

# REGIONAL PARTNERSHIPS BARWON

## Our Good Growth Principles

- Environmentally and socially sustainable
- Benefits must be shared equitably
- Embrace and embed our Aboriginal culture
- Safe, vibrant and highly livable communities





## Acknowledgement of Country

We acknowledge the traditional custodians of the land on which we live.

We recognise their continuing connection to land, waters and culture and pay our respects to their Elders past, present and emerging.

The Barwon Partnership supports initiatives that encourage greater unity, knowledge, cultural awareness and respect for the first occupants of our land.

We work with Traditional Owners Aboriginal Corporations to encourage stronger community links and local representation.



## Barwon Regional Partnership

COMMUNITY

- Professor Iain Martin (Chair)  
**Vice-Chancellor and President of Deakin University**
- Tracey Slatter (Deputy Chair), **CEO, Barwon Water**
- Bill Mithen, **CEO, Give Where You Live Foundation**
- Frances Diver, **CEO, Barwon Health**
- Melinda Kennedy, **Co-Director Murri:yul consultancy**
- Nat Anson, **CEO, Urbis Geelong**
- Lisa Kingman (OAM), **Independent community advisor**
- Jennifer Cromarty, **CEO, Committee for Geelong**
- Corrina Eccles, **Wadawurrung Traditional Owner**
- Peter Dorling, **Business Manager, Avalon Airport**

GOVERNMENT

- Penelope McKay, **Deputy Secretary, Corporate Services, DJPR**
- Robyn Seymour, **CEO, Surf Coast Shire Council**
- Martin Cutter, **CEO, City of Greater Geelong**
- Anne Howard, **CEO, Colac-Otway Shire Council**
- Martin Gill, **CEO, Borough of Queenscliffe**

RDA Barwon South West has a direct link to the Australian Government through Minister McBain



The Hon Kristy McBain MP  
Minister for Regional Development,  
Local Government and Territories



Regional Partnerships have a direct link to the Victorian Government through Minister Shing



The Hon Harriet Shing MLC  
Minister for Regional Development  
Minister for Water  
Minister for Equality



RDA Barwon South West Committee was established by the Australian Government and is supported by the Victorian Government through RDV. Chair is endorsed by both Ministers.

RDA Barwon South West Committee members include: Industry and business members with global, national and local experience in advanced manufacturing, agriculture, education, tourism and energy, supported by the **Regional Director of RDV Barwon South West**

**RDV Barwon South West**  
Regional Director and officers coordinate and connect the activities of the RDA and both Regional Partnerships.

Barwon Regional Partnership and Great South Coast Regional Partnership were established by the Victorian Government and are supported through RDV.

Regional Partnerships' members include: Business and community members, the CEOs of our Local Government Areas, an RDA Barwon South West Committee member, the **Regional Director of RDV Barwon South West** and a senior officer (Dep Sec) from the Victorian Government.

### BARWON SOUTH WEST REGIONAL STAKEHOLDERS

- G2I** (Geelong 2025 International Alliance)
- Wadawurrung Traditional Owners Aboriginal Corporation • Eastern Maar Aboriginal Corporation
- Gunditj Mirring Traditional Owners Aboriginal Corporation • Deakin University • Avalon Airport • GeelongPort
- Port of Portland • Committee for Geelong • Committee for Portland • Major employers • Peak industry bodies
- Local business incubators • Tourism Greater Geelong and the Bellarine • Great Ocean Road Region Tourism
- Grampians Tourism • Discovery Coast • Great Ocean Road Coast and Parks Authority • RICE
- Geelong Chamber of Commerce • Geelong Manufacturing Council • Gordon TAFE • South West TAFE
- Local Learning and Employment Networks • Barwon Water • Wannon Water • Southern Rural Water
- SouthWest Victoria Alliance**



### LOCAL GOVERNMENT

### Regional Development Victoria (RDV)

Serving all 6 RDA Committees and all 9 Regional Partnerships with:

- Shared evidence • Data analysis • United voice • Joined-up priorities • Capital city connections • Coordination • Pathways to government

fresh approach



fruitful outcomes

fruitful  
COMMUNICATIONS

Part of The Digital Divide group

Barwon Regional Partnership – Digital Discovery Project



Barwon is one of the fastest growing regional locations in Australia.

*Our growth presents a once in a lifetime opportunity but must be driven with care.*

*Good growth principles underpin everything we do.*

## Good Growth

- **Environmentally and socially sustainable** economic and population growth
- **Benefits must be shared equitably**, supporting the vulnerable and marginalised
- Embrace and embed our region's rich **Aboriginal culture**
- Create and maintain **safe, vibrant, highly livable communities**



2019



2022



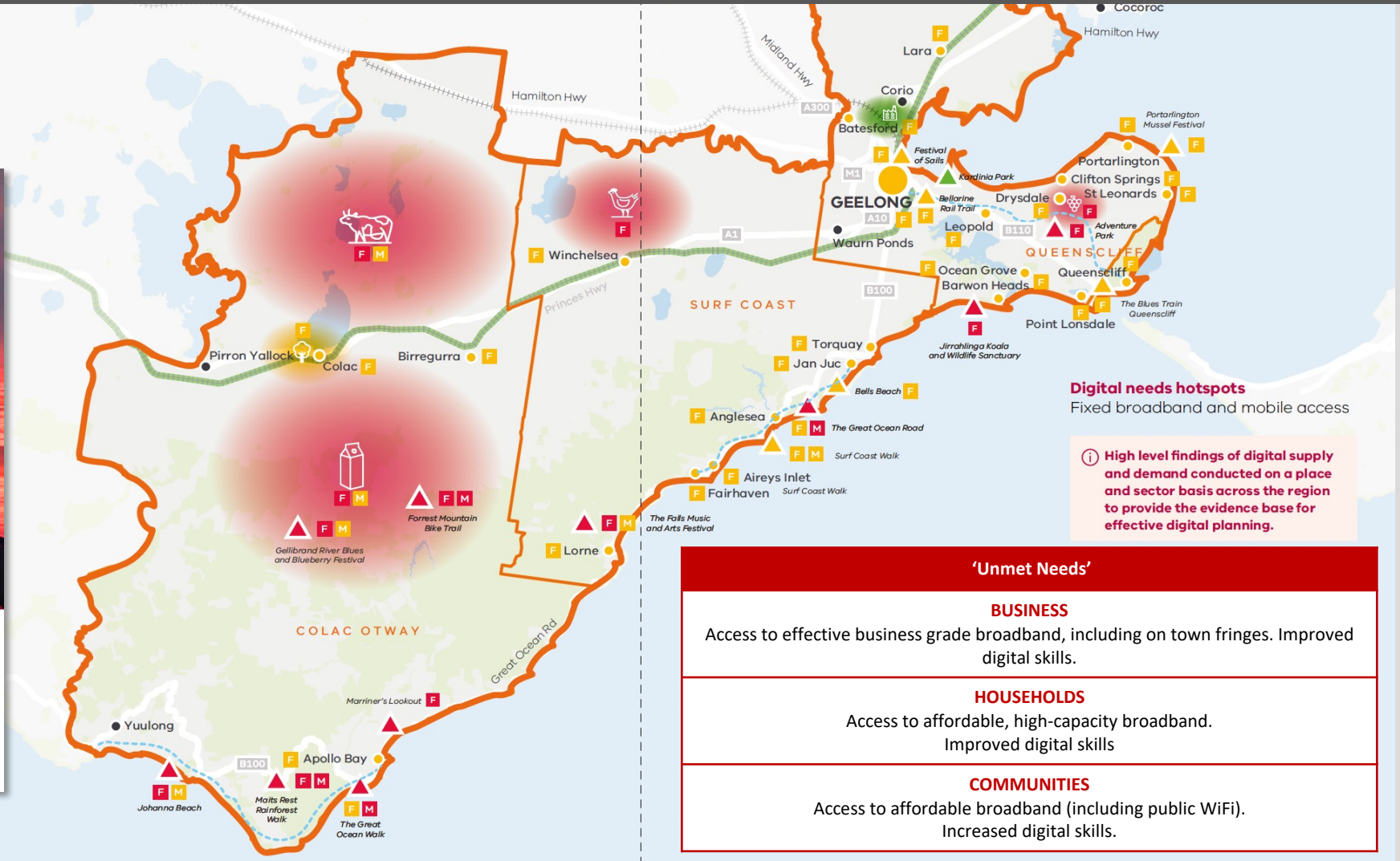
2022



2019



**Barwon Regional Digital Plan**



# Digital divide and intensity

A comparison of the current and future digital intensity requirements of the main Barwon industries based on employment is outlined.

