



Barwon Regional Digital Plan



Foreword by the Chair

The Barwon Regional Partnership seeks to ensure our region is fair and thriving, and one where everyone can reach their potential. Just like roads, rail, seaports and airports, technology is enabling infrastructure for communities.

As the Barwon region continues to navigate its way through a transitioning economy, population and visitation growth, significant greenfield urban growth and a changing climate, fair and equitable access to world-class digital services is essential.

This Digital Plan highlights the region's current gaps in digital infrastructure and where our future demands may lie, bringing to light the areas where our efforts should be focused to bridge the digital divide. By addressing these priority areas, we will ensure our communities – including residents and businesses – flourish as the digital age continues to advance.

The analysis and recommendations within the Barwon Digital Plan will form the basis of our Regional Partnerships' advocacy to the Commonwealth, Victorian and local governments, as well as industry and community groups in developing the region's future digital landscape.

The Barwon Digital Plan is a terrific example of how collaboration across the community, the private sector, tiers of government and other key stakeholders can form the basis for targeted and integrated planning and advocacy.

The Barwon Regional Partnership would like to thank the members of Barwon Regional Digital Plan Working Group, the Department of Jobs, Precincts and Regions' Telecommunications Infrastructure Group and local government representatives who gave their time towards the development of this plan.



Kylie Warne
Barwon Regional
Partnership Chair



Barwon Digital Plan snapshot

The Barwon Digital Plan uses place based analysis to identify gaps in our region's current digital infrastructure and makes recommendations on addressing those gaps



Regional facts

- 6000km²
- 300,000 residents (2017)
- \$15.1 Gross Regional Product
- \$1.09 billion agribusiness supporting 8,600 jobs



Key industries

- Healthcare and social assistance
- Retail
- Construction
- Education and training
- Manufacturing



Local Government Areas (LGAs)

- City of Greater Geelong
- Surf Coast Shire Council
- Colac Otway Shire Council
- Borough of Queenscliffe Council

Data analysed

- Fixed
- Mobile
- IoT
- WiFi
- Assets
- Skills

Delivery partners

- Local Government
- State Government
- Commonwealth Government
- NBN
- Service providers



1. Evidence base

Place and sector

- Significant places



Digital infrastructure

- Fixed
- Mobile
- WiFi
- LP-WAN
- Internet of Things (IoT)



2. The plan



ACCESSIBILITY

to digital services



ABILITY

to effectively use services



AFFORDABILITY

relative to capital city

3. Key actions

- Enhanced NBN and business grade services
- Improved opportunities for public WiFi
- Adequate mobile coverage
- Better connectivity in education sector
- Pilot blackspot program for low bandwidth IoT networks
- Fast track rollout of 5G
- Better service standards
- Augmented business clusters and shared services
- Improved tourist networks
- Digital access for remote communities



Barwon Regional Partnership: at a glance

The Barwon Regional Partnership is one of nine Partnerships across the state, established by the Victorian Government, recognising that local communities are best suited to understand their regional challenges and opportunities.



4 LGAs

Local government areas
(population):

- Greater Geelong (233,000)
- Surf Coast (29,000)
- Colac-Otway (21,000)
- Queenscliff (3,000)



Approximately
6,000 km²



\$1.09 billion
agribusiness sector
supporting 8,600 jobs



Key Industries

- Healthcare and social assistance (15%)
- Retail trade (11%)
- Construction (10%)
- Education and training (10%)
- Manufacturing (8%)
- Accommodation and food services (8%)
- Public administration and safety (6%)
- Professional, scientific and technical services (6%)



\$15.1 billion
Gross Regional
Product (GRP)*



300,000
residents
as of 2017

Barwon is closer to Melbourne and more urbanised than most other regions. It has higher than average education and income levels.

Data by Region and Quickstats from ABS.

* Source: from NIEIR (December 2018), Market Prices, Headline GRP with Indirect Taxes.

What is a Digital Plan?

The Digital Plan for each region is an evidence and place based analysis of the supply and demand for digital services and skills.

The Barwon Digital Plan identifies gaps in the region's current digital infrastructure landscape and makes recommendations on how these gaps can be addressed.

This Digital Plan forms the basis of our Regional Partnerships' advocacy to all levels of government, as well as industry and community groups. It will also be a valuable resource to other stakeholders in the region for their own advocacy and actions.

Addressing the digital divide

Victoria's Regional Digital Plans are the first of their kind, filling the critical information gaps needed to effectively reduce the persistent country-city digital divide, defined as regional shortfalls in:



Access

to digital services



Ability

to effectively use
these services



Affordability

relative to their capital
city counterparts

A substantial digital gap has been found between regional Victoria and Melbourne, based on the findings of the 2019 Digital Inclusion Index report:

56

2018 Rural
Victoria digital
inclusion score

65[^]

2019 Metropolitan
Melbourne digital
inclusion score

i These scores reflect differences in digital capability, access and affordability found in different locations. It highlights the need to address the digital divide in regional and rural areas as all Victorians deserve to have access to the same digital services – no matter where they live.

