

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.



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



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



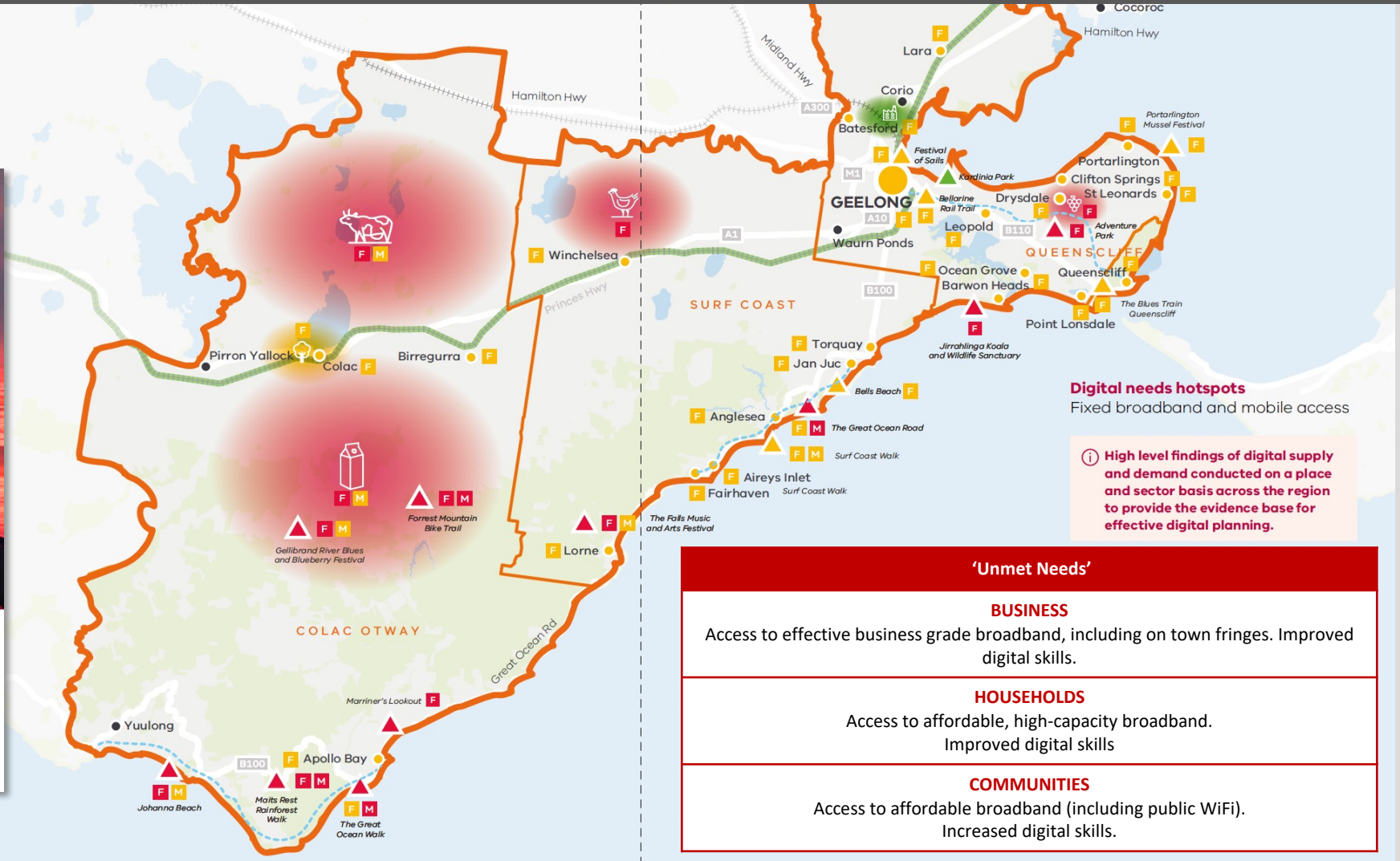
2022



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

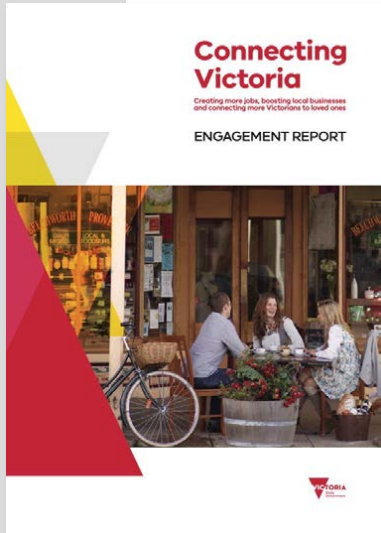
Barwon Regional Digital Plan









2019



Key themes from community consultation in *Connecting Victoria*



 Economic uplift	 Working and learning from home	 Safety	 Social Inclusion	 Telehealth	 Service Quality
<p>Businesses that don't have high-speed internet told us they are missing out on economic growth opportunities.</p> <p>Residents told us that bad connectivity, reliability and ongoing outages make it difficult to perform remote work, study online and socialise through the internet.</p> <p>Poor connectivity is a big deterrent for regional migration.</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>

THE VISITOR ECONOMY	AGRICULTURE TECHNOLOGY	BUSINESS OPPORTUNITIES	GROWTH AREAS
<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 2021⁶

(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

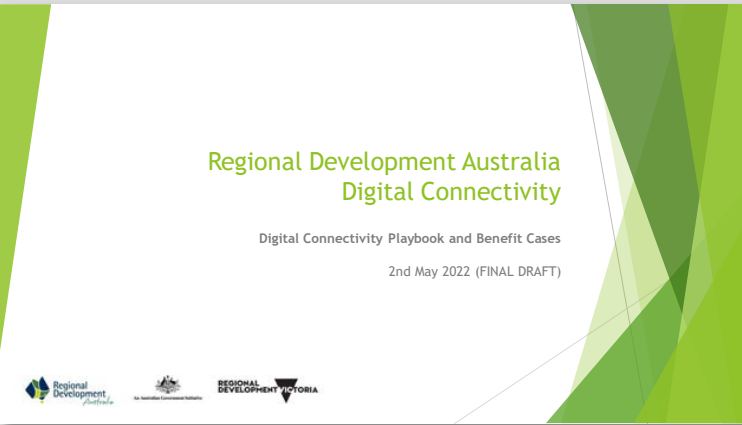


Barwon Regional Economic Development Strategy (REDS)

