, the Shire was founded by Lutheran Missionaries in 1886 and was known as the Bloomfield Mission. In 1960 it was officially renamed Wujal Wujal and in 1987 the Queensland Government transferred the trusteeship under a Deed of Grant Trust. Wujal Wujal is an alcohol restricted community

The Wujal Wujal Aboriginal Shire Councils, 2019-2020 Annual Report (2020) outlines the community vision on the 'creative development of a variety of business enterprises.' Artist from the region are well known and highly regarded. The Wujal Wujal Emergency Management Network enables residents to receive emergency warnings even if both the mobile and power networks have failed. The unreliability of landline and mobile services due to tropical weather and hilly terrain, makes this a vital service. While there is a sealed road via Cooktown the direct road to Cairns is unsealed and 4WD recommended in large sections. (wujal Wujal Aboriginal Shire, 2020)

## Focus Group Findings

A focus group was conducted via zoom and included Council employees, Qld Government, health and education services. The key issues identified were:

- Many are reliant on their mobile services for internet as there are less houses with satellite.
- Satellite internet unreliable and slow, impossible to stream on many occasions. SkyMuster not operating in bad weather. Many are resorting to multiple options e.g. Telstra dongle for work but it does not work everywhere and data limits are problematic;
- Challenges of mobile and internet plans, data limits and caps;
- Plans are not affordable;
- Poor customer service identified from telecommunication providers and little support at local level. The onus is on the customer to identify and report the problem and troubleshoot;
- When systems are down, it is not short term for a couple hours, can be up to one-two weeks at a time and major impacts on the businesses, health services, schools and hotels;
- Council has invested in infrastructure for emergency communications (ITERA satellite) but challenges include integration with existing digital technologies; maintenance costs of assets, technical skills to utilise the infrastructure;
- Poor digital connectivity has a major impact on education:
- There is little technical capacity in the Shire and often support is sought from outside the region; and
- Disaster communications include COWL (communications on wheels), the ITERA system of Council and the SES base waves are different.



“

If you want a 21st education system then we need 21st internet and facilities.

We are not too tech savvy here because we have never had the opportunity to be. So we fall behind.

Support is very rare and complaints not followed up and, you know, you have to have people it's it seems to be the onus is on the customer to, to be technically savvy enough to actually report what the problem is.

Worse case scenario if we went into a full I lock down we would be a world of hurt again.

Digital communication – Its critical infrastructure

”



## Overall TCICA Region Infrastructure and Coverage

An analysis of the relevant telecommunications services for the region was compiled using information from provider websites, discussions directly with providers and our industry knowledge. Additionally, the technical expert analysis of digital telecommunications for the Northern Gulf region was utilised to inform the construction of digital profiles for the TCICA region (Marshall et al., 2021).

The primary categories covered in the TCICA digital profiles are:

- Mobile Voice and Data Coverage
- Satellite Internet
- Fixed Internet

### Mobile Service Coverage

Mobile service coverage needs to address both voice and data depth (capacity) and breadth (coverage) (Airbridge, 2021: 11). The mobile phone coverage in the TCICA region is mainly via Telstra providing 3G and 4G network coverage. Optus has a presence in selected localities within six LGAs, and there is no Vodafone coverage. There is no 5G presence in the region. The majority of the region is not covered and is considered to be very remote, including several key arterial roads (e.g., Peninsula Development Road) and the fringes of townships. Depth of coverage (capacity) is limited in most locations. An influx of people and mobile devices for events or high tourist volumes can significantly impact data performance. Please refer to Appendix 3 for detailed mobile coverage maps.



### Satellite Internet

With their Sky Muster, Sky Muster Plus and Business offerings, NBN are essentially the exclusive provider of satellite internet services in the region as a wholesaler. The Retail Service Providers (RSP) include SkyMesh, Harbour ISP and Activ8Me. The Specialist enterprise satellite services are available and used by large companies such as Rio Tinto. They have specific application and high cost. Sky Muster Plus services are currently limited to 2/0.5Mbps with metered and unmetered data plan options. Everyday activities such as email and web browsing do not count towards used data except video streaming and Virtual Private Networks. NBN has recently introduced new plans with increased data- the 300Gb plan is \$199.95 per month after install costs. NBN Business Satellite Services (BSS) offers data speeds up to 30/5Mbps and an asymmetric plan of 13/13Mbps.

Starlink ([www.starlink.com](http://www.starlink.com)) is a new entrant to the market, offering high-speed, low latency (20-40ms) satellite internet services (50-150Mbps). Their license to operate focuses on rural and regional Australia. They have launched across 400 sites around Australia and 8000 have pre-orders (BIRR, 2021). They have a presence in Far North Queensland, providing services to schools in Cairns. Their capacity to expand is linked to more satellites being launched and ground station. Details for their launch and plan offerings are yet to be confirmed for the TCICA region, if at all.

### Fixed Internet

NBN is the sole wholesale provider of fixed internet capability. However, only a small number of communities are serviced with Cooktown and Weipa being the only localities with NBN fixed line/fixed wireless access. Everywhere else has satellite access or legacy ADSL connections.

### TCICIA Region Digital Infrastructure and Coverage

The following provides a place-based summary of the desktop-based mapping of mobile/broadband coverage and infrastructure, supported by some ground-level insights about infrastructure and services from interviews and focus groups of the findings. The table shows the level of coverage and the nature of technologies in use. The table shows the extent of mobile coverage with the key: A = uniform coverage across shire (blue), B = uniform coverage in townships, non-uniform coverage elsewhere in shire (green), C = non-uniform coverage in townships, non-uniform/no coverage elsewhere in shire (yellow), D = no coverage across shire (orange), 3G only is bolded. The NBN key is: Y = fixed line or fixed wireless (grey), Z = satellite/legacy ADSL (white).

| Northern | LGA                                      | Telstra mobile   | Optus mobile  | NBN broadband   |
|----------|--|--|---|---|
| 1        | Torres Strait Island Regional Council    | C: non-uniform 3/4G coverage focused on townships  | C: non-uniform <b>3G only</b> coverage focused on townships     | Z: satellite or legacy ADSL   |
| 2        | Torres Shire Council                     | C: non-uniform 3/4G coverage focused on townships  | C: non-uniform <b>3G only</b> coverage focused on townships     | Z: satellite or legacy ADSL   |
| 3        | Northern Peninsula Area Regional Council | C: non-uniform 3/4G coverage focused on townships  | C: non-uniform <b>3G only</b> coverage focused on townships     | Z: satellite or legacy ADSL   |
| Central  |  |  |   |   |
| 4        | Mapoon Aboriginal Shire Council          | B: uniform 3/4G in township, limited on arterials and elsewhere, 3G has greater footprint              | D: no coverage  | Z: satellite or legacy ADSL   |
| 5        | Napranum Aboriginal Shire Council        | B: uniform 3/4G in township, limited on arterials and elsewhere  | B: uniform 3/4G in township, limited on arterials and elsewhere | Z: satellite or legacy ADSL   |
| 6        | Weipa Town Authority                     | A: uniform 3/4 G coverage in all areas   | A: uniform 3/4 G coverage in all areas                          | Y: fixed line in Nanum, Trunding, and Rocky Point. Satellite or legacy ADSL elsewhere |
| 7        | Lockhart River Aboriginal Shire Council  | C: non-uniform <b>3G only</b> coverage in township, limited on arterials and elsewhere, no 4G coverage | D: no coverage  | Z: satellite or legacy ADSL   |

|          |                                      |   |  |   |
|----------|--------------------------------------|---|--|---|
| 8        | Aurukun Shire Council                | C: non-uniform 3/4G coverage focused on townships   | D: no coverage   | Z: satellite or legacy ADSL   |
| Southern |                                      |   |  |   |
| 9        | Pormpuraaw Aboriginal Shire Council  | B: uniform 3/4G in township, limited on arterials and elsewhere                                     | D: no coverage   | Z: satellite or legacy ADSL   |
| 10       | Kowanyama Aboriginal Shire Council   | B: uniform 3/4G in township, limited on arterials and elsewhere                                     | D: no coverage   | Z: satellite or legacy ADSL   |
| 11       | Cook Shire Council                   | B: uniform 3/4G coverage in Cooktown, Coen, and other townships, limited on arterials and elsewhere | C: uniform <b>3G only</b> in Cooktown and surrounds, 4G in Cooktown centre, limited on arterials and elsewhere | Y: fixed line in Cooktown centre, fixed wireless in outskirts. Satellite or legacy ADSL elsewhere |
| 12       | Hope Vale Aboriginal Shire Council   | B: uniform 3/4G in township, limited on arterials and elsewhere                                     | C: non-uniform 3/4G only in township, limited on arterials and elsewhere                                       | Z: satellite or legacy ADSL   |
| 13       | Wujal Wujal Aboriginal Shire Council | C: non-uniform 3/4G across region   | D: no coverage   | Z: satellite or legacy ADSL   |
| 14       | Mornington Shire Council             | C: uniform 3/4G coverage in township, no coverage on 4/5ths of the main island                      | D: no coverage   | Z: satellite or legacy ADSL   |

Table 15: TCICA region digital profile

Source: Table 15 was produced using publicly available information available at the following sources:

- NBN broadband rollout map: <https://www.nbnco.com.au/learn/rollout-map>
- Telstra mobile coverage map: <https://www.telstra.com.au/coverage-networks/our-coverage>
- Optus mobile coverage map: <https://www.optus.com.au/about/network/coverage>

While there are significant constraints on digital telecommunications, some investments are being made into the region. These include investments under the federal Mobile Black Spot Program and the Regional Connectivity Program (RCP). The investments under the Mobile Black Spot Program are:

Northern region:

- Telstra macrocell at Darnley Island, Torres Strait Island Regional Council (Round 1)
- Telstra macrocell at Injinoo, Northern Peninsula Area Regional Council (Round 2)
- Telstra small cell at Northern Peninsula Airport (Bamaga), Torres Shire Council (Round 4)
- Telstra small cell at Eliot Falls, Cook Shire (Round 4)

Central region:

- Telstra small cell at Portland Roads, Cook Shire (Round 5)

- Telstra macrocell at Weipa, listed as Cook Shire, but positioned in Napranum (PL Round)
- Optus small cell at Archer River Roadhouse, Cook Shire (Round 4)
- Telstra macrocell at Coen Airport, Cook Shire (Round 1)

#### Southern region:

- Optus small cell at Musgrave River Roadhouse, Cook Shire (Round 4);
- Telstra macrocell at Hutchinson Street (Cooktown), Cook Shire (Round 2);
- Telstra small cell at Rossville, Cook Shire (Round 4);
- Telstra small cell at Rossville State School, Cook Shire (Round 5);
- Telstra macrocell at Ayton, Cook Shire (Round 2); and
- Telstra small cell at Bloomfield River State School, Cook Shire (Round 4) (Department of Infrastructure, Transport, Regional Development and Communications, 2021).

Several projects recently announced in the Regional Connectivity Program (RCP) are situated in TCICA areas.

- *Aurukun*: Mobile voice and data project will upgrade the transmission and backhaul capacity at the existing Telstra 4GX mobile base station at Aurukun, a remote Indigenous community located on Cape York in Queensland (Telstra, \$289,638)
- *Napranum*: R.A.N (Regional Australia Network) project will deploy a fixed wireless network in the town of Napranum (Field Solutions Group, \$356,908)
- *Mornington Island*: Mobile voice and data project will upgrade the capacity of the existing Telstra 4GX mobile facility in the Indigenous community of Gununa on Mornington Island. The project will also upgrade the existing fibre network between Mt Isa and Point Parker, and deploy a new mobile site near Century Mine, to provide microwave backhaul capacity to the Mornington Island (Telstra, \$2,661,731) (Department of Infrastructure, Transport, Regional Development and Communications, 2021a).



As these projects were only announced in May 2021, the improvements to mobile and broadband services in the TCICA LGAs are yet to be realised. Further rounds of the RCP are planned.

Other investments in the recent past have included backbone infrastructure for mobile and broadband connectivity to the Cape and Torres Strait. 4G backbone infrastructure for Cape York was funded through a two-stage project involving the Torres Strait Regional Authority (TSRA), Australian Government Department of Agriculture and Water Resources (DAWR), and Telstra. Stage One was completed in 2018 and Stage Two was forecast for 2019 (TSRA, 2017). Telecommunication upgrades were also undertaken in Aurukun in 2016. There are also more localised digital inclusion initiatives taking place in the region, such as the Deadly Digital Communities program (digital literacy training) delivered in the Aurukun, Pormpuraaw, and Cook Shires, along with the Torres Strait Island Regional Council in 2020.



## Summary of Project Findings: Across the TCICA Region

The Cape York and Torres Strait region is unique (referred to as the TCICA region). For this reason, the project adopted a place-based approach that recognises the needs, aspirations, and historical legacies in relation to digital connectivity and telecommunications. A range of issues and challenges related to digital connectivity identified by stakeholders were common across the TCICA region. Participants recognised that the TCICA region had vast distances with low population density, and exposure to climate and weather events. Nonetheless, the research uncovered significant frustration with the daily challenges of digital technologies in the region, of work stress it places on employees, significant disruptions to connections (speed, reliability, capacity issues), affordability and service support. The impacts of the digital challenges on different aspects of life in the TCICA region are provided in Appendix 4 This section provides a summary of the findings of the research across the TCICA region under six major themes:

### 1. Issue of Equity and Rights

The key stakeholders identified that challenges of living in rural and remote locations and the lack of

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*“Without internet access which facilitates economic development and the enjoyment of a range of human rights, marginalized groups and developing States remain trapped in a disadvantaged situation”*

*UN Rapporteur, AHRC, 2021*

equitable telecommunications services. The market-based approach to telecommunications provision, including the lack of competition of telecommunication providers, has resulted in limited-service delivery and access. Many felt that there was a lack of recognition of the greater role for digital connectivity in remote areas for economic and social development. Many participants argued that the business models of telecommunications providers have meant that small and distributed populations could not be viably serviced and has resulted in ongoing challenges and lack of effective investment and servicing for needed infrastructure and services. The Universal Service Obligation (USO) is a consumer protection standard, established by the Australian government, that ensures access to landline telephones and payphones to people regardless of where they live or work. The USO was recently superseded by the Universal Service Guarantee (USG) which adds internet access to legislated communications provision for all Australians. Nearly all of the participants identified that this obligation was not adequately being met, or meeting community needs and expectations, within the TCICA region.

There was a strong suggestion by stakeholders for government to view telecommunication provision like other utilities such as road, power, water and safety infrastructure with recognised allocation of funding. It was recommended that a ‘public good approach’ was needed, shifting away from meeting

critical digital needs with a model based on business and profits, to an approach that involves policy recognition of regional digital exclusion. Some argued that the lack of equitable access was a human rights issue, given the socioeconomic characteristics of the TCICA region communities and policy imperatives such as 'Developing Northern Australia' and one of the three focus areas of the Cooperative Research Centre for Developing Northern Australia (CRCNA) is Indigenous development in Northern Australia. Also, the 'Closing the Gap' strategy of the Australian Government now includes



Target 17: By 2026, Aboriginal and Torres Strait Islander people have equal levels of digital inclusion. In several groups, it was identified that was that during the COVID lockdown schools were unable to shift to online learning, instead schools prepared resource packs to be sent home or collected. In some communities, teachers delivered the packs. In a number of the communities it was reported that the work was not completed and so there was a period that no school based learning took place. Schools and parents also indicated concerns as to how the National Assessment Program – Literacy and Numeracy (NAPLAN) would be delivered online.

## 2. Infrastructure and Access

The infrastructure in the region for mobile phone coverage is 3G and 4G for mobile phone coverage and mostly satellite or fixed wireless for internet services. Telstra is the main provider of mobile phone services with a small presence of Optus (no Vodafone). There is no 5G presence in the region. NBN SkyMuster plans, including SkyMuster Plus and Business, are the main forms of internet provision for consumers. There are significant service gaps across the geography of the region for both mobile phone and internet, with some major roads for tourism, business and domestic travel not covered, raising economic development, issues with access to services (e.g. health, education), and safety concerns. The key challenges identified by participants across the region in relation to access to services include:

- Unreliability of internet and mobile services with most participants reporting slow speeds, drop outs, short range of towers, and blackouts;
- Weather impacts on satellite internet reliability, as the region is prone to heavy rain and cyclones;
- Some infrastructure is old (fibre and copper), not upgraded;
- Optic fibre where it exists is not always connected to premises;
- Multiple ad-hoc connectivity options (different systems of set up) with limited inter-operability;
- 2-speed internet service delivery (e.g., connections that some agencies can access versus and the rest of community);
- Last mile issues of connectivity (i.e., getting existing connections to reach properties);
- Limited mobile coverage, particularly on the outskirts and out of town;
- People doubling up on devices and services due to reliability issues (for redundancy) to keep businesses operational and maintain core services (increased the cost of being connected);

- Infrastructure (mobile and some broadband) is exposed, and damage to infrastructure takes long to repair, especially during disasters;
- Interdependency between mobile, internet and power connectivity means all three can fail at once;
- Reliance on generators for energy links digital connectivity with outages of power and energy reliability;
- Lack of clarity about infrastructure planning, investment and roll out for the TCICA region by telecommunication providers;
- Lack of clarity about regional backhaul availability;
- Reliance on mobile phones to do business is not satisfactory due to data limits, coverage and affordability;
- Lack of capacity of local communities to raise investment or co-contribution for infrastructure developments;
- The need to coordinate infrastructure delivery in the region e.g. road infrastructure design and build with telecommunications;
- Shift of service delivery to online with e-government (e.g. MyGov), limited on-site services (e.g. banks, ATMs), remote work arrangements, and COVID-19 measures has created significant anxiety about access and being left behind; and
- Regional vulnerability to climate and weather events requires greater investment to protect or maintain telecommunication infrastructure.

### 3. Affordability

Affordability and availability of data plans that meet the needs of consumers was identified as one of the major issues. There is a high proportion of people on lower incomes in the TCICA region, as outlined earlier. The cost of data plans is the same as for metropolitan areas, imposing a disproportionate impact of on household budgets, while at the same time the level of service is lower. Value for money for mobile services is comprised by unreliability of service and lack of unlimited data plans. Participants identified the key challenges of affordability as follows:

- Data on mobile packages is limited and inadequate for the needs. Plans are capped which limits accessibility in relation to needs e.g. download and upload times longer. Some have paid for data that they are unable to use due to congestion and people giving up on usage;
- Few choices of retail services providers (for mobile in particular) to provide competition;
- Lack of affordability of plans for individuals, services and businesses as many have identified that they cannot afford SkyMuster Plus or the business grade plans;
- In some areas charged international mobile roaming rates (outer islands in Torres);
- Limited options of mobile/broadband bundles limited due to small number of providers;
- The need to design of different service plans to match the demand patterns of remote consumers with more choice options for plans, different data and cost structures suited to remote locations and low income families;
- Consumers are unable to afford equipment such as laptops, mobile phones; and,
- Business owners and services require affordable as existing enterprise-grade devices, platforms, software, and connections were seen as too expensive for micro and small businesses.