Industry	Digital intensity now (current practice)	Digital intensity needed in 3-5 years (best practice)
<b>Healthcare &amp; social assistance</b>	● Fixed access for patient records	● Patient & GP fixed and mobile connectivity. Digitisation of records, analytics & data transparency. Robot-assisted operations
<b>Education &amp; training</b>	● School, home fixed & mobile access	● Student fixed & mobile home connectivity, online learning. Augmented & virtual reality in classrooms for enhanced teaching methods
<b>Construction</b>	● Fixed and mobile connectivity	● Fixed & mobile connectivity, digital models
<b>Tourism</b>	● Mobile coverage of tourist hot spots	● Mobile road coverage. WiFi & IoT at popular venues. Augmented/virtual reality tours
<b>Manufacturing</b>	● Fixed connectivity	● Fixed connectivity, industrial IoT, fault prevention & data analytics for logistics
<b>Public admin &amp; safety</b>	● Resident fixed & mobile connectivity, connected public infrastructure	● Resident fixed & mobile, IoT-for Smart Cities, enhanced security & digital profiles for individuals
<b>Agriculture/forestry</b>	● Mobile coverage of farming areas	● Wide narrowband and broadband IoT access, apps and skills for intensive and broadacre horticulture, cropping & livestock
<b>Retail trade</b>	● Shop and building access	● Retail at threat from online shopping. IoT can help retail stores connect to customers through promotions and mobile payment methods

(2022-24)

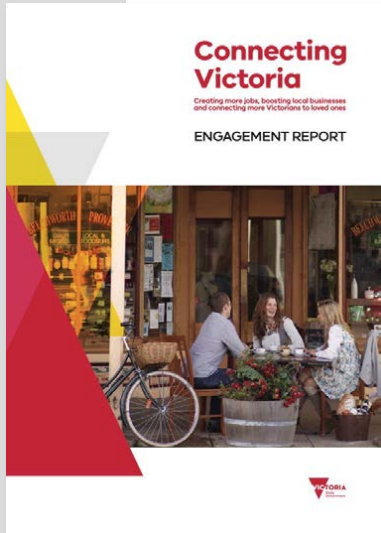
2019







Barwon Regional Digital Plan





# Key themes from community consultation in *Connecting Victoria*



 <b>Economic uplift</b>	 <b>Working and learning from home</b>	 <b>Safety</b>	 <b>Social Inclusion</b>	 <b>Telehealth</b>	 <b>Service Quality</b>
<p><b>Businesses that don't have high-speed internet told us they are missing out on economic growth opportunities.</b></p> <p><b>Residents told us that bad connectivity, reliability and ongoing outages make it difficult to perform remote work, study online and socialise through the internet.</b></p> <p><b>Poor connectivity is a big deterrent for regional migration.</b></p>	<p>The COVID-19 pandemic has led to big changes in the way we live, accelerating the shift to remote working and learning. Victorians who responded through the consultation process said that this has placed a lot of pressure on connectivity infrastructure.</p> <p>Mobile and broadband speeds have suffered, with bottlenecks and outages, making it difficult for households where people are working or learning from home.</p>	<p>Victorians that responded felt that connectivity was critical during natural disasters like bushfires and storms, power outages, and emergencies involving health and safety. They said that unreliable connectivity makes it difficult to prepare for emergencies and manage risks.</p> <p>During emergencies, better mobile and broadband coverage is needed so that community members can receive emergency messages and ask for help in real time.</p>	<p>Respondents told us the COVID-19 pandemic has made Australians even more dependent on digital technology – in our economy, everyday lives and jobs.</p> <p>They said this reliance will increase as more interactions move online. However, some members of the community cannot carry out these activities because they do not have access to high-speed and reliable mobile or broadband services.</p>	<p>Victorians told us that attending health appointments in person is challenging for many people who live in regional, rural and remote areas.</p> <p>Access to telehealth and other online services such as mental health and child health therapy sessions helps to overcome this, but Victorians told us that current connectivity speeds and bandwidth don't always support this.</p>	<p>People we consulted with said that broadband and mobile connectivity services in many places across the state are still not good enough.</p> <p>While some infrastructure has been upgraded, residents are still waiting months to be connected. They reported that connectivity issues happen with all service providers.</p> <p>We heard that long outages are common, and some areas are using old technology with no defined plans for improvement.</p>

<b>THE VISITOR ECONOMY</b>	<b>AGRICULTURE TECHNOLOGY</b>	<b>BUSINESS OPPORTUNITIES</b>	<b>GROWTH AREAS</b>
<p>Tourism is a key focus for many locations. Participants told us that some communications infrastructure cannot support the demand during peak tourism seasons, which affects businesses and leads to poor experiences for visitors. Closed international borders and other COVID-19-related restrictions have boosted intrastate travel, which has increased the load on infrastructure.</p> <p>Participants said that some areas will need better internet and mobile coverage to support existing demand as well as live streaming, for example, arts, music, and sporting events, to engage a wider audience.</p>	<p>Lack of connectivity was highlighted as a big factor that is slowing down digital advancement in agriculture, including use of the Internet of Things (IoT) and robotics or automation.</p> <p>Participants said high-tech agriculture needs 5G and enhanced connectivity to support on-farm operations, supply chain management, and to collect data about things like soil quality and water use in real time.</p>	<p>Participants reported that limited mobile and broadband connectivity is negatively affecting businesses in some areas.</p> <p>Business owners are reluctant to invest in equipment to improve production and increase competitiveness if there is a chance it won't work due to connectivity issues.</p>	<p>We were told that many places are experiencing rapid development and growth, and infrastructure has not been able to cope, leading to slow connectivity and ongoing outages. To make the most of this growth, participants said that connectivity infrastructure needs to be upgraded.</p> <p>They also said that the planning process for new developments including housing estates and digital hubs needs to identify appropriate sites for new mobile towers early and ensure high-speed broadband connectivity is provided.</p>



2019-21

**Digital connectivity**

Access to reliable internet and mobile services allows for access to new markets, facilitates efficiency gains and opens up opportunities for innovation. Good digital connectivity can also facilitate more inclusive access to services and flexible working arrangements.



63 to 70

**Australian Digital Inclusion Index Score in Barwon in 2021<sup>6</sup>**

(Victorian average: 71)

**Fixed broadband access**

**Mobile access**

**Cities and large towns, such as Geelong and Colac**

Generally comparable to metropolitan Melbourne with some access to FTTP and widespread provision of FTTN within town centres, but fixed wireless and satellite serving the town fringe and beyond

Generally comparable to metropolitan Melbourne with multiple carriers operating 4G networks, but quality and reliability of access can fade beyond town centre

**Small towns and localities, such as Batesford and Birregurra**

Generally provisioned with fixed wireless services in the town centre with the fringe and surrounding areas receiving satellite. Some small towns receive higher-speed FTTN or FTTC services

Less capacity and reliability than in larger towns. Better quality within the town centre than when moving into surrounding areas and between towns

**Primary production areas, such as dairy grazing southwest of Colac**

Lower capacity fixed broadband technologies like fixed wireless and satellite available due to remoteness of these farms / businesses. Fixed wireless more available closer to population centres

Variable service quality across primary production areas. Better when closer to population centres and unimpeded by local topography

**Tourist locations, such as Bells Beach**

Most relevant to tourist operators and businesses. Higher capacity technologies like FTTP available to operators in town centres, but lower capacity services like fixed wireless and satellite in more remote tourist locations

Often weak coverage in remote locations such as trail walks and national parks and network limitations in accommodating large influxes of visitors such as periodic events

**Transport corridors, such as major highways and rail lines**

N/A

Stronger and more reliable coverage on large highways and rail lines, with service quality and reliability compromised on smaller roads and in more remote areas

Source: (Infrastructure Victoria, 2019)