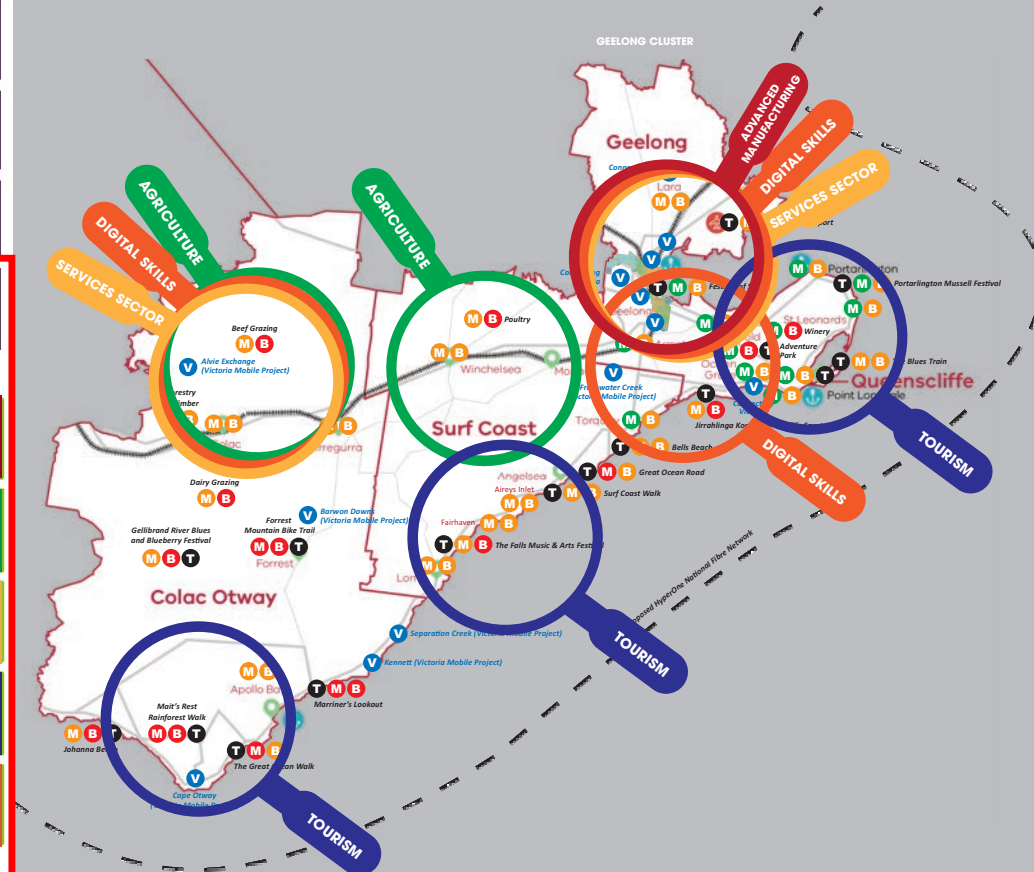
STRATEGIC DIRECTIONS

- 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

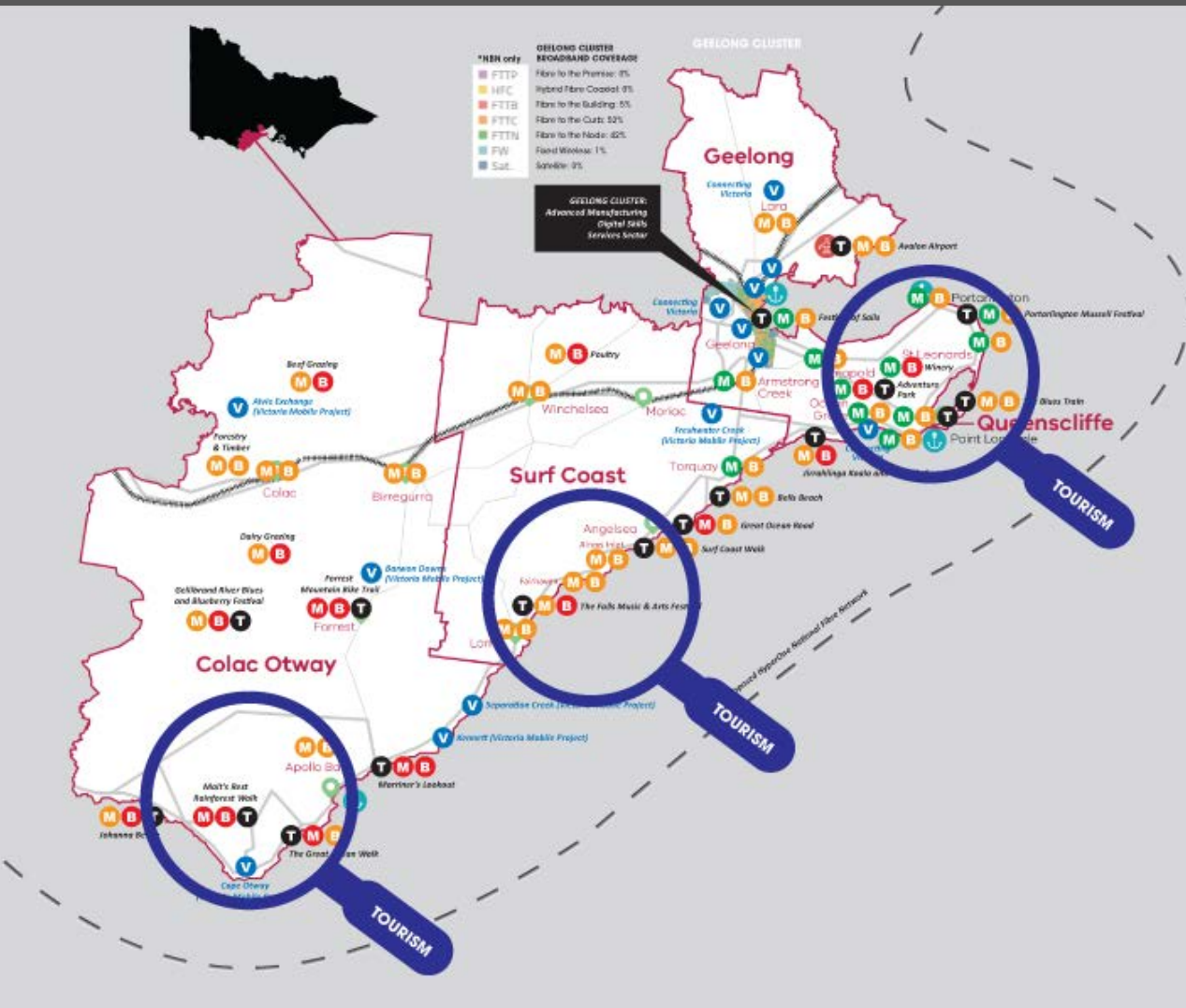


fruitful outcomes

fruitful COMMUNICATIONS

Part of The Digital Divide group

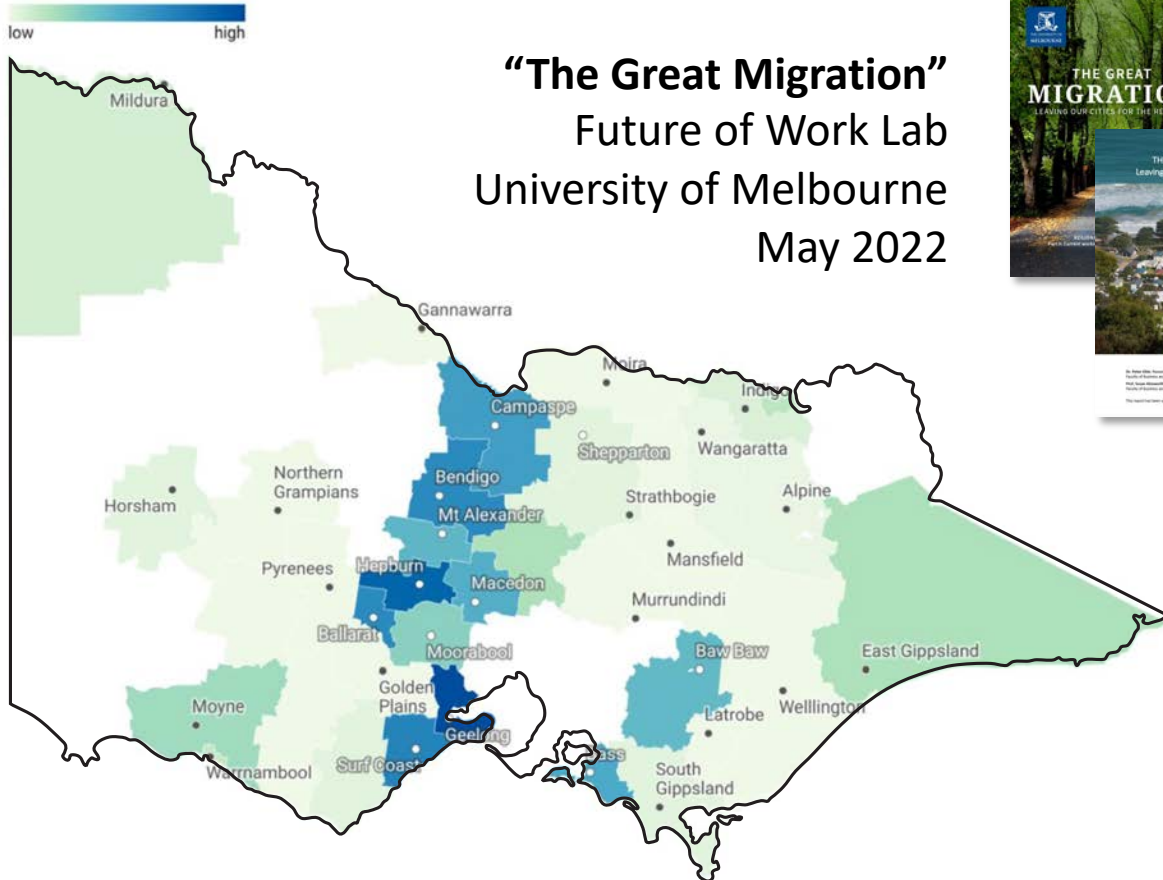
Barwon Regional Partnership – Digital Discovery Project



WHAT:
Tourism

WHERE:
Geelong & the Bellarine
Great Ocean Road
(Surf Coast & Colac Otway Shires)

HOW:
Infrastructure
(Fixed Broadband, Low Orbit Satellite, Pubic Wifi, IoT networks, 3G/4G/5G, other)
Access & Affordability
Capability



“The Great Migration”
 Future of Work Lab
 University of Melbourne
 May 2022



Geelong and Surf Coast migration opportunities

Post-COVID movers - 25-44 age group.

Pre-COVID movers - 45-64 age group.

- Education and Training sector (20%)
- Healthcare and Social Assistance (15%)
- Professional, Scientific and Technical Services (13%)

27% commuting to a metropolitan region for work.

37% living and working in the same regional postcode.