### 4. Service Supports

Limited access to technical support services was a major challenge that was identified across the TCICA region. The identified issues in relation to service supports were:

- Long service times for connectivity installation and maintenance;
- Little place-based technical capability of people in the community to help troubleshoot connection issues,
- Lack of on-ground technical expertise in businesses, service agencies and government, with many agencies contracting consultants to support them remotely (e.g. from Cairns);
- Decreasing on-the-ground technical and service support staff in the regions by telecommunication providers;
- Poor customer service and misinformation given by some providers;
- The onus of addressing technical issues and troubleshooting is placed on consumers rather than the providers;
- Difficulty attracting telecommunication workforce to the region, requiring travel by staff from other areas (a high cost), often resulting in delays to service or lack of ability to get through in severe weather events;
- Slow service responses and waiting times on getting help with trouble-shooting; the Customer Service Guarantee (CSG) was often not met but communities did not have the awareness or the skills to make complaints.

Many of the findings from this study were confirmed in the Airbridge (2021) technical report which identifies, in the nearby Northern Gulf region, that there are significant service assurance challenges; relevantly skilled people are generally not available, nor does support readily exist for sound advice on how to best address the challenges experienced; and support is often needed from outside the region with the associated expenses of travel and time.

### *5. Digital Literacy and Awareness*

Digital literacy and awareness were highlighted as major challenge. There were different dimensions to this issue. One related to the know-how about soft/hardware and connectivity options, and the other related to the skills and ability to utilise digital technologies in everyday aspects of life and business. The issues identified were:

- Lack of consumer knowledge and advice on digital connectivity (getting/staying connected, trouble shooting, service complaints);
- Confusion about telecommunications- the providers, packages, internet-mobile differences, options for connectivity;
- Lack of digital skills and increased digital divide – with generational gaps;
- geographic differences; differences between working and not-working; professional and non-professionals; and individuals and organisations; and,
- Lack of digital skills for capitalising on business opportunities, education, and accessing social services.

### *6. Safety, Emergency and Border Security*

Participants imparted specific concerns related to their own safety, but also possible comprised safety of the broader Australian community, owing to digital connectivity inadequacy or failure in the TCICA region. These issues include:

- Interruptions to communications during accidents and health emergencies;
- Limited access to information and alerts during disaster management and weather events;



- Difficulty reporting of safety issues across isolated roads and between islands in the Torres; Strait;
- Difficulty reporting of domestic violence and criminal activity;
- Difficulty reporting border security concerns; and,
- Difficulty implementing COVID-19 safety measures

## Considerations in Developing a Digital Strategy

There are a number of considerations in the development of a digital strategy for TCICA as outlined below.

### Scales of approach

The possible technical and educative responses to emerging needs are at multiple scales and are defined as distinct enablement categories (adopted from Marshall et al.; 2021):

- *Category 1: Individual, family or business:* Localised solutions to improve last mile connectivity that can be implemented through self-help or education (i.e., 'quick wins').
- *Category 2: Community organisation or community:* Solutions undertaken by community or a community group for wider improvement to access or quality of connectivity services through local investment.
- *Category 3: Regional:* Solutions and co-investment undertaken by local/state government or regional bodies along with service providers to achieve regional-level outcomes.
- *Category 4: Cross-regional:* High-level, major initiatives requiring engagement and investment of local/state/federal government and other external stakeholders.

### Key Drivers of Digital Strategy

Drivers in developing a strategy is critical, particularly prioritising the key challenges amongst competing priorities. The Northern Territory Government has identified a range of useful drivers as outlined below in Figure 4. These drivers correlate to the findings in this research and provide a useful broad framework for consideration of a TCICA strategy.


| DRIVER   | DESCRIPTION  |   |
|----------|--|---|
| Enable   | Provide the tools or means that allow people to make better use of digital technology  |  |
| Innovate | Find new and different ways to apply digital technology that creates fresh new solutions   |  |
| Share    | Make knowledge and data available to others to reuse and exploit for benefit of all  |  |
| Protect  | Safeguard digital information that is entrusted, including personal, sensitive, commercial-in-confidence and legally protected data                                |  |
| Educate  | Build Territorians digital skills and knowledge to maximise opportunity to prosper in the digital economy, develop rewarding careers and sustain future workforces |  |

Figure 4: Underpinning Digital Drivers (NT Government, 2019: 6)

### Modes of delivery

Communities that have faced digital challenges have undertaken different strategic approaches as to who delivers. There are many examples from around the world and it is not the focus to provide a comprehensive analysis but provide a broad overview of approaches for consideration:

*Community Owned Internet Service Provision:* Initiatives to complement what the main providers are providing but addressing infrastructure gaps, speeds, and affordability as well as having technical capabilities. In the context of Indigenous Canadians, Dakota-NET, born out of challenges of affordable and accessible internet, is a locally operated wireless ISP – that has been supplying high-speed Internet to the community, as well as surrounding rural communities. Projects have been undertaken to empower Indigenous communities via ownership of their own infrastructure. For example, Katlodeeche First Nation’s own 397-kilometre fibre-optic network (for further details see <https://www.theglobeandmail.com/life/adv/article-connecting-canada-a-community-based-approach/>).

The benefits of community owned ISPs include:

- Addressing inequity by focusing on accessible and affordable connectivity rather than making profits as the main objective;
- Developing local digital skills and technical capacities;
- Ownership and say over infrastructure planning;
- Demystifying technology;
- Providing competition to the mainstream telecommunication agencies; and
- Providing social enterprise and jobs in local community.

In Australia, the Centre for Appropriate Technology (CfAT) (<https://cfat.org.au/>) based in Alice Springs provides solutions to infrastructure challenges that people face in maintaining their relationship with country. The focus is primarily: reliable power, water supply, digital connectivity, built infrastructure, training and skills development. Their telecommunications solutions include CfAT Mobile Hotspots, a one-user-at-a-time facility to extend mobile coverage in fringe areas with poor coverage. There is also this work by the RDA NT on point-to-point microwave solutions between communities, which could be considered for TCICA.<sup>2</sup>

The lessons learnt from these types of projects is the steady build, without significant community debt, gradual enhancement of customer base, attracting grants and investment.

*Local/Regional Government as ISP provider:* Local governments play an important role in the economic, social and cultural live of communities. Many local governments have embarked on the journey of ‘smart cities’ and digital strategies. They are well placed to deliver digital communication services. For example, many local governments in the USA and Canada have increasingly become Internet Service Providers (ISP) to provider cheaper and accessible internet services. There are a

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<sup>2</sup> See <https://www.rdant.com.au/remote-high-speed-wireless-technology-pilot/>

variety of models of local governments as ISPs and what they provide. Many also provide digital literacies and jobs in digital technologies.

In Australia, CouncilBIZ (<https://www.councilbiz.nt.gov.au>) is a local government subsidiary operating under the auspices of the Local Government Act, was established to provide information technology support of eight councils in NT. It is a shared services model with a governance structure that comprises a member from each of the Council and the Local Government Association of NT and service agreements. The ICT services provided include server infrastructure, IT support, application hosting, service desk, software evaluation, IT audits, Mearki network solutions and logging of issues with network outage, Office 365 and other business software, business telephony, moving to cloud base IT and procurement.

*Public-Private Partnerships (PPP):* Collaboration across different sectors is not new and PPPs have increasingly gained popularity. PPP arrangements typically involve a partnership between a government entity, for providing a public asset or service, where risks and benefits are allocated (Babacan, 2021). PPPs can be utilized at scale, addressing last and middle mile backbone regional issues or bigger scale infrastructure investments. For example, in USA, Kentucky Wired (<https://kentuckywired.ky.gov/Pages/index.aspx>) involves the construction and operation of a 3,200-mile network connecting all 120 counties in Kentucky to the global internet. It then will provide non-exclusive access to any competing internet provider that wants to lease bandwidth and build the “last mile” connections to customers’ homes.

*Overseas or Other Private Sector Provision:* It is possible to attract private sector providers to increase competition or capitalise on a niche market. Starlink is an example of private sector competition. Overseas investors have expressed interest in investing in Australian digital telecommunications and provide potential future options, particularly with emerging technologies.

## Strategies for Digital Connectivity for the TCICA Region

A digital strategy should identify the infrastructure and service needs and identify programs that develop the digital skills of communities to ensure they are capable of accessing and benefiting from digital technology (ARUP, 2019:86). Catalytical infrastructure is both hard and soft infrastructure as an enabler that unlocks social, economic, cultural and environmental opportunities. Digital connectivity needs to catalyse change across the TCICA region, aligned to the scales of change and the challenges identified earlier in this report. This strategy identifies five priority areas for action, aligned with the dimensions of digital inclusion, i.e. access, affordability and ability, and with the enablement categories (i.e. Category 1: Individual, family or business; Category 2: Community organisation or community; Category 3: Regional; Category 4: Cross-regional)

|         | Strategic Focus Areas                                  | Strategic Initiatives   | Time Frames         | Enablement Category |
|---------|--|---|---------------------|---------------------|
| Access  | 1. Address Digital Infrastructure Issues in the Region | 1.1 Establish a TCICA region ICT infrastructure planning, coordination and partnership committee.                     | Short term          | Category 3          |
|         |  | 1.2 Explore the option for alternative ICT provision to improve public good outcomes and competitiveness.             | Medium term         | Category 3          |
|         |  | 1.3 Address immediate service enablement, coverage, last and middle mile issues.                                      | Short-medium term   | Category 1 and 2    |
|         |  | 1.4 Conduct a future digital demand analysis and develop a Regional Digital Investment Plan for TCICA and FNQ region. | Medium to long term | Category 3 and 4    |
| Ability | 2. Develop Awareness & Capabilities                    | 2.1 Initiate digital literacy programs to individuals, families and communities.                                      | Short term          | Category 1          |
|         |  | 2.2 Working with relevant telecommunication providers, develop a satellite and ICT awareness campaign.                | Short term          | Category 1          |



|                                |   |   |                        |                  |
|--------------------------------|---|---|------------------------|------------------|
|                                |   | 2.3 Support the development of a pool of place-based technical staff and skills across the LGAs in the TCICA region.  | Medium to long term    | Category 1, 2, 3 |
|                                |   | 2.4 Facilitate a network of digital technology officers meeting, including ICT staff in TCICA regions and service providers who support the region as a platform for learning, knowledge sharing, problem solving and skills development. | Short to medium term   | Category 3       |
| Ability, Affordability, Access | 3. Develop collaboration & partnerships for improved digital connectivity | 3.1 Establish a TCICA region digital connectivity Technical Panel Reference Group with telcos, councils, regional bodies and other critical stakeholders.   | Short term and ongoing | Category 3 and 4 |
|                                |   | 3.2 Develop an ecosystem of digital champions for the TCICA region.   | Short term             | Category 2 and 3 |
| Access, Ability                | 4. Robust Disaster & Emergency Telecommunications                         | 4.1 In line with TCICA regional disaster resilience strategy, develop regional disaster and emergency telecommunications solutions.   | Short to medium term   | Category 3       |
| Access, Ability                | 5. Supporting vibrant TCICA economies                                     | 5.1 Develop travel hotspots technology hubs along selected tourist routes.  | Medium term            | Category 1 and 3 |
|                                |   | 5.2 Develop initiatives to support small business to leverage benefits of e-commerce and explore future options for a digital economy.  | Medium Long term       | Category 1 and 3 |
| Access, Affordability          | 6. Other  | 6.1 Develop indicators and benchmarks for minimum service quality and meeting Universal Service Guarantees.   | Short to medium term   | Category 4       |
|                                |   | 6.2 Continue to build evidence base for service and research gaps.  | Ongoing                | Category 3 and 4 |

## 1. Address Digital Infrastructure Issues in the Region

### 1.1 *Establish a TCICA region ICT infrastructure planning, coordination and partnerships committee*

The purpose of an ICT infrastructure coordination and planning committee will be to enable region wide planning of ICT infrastructure, while taking into account locally specific needs. Economies of scale may be gained through joint efforts in infrastructure development and significant returns on investment if ICT infrastructure can coincide with other infrastructure e.g. ICT with roads, CCTV, energy infrastructure development. This would also assist in developing shovel ready projects, advocacy and developing projects for various grant programs. Infrastructure Australia should be engaged as they are undertaking an evaluation of their investment criteria with a view to broadening measures for investment. The secretariat for such a committee could be provided by TCICA or one of the member Councils.

### 1.2 *Explore the option for alternative ICT provision to improve public good outcomes and competitiveness.*

The business provision models of telecommunication providers are geared toward maximum returns on investment the geographic vastness and small dispersed populations in the TCICA region provide significant challenges for conventional business models of telecommunication infrastructure and service delivery. Several options could be explored by TCICA including, but not exclusive to, the following:

- *TCICA as provider:* TCICA consider being an ISP provider for the region or a shared services model of ICT provision across Council located with on ground staff across three zones within Cape York and Torres. There advantages and disadvantages of this option and a cost-benefit analysis should be conducted. TCICA should hold meetings with QCN Fibre as the company has plans to expand beyond Cairns. There are opportunities to leverage the co-placement of telecommunications and energy infrastructure.
- *Cross regional provision:* TCICA and FNQROC examine joint infrastructure and service provision options. This can include one ISP public provider for FNQ region, shared services model for ICT across Councils and joint technical support. For major infrastructure funding can be obtained from Northern Australia Investment Facility (NAIF), State and Australian Governments (e.g. RCP, Advance Queensland), philanthropy and private investment.
- *Social Enterprise:* TCICA work with businesses and not-for-profit organisations to establish social enterprises in ISP, digital skills and technical support businesses. Establishment, technical skills, business and governance models could be considered. Funding could be provided by Indigenous Business Australia and the social enterprise funding schemes in Queensland and Australian Governments.
- *Attract Private Providers:* This research has identified that there are overseas and domestic private investors looking to fund digital infrastructure across Australia, some with a corporate social responsibility focus. The Queensland Department of State Development, Infrastructure, Local Government and Planning have knowledge of potential investors. Additionally, there are philanthropic agencies looking for investment opportunities.
- *Engage emerging providers:* The world of digital connectivity is changing quickly. Providers such as Starlink (now supporting rural areas e.g. school in Cairns) with satellite internet services should be contacted by TCICA to gauge interest in investment in the region. Other services such as Amazon Web Services, providing cloud and web-based services, may also be useful.

These options have merits and disadvantages. A full scoping and feasibility analysis will need to be developed on some of the options. Implementing one of these options will be a game changer for the region and provide competition for existing providers.

### *1.3 Address immediate service enablement, coverage, last and middle mile issues*

There are a number of challenges of immediate issues of connectivity in the TCICA region.

Enhancing the capacity of existing providers and effective utilisation what is available are critical and can result in quick wins.

#### *Local Mobile Coverage Expansion*

Deploy small mobile repeaters to enhance localised mobile coverage at businesses or on rural properties. There is demonstrated benefit in having an upfront desktop assessment completed to determine the solution's viability and recommend the most suitable equipment. The service can be self-installed or professional assistance provided. The benefits include:

- Extend mobile network footprint;
- Extend mobile data footprint; and
- Simple pricing model and affordable solution.

Funding could be sought through:

- Directly purchased by business or individual (panel of suppliers to be established for reference); and
- A part subsidy model to offset the cost of having an upfront desktop assessment completed.

#### *Community Mobile Coverage Expansion*

Engage with mobile carriers (primarily Telstra) to deploy macro repeater or small cell services to target specific community locations. Small cell options are significantly cheaper than full mobile base stations to deploy but have the drawback of providing limited coverage. They are best targeted for locations where isolated coverage is needed. For example, Council facilities, tourists stopping point at national parks and other similar facilities. The benefits include:

- Address safety and emergency communications needs for locals and visitors;
- Extend mobile data footprint;
- Extend IoT network footprint; and
- Simple funding models with generally no ongoing costs.

Funding could be sought through:

- Regional Connectivity Program (RCP): A federally funded program with submissions from telcos and NBN to extend network coverage – fixed and/or mobile. Submissions generally prepared in consultation with community sponsor (e.g., Local member, Council, Community/Industry group or association);

- Mobile Black Spot Program: A federal program to extend mobile network coverage to regional communities. Submission via funding agency in partnership with a mobile carrier with support from community sponsor (e.g., Local member, Council, Community/Industry group or association);
- Direct Funding: Council or commercial entity engage the carrier to provide service; and
- Corporate or philanthropic funding.

### *Brokerage of Last Mile Connectivity*

Connecting local consumers to independent advice and brokerage support for acquiring suitable and affordable last mile mobile and broadband solutions for the home, business, or organisation. This can be achieved through education about existing support, namely the federally-funded Regional Tech Hub which was established in 2020 following several years of volunteer support provided by the Better Internet for Rural, Regional and Remote Australia Facebook group and website. Free services provided by the Hub include:

- A Monday to Friday hotline (1300 081 029) to ask a real person questions;
- Desk check of connectivity options for specific addresses;
- Lists of provider options for different types of technologies and connections; and
- Online resources about how to Get Connected, Stay Connected, Improve Connections and Use Connections effectively.

At a community-level, brokerage could be undertaken by civic organisations, with appropriate education, support, and funding from state and federal governments, and major service providers in the region. This could include preparation of resources specifically for TCICA region communities, facilitation of information sessions in communities, and coordination of stakeholders to co-invest in solutions.

Funding could be sought through co-investment of industry (telcos), government (local/state) and community organisations for public awareness and education programs relating to last mile options and existing support services. Independent brokerage roles (beyond what is provided by the Regional Tech Hub) could be sought through co-investment arrangements of community development grants, such as through Regional Development Australia. Importantly, these campaigns/programs should be co-designed with communities using local media vehicles to ensure messaging is targeted and ultimately useful.

### *Macro Mobile Coverage Expansion*

Engage with mobile carriers (primarily Telstra) to develop a progressive funding model to establish coverage along the Peninsula Development Road and other high traffic routes. The aim is to fill the broad gaps in highway and roads coverage progressively. The benefits include:

- Address safety and emergency communications needs for locals and visitors;
- Extend mobile data footprint;
- Extend IoT network footprint; and
- Establish core network access points along the highway route to provide for access to other telco services.

Funding can be sought through:

- Regional Connectivity Program (RCP): A federally funded program with submissions from telcos and NBN to extend network coverage – fixed and/or mobile. Submissions generally prepared in consultation with community sponsor (e.g., Local member, Council, Community/Industry group or association);
- Mobile Black Spot Program: A federally program to extend mobile network coverage to regional communities. Submission via funding agency in partnership with a mobile carrier with support from community sponsor (e.g., Local member, Council, Community/Industry group or association).
- May need to add Telstra co-investment fund here: <https://www.zdnet.com/article/telstra-puts-au200m-over-four-years-aside-for-regional-co-investment/>

### *NBN Fixed Service Enablement*

NBN fixed services are not available in most part of the TCICA region. There are direct benefits in enabling the townships with fixed NBN technology options (FTTP/C/N) such as:

- More choice of retail service providers;
- Providing broader service offerings (speeds, data plans, extras);
- Support for business enablement with business-specific services;
- Pricing comparable with major regional centres; and
- Remove large groups of users from satellite platform, improving service for remote users.