# 2019-21

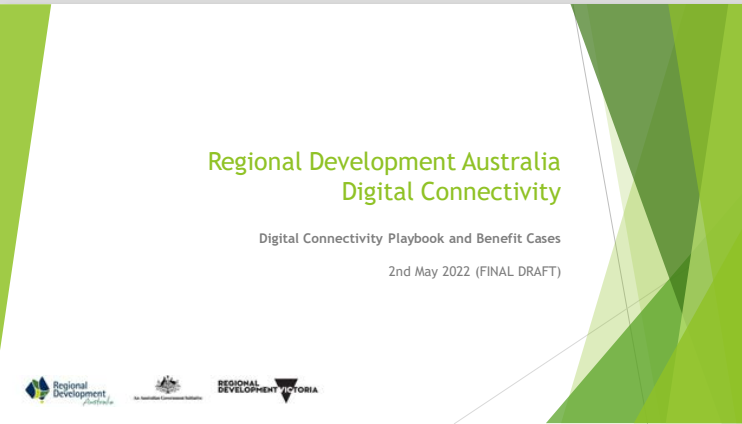


## Barwon Regional Economic Development Strategy (REDS)

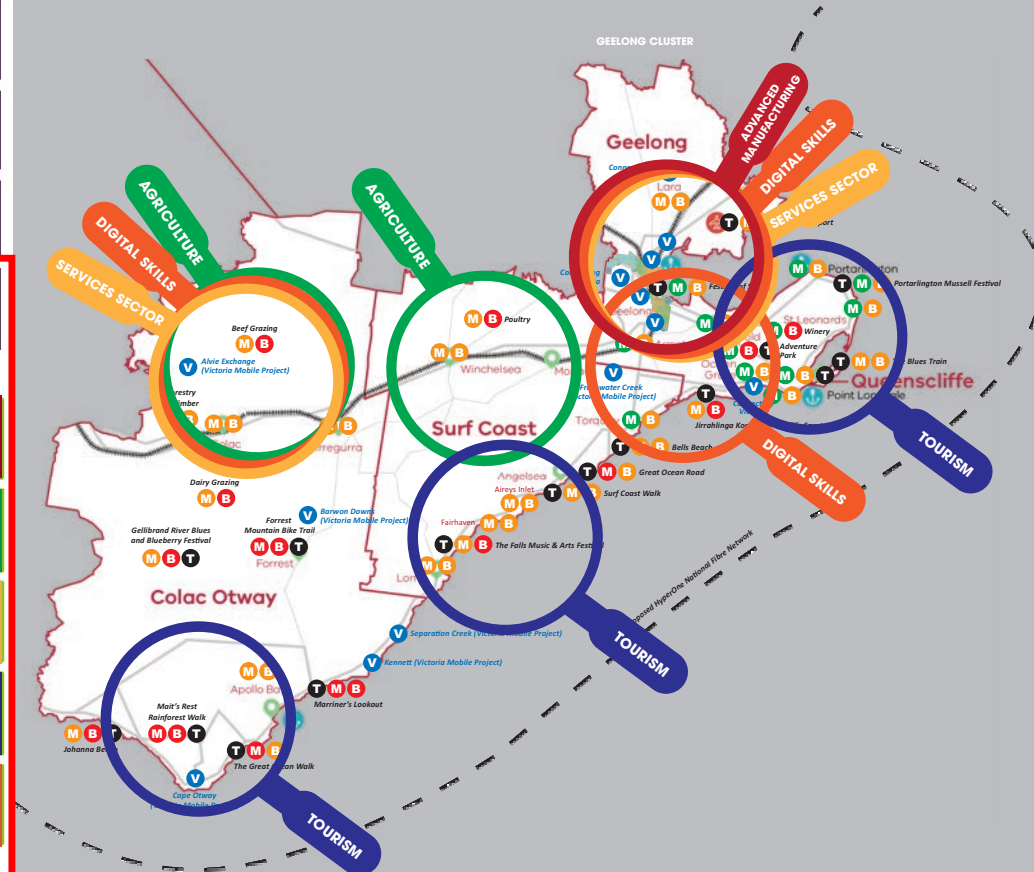
### STRATEGIC DIRECTIONS

- Accelerate the transition to new and high-value manufacturing opportunities**  
 Developing future-focused products and advanced manufacturing capabilities will, along with existing supply chains and transport infrastructure, drive new and high-value manufacturing opportunities.
- Further the innovation and skills ecosystem**  
 Existing innovation hubs and significant local research expertise will contribute to business incubation, productivity growth and a future-focused education and training sector.
- Realise the potential of the visitor economy**  
 The diverse range of tourism offerings, including natural landscapes, creative industries, Aboriginal heritage and emerging agritourism, strongly positions the region to take advantage of changing domestic visitor trends.
- Maximise the economic benefit from expanding service-based sectors**  
 Strong population growth and changing demographics have driven service-based sectors with a skilled workforce – cultivating these sectors is an opportunity for long-term growth and wider economic benefits.
- Build a sustainable and climate-resilient economy**  
 Renewable energy generation, including rooftop and large-scale solar, wind and renewable hydrogen, complement strong community interest in resource recovery and recycling to drive sustainability in the region.

2022



- BENDIGO CLUSTER (pg 37)
- TRARALGON CLUSTER (pg 46)
- NORTH EAST CLUSTER (pg 55)
- GEELONG CLUSTER (pg 64)**
- ADVANCED MANUFACTURING
- AGRICULTURE
- HEALTHCARE (SERVICES)
- TOURISM
- SKILLS
- DIGITAL INCLUSION (pg 129)



fresh approach

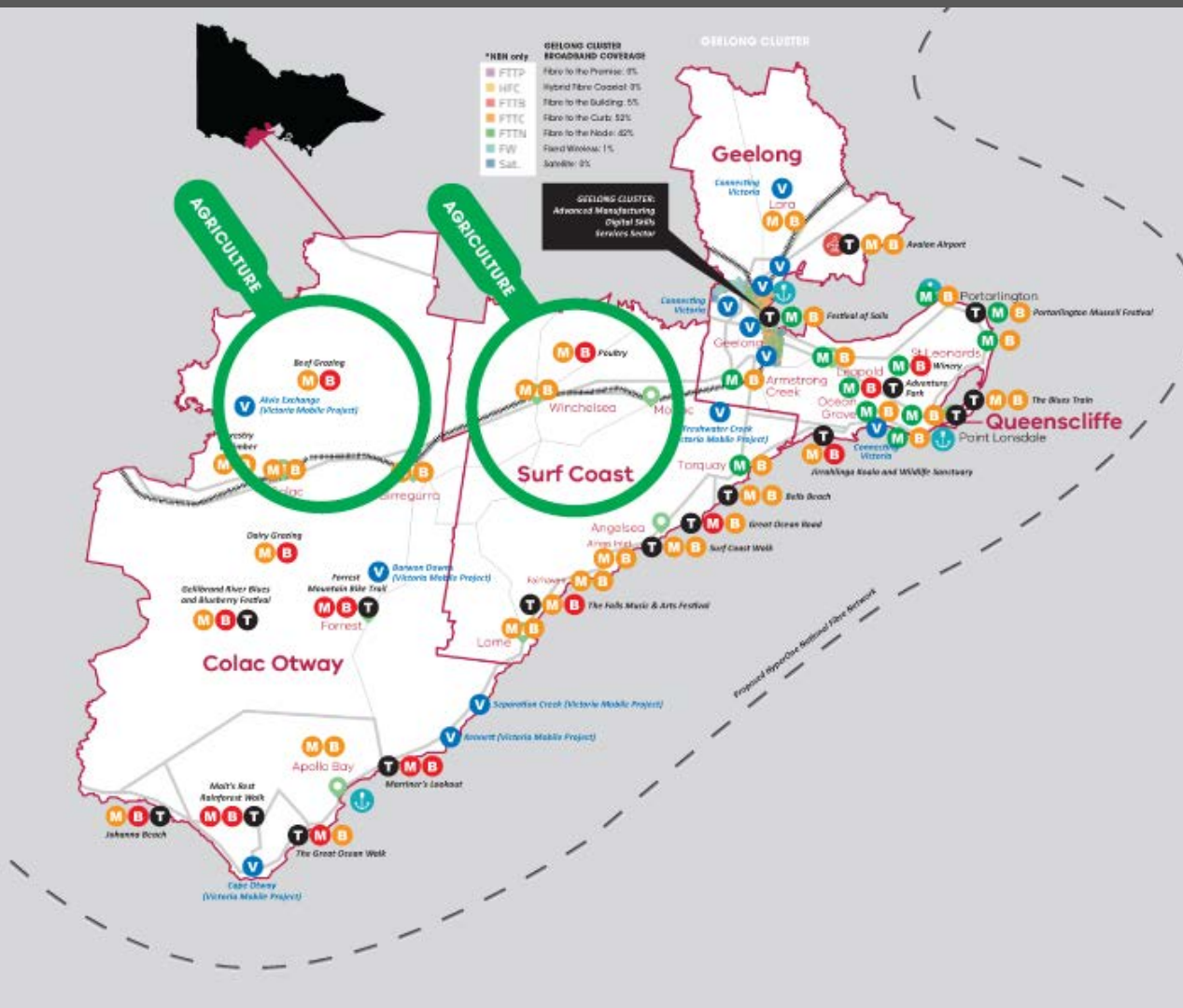


fruitful outcomes

fruitful COMMUNICATIONS

Part of The Digital Divide group

Barwon Regional Partnership – Digital Discovery Project



WHAT:  
Agriculture

WHERE:  
Surf Coast hinterland  
Colac region

HOW:  
Infrastructure

(Fixed Broadband, Low Orbit Satellite,  
Pubic Wifi, IoT networks, 3G/4G/5G, ???)