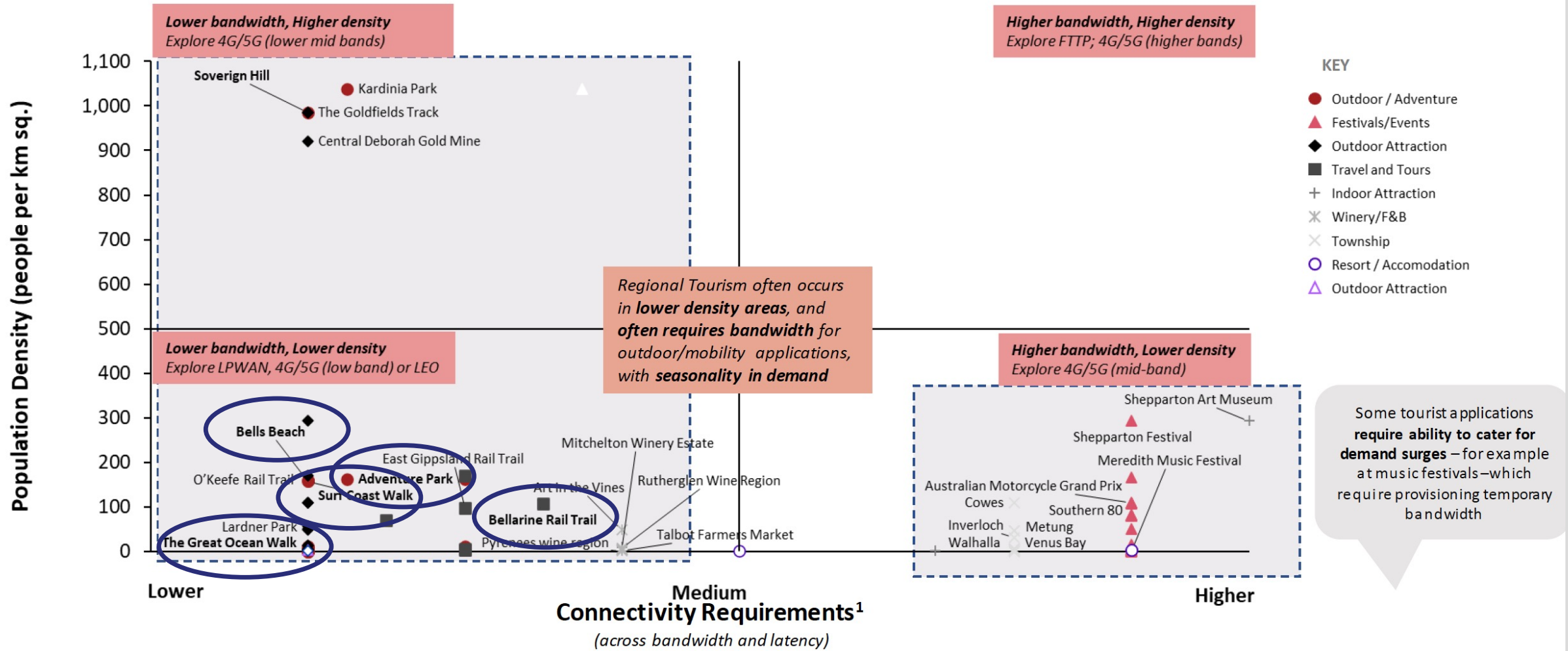
65% would like work from home 2-3 days per week.

31% would like to end their commute to work.

Only 23% actively looking for employment regionally.

Only 17% interested in sharing a co-working space.

Tourism



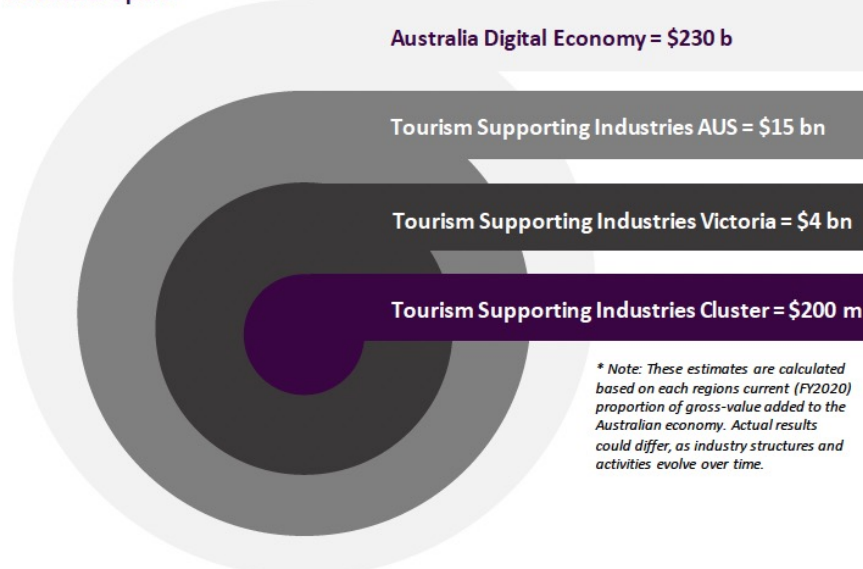


Investing in connectivity now has the potential to unlock a \$200m+ economic uplift in the future through greater participation in the digital economy

The digital economy opportunity to be unlocked

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 regions current (FY2020) proportion of gross-value added to the Australian economy. Actual results could differ, as industry structures and activities evolve over time.*



Unlocked by

Enhancing digital connectivity in regional tourist areas enables participation in the digital economy – and unlocks the broader digital economy opportunity

Direct economic uplift of digital connectivity to FTTP

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

GVA: **\$5.5m**



Retail Trade
\$1.5m



Accommodation and
Food Services
\$4.0m

Economic Uplift from connectivity:

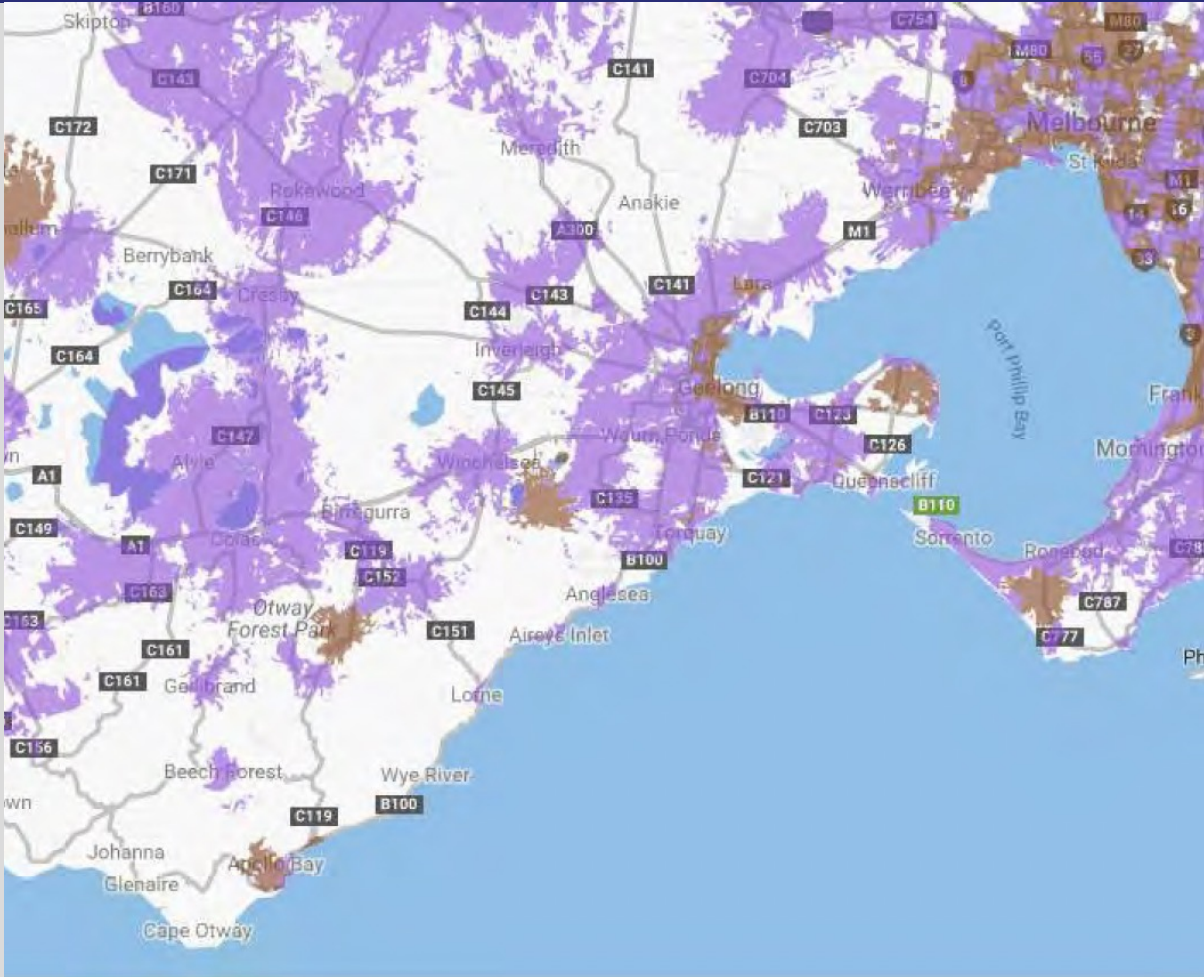
Economic uplift potential indicates the cumulative benefit from transitioning from current broadband fibre connectivity, to FTTP fiber connectivity over five years (2022-2026). This represents the incremental benefit of enabling this technology over the current fibre coverage level. It is important to 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)