The barrier to enablement for NBN has been the cost of backhaul infrastructure. With the prospect of Telstra InfraCo offering dark fibre options, it may now prove practical for NBN to reassess the viability of such community enablement projects. TCICA should also explore opportunities with QCN Fibre about leveraging of existing or expanded Queensland energy infrastructure.

Funding could be sought through:

- Regional Connectivity Program (RCP): A federally funded program with submissions from telcos and NBN to extend network coverage – fixed and/or mobile. Submissions generally prepared in consultation with community sponsor (e.g., Local member, Council, Community/Industry group or association); and
- Regional Connectivity Infrastructure Fund (RCIF): NBN funded program (\$300M) to extend/flip NBN service delivery capability to regional communities. Submission via NBN from community sponsor (e.g., Local member, Council, Community/Industry group or association).

### *1.4 Conduct a future digital demand analysis and develop a Regional Digital Investment Plan for TCICA and FNQ region*

The population demographics and digital technologies are dynamic and changing. The provision of services is partly driven by demand. Leveraging partnerships developed during this project (and other projects carried out in parallel), progress a partnership-based Regional Digital Investment Strategy. Initial activities could include:

- Conduct a digital demand analysis into the next 10 years;



- Engagement of key organisations in the region to lead region-wide efforts to address digital connectivity holistically in Far North Queensland and the Cape and Torres Strait;
- Engagement of key Federal and State agencies to assist in progressing the strategy through existing policy and funding frameworks (e.g., National Disaster Recovery Fund);
- Establish local working groups to cost and advocate for specific investments over the next 5-10 years;
- Continued engagement of Tech Panel to collaborate to design and implement placed-based digital connectivity solutions; and
- Discuss and develop new approach to digital enablement funding not focused on commercial return but greater emphasis to digital/social criteria for remote communities.

Funding for planning and engagement to achieve a Regional Digital Investment Plan will include significant in-kind contributions from relevant stakeholders and grants to assist with coordination and travel costs. Funding for the Plan may come from a range of sources including government, private sector, loans, NAIF and philanthropic agencies.

## 2. Developing Awareness and Capabilities

### *2.1 Initiate digital literacy programs to individuals, families and communities*

A range of community-based digital literacy building initiatives could be undertaken in domains of interest to local individuals, families, businesses, and councils. While outsider expertise may be required, regionally based service providers should be employed in the first instance to delivery digital literacy training to constituents and/or be conduits to service delivery from broader state or federally based digital literacy agencies. Options include:

- Devising a register of awareness, capability, and use of existing mobile and internet connectivity and opportunities in the region;
- Supporting IT/digital services in remote communities attached to existing businesses and organisations. This could be achieved through:
  - Upskilling existing service providers (e.g., library, post office workers); and
  - Localised support programs.
- Expansion of the federal [Be Connected program](#) (digital skills for over 50s) and Infoxchange's [Digital Springboard program](#) (job-ready digital skills) into FNQ through actively recruiting community partner organisations into FNQ through actively recruiting community partner organisations. It would be important to have culturally appropriate programs that are targeted such as the Deadly Digital Communities that are run in conjunction with Indigenous Knowledge Centres<sup>3</sup>;
- Active promotion of the [Regional Tech Hub and](#) other resources that are already available to consumers, but which are not promoted widely in FNQ, such as IoT coverage maps and solutions, and telcos' dedicated regional and enterprise services support (e.g., [Telstra Enterprise](#), [NBN Local](#)).

This approach likely requires a negotiated federal/state investment for a limited time period (perhaps three years) to substantively lift the social and economic benefit currently available in the region.

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<sup>3</sup> See <https://www.slq.qld.gov.au/about-us/partnerships-collaboration/local-government-and-public-libraries/programs/deadly-digital>

There also specific skilling programs that are provided such as Department of Employment, Small Business and Training and AusIndustry.

### *2.2 Working with relevant telecommunication providers, develop a mobile, satellite and ICT awareness campaign*

Develop and an awareness program to ensure all users of existing technology choices and uses including, mobile phone, satellite and other options. Priority can be given to awareness programs regarding option to migrate to NBN Sky Muster Plus due to improved performance and inclusion of unmetered data.

Funding for such education programs could be provided by relevant industry engagement groups such as NBN and satellite service providers. Development of programs should occur in consultation with end users and be informed by research and best practice principles.

### *2.3 Support the development of a pool of place-based technical staff and skills across the LGAs in the TCICA region.*

On the ground technical capacity has been identified as a major gap. Developing a pool of place-based technical staff will help address appropriate solutions at individual, business and agency level, minimize down time with trouble shooting and develop innovative solutions.

Initial activities can include:

- Developing tailored courses working with education and training providers to develop technical skills/careers within community education and training;
- Employment/attraction of technical staff to the region; and
- Working with telecommunication providers to identify local support options.

Ongoing maintenance of infrastructure and services can be delivered by locals instead of having to wait for service providers to fix things. Funding for technical capacity enhancement can be explored Jobskills programs, education and training funding, telecommunication provider contribution, local resources e.g. Councils; and private sector investment. Companies such as Rio Tinto who have investments and interest in the region may be able to support such initiatives. If established as a social enterprise, other funding options from State and Federal governments may be possible.

### *2.4 Facilitate a network of digital technology officers meeting, including ICT staff in TCICA regions and service providers who support the region as a platform for learning, knowledge sharing, problem solving and skills development*

The project brought together a focus group of digital technology officers located within the TCICA region. The focus group, while being a source of research data collection, also served as information and knowledge sharing. There is benefit in consolidating scarce expert technical knowledge, sharing

and skills within the region. This forum can meet quarterly and be facilitated by TCICA or one of the Councils. Digital providers and other stakeholders may be invited to attend meetings on a regular basis or by invitation.

### 3. Develop Collaboration & Partnerships

Collaborative effort is going to be critical in improving digital connectivity in the TCICA region. A cross section of community will need to be engaged including business, service providers, government, and, importantly, the telecommunication industry.

#### *3.1 Establish a TCICA region digital connectivity Technical Panel Reference Group with telcos, councils, regional bodies and other critical stakeholders.*

During the research process a Technical Panel was engaged with critical stakeholders focusing on the region. The benefits of this forum was:

- Focus on the region's digital communication issues;
- Multiple perspectives from stakeholders;
- Awareness of challenges but also constraints of each agency;
- Willingness and openness to address the key issues;

A Technical Reference Group established for the region can support the implementation of this strategy including infrastructure planning, skills and capacity development, proposal for funding and regional investment strategies. Annual forums, showcasing opportunities for new and emerging technologies and roll out of telecommunication projects may also be undertaken via this forum.

#### *3.2 Develop a system of digital champions for the TCICA region*

Digital champions from major sectors and digital knowledge can provide support and leadership for the implementation of this Strategy. A system of digital champions can be established across the TCICA region. The role of the champions can include:

- Highlight the needs and advocate for the region;
- Provide support for digital access;
- Demonstrate the benefits of digital technologies at the community/regional level;
- Sharing knowledge, information or technical skills;
- Build confidence in using digital technologies.

The champions are enablers and are similar programs around the world. The Queensland Government had initiated Advance Queensland Community Digital Champions in 2015 although it could not be ascertained whether there were any in the TCICA region<sup>4</sup>. The proposed champions can be for the TCICA region or place-based. The selection of champions may be undertaken via different processes including call for nomination or direct appointment process. These will be pro-bono roles and should not require funding. The accountability of champions should be to the TCICA Board.

### 4. Robust Disaster & Emergency Telecommunications

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<sup>4</sup> Queensland Government (2017) Digital1st, <https://digital1st.initiatives.qld.gov.au/documents/digital-strategy.pdf>, p.16.

#### *4.1 In line with TCICA regional disaster resilience strategy, develop regional disaster and emergency telecommunications solutions*

TCICA is developing a disaster resilience strategy for the region. Safety, disaster and emergency telecommunications has emerged as a major consideration in this research. The challenges of communication under severe weather or distress situations pose threats to resilience. There are different communication systems for disaster and as well as difficulty of coverage (due to weather events or coverage). The disaster resilience strategy should consider addressing digital communications as part of their planning process. There are a number of Australian Government funding programs such as the Strengthening Telecommunications Against Natural Disasters and Future Drought Fund that may enable a regional application. In addition, the Queensland Reconstruction Agency and the Queensland Rural and Industry Development Authority provides a range of funding and loans for disaster recovery and resilience.

### **5. Supporting vibrant TCICA economies**

TCICA has recently undertaken an economic opportunities plan covering the Cape, Torres and Gulf. In line with that plan there should be consideration given to the

- Development travel hotspots technology hubs along selected tourist routes (5.1); and
- The develop initiatives to support small business to leverage benefits of e-commerce and explore future options for a digital economy (5.2).

### **6. Other**

#### *6.1 Develop indicators and benchmarks for minimum service quality and meeting Universal Service Guarantees*

It will be critical to develop indicators and benchmarks for what constitutes service quality and meeting of Universal Service Guarantee. While telecommunication and providers and the Australian Government has some definitions of these concepts these are not reflective of the needs and expectations within TCICA region. As one participant in Cooktown noted “minimum service guarantees are not good enough anymore and it continues to leave us behind”. The development of what constitutes appropriate indicators and benchmarks will provide a guide to this strategy and the Regional Digital Investment Plan.

#### *6.2 Continue to build evidence base for service and research gaps*

Having an appropriate evidence base is necessary to progress the development digital connectivity investment and advocacy. Research should be conducted on key issues such as baseline research on digital delivery and inclusion, for Closing Gap impacts, economic development, social service provision impacts (health, education) and civic participation.

## Conclusion and Next Steps

The implementation of the Strategy will require the development of an implementation plan. TCICA should lead the development of such a plan and be guided by a critical reference group as outlined in the Strategy. The implementation plan could include:

- What should be prioritised;
- What are the key actions and tools/resources for delivery;
- What are the milestones, timelines and responsibilities;
- What are the indicators of success and evaluation frameworks;
- What gaps exist in knowledge and research.

The engagement of telecommunication providers and other stakeholders is going to be critical to the successful implementation of the Strategy. Thought should be given to which stakeholders will be engaged, mechanisms and levels of engagement and which stage of delivery.

The communities of the TCICA region have aspirations for economic development, and social and cultural development and wellbeing. Telecommunications and internet infrastructure and services are increasingly an essential part of life in Australia and in the post COVID-19 environment is considered a critical utility. Digital connectivity enables people to earn a living, run a business, have social contact, access services, and participate in civic life.

This study has highlighted that many people in the TCICA region face significant challenges and feel that they are being left behind owing to infrastructure and service gaps, lack of access to affordable internet, and low levels of digital ability to put the internet to work in daily life. Digital exclusions can compound existing inequalities and have long term and intergenerational consequences for communities such as poorer education, employment, and health outcomes. The benefits of the digital economy cannot be shared when some members of the community are still facing real barriers to online participation (Thomas et al, 2020:5).

Evidence highlights the critical roles that digital connectivity plays, particularly in information exchange, decision making, building social capital, civic participation, and connection for long term recovery (Babacan et al, 2020; Sakurai & Murayama, 2019; Cheng et al., 2015). Digital participation can be strongly empowering, helping people to overcome their sense of helplessness, giving them a sense of control and agency for individuals, communities and businesses, and helping them fulfil economic and social aspirations and develop resilience in the long term.



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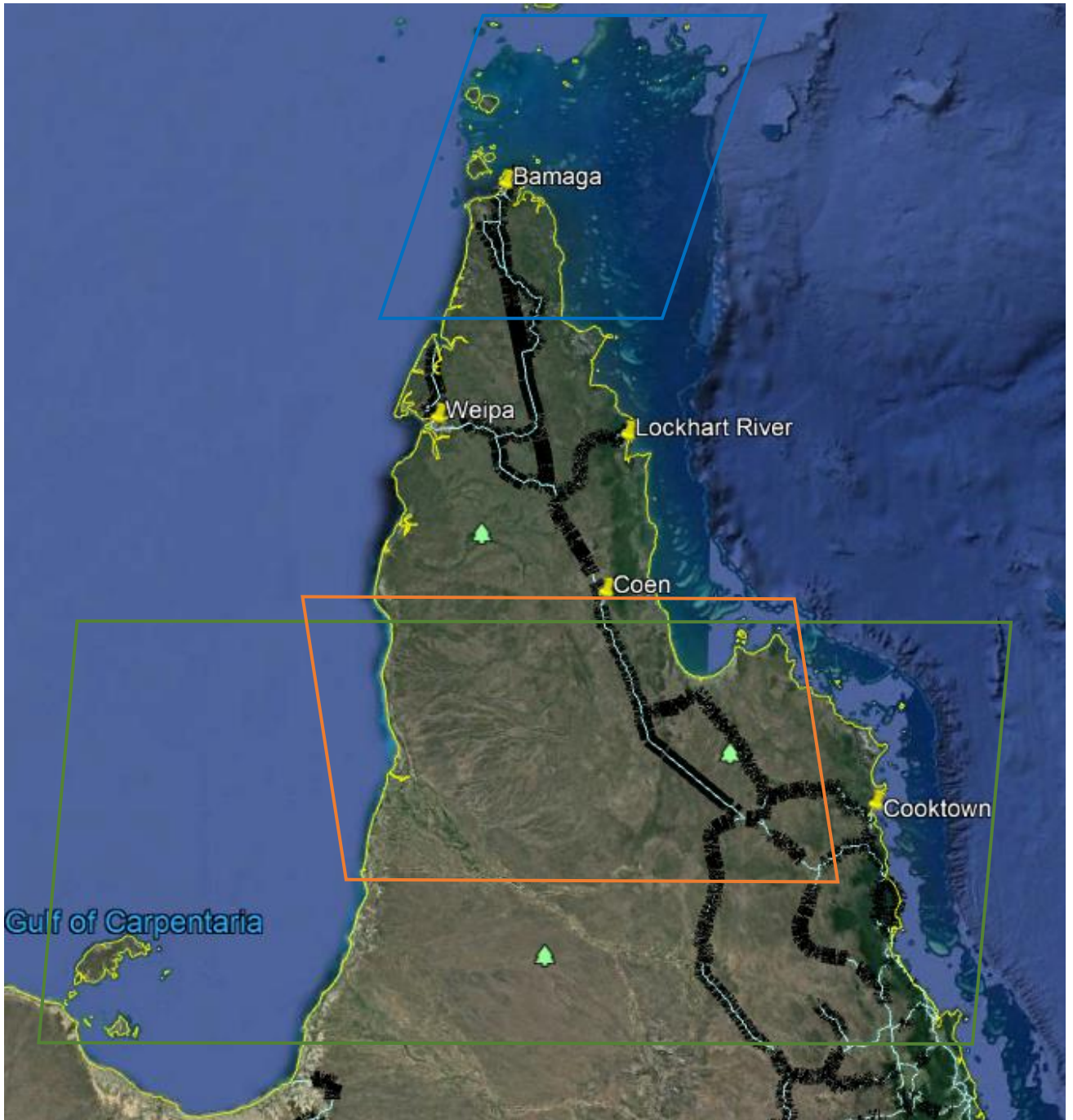
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## APPENDICES

### Appendix 1: Mobile Black Spots

To supplement the above coverage maps, which were accurate in June 2021, we also refer to the 2019 mobile black spot survey undertaken by FNQROC, which identified several GSM black spots in and between TCICA communities. As shown below, no signal at all could be obtained along roads throughout the Cape. In some instances, GSM black spots were detected where Telstra and Optus 3G maps show coverage. For example, in the Northern region, even after the Telstra base station at Injinoo (funded under Round 2 of the Mobile Black Spot Program) was operational, GSM black spots were detected immediately out of town on the Injinoo Road to Umagico and the Injinoo Back Road to the south.



FNQROC mobile black spot survey (GMS black spots indicated in black) (Source: Digital Economy raw data, 2019)

For comparison, the figure below shows mobile black spots reported by the community to inform Rounds 1 to 4 of the MBSP, sourced from the Australian Government National Map (<https://nationalmap.gov.au/>).



Mobile Black Spot Program base stations (Yellow = small cell, Red = microcell)



Community reported mobile black spots up until October 2018 (indicated by blue dots)

## Appendix 2: Focus Group Participation and information

Between 18 March and 15 June 2021, a total of 103 individuals took part in a focus group or interviews

In person focus groups were held in

- Lockhart River
- Thursday Island
- Pormpuraaw

A site visit to Cooktown was also undertaken.

Virtual focus groups were held with

- Whole of Cape and Torres Strait, Government departments and service providers
- Northern Peninsula Area
- Weipa Region
- Kowanyama Aboriginal Shire Council
- Mornington Island
- Cook Shire region
- Napranum region
- Hope Vale community
- Wujal Wujal region
- Aurukun region
- Service supporters and LGA ICT Officers
- Technical panel

A range of community stakeholders were invited and attendees included representatives from



- All TCICA LGAs
- Aged Care service providers
- Airport operators
- Art Centers
- Banking
- Cape York/Gulf Remote Area Aboriginal and Torres Strait Islander Child Care Advisory Association Inc (RAATSICC)
- Community Owned Enterprise (COE)
- Community Radio
- Cooktown District Community Centre
- Councils
- Department of Aboriginal and Torres Strait Islander Partnerships (DATSIP)
- Education Queensland
- Far North Queensland Region Department of Employment, Small Business and Training
- Field Solutions group
- Fourier ICT
- Government departments
- Home and Community Care (HACC)
- Higher education students
- ICT Service Support
- ICT Officers
- Interagency groups
- Lakeland Progress Association
- Libraries
- Department of Main Roads
- Medical and health providers
- Mining Companies
- NBN co
- NBN Local
- Optus
- Park Rangers
- Post Offices
- Puuya Foundation
- QCN Fibre
- Qld Fire and Emergency Services
- Qld Health
- Qld Police service
- Retail and supermarket operators
- Rise Employment Services
- Small Business
- TAFE
- Telstra

## TCICA Region Telecommunications & Digital Connectivity Project

Activ8me | [www.activ8me.net.au/about](http://www.activ8me.net.au/about)

Telecommunications and internet infrastructure and services are increasingly an essential part of social and economic life in Australia. Reliable and affordable digital infrastructure and services are needed to provide communications connectivity and capacity in all Australian households, businesses and communities. Digital connectivity enables people to earn a living, have social contact, access businesses and services, and participate in civic life. However, many regions are being left behind owing to lack of access and infrastructure to affordable and reliable internet.

### About the project:

The project aims to identify options for the deployment of fibre, wifi, satellite and mobile technologies across the region to help boost economic growth, digital inclusion and deliver a range of social benefits including the more effective provision of local public services like health and education. It also aims support councils to develop their own digital strategies to achieve cost efficiencies and increase community access to council. The project is a collaboration between The Cairns Institute, James Cook University, Queensland University of Technology and TCICA.

### About TCICA:

The Torres Cape Indigenous Council Alliance is a membership based regional organisation. The TCICA now consists of 13 local governing authorities from across the Torres Strait, Cape York & Gulf region of Far North Qld. The region covers more than 131,000 square kms and is home to around 28,500 people, 65.7% of whom are Aboriginal or Torres Strait Islander.