Access  
Affordability  
Capability



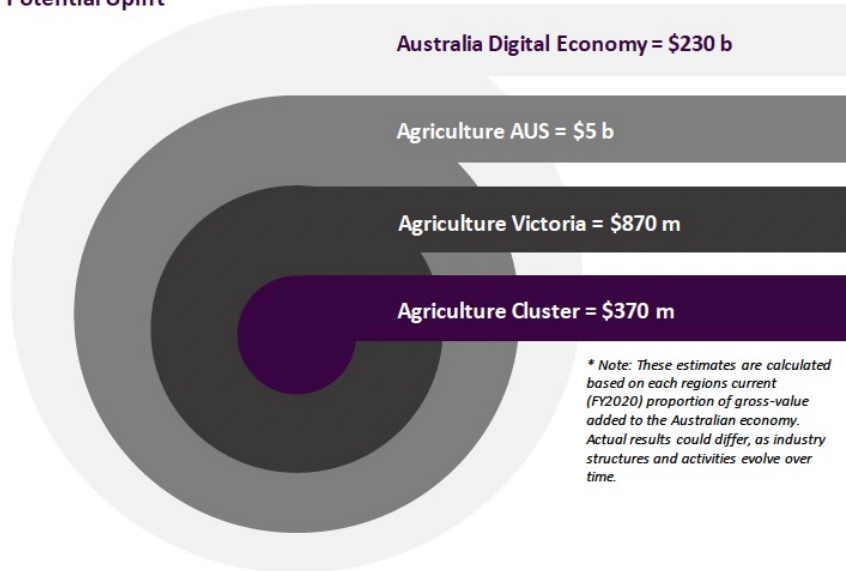


# Investing in connectivity now has the potential to unlock \$370m+ economic uplift in the future through greater participation in the digital economy (in the 20 priority SA2s)

## The digital economy opportunity to be unlocked – In priority SA2s

Connecting Australia's digital economy has the potential to add over \$230 billion by 2030. This can be delivered through the potential of "4.0" technologies, such as the Internet of Things (IoT), Artificial Intelligence (AI) and 5G. Whilst jobs and business growth will initially be centered around urban areas, emerging regional towns have significant growth opportunity. Proportionally, the most significant uplift in job growth will be seen in Australia's regions – where digitisation has the potential to open up and expose local businesses to new opportunities.

### Potential Uplift\*



*\* Note: These estimates are calculated based on each region's current (FY2020) proportion of gross-value added to the Australian economy. Actual results could differ, as industry structures and activities evolve over time.*

## Direct economic uplift of digital connectivity to FTTP



### Unlocked by

Enhancing digital connectivity in the agriculture cluster enables participation in the digital economy – and unlocks the broader digital economy opportunity



Agriculture, Forestry and Fishing  
**\$13m**

Enabling digital connectivity in the agriculture cluster will enhance productivity across the industry, delivering a *direct* potential economic uplift of:

### Economic Uplift from connectivity:

Economic uplift potential indicates the cumulative benefit from transitioning from current broadband fibre connectivity, to FTTP fiber connectivity over five years (2022-2026). This represents the incremental benefit of enabling this technology over the current fibre coverage level. It is important to note that the results are based on historical industry concentrations within SA2s, and forecasted industry growth rates at an aggregate level. They do not account for interactions between industries or the potential restructuring of industry concentrations at a granular level. As such, only a 5-year analysis period is chosen – over a longer period, a model accounting for these potential shifts would be required.

### FTTP (the fixed broadband ideal state)

FTTP is considered the ideal state for fixed broadband\* and therefore this economic uplift potential represents the maximum potential uplift. This is *not* a technology solution recommendation. The actual economic uplift will differ based on the technology solution that is considered fit for purpose.

\*FTTP is a ideal state under current technologies for fixed broadband, 5G for mobile, and in reality a mixture of technologies will be needed to address the challenges.

# Agriculture

Population Density (people per km sq.)

899  
12  
11  
10  
9  
8  
7  
6  
5  
4  
3  
2  
1  
0

**Lower bandwidth, Higher density**  
Explore 4G/5G (lower mid bands)

**Lower bandwidth, Lower density**  
Explore LPWAN, 4G/5G (low band) or LEO

**Higher bandwidth, Higher density**  
Explore FTTP; 4G/5G (higher bands)

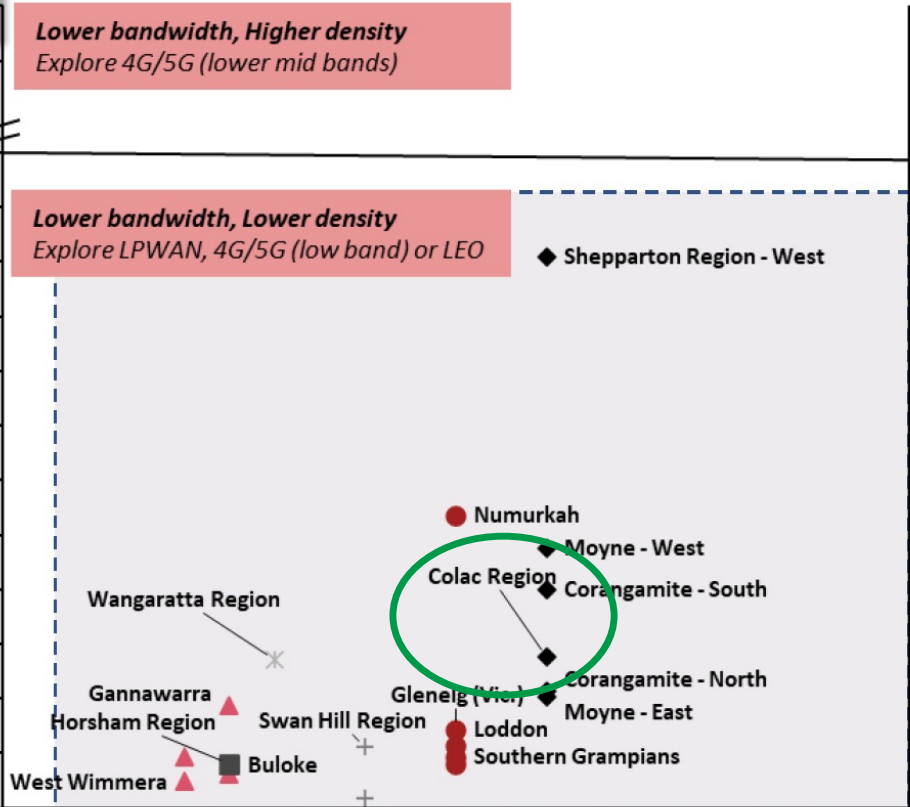
**Higher bandwidth, Lower density**  
Explore 4G/5G (mid-band)

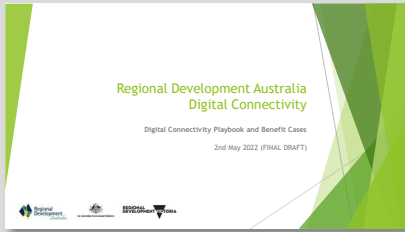
- Grain, Wool, Meat
- ▲ Cropping
- ◆ Dairy Farming
- Grazing
- + Horticulture
- ✕ Viticulture