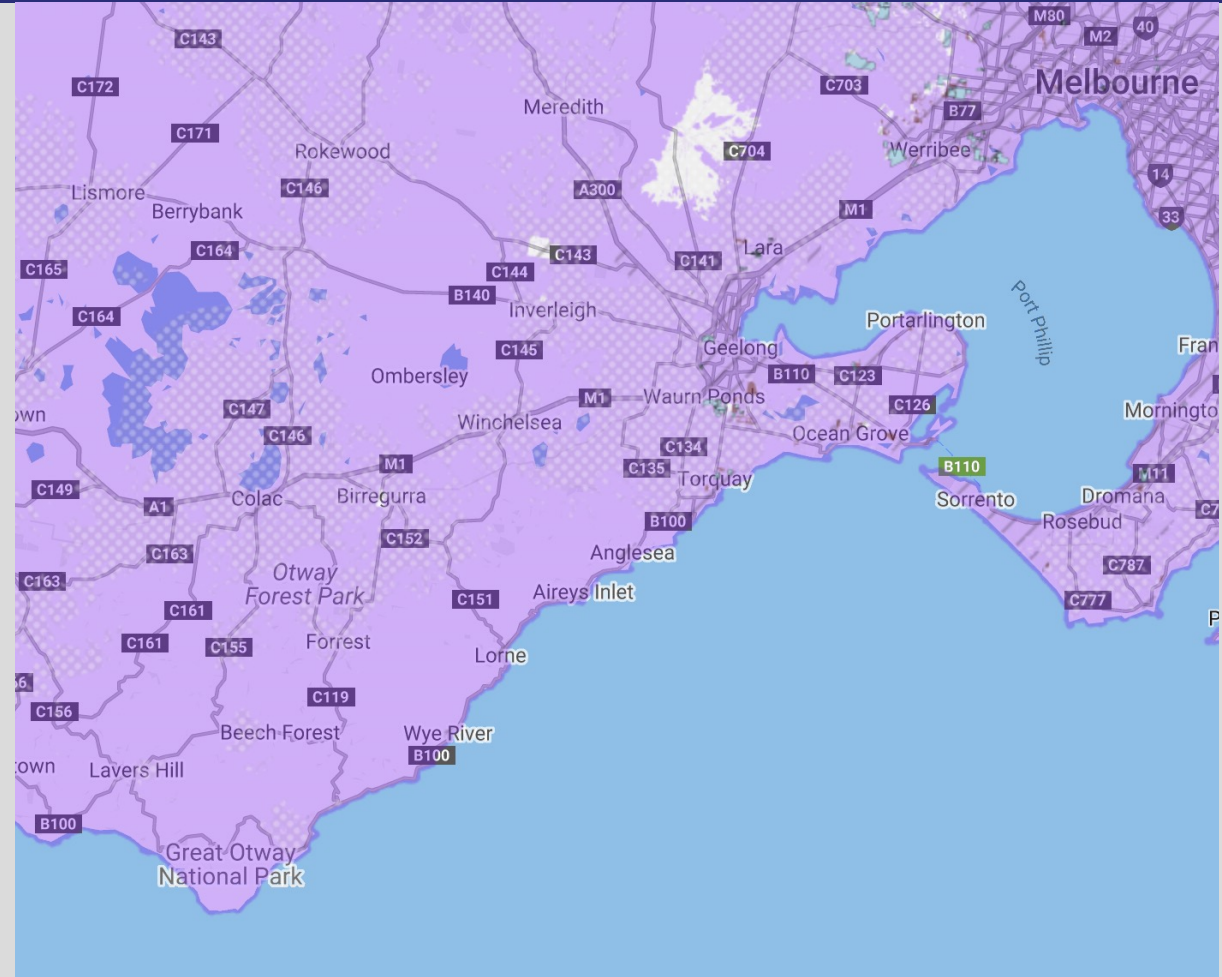
FTTP is considered the ideal state for fixed broadband* and therefore this economic uplift potential represents the maximum potential uplift. This is *not* a technology solution recommendation. The actual economic uplift will differ based on the technology solution that is considered fit for purpose.

*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.

Tourism – Barwon Region



NBN broadband coverage **2019**



NBN broadband coverage **2022**

Tourism

Type	Location	LGA	User Type	Access	
				Fixed Supply / Demand	Mobile* Supply / Demand
Permanent	Bells Beach	Surf Coast	Operator	M/H	H/H
			Visitor	n.a.	H/H
	Johanna Beach	Colac Otway	Operator	L/H	M/H
			Visitor	n.a.	M/H
	The Blues Train Queenscliff	Queenscliff	Operator	M/H	H/H
			Visitor	n.a.	H/H
	Marriner's Lookout	Colac Otway	Operator	L/H	H/H
			Visitor	n.a.	H/H
	Jirrahlinga Koala & Wildlife Sanctuary	Greater Geelong	Operator	L/H	H/H
			Visitor	n.a.	H/H
	Kardinia Park	Greater Geelong	Operator	H/H	H/H
			Visitor	n.a.	H/H
	Adventure Park	Greater Geelong	Operator	L/H	H/H
			Visitor	n.a.	H/H
The Great Ocean Road	Surf Coast, Colac Otway	Operator	M/H	L/H	
		Visitor	n.a.	L/H	

2019

Barwon Digital Plan Supporting Information

Type	Location	LGA	User Type	Access	
				Fixed Supply / Demand	Mobile* Supply / Demand
Events	The Falls Music & Arts Festival	Surf Coast	Operator	L/H	M/H
			Visitor	n.a.	M/H
	Festival of Sails	Greater Geelong	Operator	M/H	H/H
			Visitor	n.a.	H/H
	Portarlington Mussel Festival	Greater Geelong	Operator	M/H	H/H
			Visitor	n.a.	H/H
Gellibrand River Blues & Blueberry Festival	Colac Otway	Operator	L/H	M/H	
		Visitor	n.a.	M/H	
Trails	The Great Ocean Walk	Surf Coast	Operator	M/H	L/H
			Visitor	n.a.	L/H
	Surf Coast Walk	Surf Coast	Operator	M/H	M/H
			Visitor	n.a.	M/H
	Bellarine Rail Trail	Greater Geelong, Queenscliff	Operator	M/H	H/H
			Visitor	n.a.	H/H
	Maits Rest Rainforest Walk	Colac Otway	Operator	L/H	L/H
			Visitor	n.a.	L/H
Forrest Mountain Bike Trail	Colac Otway	Operator	L/H	L/H	
		Visitor	n.a.	L/H	

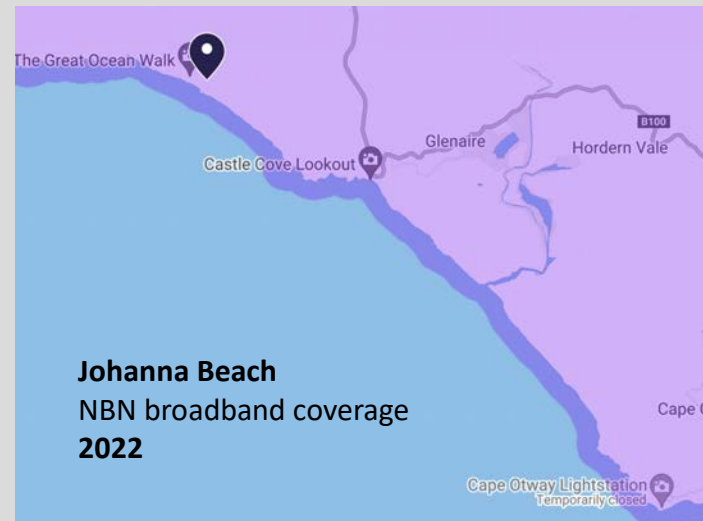
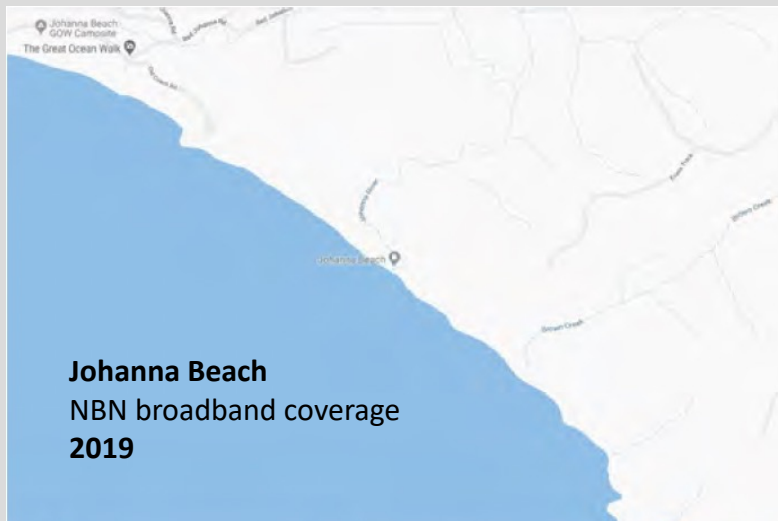
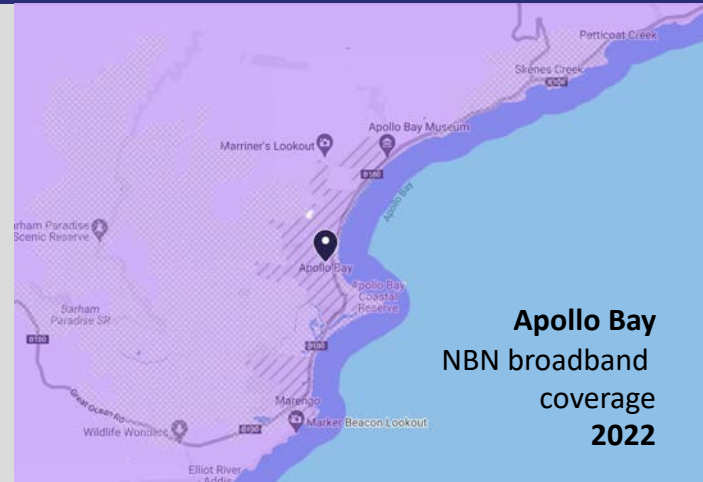
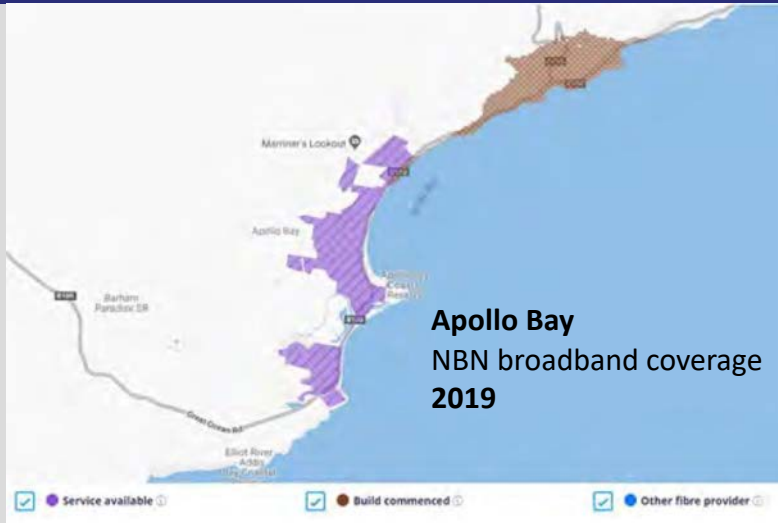
Legend Red - Major supply shortfall | Amber - Intermediate supply shortfall | Green - current supply meets or exceeds demand.