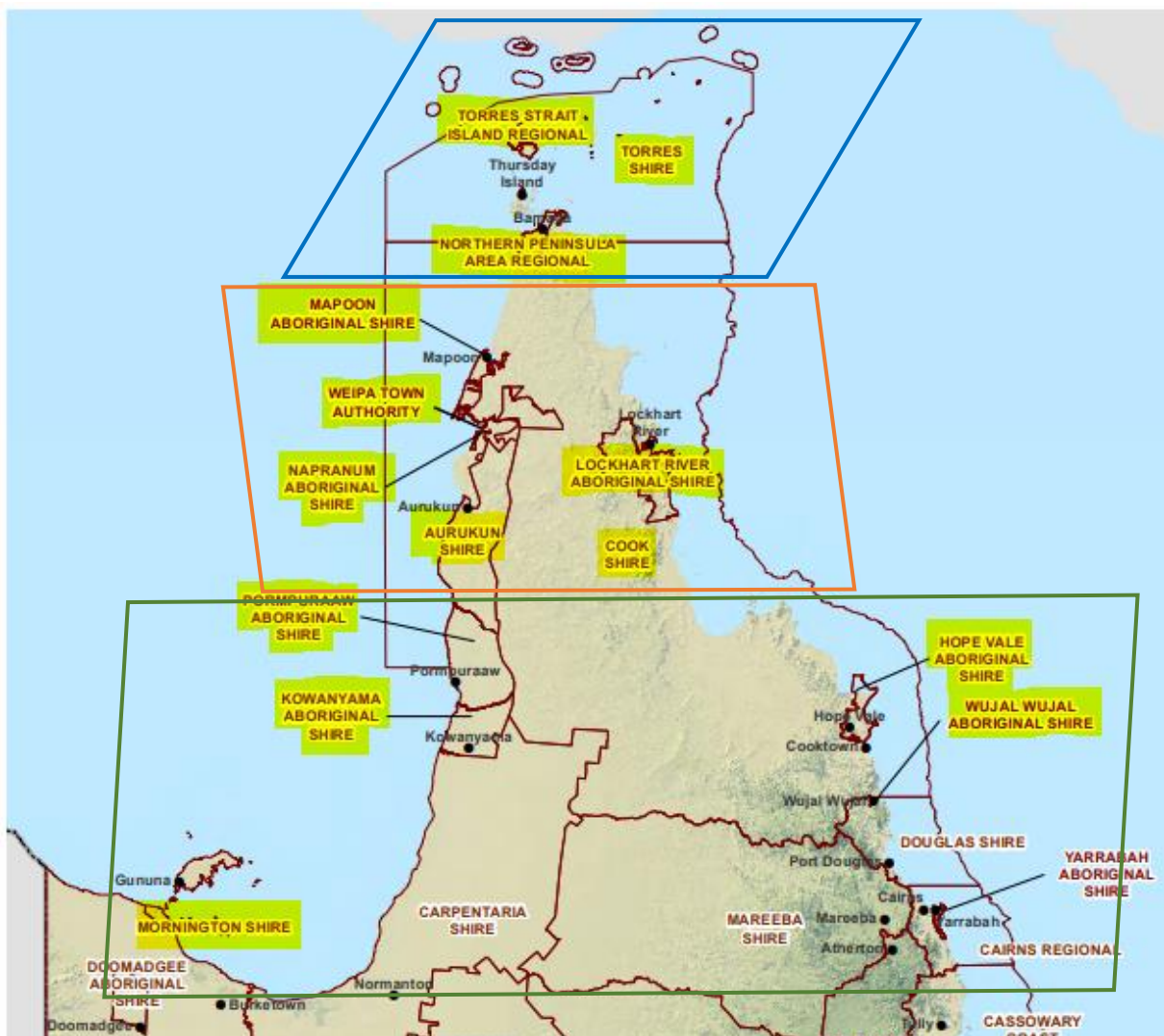
### About the researchers:

The research team come from a variety of disciplines and have experience in digital inclusion, regional development, economic and policy development and human services. The team includes, Professor Hurriyet Babacan, Professor Allan Dale, Dr Amber Marshall, Dr Narayan Gopalkrishnan and Jen McHugh.

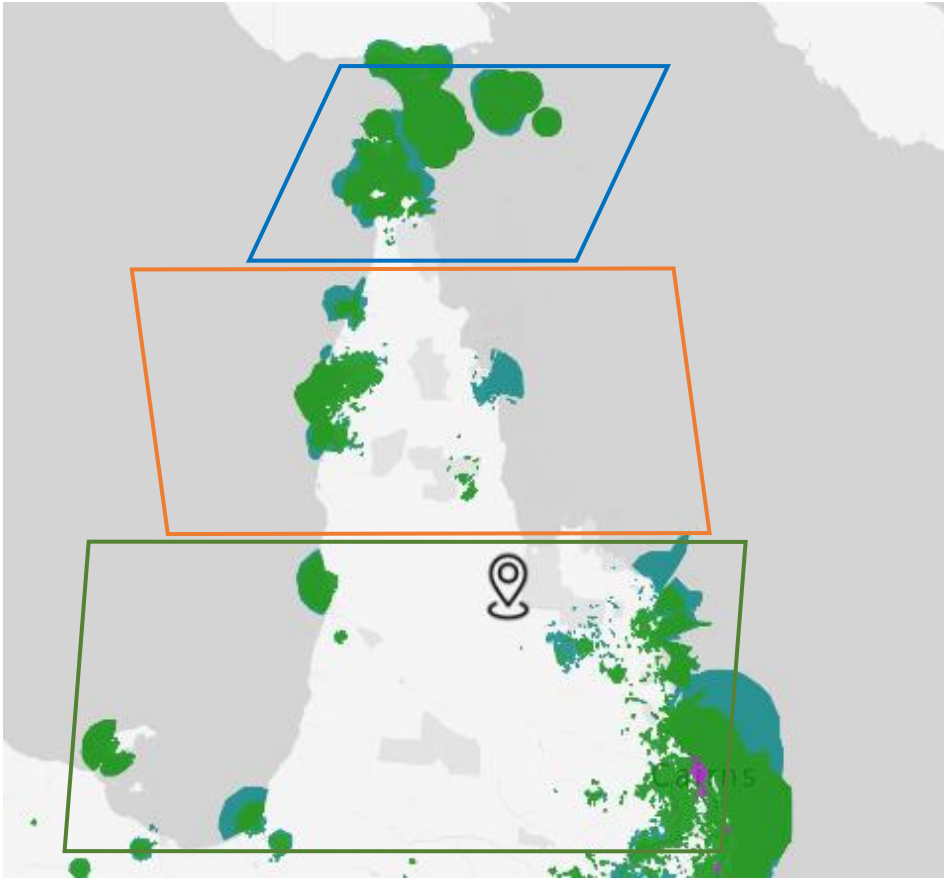


### Appendix 3: Mobile Coverage

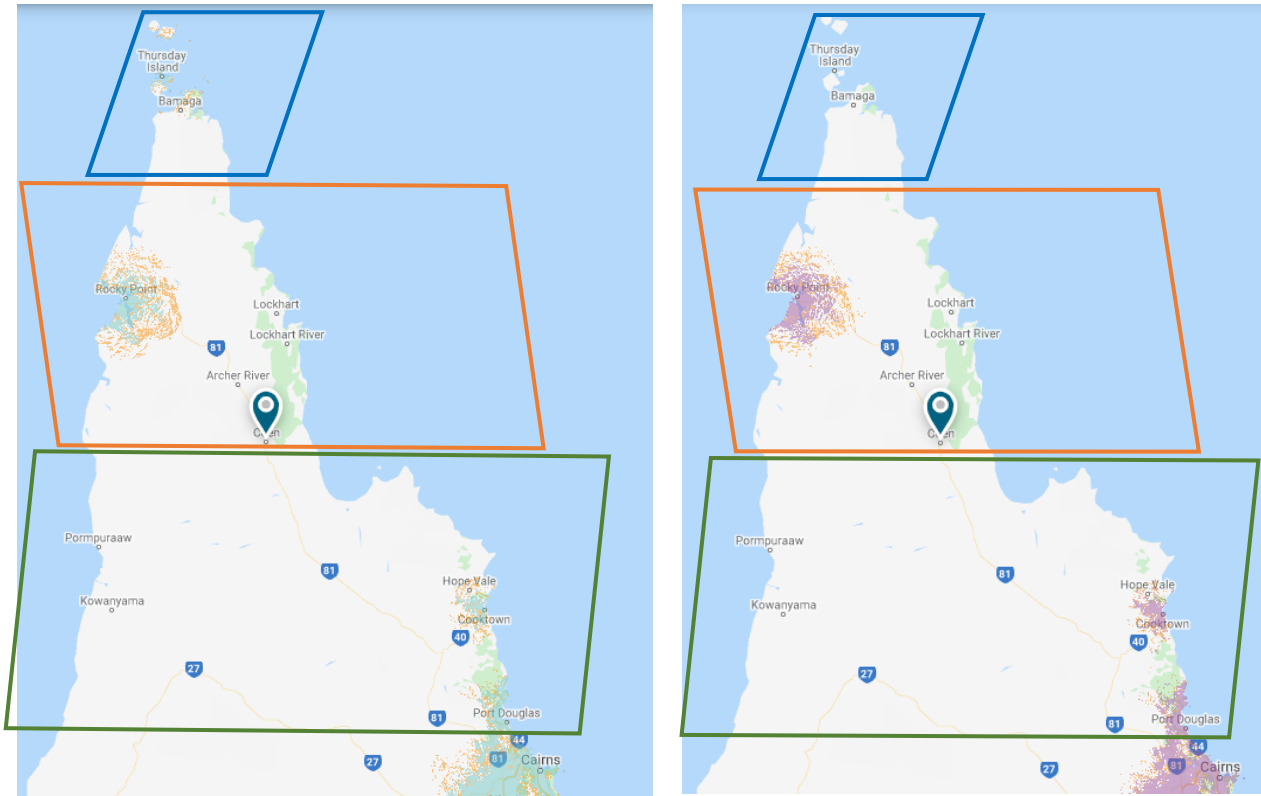
For the purposes of providing an overview, the Cape York LGAs have been divided into three research regions: Northern, Central, and Southern. These regions are delineated for the purposes of this digital profiles.



TCICA LGAs in Cape and Torres region (Blue = Northern region, Orange = Central region, Green = Southern region)



Telstra Mobile Coverage: Aqua = 3G, Green = 4G, Purple = 5G



Optus Mobile Coverage: Aqua – 3G outdoors, Purple = 4G outdoors, Orange = Outdoors with antenna.  
 NB: No mobile coverage on Mornington Island (off map).



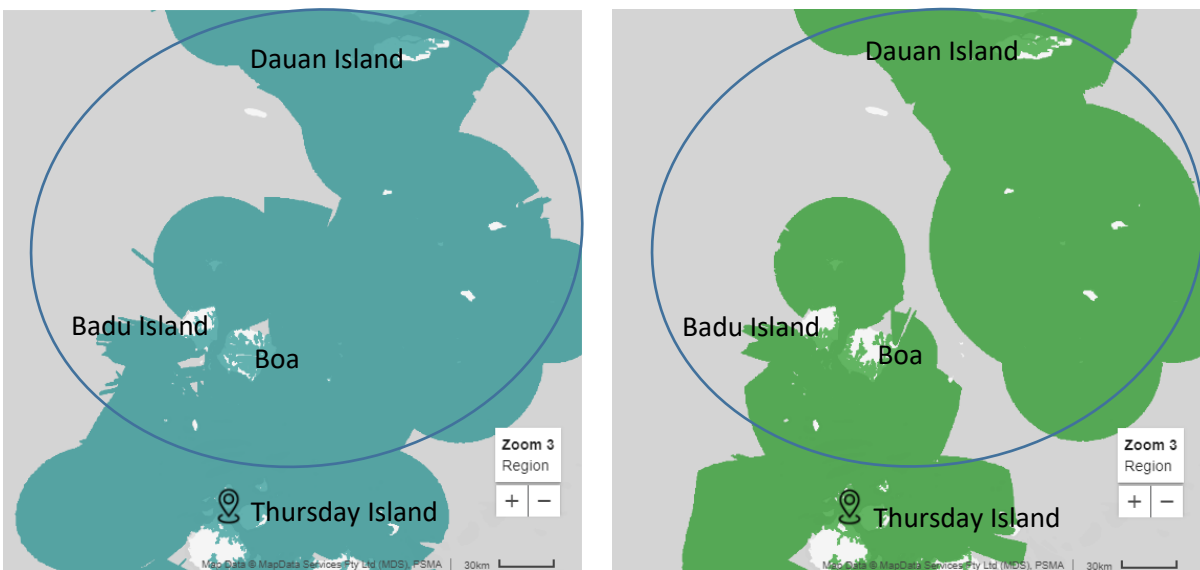
## 1. Torres Strait Island Regional Council (TSIRC)

TSIRC includes 15 outer island communities, reaching from the northern most point of Australia to the border of Papua New Guinea.

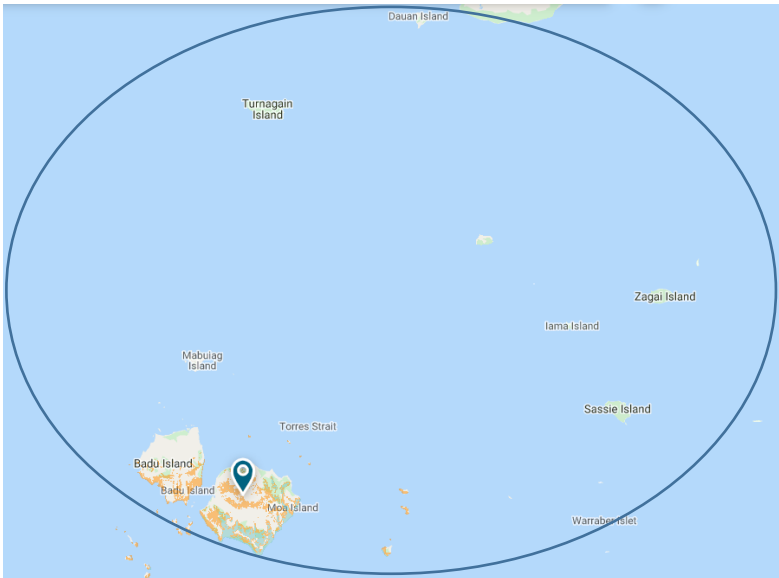
The Telstra maps below show extensive offshore 3/4G coverage. 3G coverage is slightly more extensive than 4G. In 2019, the Queensland Government, Torres Strait Regional Authority, and Telstra announced a collaboration to deliver 4G to 14 of the region's islands by 2021 (<https://statements.qld.gov.au/statements/88754>).

Optus' coverage map shows a modest 3G only footprint on Badu Island and Moa Island, as well as some smaller islands closer to the mainland.

This region benefited from Round 1 of the Mobile Black Spot Program, with Telstra installing a macrocell at Darnley Island, west of Dauan Island. NBN broadband is satellite or legacy ADSL.



Telstra mobile coverage: Aqua = 3G, Green = 4G, Purple = 5G | Circle = Approximate LGA area



Optus coverage: Orange = 3G outdoors with antenna, Aqua = 3G outdoors |  
 Circle = Approximate LGA area

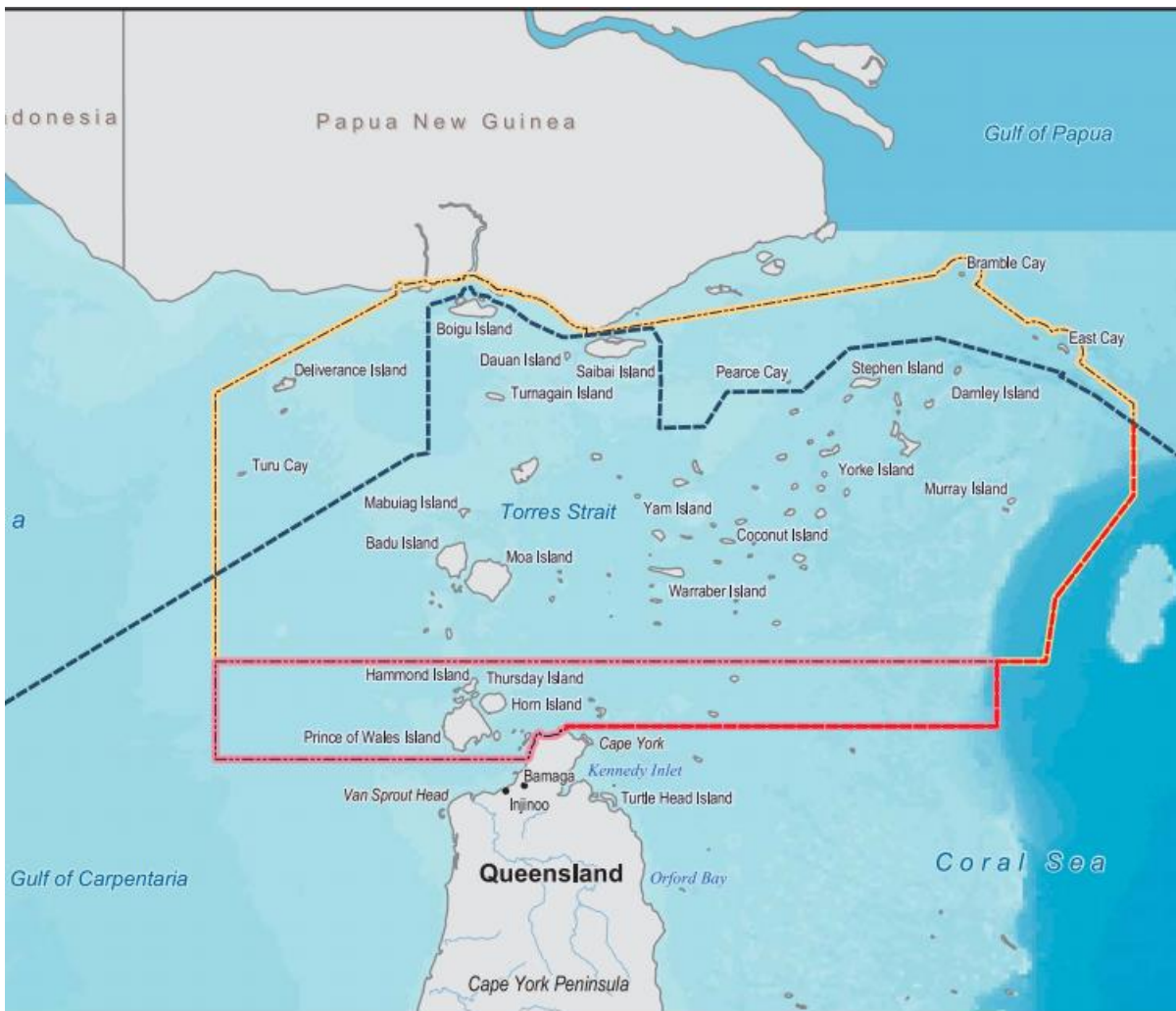
## 2. Torres Shire Council (TSC)

TSC includes the northernmost part of Cape York Peninsula, together with several islands including Thursday Island, Horn Island, Prince of Wales Island, and Hammond Island.