Low Medium High

**Connectivity Requirements<sup>1</sup>**  
(across bandwidth and latency)

**Emerging use cases such as AI/Robotic farming require more bandwidth, lower latency**



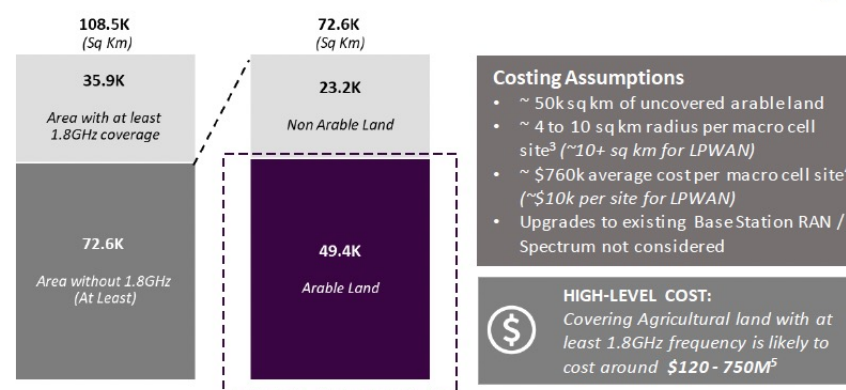
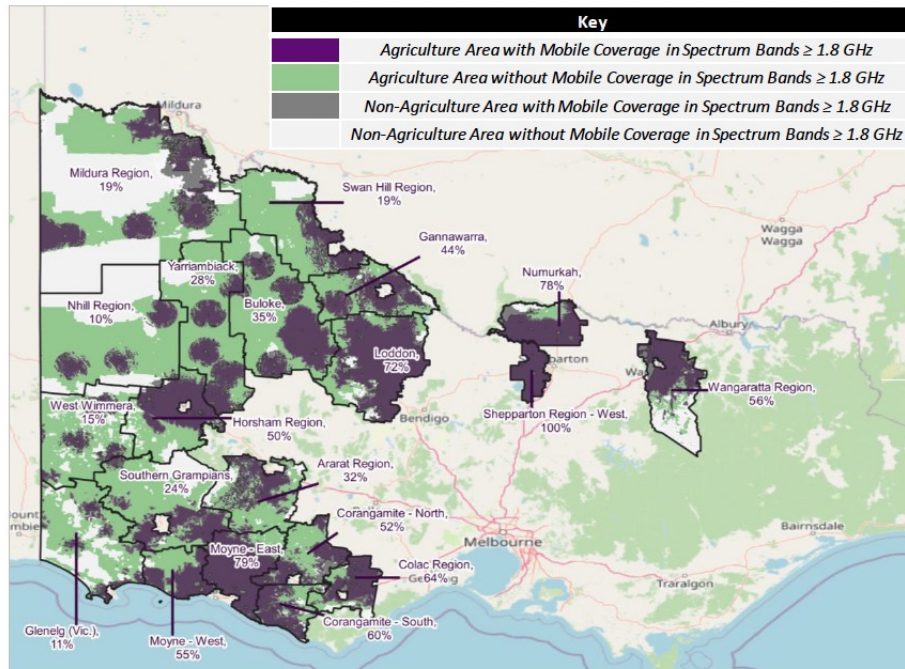


# Rough estimates suggest ~ \$120 to 750M investment required to cover around 50'000 Square Km of agricultural land with mobile broadband across the cluster

**INDICATIVE ONLY**

About 67% of the agricultural cluster (~73k Sq Km) does not have mobile coverage at spectrum frequencies  $\geq 1.8$  GHz <sup>1</sup>

About 68% of land without at least 1.8GHz Mobile coverage (~50k Sq Km) is Agricultural/Arable <sup>2</sup>



**Costing Assumptions**

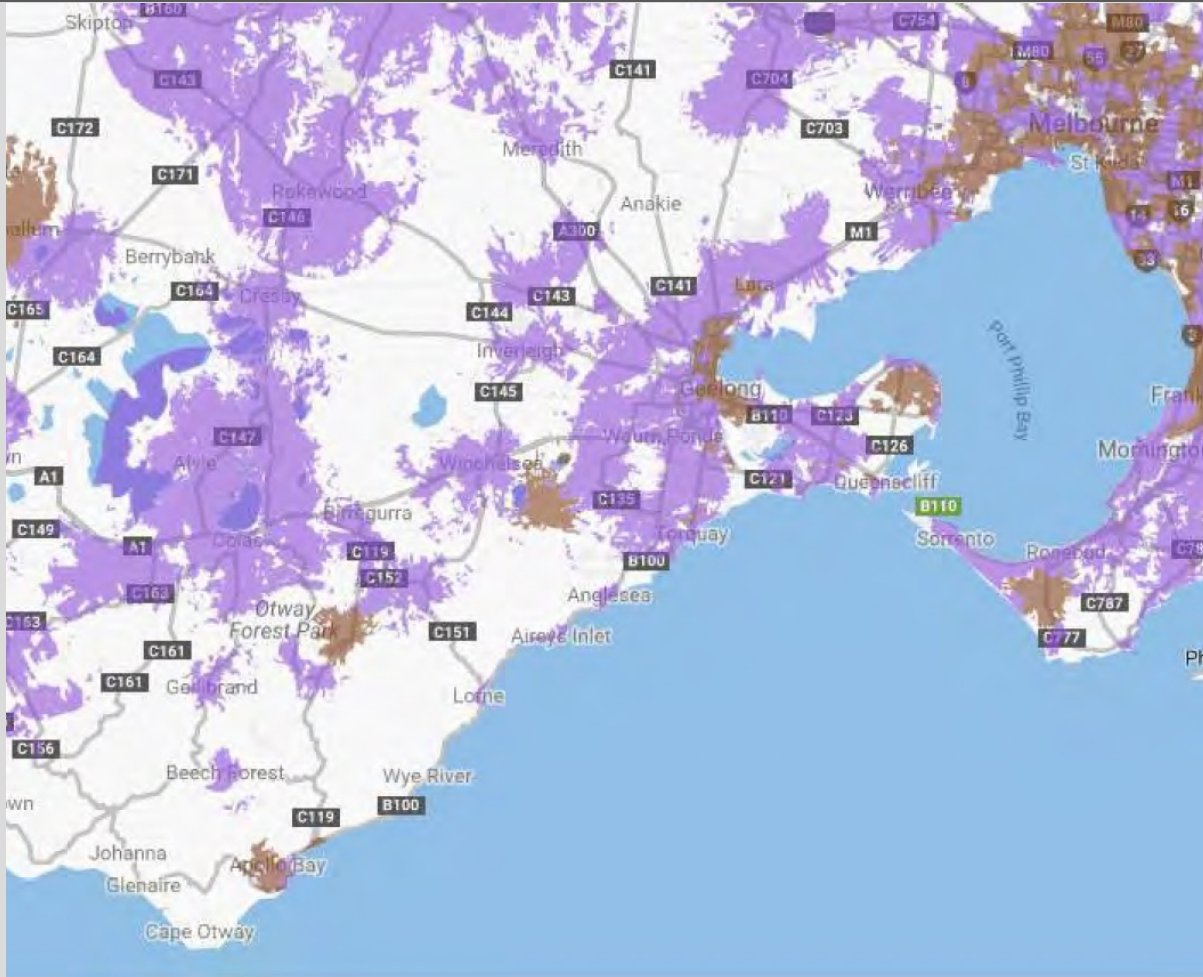
- ~ 50k sq km of uncovered arable land
- ~ 4 to 10 sq km radius per macro cell site<sup>3</sup> (~10+ sq km for LPWAN)
- ~ \$760k average cost per macro cell site<sup>4</sup> (~\$10k per site for LPWAN)
- Upgrades to existing Base Station RAN / Spectrum not considered

**HIGH-LEVEL COST:**  
Covering Agricultural land with at least 1.8GHz frequency is likely to cost around **\$120 - 750M<sup>5</sup>**