*Light green – user experience doesn't match reported coverage

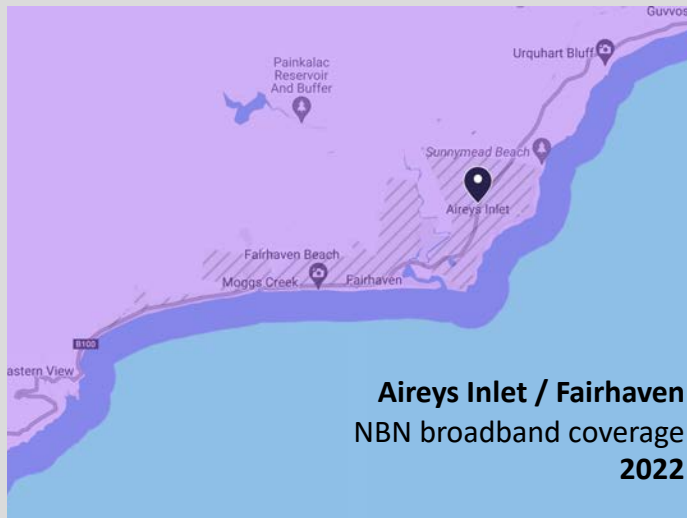
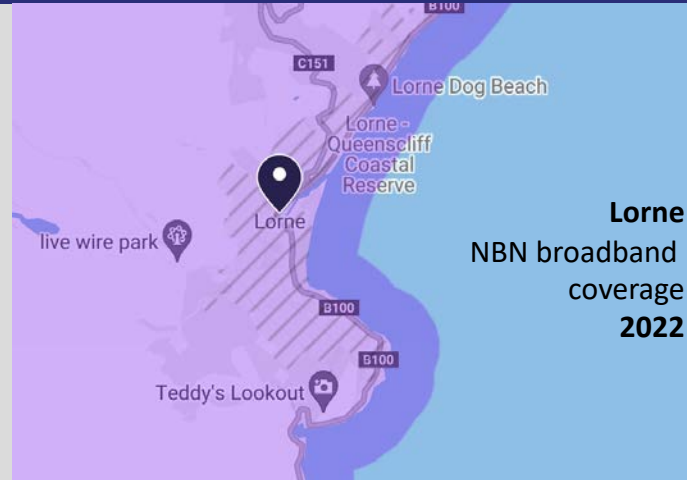
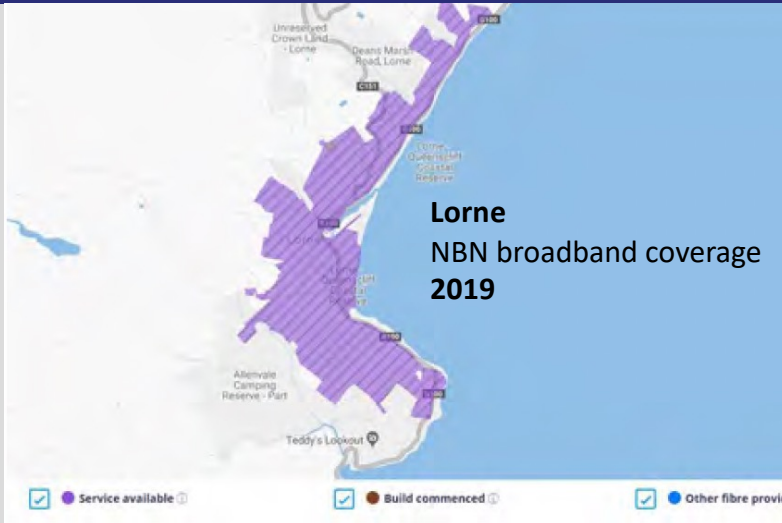
Tourism – Great Ocean Road



Connectivity challenges & Pain Points



Tourism – Great Ocean Road



Mobile Coverage – Great Ocean Road 2019

Based on public coverage maps:*

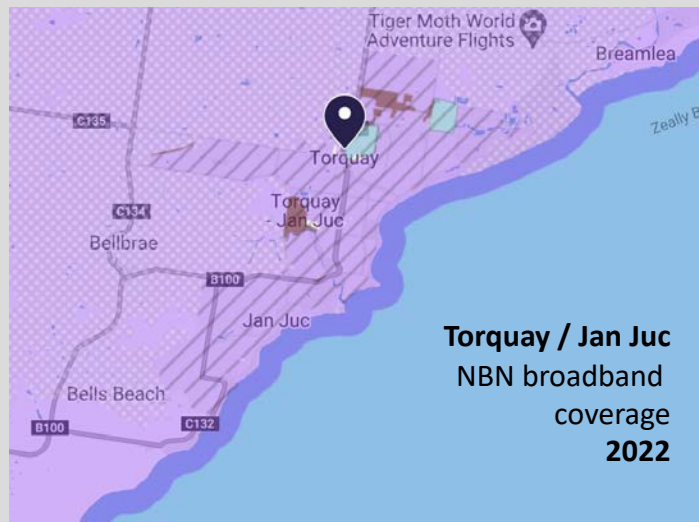
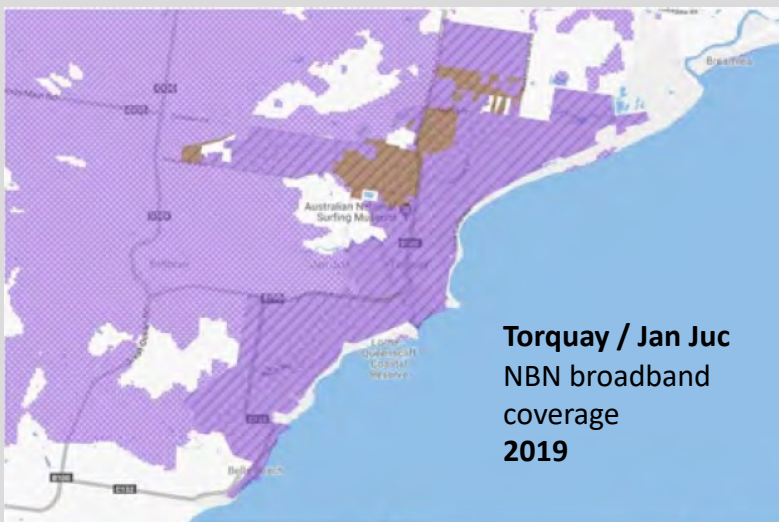
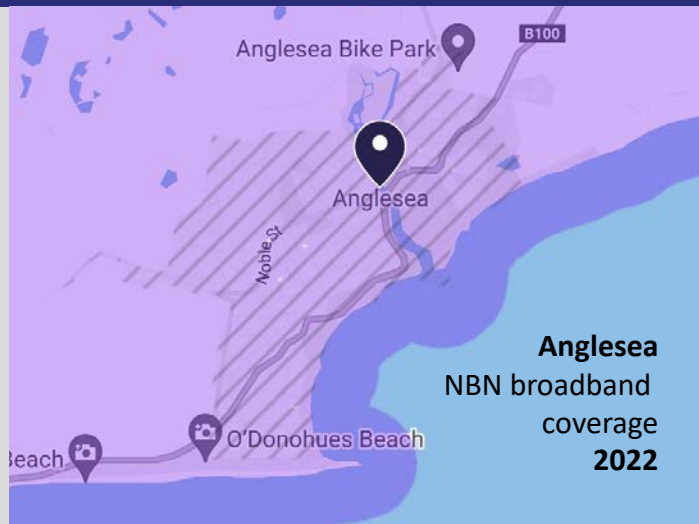
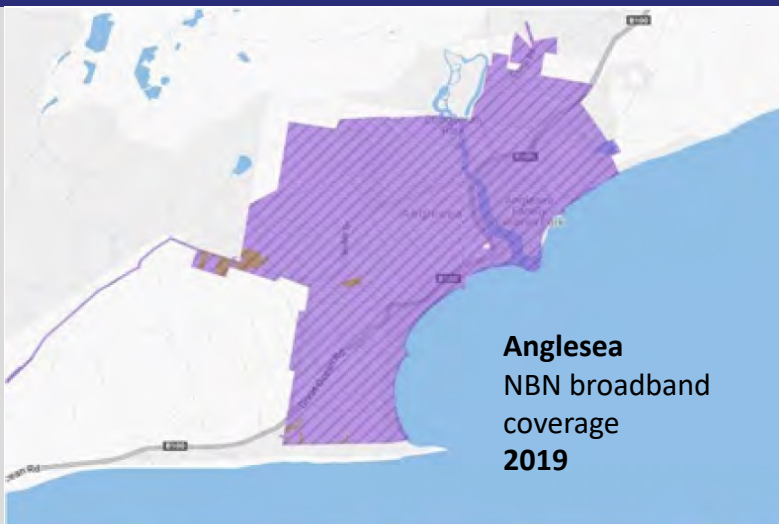
- **Telstra** provides particularly poor coverage between Lorne and Yuulong as well as the coastal section around Separation Creek but otherwise shows relatively consistent 4GX outdoor coverage.
- **Optus** similarly shows particularly poor coverage from Lorne; however, Optus is constructing new coverage around Kennett River and near Beech Forest that will improve coverage via the Cape Otway National Park.
- **Vodafone** shows no coverage between Apollo Bay and Yuulong via the Cape Otway National Park as well significant black spots between Kennett River and Lorne, but otherwise shows 4G outdoor coverage across the route.