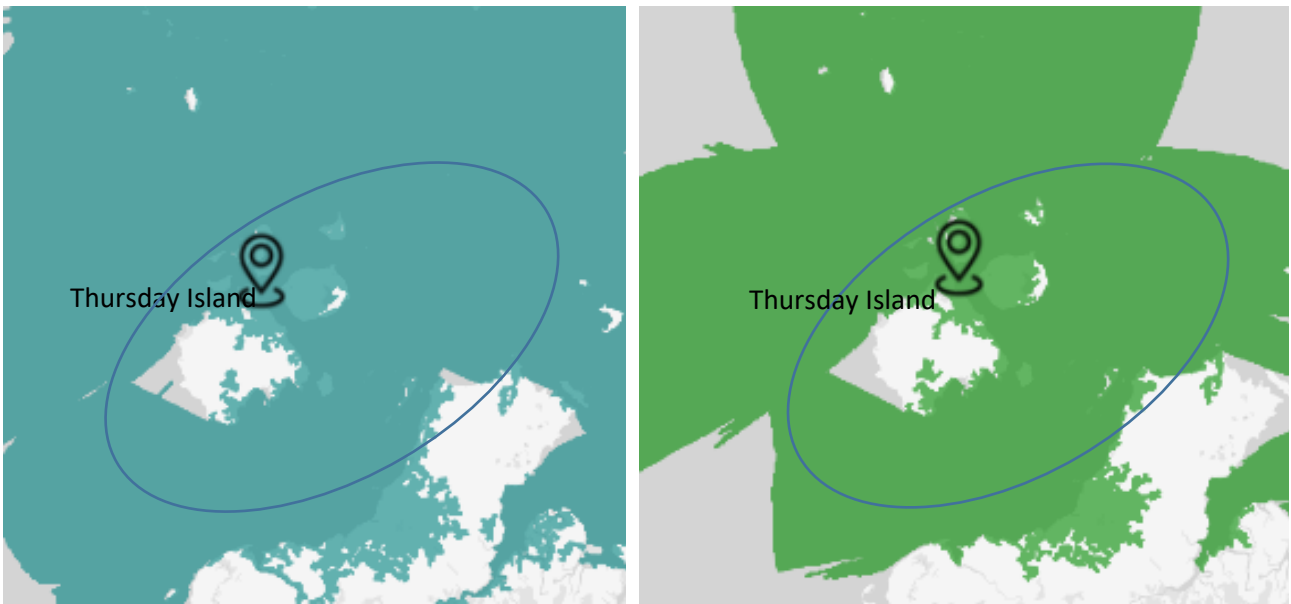
The Shire's administrative centre is located on Thursday Island which, according to Telstra's coverage maps, enjoys full 3/4G coverage across the island. The Telstra maps below show patchy coverage on other islands (e.g., Prince of Wales Island) and on the coastal fringes of the mainland (e.g., Punsand).

Optus 3G coverage appears to be comparable to Telstra 3G in this region.

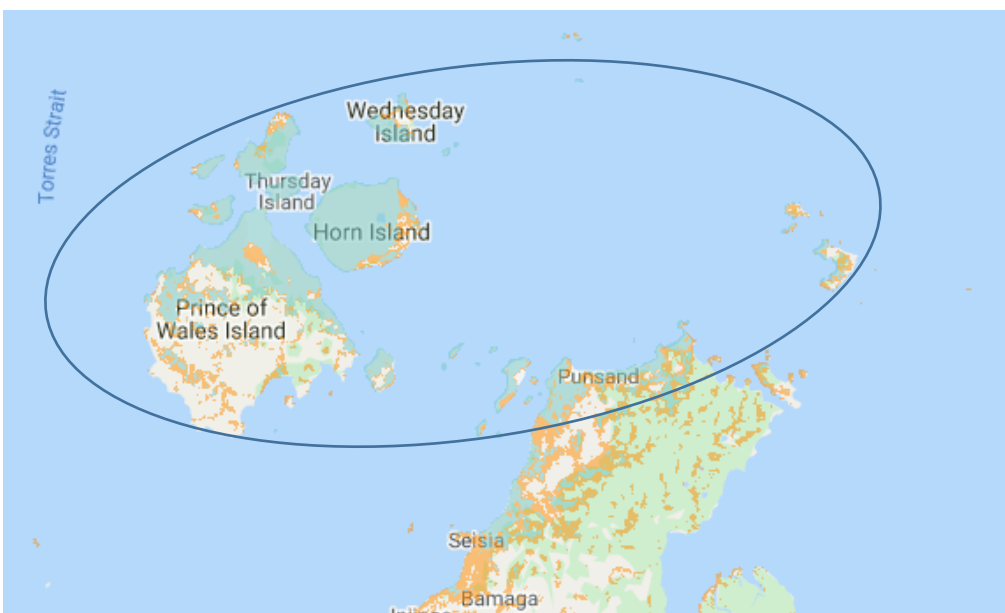
NBN broadband is satellite or legacy ADSL. This region benefited from the Mobile Black Spot Program (Telstra small cell at Northern Peninsula Airport (Bamaga), but has not participated in the Mobile Black Spot Program or the Regional Connectivity Program.



Map showing TSC region in red (Source: [torres.qld.gov.au/downloads/file/400/map-of-torres-strait-islands](http://torres.qld.gov.au/downloads/file/400/map-of-torres-strait-islands))



Telstra coverage: Aqua = 3G, Green = 4G | Circle = Approximate LGA area



Optus coverage: Orange = 3G outdoors with antenna, Aqua = 3G outdoors | Circle = Approximate LGA area

### 3. Northern Peninsula Area Regional Council (NPARC)

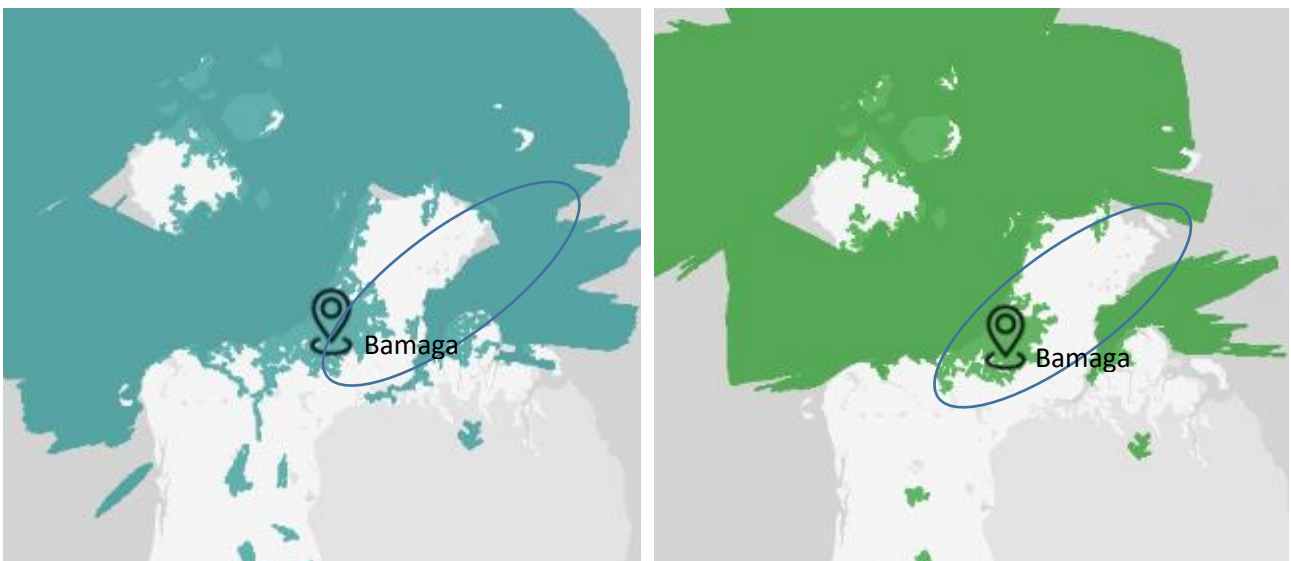
NPARC is comprised of five Indigenous communities: Injinoo, Umagico, Bamaga, New Mapoon, and Seisa.

The maps below show almost identical 3G and 4G Telstra coverage in the region. When zoomed in further, the Telstra maps show more uniform coverage in the town centres, with patchy coverage between them.

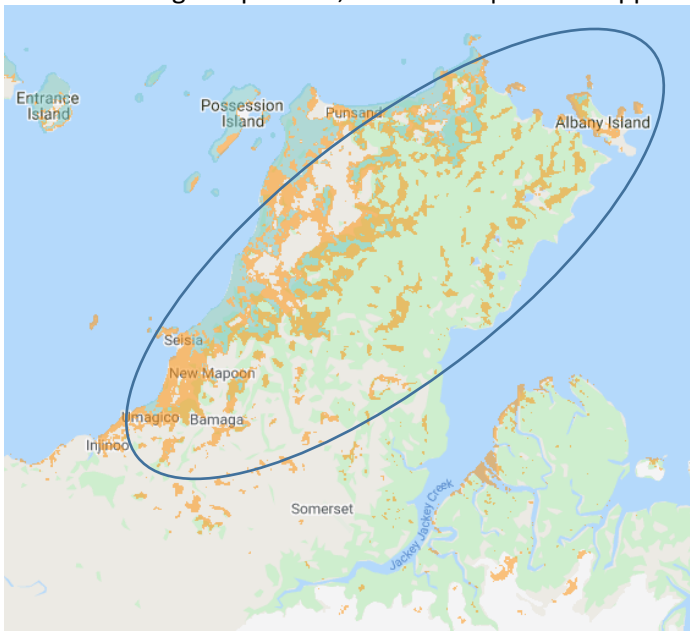
The Optus coverage maps show uniform 3G coverage across the region, with gaps in service in town centres.

This region has benefited from two mobile base stations through the Mobile Black Spot Program (Telstra cells at Injinoo), but has not yet participated in the Regional Connectivity Program.

NBN broadband is satellite or legacy ADSL.



Telstra coverage: Aqua = 3G, Green = 4G | Circle = Approximate LGA area



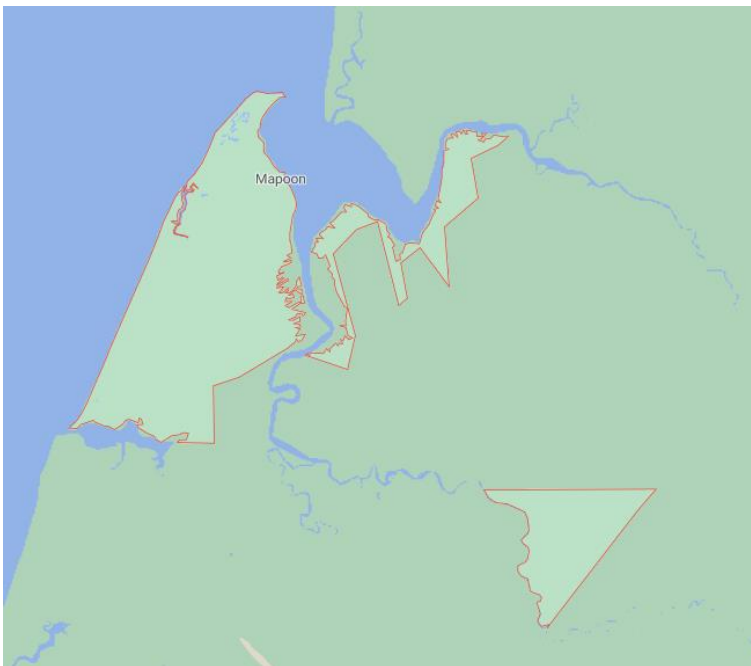
Orange = 3G outdoors with antenna, Aqua = 3G outdoors | Circle = Approximate LGA area



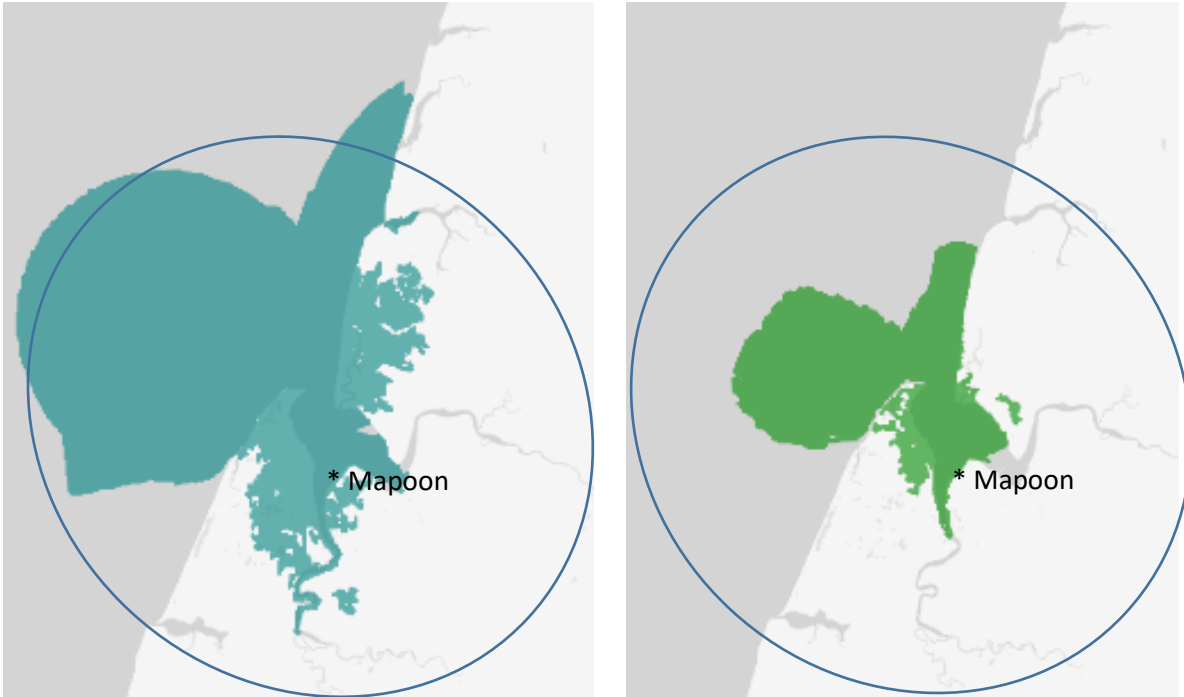
#### 4. Mapoon Aboriginal Shire Council (MASC)

MASC occupies the region north of Weipa and south of the Northern Peninsula Area Reginal Council. Its administrative and population centre is in Mapoon. Mapoon township enjoys uniform Telstra 3/4G coverage, but this drops out outside of the township. There is stronger Telstra 3G coverage than 4G to the north, south, and offshore from Mapoon community. There is no coverage in the annexed region of MASC to the south east.

There is no Optus mobile service. This region has not participated in the Mobile Black Spot Program or the Regional Connectivity Program. NBN broadband is satellite or legacy ADSL.



Mapoon Aboriginal Shire



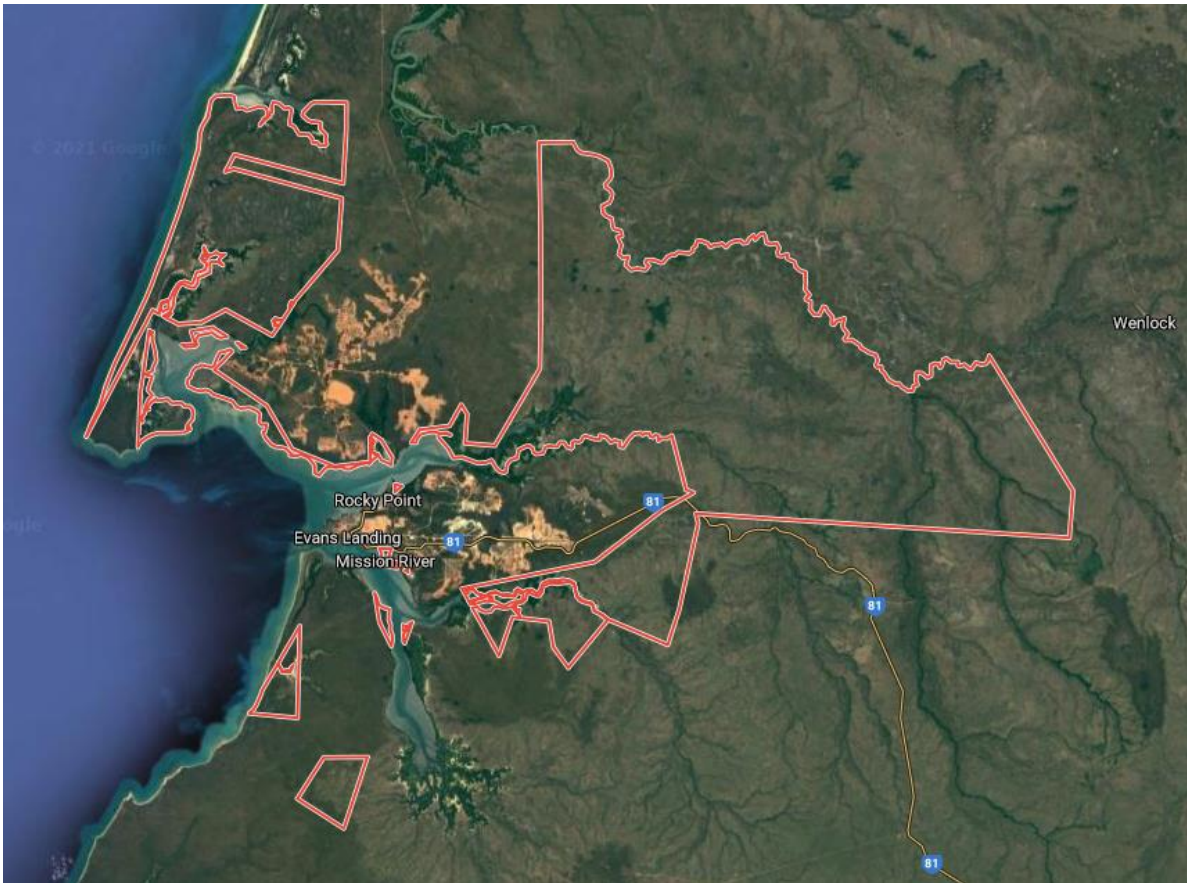
Telstra coverage: Aqua = 3G, Green = 4G, Purple = 5G | Circle = LGA area exceeds map area

#### 5. Napranum Aboriginal Shire Council (NASC)

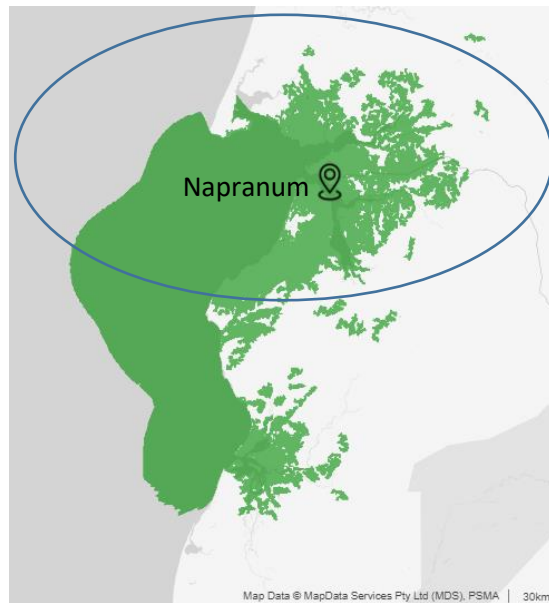
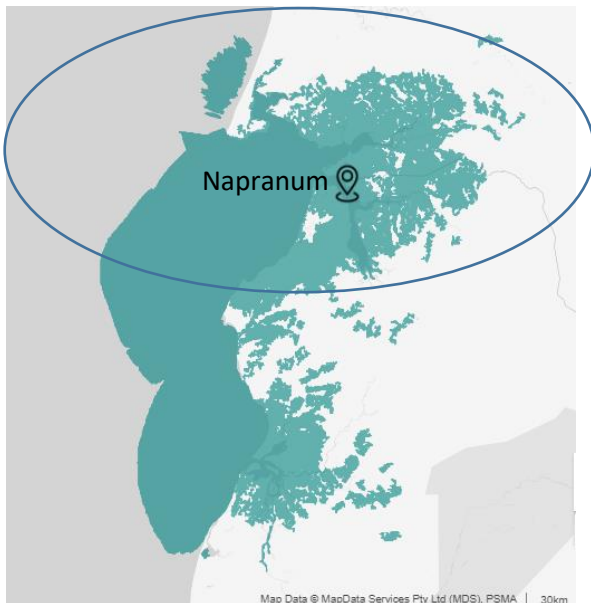
NASC occupies areas in and around the Weipa Town Authority. Its administrative and population centre is Napranum (also Weipa South, Mission River).