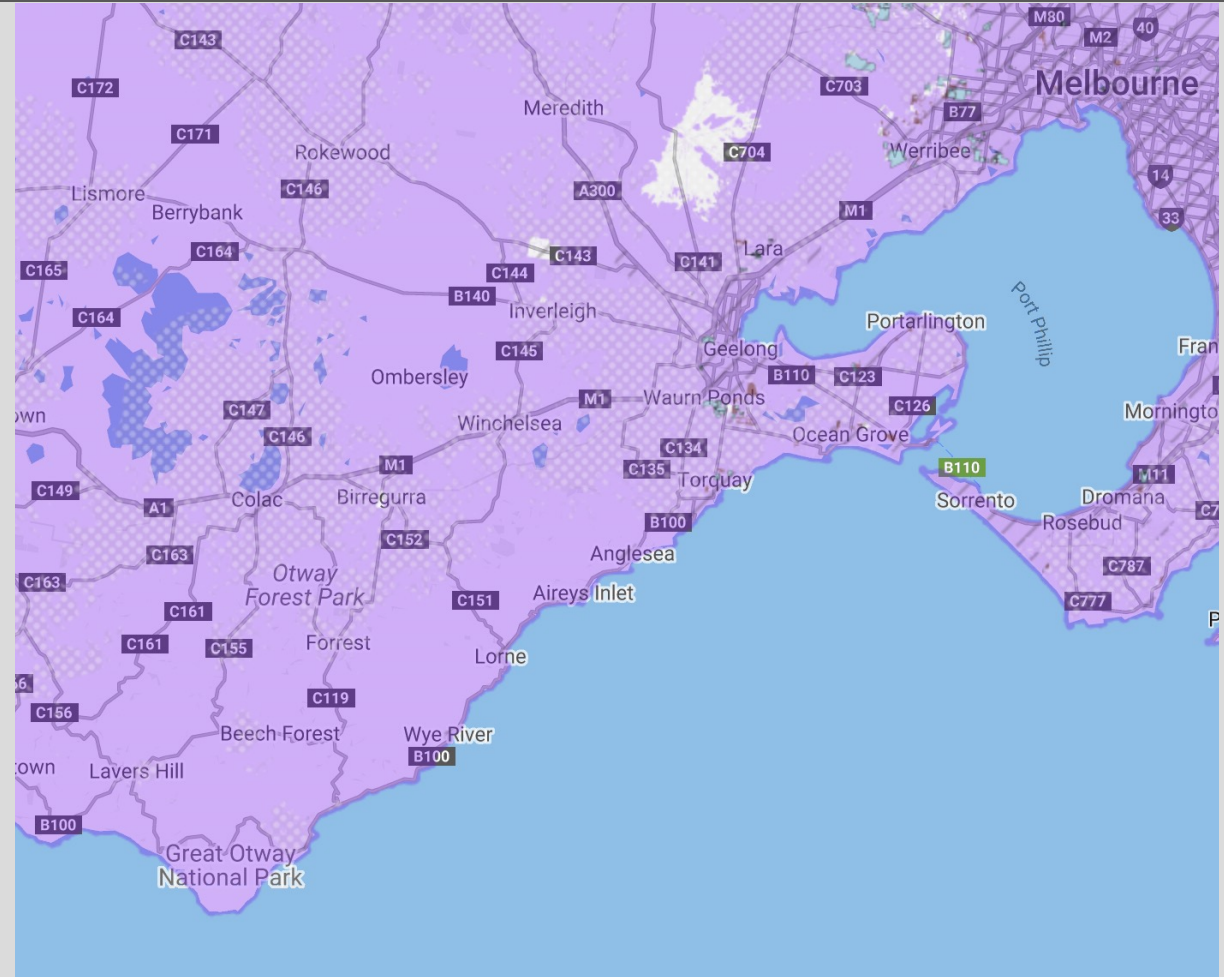
**LPWAN costs significantly less to deploy, albeit with much lower bandwidth**

- As a comparison, covering the same area with LPWAN IoT is likely to cost around ~\$2M<sup>3</sup>.
- This estimate does not consider agricultural land already covered by narrowband / LPWAN, meaning the \$ figure above is likely to be lower.
- Note that narrowband coverage will not address high data use cases (which requires mobile broadband capacity and coverage).

1. Frequencies at 1.8GHz (lower mid band) and higher generally provide a rough proxy for at least 4G mobile broadband connectivity (which provides a capacity layer for more data intensive applications and use-cases in addition to mobile coverage).  
 2. Based on figures sourced from ABS. <https://www.abs.gov.au/statistics/standards/australian-statistical-geography-standard-asgs-edition-3/jul2021-jun2026/main-structure-and-greater-capital-city-statistical-areas/mesh-blocks>  
 3. Depends on multiple factors including topography, spectrum band used, RAN configuration and required bandwidth at the site. Square radius based on GSC-IoT regional Coverage (V3) options analysis – Venture Insights. Radius converted to area by using  $\pi r^2$   
 4. Based on figures sourced from DJPR, includes backhaul, excludes any spectrum acquisition costs  
 5. Investment decisions should consider coverage areas based on connectivity needs from respective Agricultural locations

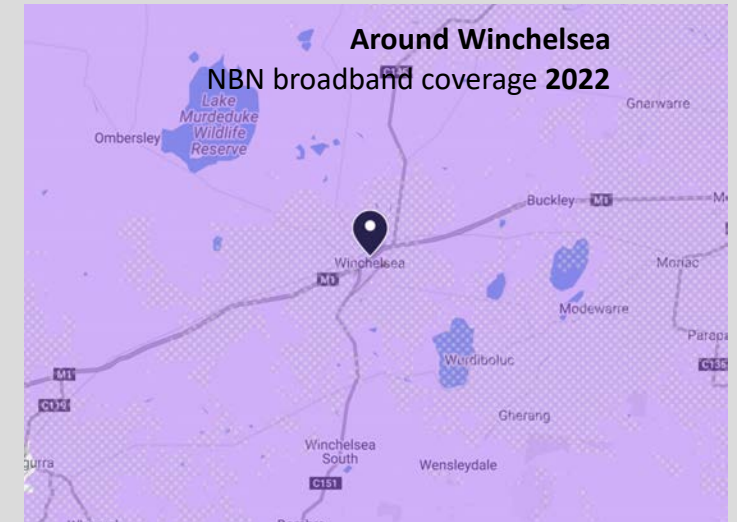
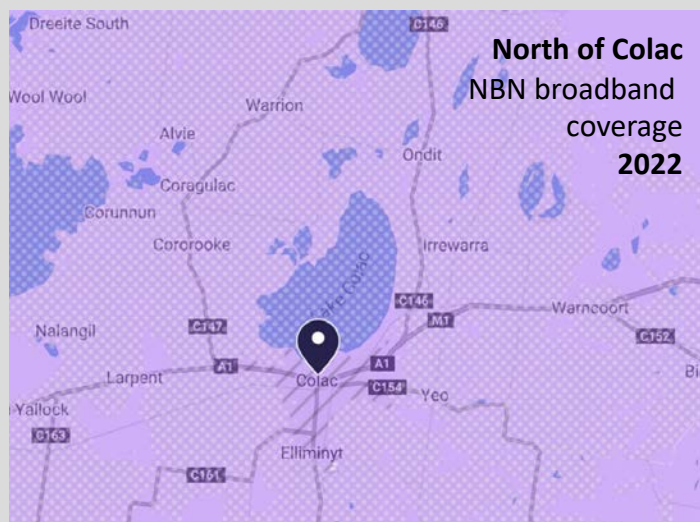
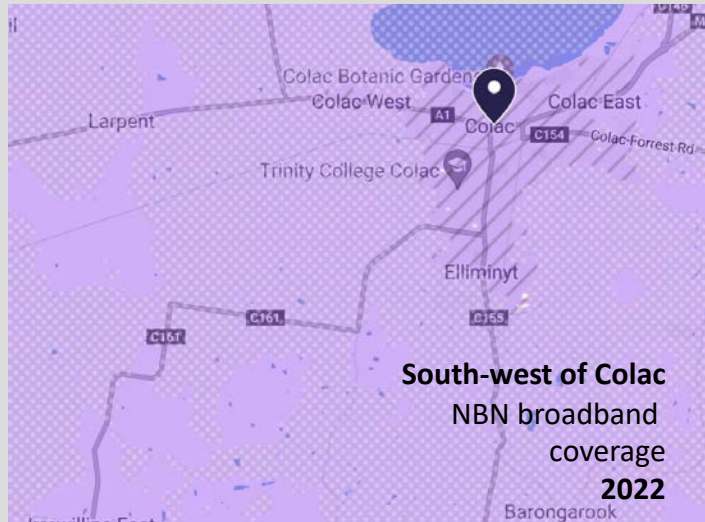
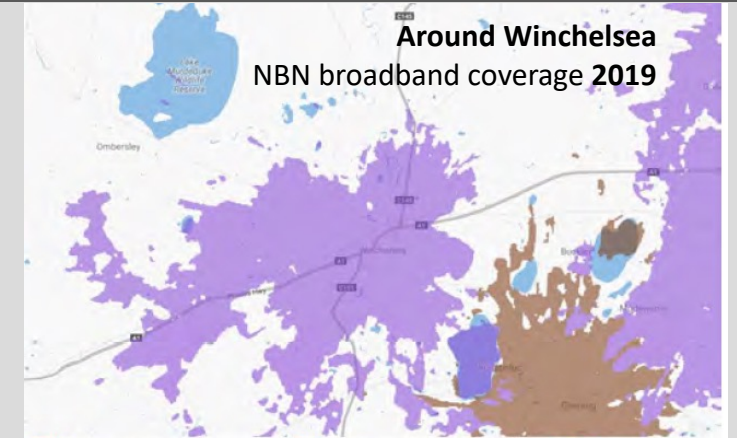
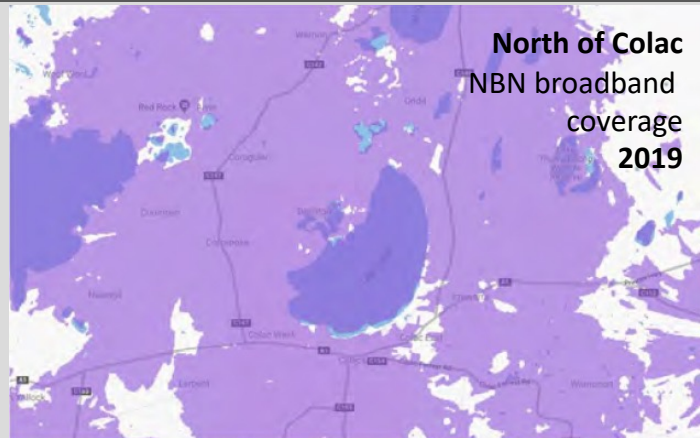
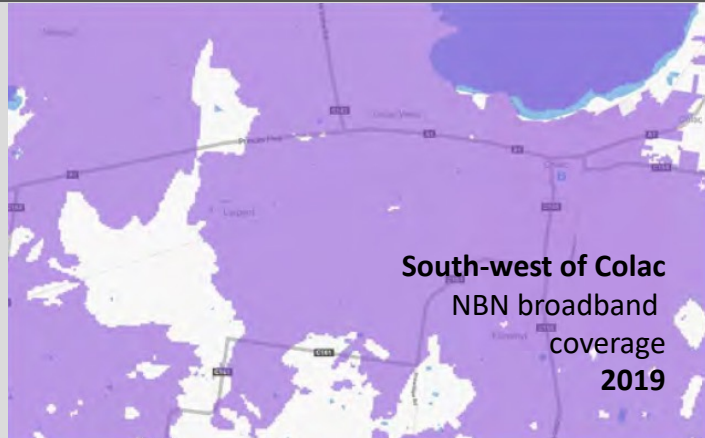