In summary, there appears to be unreliable mobile coverage for all three mobile network operators across significant sections of the route.

*User experience is often inferior to reported coverage.

“Solutions for the fluctuating demand for mobile coverage and digital capacity in the region need to be explored further” – Digital Plan 2019

Tourism – Great Ocean Road



CONNECTIVITY CHALLENGES AND PAIN POINTS



RIPCURL PRO, BELLS BEACH, VICTORIA

The longest running event in competitive surfing, the Rip Curl Pro at Bells Beach is an iconic stop on the World Surf League's Championship Tour. Staged at Bells Beach on Victoria's Surf Coast over the Easter holiday period, the event attracts some 30,000 live spectators each year. It is also streamed live to an audience of several million viewers globally.

The location has very poor digital infrastructure, so organisers are required to secure temporary infrastructure at a cost of around \$30,000 in order to provide suitable services for spectators, athletes, media and the global broadcast. Even with the addition of temporary infrastructure, mobile connectivity at the event often fails to meet the demand of the event.

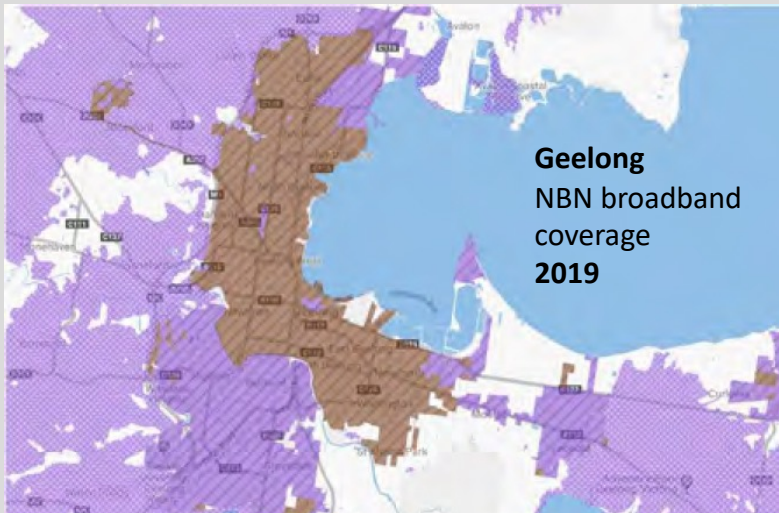
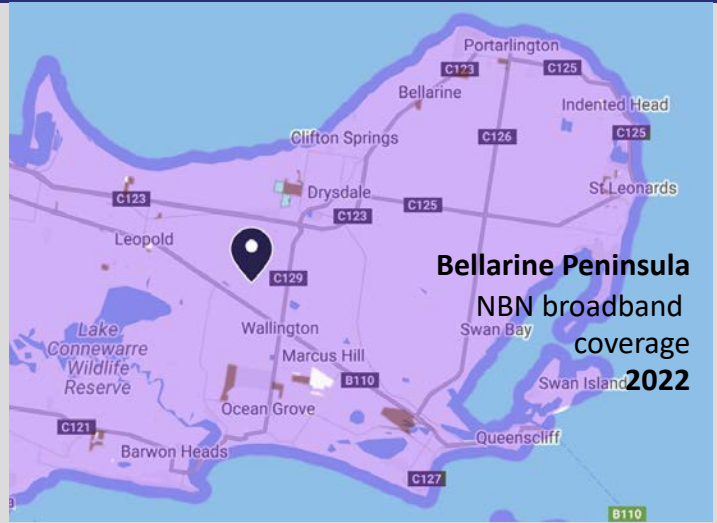
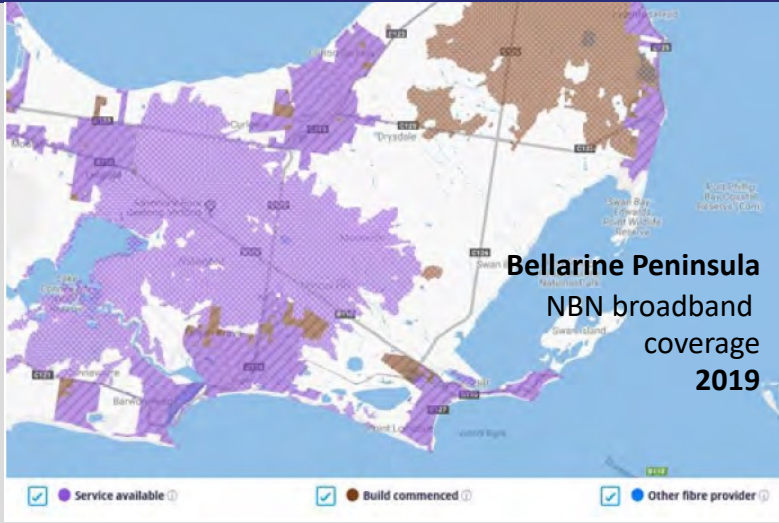


CADEL EVANS GREAT OCEAN ROAD RACE – GEELONG, BELLARINE & THE SURF COAST

The Cadel Evans Great Ocean Road Race is Australia's premier modern one-day cycling classic. Featuring the world's best cyclists, the event is broadcast to over 140 territories, promoting the Barwon South West region to a global audience.

The 170km course features sections of the Great Ocean Road and Bells Beach, before winding its way back to the Geelong waterfront through the picturesque hinterland. In 2020, the official broadcast was regularly interrupted due to blackspots along the route, resulting in a disrupted narrative and impacting the viewing experience.

Tourism – Bellarine / Geelong



LGA	Name	User Type	Access			
			Fixed Supply / Demand	Mobile* Supply / Demand	LP-WAN IoT Supply / Demand	WiFi Supply / Demand
Geelong	Geelong (pop. 157,104)	Business	M/H	H/H	H/M	n.a.
		Home	H/H	H/H	H/L	H/L
		Community	n.a.	H/H	n.a.	H/L
Geelong	Ocean Grove / Barwon Heads (pop. 18,205)	Business	M/H	H/H	H/M	n.a.
		Home	H/H	H/H	H/L	M/L
		Community	n.a.	H/H	n.a.	M/L
Surf Coast	Torquay / Jan Juc (pop. 16,948)	Business	M/H	H/H	H/M	n.a.
		Home	H/H	H/H	H/L	M/L
		Community	n.a.	H/H	n.a.	M/L
Colac-Otway	Colac (pop. 11,891)	Business	M/H	H/H	H/M	n.a.
		Home	H/H	H/H	H/L	M/L
		Community	n.a.	H/H	n.a.	M/L

Left: Unmet digital demand – Digital Plan 2019

Although a number of significant places and tourist locations (largely those located close to more densely populated areas) appear to have good mobile coverage based on public coverage data, the 'lived experience' is often different for a range of reasons including significant seasonal influences on service capacity. Many places in the region experience substantial tourism influxes during popular holiday periods. These influxes substantially increase demand on fixed and mobile networks and reveal user constraints for both visitors and residents in these areas.