Given its proximity to the more well-resourced Weipa Town Authority, Napranum enjoys 3/4G coverage from both Telstra and Optus (Fig xvii and xviii). While this coverage is uniform in the town centre, it is patchy elsewhere, as shown on the maps below. A Telstra base station was constructed at Weipa under the PL Round of the Mobile Black Spot Program, which could benefit both the NASC and WTA.

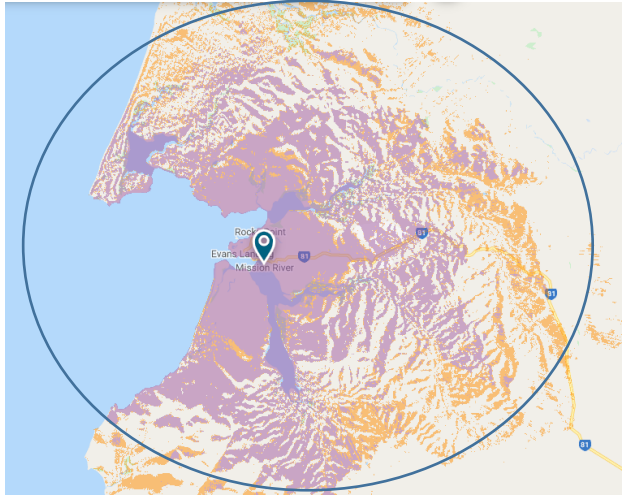
Although neighbouring Weipa Town Authority has fixed line NBN, NASC has satellite or legacy ADSL. However, Napranum will soon benefit from the R.A.N (Regional Australia Network) project funded under the Regional Connectivity Program, whereby Field Solutions Group will deploy a fixed wireless network in the town.



Napranum Aboriginal Shire Council



Telstra coverage: Aqua = 3G, Green = 4G, Purple = 5G | Circle = Approximate LGA area



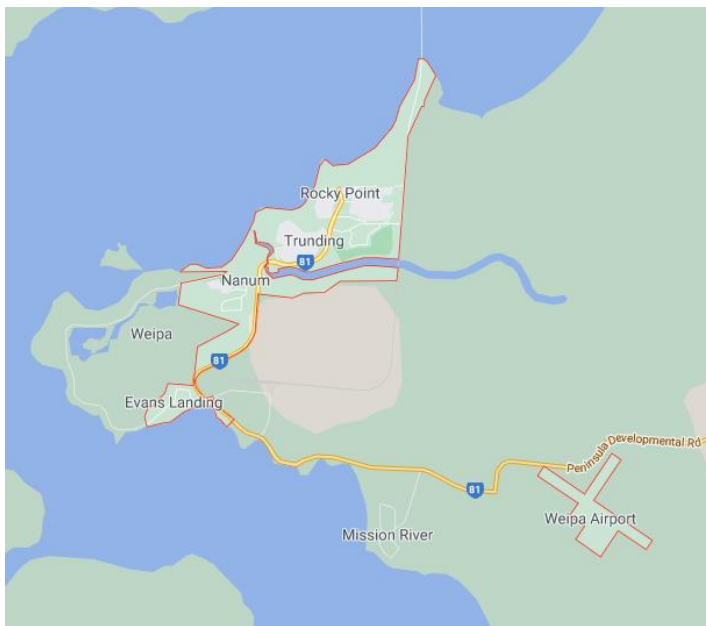
Optus coverage: Aqua = 3G outdoors, Purple = 4G outdoors, Orange = Outdoors with antenna | Circle = Approximate LGA area

## 6. Weipa Town Authority (WTA)

WTA is located on Albatross Bay on the west coast of the Cape York Peninsula, in the Gulf of Carpentaria, and is engulfed by the Napranum Aboriginal Shire Council. It is comprised of the townships of Rocky Point, Trunding, Evans Landing, and Nanum, plus an annexed area where the Weipa Airport is situated.

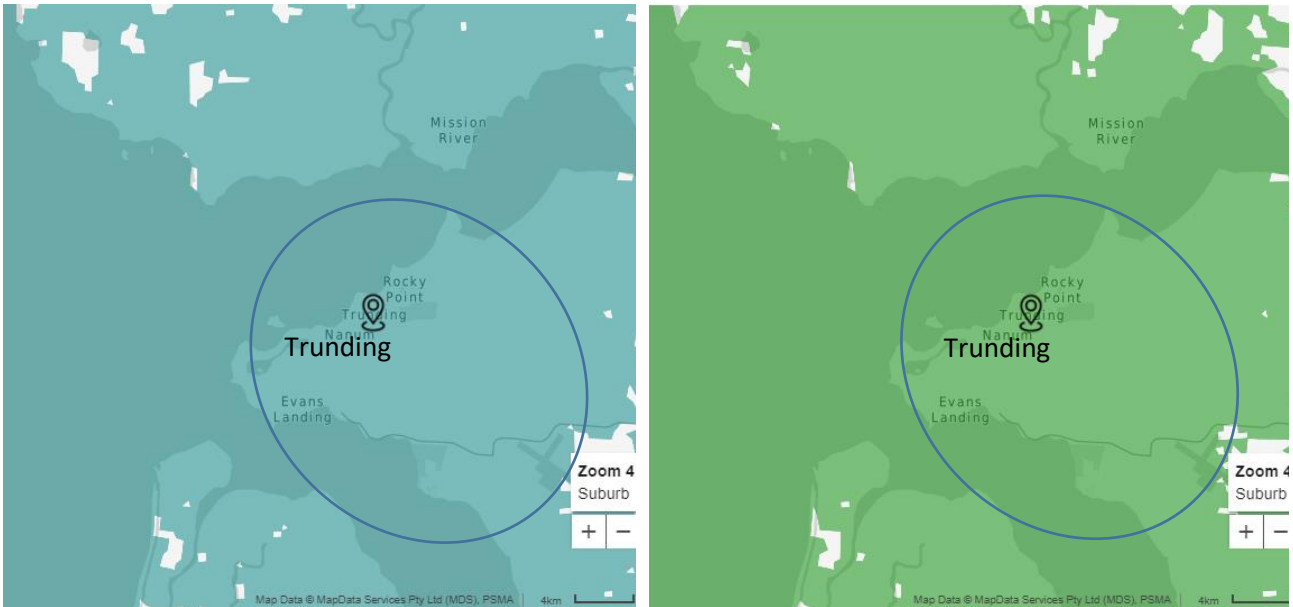
Weipa is very well serviced by both Telstra and Optus 3G and 4G, including the airport (Fig xxi and xxii). The Telstra base station at Weipa provided under the Mobile Black Spot Program may have contributed to improved service in the NASC region.

Unlike most of the Cape and Torres region, some areas in WTA have access to NBN fixed line internet (fibre to the node). WTA has not participated in the Regional Connectivity Program; however, Rio Tinto has likely invested in its own telecommunications infrastructure to service residents and workers in the area.

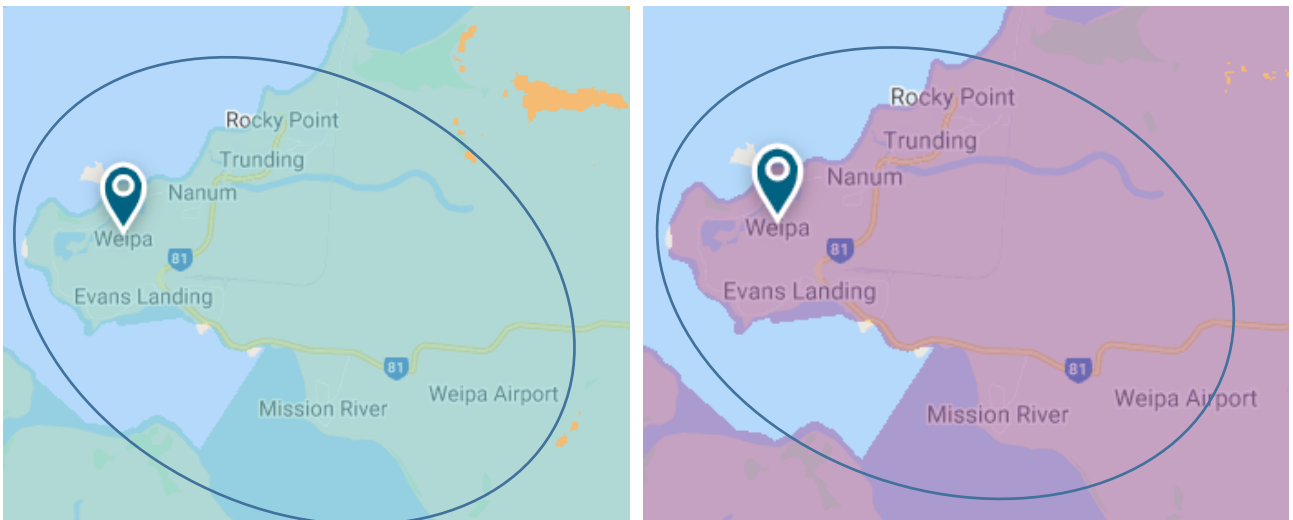


Weipa Town LGA





Telstra coverage: Aqua = 3G, Green = 4G, Purple = 5G | Circle = Approximate LGA area



Optus coverage: Aqua = 3G outdoors, Purple = 4G outdoors | Circle = Approximate LGA area



NBN coverage: Stripes = fixed line, Elsewhere = satellite | Circle = Approximate LGA area

## 7. Lockhart River Aboriginal Shire Council (LRASC)

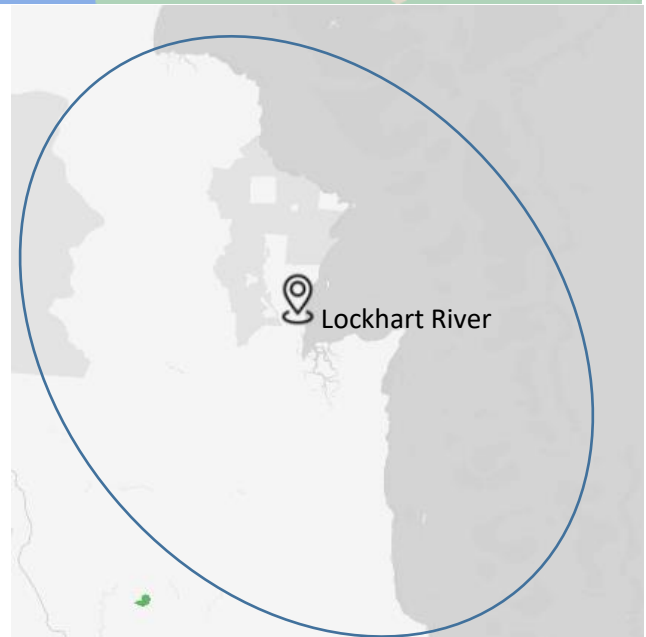
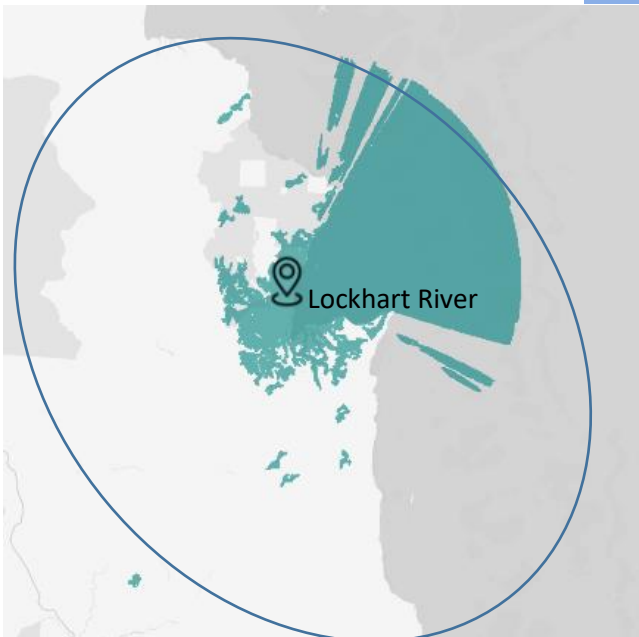
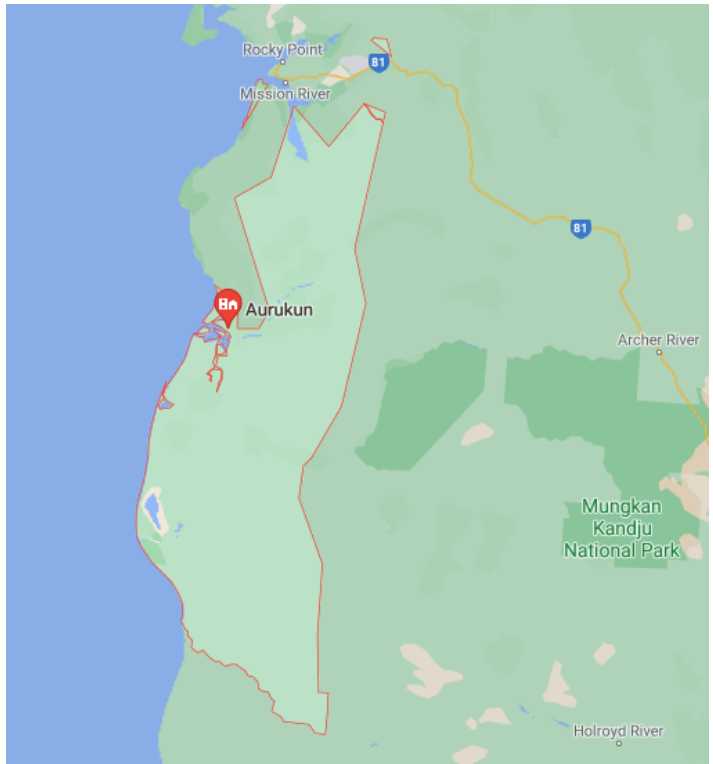
LRASC is located on the east coast of the Cape York Peninsula approximately 800 kilometres north of Cairns by road. The administrative and population centre is Lockhart River Township, located about two kilometres inland of Quintell Beach.

Lockhart River is the only TCICA LGA that is limited to 3G coverage only (no 4G). This coverage, provided by Telstra (Fig xxiv), is centred on the township of Lockhart River, and drops out quickly on the outskirts of town. There is no Optus mobile service in LRASC.

NBN broadband is satellite or legacy ADSL. This region has not participated in the Mobile Black Spot Program or the Regional Connectivity Program.



Lockhart Aboriginal Shire



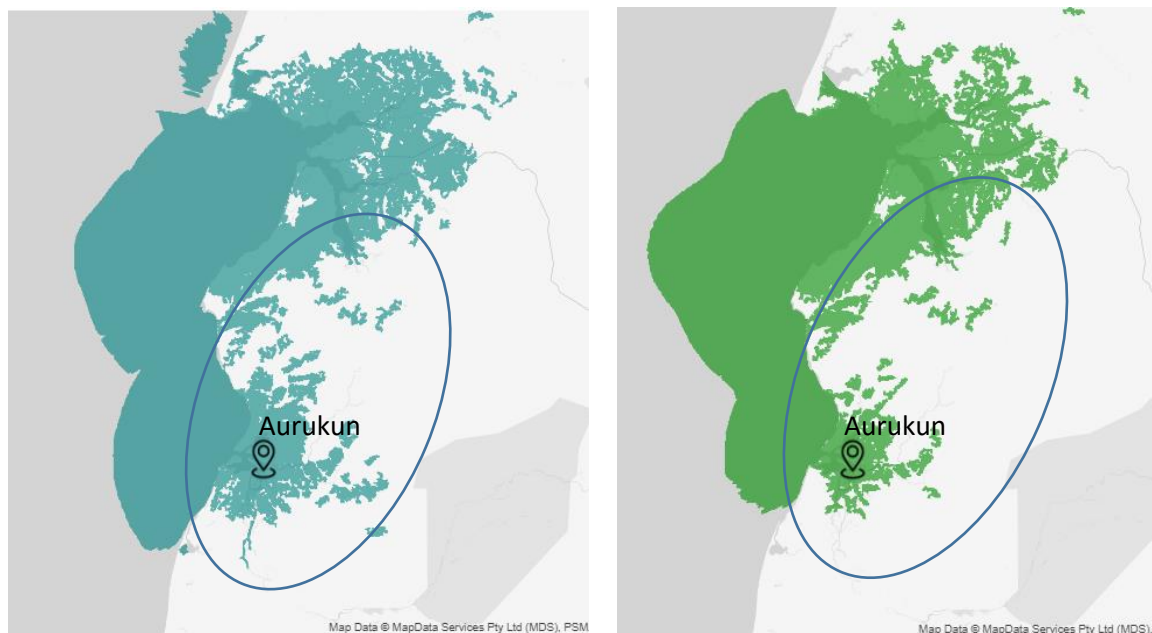
Telstra coverage: Aqua = 3G, Green = 4G | Circle = Approximate LGA area

### 8. Aurukun Shire Council (ASC)

Aurukun Shire is bounded by the Holroyd River and Pormpuraaw Deed of Grant in Trust lands to the south, Cook Shire and Archer Bend National Park to the east, the Gulf of Carpentaria to the west and Cook Shire to the north. It has about 107 kilometres of Gulf of Carpentaria coastline.

Telstra’s 3G and 4G networks service the Aurukun township, and there is negligible difference between the coverage of these services. 4G became available in 2016 when Telstra completed an optic fibre project in Aurukun. Telstra maps show offshore coverage up to about 40 kilometres. There is no Optus coverage.