NBN broadband coverage 2019



NBN broadband coverage 2022







	Land Use	Location	User Type	Access		
				Fixed Supply / Demand	Mobile* Supply / Demand	LP-WAN IoT Supply / Demand
Primary Production Areas	Dairy grazing	South-west of Colac	Business	L/H	M/H	H/M
			Home	M/H	M/H	H/L
	Beef grazing	North of Colac	Business	L/H	M/H	H/M
			Home	M/H	M/H	H/L
	Poultry	Around Winchelsea	Business	L/H	H/H	H/M
			Home	L/H	H/H	H/L
Food and Fibre Processing Facility	Winery	Drysdale	Business	L/H	H/H	H/M
			Home	M/H	H/H	H/L
	Dairy	North Geelong	Business	H/H	H/H	H/M
			Home	H/H	H/H	H/L
	Forestry & timber	Colac	Business	M/H	H/H	H/M
			Home	H/H	H/H	H/L

Legend Red - Major supply shortfall | Amber - Intermediate supply shortfall | Green - current supply meets or exceeds demand.

\* Mobile coverage taken from public carrier coverage maps which may not reflect detailed coverage at the local level.

**Unmet digital demand (in 2019)**

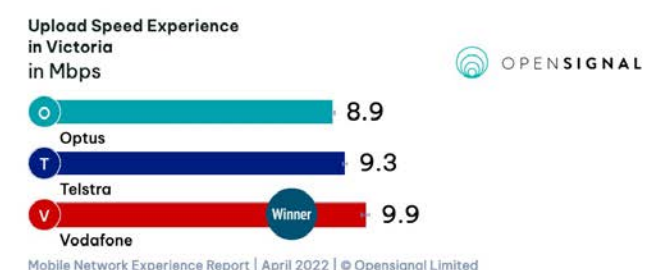
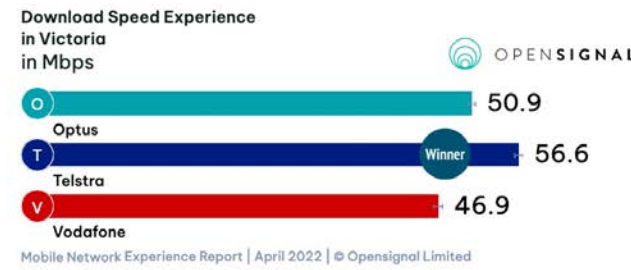
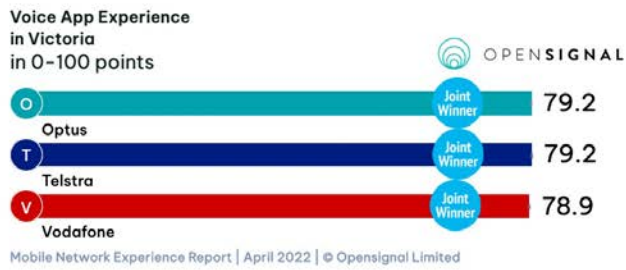
Amber = Intermediate supply shortfall

Green = Supply meets or exceeds demand.

Light green = **Reservations, based on local mobile access experience, about the good coverage indicated by public coverage maps.**

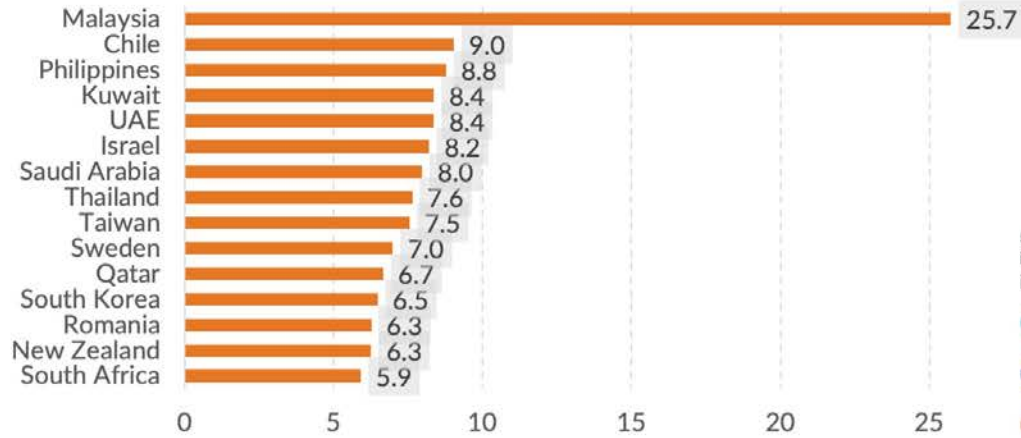
**Left: Unmet digital demand – Digital Plan 2019**

**Below: Regional Victoria overall mobile coverage – OpenSignal, April 2022**



# 5G Global Top 15: Uplift

5G vs 4G Download Speed Improvement (ratio)



Below: Regional Victoria 5G mobile coverage – OpenSignal, April 2022

5G Video Experience in Victoria in 0-100 points



Mobile Network Experience Report | April 2022 | © Opensignal Limited

5G Games Experience in Victoria in 0-100 points



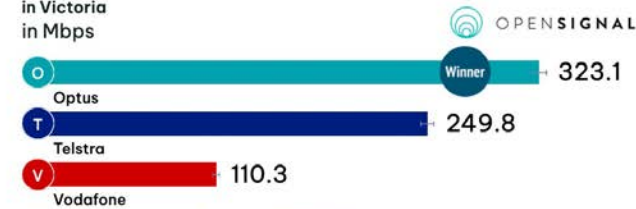
Mobile Network Experience Report | April 2022 | © Opensignal Limited

5G Voice App Experience in Victoria in 0-100 points



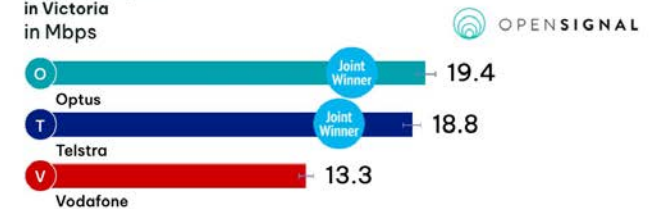
Mobile Network Experience Report | April 2022 | © Opensignal Limited

5G Download Speed in Victoria in Mbps



Mobile Network Experience Report | April 2022 | © Opensignal Limited

5G Upload Speed in Victoria in Mbps



Mobile Network Experience Report | April 2022 | © Opensignal Limited

## Other infrastructure and assets



VicTrack fibre transits the northern fringe of the city, following the route of the train line. Utilising spare capacity on this fibre could enable high-speed connectivity to Melbourne.