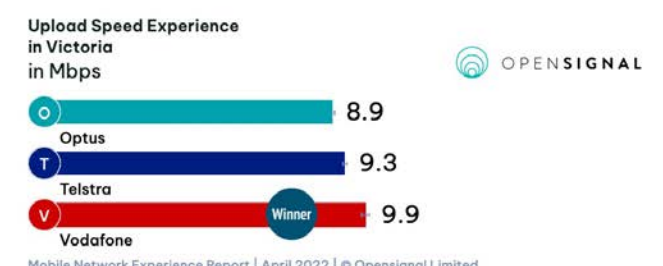
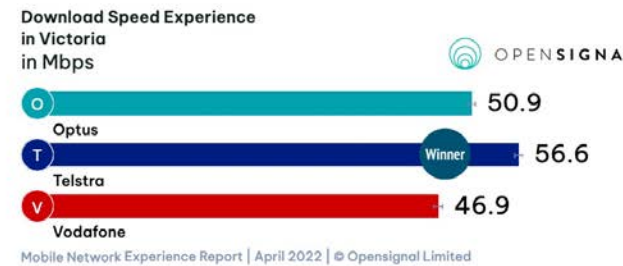
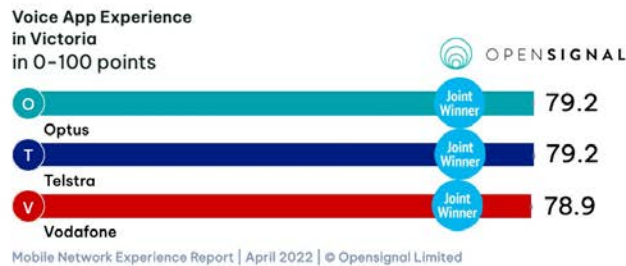
Below: Regional Victoria overall mobile coverage – OpenSignal, April 2022

Unmet digital demand (in 2019)

Amber = Intermediate supply shortfall

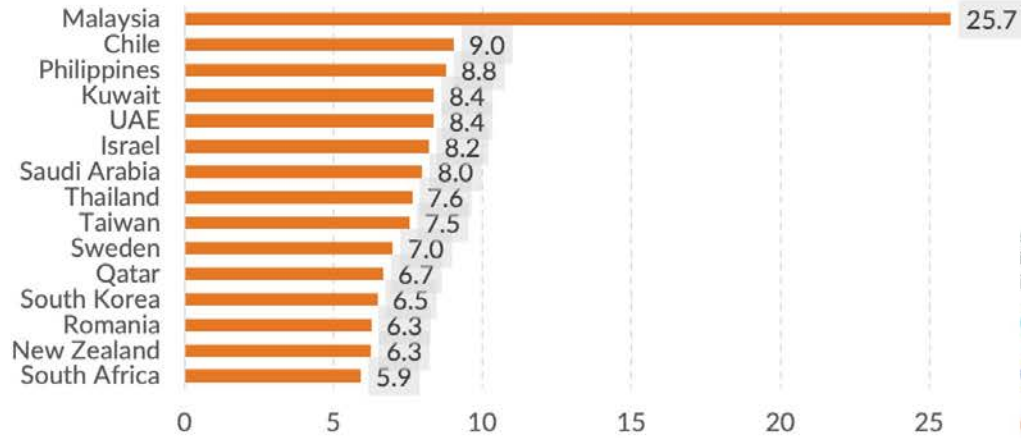
Green = Supply meets or exceeds demand.

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



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



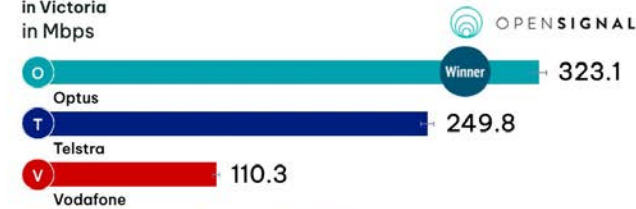
Mobile Network Experience Report | April 2022 | © Opensignal Limited

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



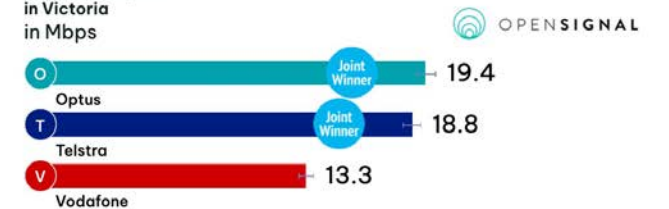
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5G Download Speed in Victoria in Mbps



Mobile Network Experience Report | April 2022 | © Opensignal Limited

5G Upload Speed in Victoria in Mbps



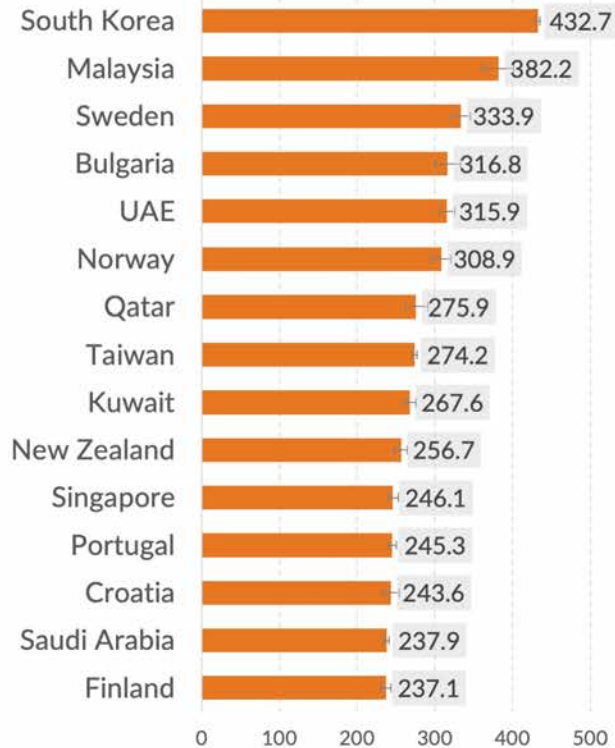
Mobile Network Experience Report | April 2022 | © Opensignal Limited



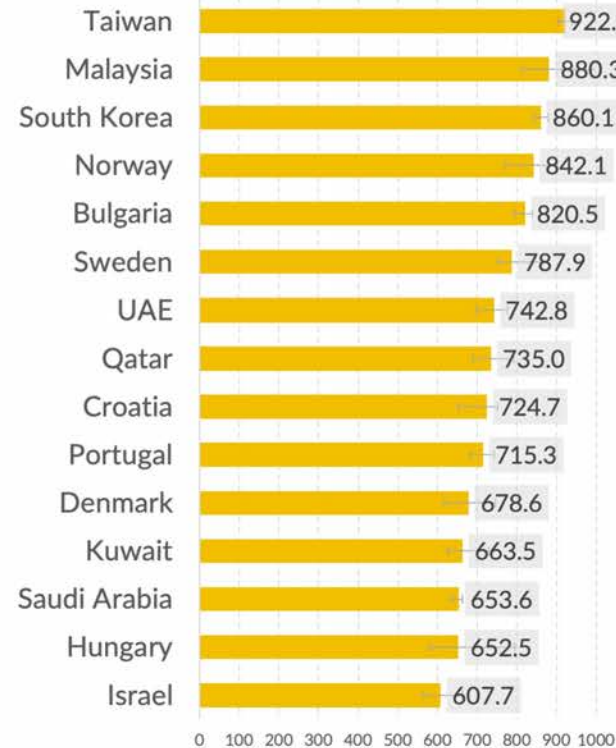
5G Global Top 15: Speed



5G Download Speed (Mbps)



5G Peak Download Speed (Mbps)



5G Upload Speed (Mbps)



Data collection period: 1 March 2022 – 29 May 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



The connectivity solution for tourism, and associated build cost, depends on the type of digital applications required

CONNECTIVITY SOLUTION



Fixed Broadband



Mobile



Narrowband / Low Power Wide Area Network (LPWAN)



Satellite Broadband

Fibre to the Premises

4G/5G

NB-IoT / Sigfox / LoRA

Low Earth Orbit (LEO)

	Fixed Broadband	Mobile	Narrowband / Low Power Wide Area Network (LPWAN)	Satellite Broadband
EXAMPLE USE CASES	<ul style="list-style-type: none"> • Tourist Wi-Fi Hotspots • Stable broadband at accommodation 	<ul style="list-style-type: none"> • Tourist Wi-Fi hotspots • Public safety (e.g. geotagged fire hazard messaging) • Connectivity in remote areas 	<ul style="list-style-type: none"> • Tourist area monitoring 	<ul style="list-style-type: none"> • Remote area connectivity • Cellular Backhaul
EXAMPLE TOURISM TYPES	<ul style="list-style-type: none"> • Motels, Hotels, Backpackers • Public attractions (Museums, Zoo) 	<ul style="list-style-type: none"> • Camping Grounds • Rural Wineries • Rural/remote tourist hotspots 	<ul style="list-style-type: none"> • Wildlife sanctuary / beach area quality control • Festival crowd tracking 	<ul style="list-style-type: none"> • Very remote area connectivity • Connectivity on railways
KEY LIMITATIONS	<ul style="list-style-type: none"> • Wi-Fi expansion/mesh network may be needed for vast areas 	<ul style="list-style-type: none"> • Congestion risk, especially peak time or during emergencies 	<ul style="list-style-type: none"> • Very low bandwidth 	<ul style="list-style-type: none"> • Compatible device ecosystem lacking, including hardware and terminals
INITIAL BUILD COST (Indicative only)	<ul style="list-style-type: none"> • Up to \$/millions per site depending on distance from point of interconnect, terrain conditions 	<ul style="list-style-type: none"> • Average costs^{1,2} • \$760,000 per macro cell tower (4 – 10 + km radius) • \$80,000 per small cell site (1 – 4 + km radius) • Can vary significantly (e.g. Depending on backhaul choices and terrain) 	<ul style="list-style-type: none"> • Average ~\$10,000 per base station³ • Cost can be much higher depending on backhaul availability and site location • ~10km radius per station¹ 	<ul style="list-style-type: none"> • ~\$1k per receiver terminal (Starlink⁴) + mesh network costs • Additional costs for commercial grade backhaul terminals (TBC)