#### Aurukun Shire



Telstra coverage: Aqua = 3G, Green = 4G | Circle = Approximate LGA area

#### 9. Pormpuraaw Aboriginal Shire Council (PASC)

Pormpuraaw Aboriginal Shire is approximately halfway between Karumba and Weipa on the Edward River. The administrative and population centre is Pormpuraaw Township.

Pormpuraaw was the subject of a case study in the 2019 Australian Digital Inclusion Index (ADII), which gave particular insight into lower levels of inclusion in Indigenous communities compared to the Australian average. Among the findings was that Pormpuraaw residents were mostly mobile-only users, and that they were also less included than average mobile-only users, particularly on the *affordability* sub-index (Thomas et al., 2019, p. 24). In contrast to the overall trend, people in Pormpuraaw scored higher on the *digital ability* sub-index than the average Australia. See Table 2 for detailed results.

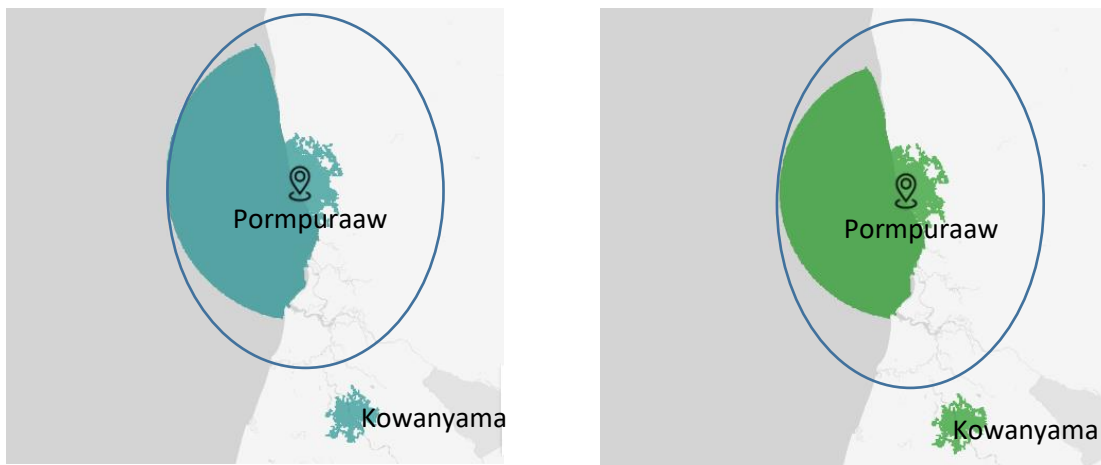


| 2019                           | Pormp. survey respondents (n = 145) | Ali Curung survey respondents (n = 112) | ADII national | Gap between Pormp. survey respondents and ADII national | ADII Indigenous Australians | Gap between Pormp. survey respondents and ADII Indigenous Australians | ADII mobile-only | Gap between Pormp. survey respondents and ADII mobile-only |
|--------------------------------|-------------------------------------|---|---------------|---|-----------------------------|---|------------------|--|
| <b>ACCESS</b>                  |                                     |   |               |   |                             |   |                  |  |
| Internet Access                | 67.8                                | 64.3                                    | 87.9          | -20.1   | 81.9                        | -14.1   | 74.7             | -6.9   |
| Internet Technology            | 43.5                                | 40.5                                    | 80.4          | -36.9   | 69.9                        | -26.4   | 59.5             | -16.0  |
| Internet Data Allowance        | 38.8                                | 37.2                                    | 58.7          | -19.9   | 53.4                        | -14.6   | 33.2             | 5.6  |
|                                | <b>50.1</b>                         | <b>47.3</b>                             | <b>75.7</b>   | <b>-25.6</b>  | <b>68.4</b>                 | <b>-18.3</b>  | <b>55.8</b>      | <b>-5.7</b>  |
| <b>AFFORDABILITY</b>           |                                     |   |               |   |                             |   |                  |  |
| Relative Expenditure           | 15.1                                | 39.6                                    | 54.6          | -39.5   | 49.7                        | -34.6   | 54.5             | -39.4  |
| Value of Expenditure           | 3.0                                 | 12.1                                    | 63.9          | -60.9   | 55.1                        | -52.1   | 13.1             | -10.1  |
|                                | <b>9.0</b>                          | <b>25.8</b>                             | <b>59.2</b>   | <b>-50.2</b>  | <b>52.4</b>                 | <b>-43.4</b>  | <b>33.8</b>      | <b>-24.8</b>   |
| <b>DIGITAL ABILITY</b>         |                                     |   |               |   |                             |   |                  |  |
| Attitudes                      | 42.1                                | 47.7                                    | 51.2          | -9.1  | 50.4                        | -8.3  | 42.9             | -0.8   |
| Basic Skills                   | 63.7                                | 64.5                                    | 58.1          | 5.6   | 46.9                        | 16.8  | 47.7             | 16.0   |
| Activities                     | 48.4                                | 44.8                                    | 43.1          | 5.3   | 35.8                        | 12.6  | 33.6             | 14.8   |
|                                | <b>51.4</b>                         | <b>52.3</b>                             | <b>50.8</b>   | <b>0.6</b>  | <b>44.4</b>                 | <b>7.0</b>  | <b>41.4</b>      | <b>10.0</b>  |
| <b>DIGITAL INCLUSION INDEX</b> | <b>36.7</b>                         | <b>42.9</b>                             | <b>61.9</b>   | <b>-25.2</b>  | <b>55.1</b>                 | <b>-18.4</b>  | <b>43.7</b>      | <b>-7.0</b>  |

Source: ADII Supplementary Survey – Pormpuraaw remote Indigenous community, 2019; ADII Supplementary Survey – Ali Curung remote Indigenous community 2018 (note: results are as recorded in 2018); Roy Morgan Single Source, March 2019.

### ADII results for Pormpuraaw in 2019

Pormpuraaw has Telstra 3G and 4G coverage across the township approximately 10 kilometres in diameter (similar to Kowanyama to the south east). There is limited coverage along the main arterial in/out of town (Strathgordon Road) and, notably, has more coverage offshore than onshore. There is no Optus service. NBN broadband is satellite or legacy ADSL. This region has not participated in the Mobile Black Spot Program or the Regional Connectivity Program.



Telstra coverage: Aqua = 3G, Green = 4G | Circle = Approximate LGA area

### 10. Kowanyama Aboriginal Shire Council (KASC)

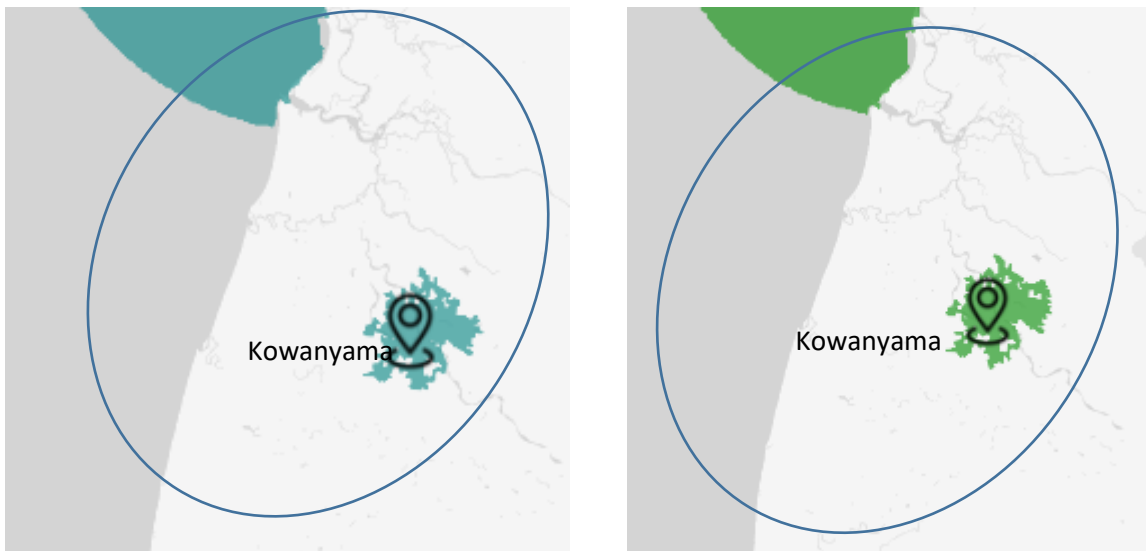
Kowanyama Aboriginal Shire is a coastal shire on the Gulf of Carpentaria, south of Pormpuraaw (Fig xxix). The administrative and population centre is Kowanyama Township, situated inland from the west coast. It is approximately 600 kilometres by road from Cairns and 380 kilometres by road to Kurumba.

Kowanyama town has Telstra 3G and 4G across a diameter of approximately 10-12 kilometres, with negligible difference between 3G and 4G. There is no Optus service.

NBN broadband is satellite or legacy ADSL. This region has not participated in the Mobile Black Spot Program or the Regional Connectivity Program.



Kowanyama Aboriginal Shire



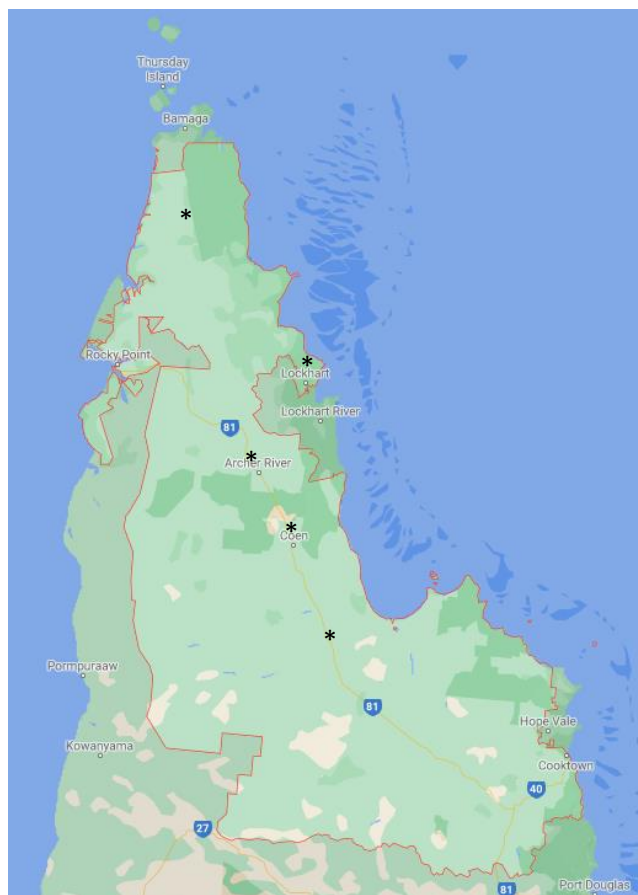
Telstra coverage: Aqua = 3G, Green = 4G, Purple = 5G | Circle = Approximate LGA area

## 11. Cook Shire Council (CSC)

Cook Shire covers most of the eastern and central parts of the Cape York Peninsula, covering an area of 105,718 square kilometres. It is the largest LGA in Queensland (xxi). The administrative centre is Cooktown, population is spread across the shire, concentrated in the other townships along Peninsula Development Road such as Coen, Archer River, and Laura. It includes Lizard Island.

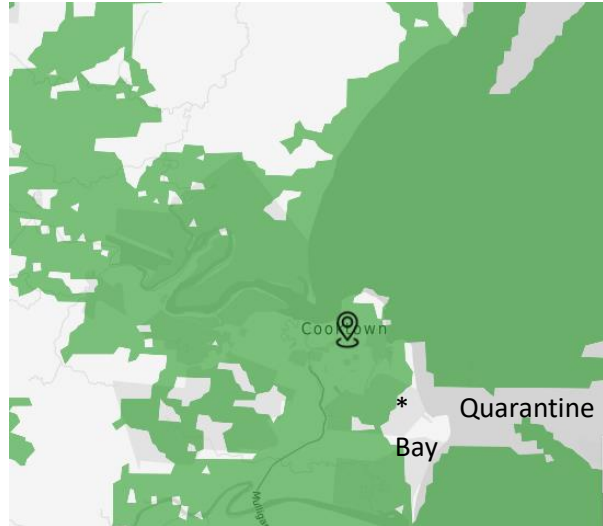
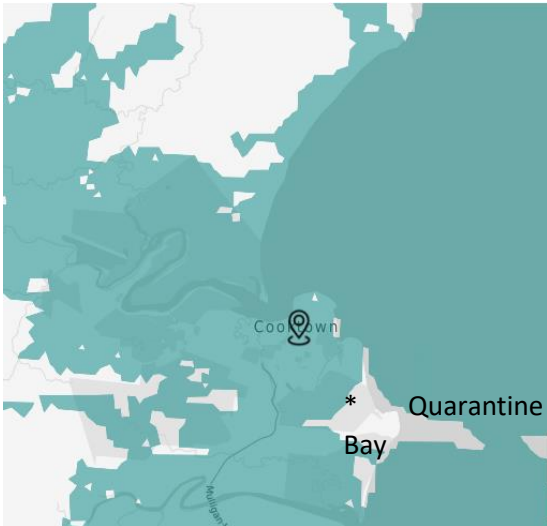
The whole-of-Cape Telstra and Optus coverage maps (Appendix 1) show coverage is concentrated in Cooktown and surrounding areas. This is confirmed by the FNQROC map (Appendix 1) showing black spots along major

Nonetheless, very large sections (the majority) of the Peninsula Development Road (yellow) are characterised by GSM black spots (Digital Economy Group, 2019). Moreover, Optus MBSP base stations at Archer River and Musgrave River stand isolated amongst Telstra base stations.

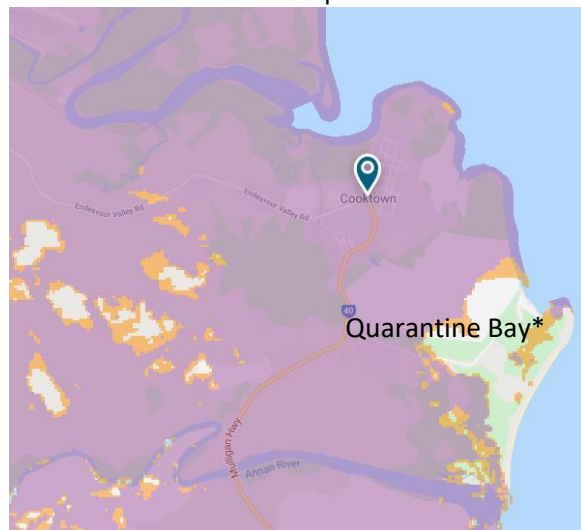
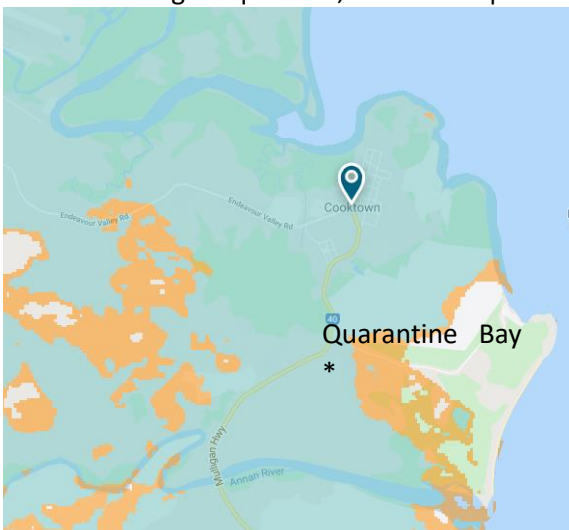


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Below are maps of Telstra and Optus mobile coverage in Cooktown. They show that parts of Cooktown, especially Quarantine Bay Road, are out of range.

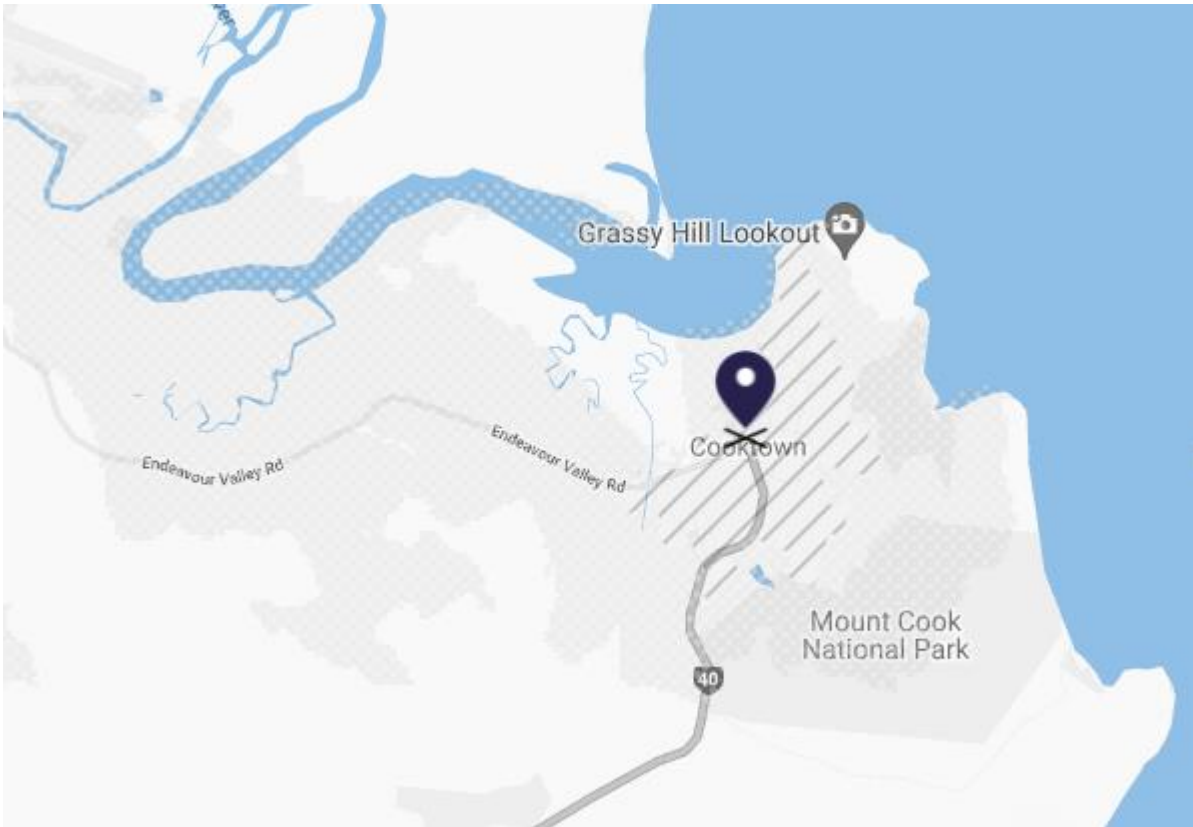


Telstra coverage: Aqua = 3G, Green = 4G | LGA area includes and exceeds map area



Optus coverage: Aqua = 3G outdoors, Purple = 4G outdoors, Orange = Outdoors with antenna | LGA area includes and exceeds map area

Cooktown is one of the few areas in the TCICA region where access to NBN fixed line (fibre to the node) and fixed wireless broadband is possible from certain locations. Fixed line services are available in the town centre, while fixed wireless is offered on the fringes of town as far out as Hann State Forest. CSC has not participated in the Regional Connectivity Program.