No details are available of optical fibre connectivity provided by other MNOs.

Extensive 220v power is available in Geelong and its surrounding suburbs.

- Digital Plan 2019

KEY	CITY-WIDE INITIATIVE
Free Public WiFi	3D Digital Twin
CCTV network	Geelong Data Exchange
Smart lighting	Geelong City Deal
Customer Experience & Digital Modernisation Program	UAV trials
AR Bollards	Clean tech
IoT (Internet of Things)	
Smart nodes	

- Private fibre
- CCTV network
- Smart Nodes
- Low Orbit Satellite
- IoT networks
- Public Wifi
- Data Analytics
- Digital Twin
- UAV / EV
- AR
- Digital maturity
- Other



**fruitful**  
COMMUNICATIONS

Part of **The Digital Divide** group

Barwon Regional Partnership – Digital Discovery Project

## **Business objectives, challenges & opportunities**

CONNECTIVITY SOLUTION



Fixed Broadband

Fibre to the Farm



Mobile

4G/5G



Narrowband / Low Power Wide Area Network (LPWAN)

NB-IoT / Sigfox / LoRA



Satellite Broadband

Low Earth Orbit (LEO)

EXAMPLE USE CASES	Fixed Broadband	Mobile	Narrowband / Low Power Wide Area Network (LPWAN)	Satellite Broadband
EXAMPLE AGRICULTURAL TYPES	<ul style="list-style-type: none"> <li>Dairy, poultry and beef</li> <li>Chicken farming (e.g. live streaming "free range")</li> </ul>	<ul style="list-style-type: none"> <li>Dairy, poultry and beef</li> <li>Wineries</li> <li>Horticulture</li> <li>Broadacre cropping</li> </ul>	<ul style="list-style-type: none"> <li>Dairy, poultry and beef</li> <li>Hydroponic farms</li> <li>Fruit Orchards</li> <li>Broadacre cropping</li> </ul>	<ul style="list-style-type: none"> <li>Very remote farms (where mobile is cost prohibitive)</li> </ul>
KEY LIMITATIONS	<ul style="list-style-type: none"> <li>Very high cost for remote areas</li> <li>Wi-Fi expansion/mesh network may be needed for vast areas</li> </ul>	<ul style="list-style-type: none"> <li>Maybe costly to deploy depending on backhaul and topography</li> </ul>	<ul style="list-style-type: none"> <li>Very low bandwidth, not suitable for high data requirements</li> </ul>	<ul style="list-style-type: none"> <li>Compatible device ecosystem lacking, including hardware and terminals</li> </ul>
INITIAL BUILD COST (Indicative only)	<ul style="list-style-type: none"> <li>Up to \$/millions per site depending on distance from point of interconnect, terrain conditions</li> </ul>	<ul style="list-style-type: none"> <li>Average costs<sup>1,2</sup></li> <li>\$760,000 per macro cell tower (4 – 10+ km radius)</li> <li>\$80,000 per small cell site (1 – 4+ km radius)</li> <li>Can vary significantly (e.g. Depending on backhaul choices and terrain)</li> </ul>	<ul style="list-style-type: none"> <li>Average ~\$10,000 per base station<sup>3</sup></li> <li>Cost can be much higher depending on backhaul availability and site location</li> <li>~10km radius per station<sup>1</sup></li> </ul>	<ul style="list-style-type: none"> <li>~\$1k per receiver terminal (Starlink<sup>4</sup>) + mesh network costs</li> <li>Additional costs for commercial grade backhaul terminals (TBC)</li> </ul>

Infrastructure  
Suitability  
Accessibility  
Affordability  
Capability  
Reliability  
Appetite  
Other?

1. Based on figures sourced from DJPR, includes backhaul

2. Depends on multiple factors including topography, spectrum band used, and RAN configuration

3. Based on GSC-IoT Regional Coverage (V3) options analysis – Venture Insights. Includes gateway and CAPEX but excludes backhaul

4. Canstar Blue, <https://www.canstarblue.com.au/interet/starlink-australian-speeds-update/>

## Agenda – Agriculture

One of five online workshops investigating the digital priorities of strategically important economic sectors and locations in the Barwon Region

9am (5 mins)	<b>Welcome &amp; introductions</b> <ul style="list-style-type: none"> <li>Acknowledgements, overview of agenda and session format.</li> </ul>	LB
9.05am (5 mins)	<b>Context &amp; methodology</b> <ul style="list-style-type: none"> <li>Role and composition of Barwon Regional Partnership.</li> <li>Overview of Barwon region's challenges and opportunities.</li> <li>Digital Discovery Project objectives and methodology.</li> </ul>	LB
9.10am (15 mins)	<b>Review available and planned infrastructure</b> and on-the-ground experience in specified location/s <ul style="list-style-type: none"> <li>Validate (or not) the accuracy of publicly available information against user experience and knowledge for specified locations.</li> <li>Identify any significant omissions or errors in publicly available data.</li> </ul>	LB
9.25am (10 mins)	<b>Confirm business objectives, challenges and opportunities of workshop participants</b> <ul style="list-style-type: none"> <li>What are the problem/s to be solved?</li> <li>Will current and planned digital infrastructure address those business needs?</li> </ul>	PA
9.35am (15 mins)	<b>Alternative/complementary technologies, assets and activities</b> <ul style="list-style-type: none"> <li>How might we address business needs in the short term and leverage potential for adaptive reuse in the longer term?</li> <li>Might potential solutions offer any additional economic, environmental or social benefits in the lead-up to the Commonwealth Games?</li> <li>How might we reduce implementation costs and increase affordable access for all?</li> </ul>	PA
9.50am (10 mins)	What is the recommended <b>digital capability investment priority</b> for this sector and location?	PA
10am	Close & Next steps	LB

## Output – Agriculture

One of five online workshops investigating the digital priorities of strategically important economic sectors and locations in the Barwon Region

Nicole Newman

James Myatt

Leigh Dennis

Ralph Cotter

### Participant comments and observations - skills

NBN rollout completed across Barwon Region.

NBN and telecommunications carrier service maps do not reflect the lived experience in the Barwon region.

Connection and speed unreliable and inconsistent in high-growth residential area between Geelong and Torquay.

Satellite NBN coverage is not available everywhere and in some places is not available at all times.

Slow speeds and poor reliability makes Satellite NBN poor value.

Poor knowledge of low orbit satellite opportunities.

Low appetite and uptake of digital solutions due to lack of reliable services

Poor knowledge of potential benefits of digitally-enabled transformation of agriculture sector (yield increase, bio-security improvements, environmental sustainability, value-add business generation, youth retention and attraction, innovation, drought and flood mitigation and recovery, mental health, influencer sponsorships, agritourism)

In high tourism zones, network capacity is compromised all summer, making it unreliable for business and essential services.

IoT networks still in infancy with some “progressive” farmers running pilots and upskilling.

Technology providers have poor visibility and knowledge of infrastructure, knowledge and support gaps in farming communities.

Awareness and skills development required for digital opportunities in agriculture. Education is “completely missing”.

Infrastructure, education & engagement required to enable farmgate websites, supply chain management, regulation compliance, agritourism opportunities supported by Tourism Vic)

Federal Govt target to increase Smart Agriculture adoption by 30% by 2030.

State Government target ?????? & other alignments

Inbound agricultural product supply chain is fractured and unreliable. Outbound is ok.

Pockets of excellence in dairy (soil moisture monitoring, weather stations, Southern Farming Systems, ground water bores)

DELWP’s Digital Twin work may assist with flood plain management (dabbling)

Skilled labour shortages in agriculture are negatively impacting business outcomes.

Connectivity is a pre-requisite to attracting people to live and work in a regional location.

Ag profitability is low and average age of farmers is increasing.

Aggregation of smaller properties.

Agriculture and Smart Agriculture is not promoted at schools and training centres.

University budgets for Ag & Food Science has been cut back in favour of food technology and processing courses.

### Potential actions - skills

1. Smart Ag apprenticeships