INDUSTRY FOCUSED - TOURISM

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/interenet/starlink-australian-speeds-update/>

Agenda – Tourism

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

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

Output – Tourism

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

Liz Price

Brendan Sanders

Oliver Nickson

Matt Taylor

Shannon Maloney

Tom Jetson

Participant comments and observations - skills

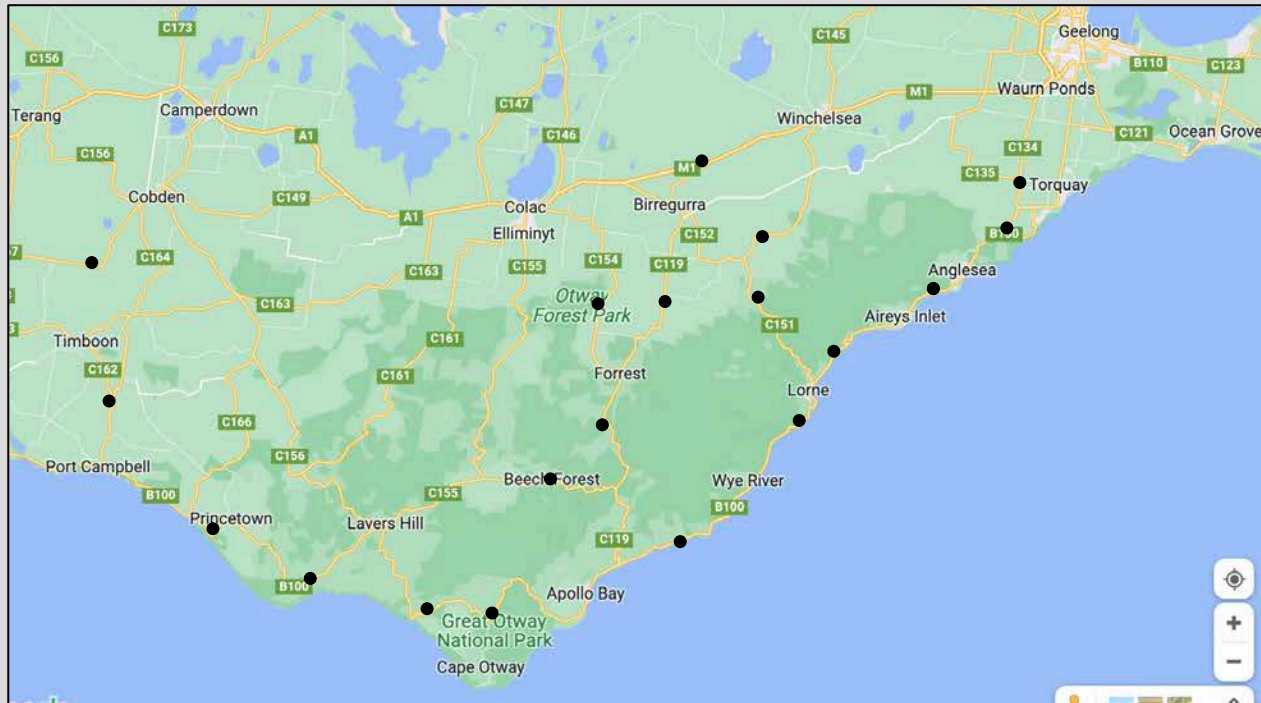
- Poor broadband experience in key visitor locations during whole of summer and other peak periods
- Unreliable broadband access is affecting tourism operations (no access to EFTPOS, websites, video transfer, social media posts, etc.)
- Tourism operators are unaware of digitally-enabled customer service improvements and business growth opportunities
- Unreliable digital access is inhibiting innovation in tourism and ignoring customer needs
- On the ground mobile experience is poor or non-existent in many parts of the region
- Poor connectivity at events and tourism assets impedes customer experience
- Emergency management capability is compromised during peak tourism when congestion causes mobile and broadband connectivity to slow or stop.
- High risk that poor digital connectivity will impact broadcast viewing experience during the Commonwealth Games, with international reputational consequences.
- Some community members are concerned about potential negative visual and health impacts of planned digital infrastructure improvements in the region.
- Bells Beach event operators install their own temporary digital infrastructure to assure customer and broadcast experience.
- Some community members are concerned about increased visitation affecting the amenity of the region.
- Digital experience for visitors is at its worst when visitor numbers are at their peak.
- Active tourism offerings (trails, water activities, etc.) negatively impacted by poor or non-existent connectivity.

Potential actions - skills

1. Create a distributed network to increase reliability and consistency of connectivity.
2. Investigate opportunities to partner with telecommunications and integration providers to identify targeted solutions to:
 - reliability and consistency of digital access along Surf Coast and GOR
 - address congestion at peak visitation times
 - address community concerns about environmental/health impacts of digital infrastructure
 - inland? enable growth in AgTourism and value-add businesses
 - embrace and embed Aboriginal cultural and environmental knowledge and support Country Plans
 - generate new employment and business opportunities for indig, women, disabled, etc
3. Mentoring /staff support system for tourism operators.
4. Collaborative digital initiatives to reduce costs, increase quality and consistency of customer experience, improve promotional activity



Output – Tourism



- Observed current mobile coverage blackspots – August 2022 (Liz Price, GORT)

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



Can 2026 Games deliver digital gold?

GIULIA BAGGIO

“LET THE GAMES BE THE ULTIMATE DEADLINE FOR A MASSIVE UPSCALING OF DIGITAL INFRASTRUCTURE TO BRING US INTO THE MODERN ERA. GETTING THIS RIGHT COULD BE THE BIGGEST, MOST POSITIVE LEGACY OF ALL.”

DESPITE the detractors, there's little doubt the Commonwealth Games puts a collective spring in the step of most Australians.

It's our reliable, national "feel-good" event and always starts with Aussie swimming legends carving up the pool. You can't help but feel happy and amazed.

Last week, millions watched the Birmingham opening ceremony on smartphones, tablets and TVs. In coming days, more than a billion people will tune in to see 5000 athletes from 72 countries competing in 19 sports and eight para-sports.

Here in Geelong, we're taking special note. Very soon it'll be our turn to host this extravaganza and we want to put on a great show.

The gaze of Australian and international media will be upon us for 12 short days and nights.

We must put our local stories and glories up in lights for the biggest audience we will ever enjoy.

There's plenty here to excite, inspire and attract prospective new visitors and businesses to our very pretty and liveable part of the world.

But if the Games were held tomorrow, there might not be much to see.

We know all too well that digital connectivity in Geelong and the wider region is extremely patchy.

A live-streamed, international media event would stretch the network to breaking point and send devices crashing within minutes.

It's our Achilles' heel and it's been hurting us for long enough.

Let the Games be the cure.

Right now, we're way behind our metropolitan neighbours.

terrible reception a stone's throw from the waterfront, speeds so slow that traders struggle with epos machines on Pako, kids

struggling with online learning because of lacklustre connectivity, and all without leaving the city limits.

It's much worse out in our regional communities. Unreliable coverage is exacerbated by the annual summer influx of tourists and anyone taking a train from Melbourne knows their phone conversation will drop out at least three times between Sunshine and Geelong station.

These network pressures will be nothing compared with the demand of tourists, organisers and broadcasters arriving for the Games in 2026.

The current lack of connectivity would be mystifying and unacceptable for thousands visiting the region or media organisations trying to provide live streams, as well as TV, digital and radio broadcasting.

The look and feel of the Commonwealth Games are what most people remember years after the event.

Geelong's unique identity needs to be on display 24/7 to make an impact and we will need the highest-functioning digital platforms to achieve this.

We want locals, visitors and viewers around the world to fully

immerse themselves in Wadawurrung culture and stories.

The region's coastal beauty will undoubtedly have a starring role when the beach volleyballers hit the sand.

Geelong's industrial and farming history should be highlighted for their role in the Commonwealth's prosperity – for better or worse – in the heyday of wool, manufacturing and the gold rush.

We want to show off the best of the region's arts, wineries and farm gate produce right across the City of Greater Geelong, Golden Plains, Surf Coast, Colac Otway and Borough of Queenscliffe.

Think of how the Tour de France promotes its regional magic to the world.

And imagine the buzz of a combined event calendar with the Games rolling into the April Easter period for the region's surfing carnival. We can only share the best of this very cool region if we have the right tools.

Let the Games be the ultimate deadline for a massive upscaling of digital infrastructure to bring us into the modern era.

Getting this right could be the biggest, most positive legacy of all. Giulia Baggio is the chief executive of G2I