NBN coverage: Stripes = fixed line, Spots = fixed wireless, Elsewhere = satellite.



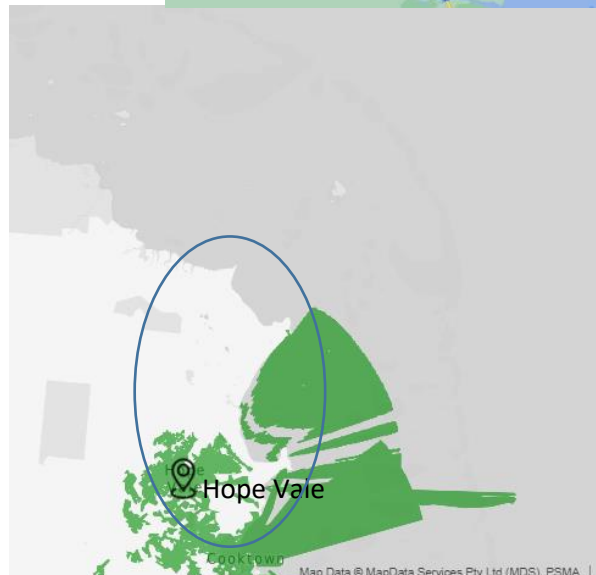
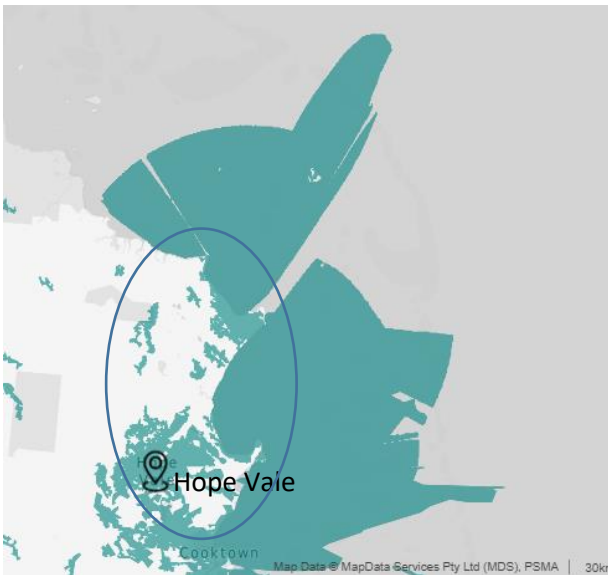
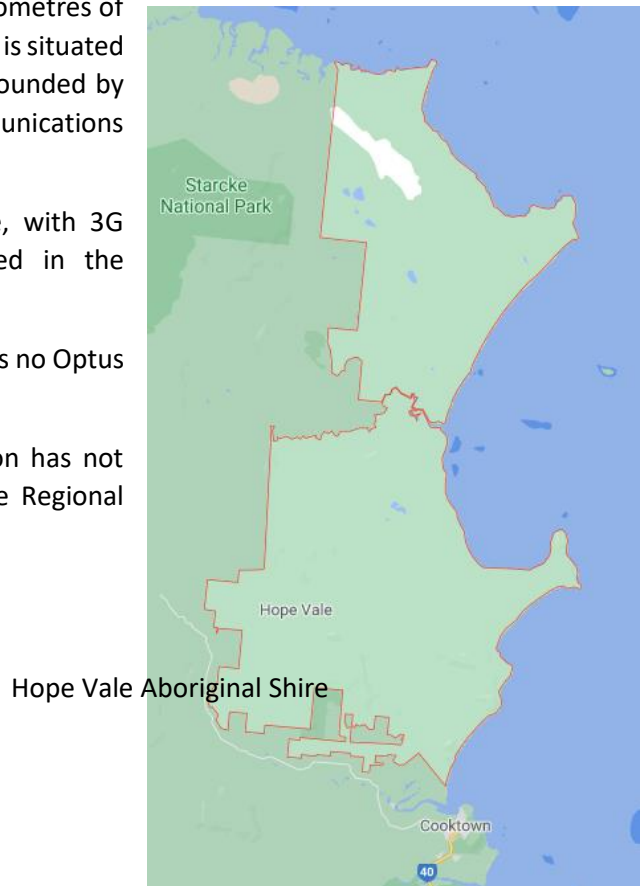
## 12. Hope Vale Aboriginal Shire Council (HVASC)

Hope Vale Aboriginal Shire covers approximately 20 kilometres of coastline to the north of Cooktown. Hope Vale township is situated 46 kilometres north west of Cooktown in a valley surrounded by mountain ranges, presenting particular telecommunications challenges.

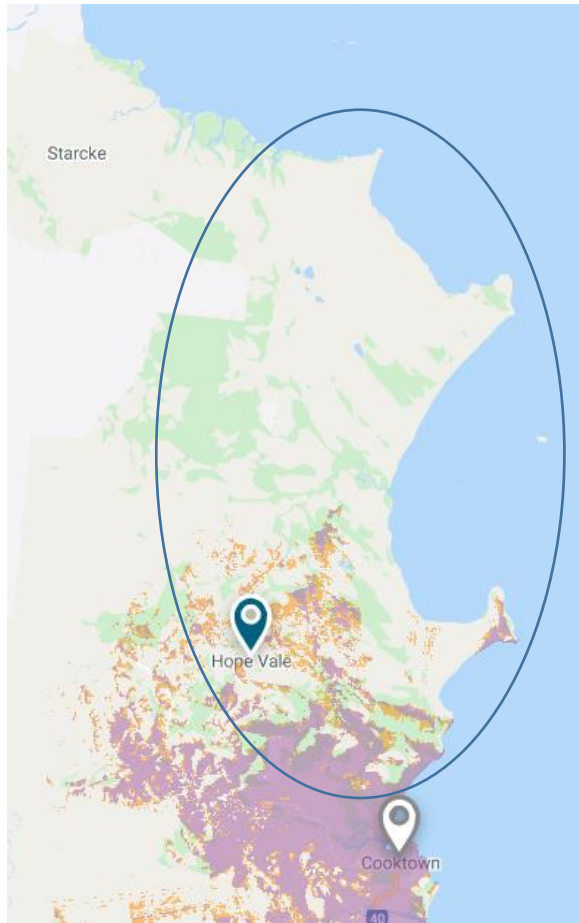
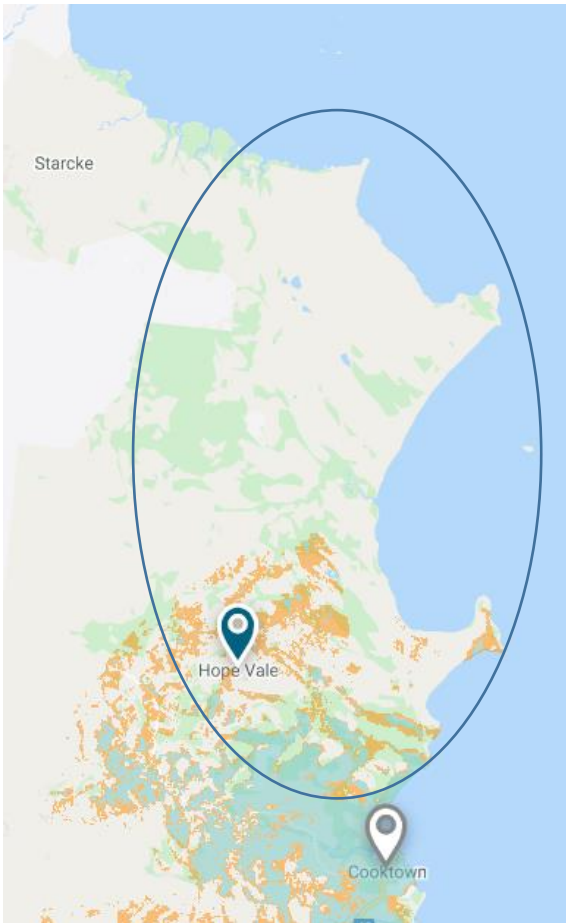
Telstra provides patchy 3G and 4G mobile coverage, with 3G having a larger footprint. Coverage is concentrated in the community of Hope Vale (Fig xxxvi).

Optus has a 3G and 4G footprint in the shire, but there is no Optus reception in the town of Hope Vale itself.

NBN broadband is satellite or legacy ADSL. This region has not participated in the Mobile Black Spot Program or the Regional Connectivity Program.



Telstra coverage: Aqua = 3G, Green = 4G, Purple = 5G | Circle = Approximate LGA area

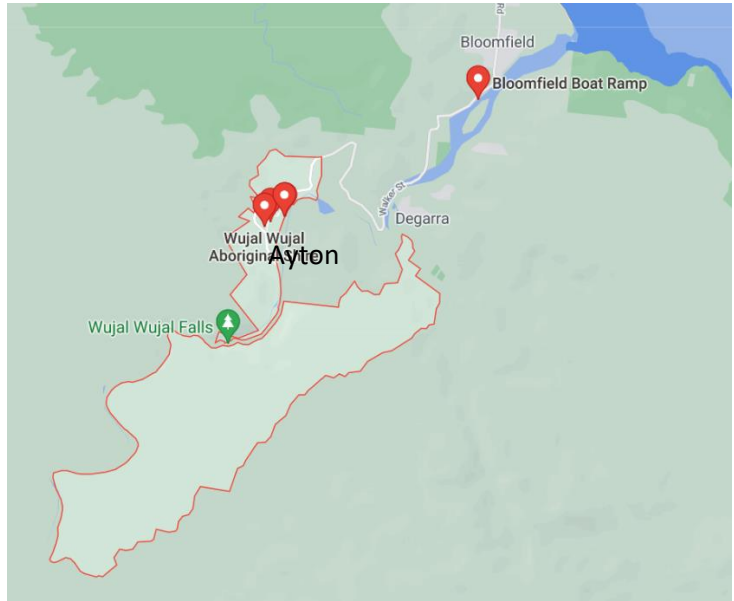


Optus coverage: Aqua = 3G outdoors, Aqua = 4G outdoors, Orange = Outdoors with antenna | Circle = Approximate LGA area

### 13. Wujal Wujal Aboriginal Shire Council (WWASC)

Wujal Wujal Aboriginal Shire is situated on the west coast of Cape York to the north of Cape Tribulation. It is adjacent to the locality of Degarra in the Douglas Shire. The small township of Wujal Wujal is the administrative and population centre and is situated on the Bloomfield (Banner) River.

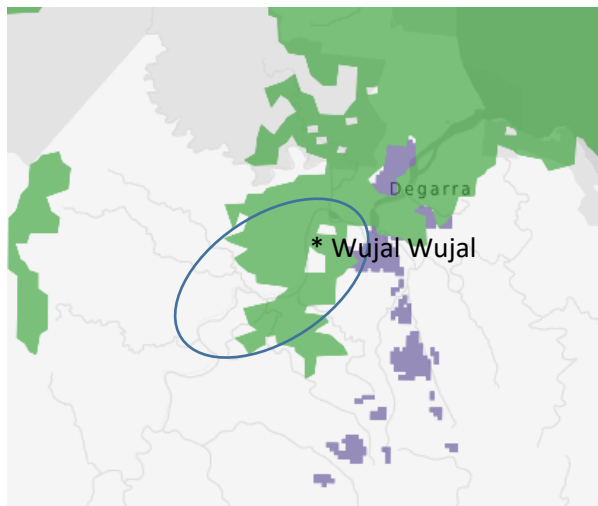
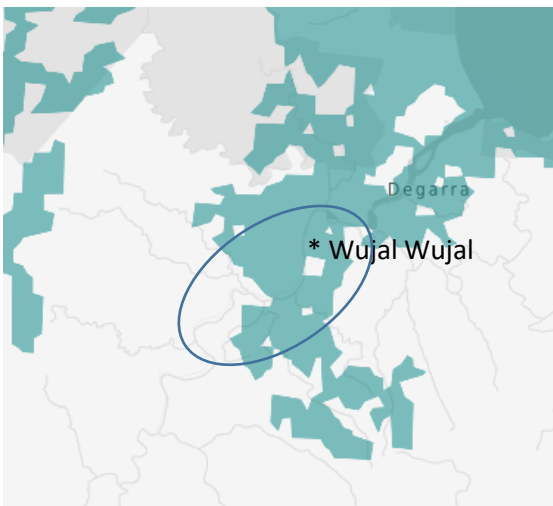
The hilly terrain in Wujal Wujal presents particular challenges for telecommunications, such as frequent outages owing to weather events. The Wujal Wujal Emergency Management Network enables residents to receive emergency warnings even if both the mobile and power networks have failed. Connection to the Network is possible on Wi-Fi equipped devices, such as smart phones and tablets. The WWASC council website implies that this system utilises the NBN Sky Muster satellite (See: [wujalwujalcouncil.qld.gov.au/community/local-wifi/](http://wujalwujalcouncil.qld.gov.au/community/local-wifi/)).



Wujal Wujal Aboriginal Shire

Telstra provides patchy 3G and 4G mobile coverage, with 3G having a larger footprint (Fig xxxix). There is no Optus service. At around the time that the Telstra macrocell at Ayton, Cook Shire (Mobile Black Spot Program Round 2) was funded, Telstra and the Queensland Government committed to increase backhaul to improve performance, not just coverage. It involved upgrading microwave radio links that provide telecommunications connectivity to the Wujal Wujal and Ayton communities (Enoch, 2017).

NBN broadband is satellite or legacy ADSL. This region has not participated in the Regional Connectivity Program.



Telstra coverage: Aqua = 3G, Green = 4G, Purple = 4G coverage coming soon | Circle = Approximate LGA area

#### 14. Mornington Shire Council (MSC)

The Shire of Mornington is located in the Gulf of Carpentaria and includes Mornington Island as well as neighbouring islands in the Wellesley Islands group. The Shire's administration and population centre is in the township on the south-west beach of Mornington Island near Denham Island, with Aboriginal homelands existing across the island.



Mornington Shire Council

Telstra's 3G and 4G coverage is almost identical and is centred on the township, covering approximately one fifth of the main island. There is no coverage on several of the other islands in the shire. MSC has not participated in the Mobile Black Spot program.

NBN broadband is satellite or legacy ADSL. However, this region will benefit from the Regional Connectivity Program's recent announcement of a mobile voice and data project to upgrade the capacity of the existing Telstra 4GX mobile facility in the Indigenous community of Gununa on Mornington Island. The project will also upgrade the existing fibre network between Mt Isa and Point Parker, and deploy a new mobile site near Century Mine, to provide microwave backhaul capacity to Mornington Island.



Telstra coverage: Aqua = 3G, Green = 4G, Purple = 5G | Circle = Approximate LGA area

## Appendix 4: Summary of Impacts of Digital Challenges in Different Aspect of Life in the TCICA Region

A multitude of impacts were highlighted, during the research, resulting from digital exclusion in the TCICA region across all aspect of life.

| Impact Area       | Key impacts   |
|-------------------|---|
| Economic Impacts  | <ul style="list-style-type: none"> <li>• Holding the region back</li> <li>• Digital connectivity is one of the key factors influencing business decisions to invest in the region</li> <li>• Lack of ability to tap into new markets (e.g. online arts sales)</li> <li>• Difficulties of doing business e.g. bookings for tourism and Wi-Fi access for guests; commerce facilitation (payment of accounts, EFTPOS services); difficulty of online bookings and marketing (events, accommodation); impacts on self-sufficiency (e.g. supply chains of produce into the region, outages affect fuel pumps, financial transactions)</li> <li>• Contributing to existing difficulty in attracting workforce to the region and drain of professional/skilled people from the region</li> </ul> |
| Workplace impacts | <ul style="list-style-type: none"> <li>• Work stress relating to digital connectivity (e.g. reporting, uploading/downloading documents), connectivity with head office systems requiring greater bandwidth and difficulties of accessing cloud based systems</li> <li>• Payroll impacts (often delivered electronically from outside Cairns area)</li> <li>• Inability to participate in education, training, and professional development (e.g staff going to Brisbane or Cairns to do online training)</li> <li>• Difficulty with online meetings on Zoom or MS Teams</li> <li>• Mobile workers (e.g. health, rangers, social services providers) who drive across different towns are isolated due to blackspots and internet connectivity</li> </ul>                                  |
| Service Impacts   | <ul style="list-style-type: none"> <li>• Services still running paper-based systems, some services closed for half a day to catch up paper systems (e.g. primary health)</li> <li>• Limitations across what services can be delivered (e.g. access to online courts, aged and health service delivery, teachers cannot access vital e-resources)</li> </ul>   |
| Social Impacts    | <ul style="list-style-type: none"> <li>• Health, employment, and education outcomes</li> <li>• Isolation from communities and community cohesion</li> <li>• Mental health impacts</li> <li>• Access to resources, services, and information</li> <li>• Difficulty of online information and engagement (e.g. mygov)</li> <li>• Leisure and recreation impacts e.g. cannot steam videos</li> <li>• Lack of online safety (e.g. cyber security, online predators, scams)</li> </ul>   |



|                             |  |
|-----------------------------|--|
|                             | <ul style="list-style-type: none"> <li>• Young generation tech savvy, usually mobile phones and not skilled across different equipment</li> </ul>  |
| COVID-19 Impacts            | <ul style="list-style-type: none"> <li>• Increased reliance on digital technologies due to the pandemic, challenges of many online daily business and domestic activities</li> <li>• Apps for check in does not work</li> <li>• Paper-based systems used at school</li> <li>• Services that were flying in to deliver services could not deliver many services online due to digital connectivity challenges</li> <li>• Difficulty of doing online business</li> <li>• Challenges of working from home (e.g. virtual meetings, cloud computing)</li> </ul>   |
| Disaster Management Impacts | <ul style="list-style-type: none"> <li>• Frequent impacts of rain and weather on connectivity</li> <li>• Cyclones and disasters- all forms of communication stop due to damage to infrastructure or interference, areas are cut off due to flooding, difficulty of getting in and out for repair, long periods of outage</li> <li>• Cells on wheels (COWs), mobile exchanges on wheels (MEOWs) and NBN Road Muster trucks, are also weather impacted</li> <li>• Mobile disaster communication systems have short range and sometimes cannot get in due to hazards and geography</li> <li>• Isolation and addressing emergencies, getting information into the community</li> <li>• Warning, evacuation and recovery challenges</li> <li>• Different systems of communication not integrated</li> </ul> |
| Safety and Security Impacts | <ul style="list-style-type: none"> <li>• E-safety (e.g. Centrelink payments stolen with password sharing as recipient does not have technical skills)</li> <li>• Challenges of reporting of safety issues across isolated roads and between islands in the Torres Strait</li> <li>• Challenges of reporting of domestic violence and criminal activity</li> <li>• Border security reporting around PNG</li> </ul>  |
| Inter-generational Impacts  | <ul style="list-style-type: none"> <li>• Inter-generational relationships across the life cycle of individuals and families.</li> <li>• Perpetuates intergenerational disadvantage and mobility</li> <li>• Prolongs achieving outcomes from Closing the Gap</li> <li>• Impacts on confidence and self-perception</li> </ul>  |