[^] Rating from the 2019 Royal Melbourne Institute of Technology-Swinburne-Roy Morgan-Telstra Digital Inclusion Index (DII)

Assessment of digital needs

Analysis of digital supply and demand is conducted on a place and sector basis across the region to provide the evidence base necessary for effective digital planning. Analysis in the Digital Plan has been undertaken on a place and infrastructure basis as follows:

Place analysis



Significant Places

Looks at the demand and supply of digital infrastructure and services in the most populated cities, towns, key spots and localities of the region.

i 16 towns and various tourist locations were analysed.

Digital infrastructure analysis



Fixed access

Include National Broadband Network (NBN) fixed-line broadband services including Fibre-to-the-Premises (FttP), Fibre-to-the-Node (FttN), Fibre-to-the-Curb (FttC), Fixed Wireless and Satellite.



Mobile

Availability of digital mobile networks capable of supporting voice telephony and data applications eg. through 3G and 4G networks.



WiFi

Availability of public WiFi services e.g. through public libraries and buildings, information centres and other local government initiatives.

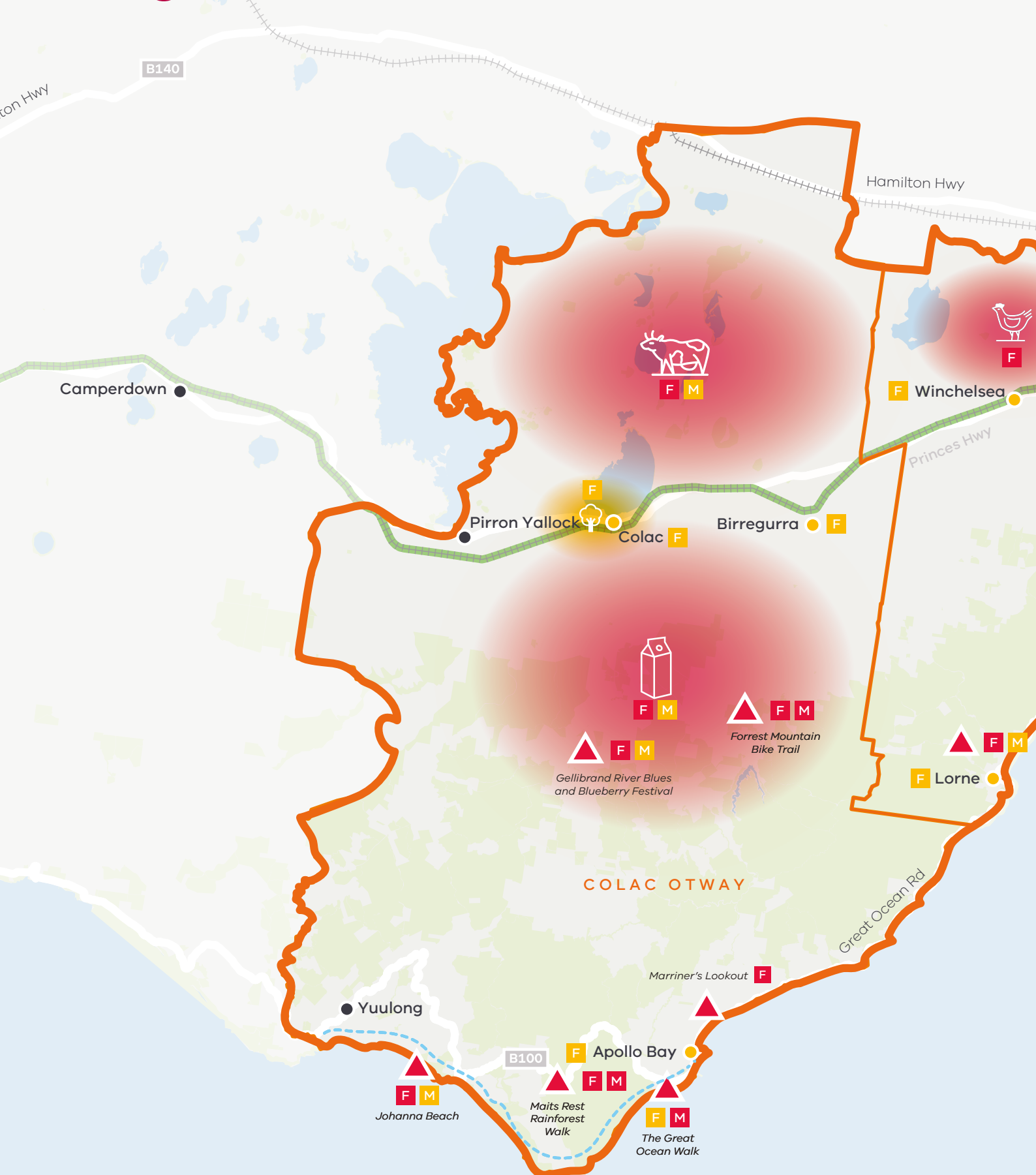


LP-WAN IoT

Availability of Low Powered Wide Area Networks (LP-WAN) that can support Internet of Things (IoT) applications like remote sensors and devices that are increasingly relevant to industry applications.



Findings of the Digital Plan





Barwon Region

- | | | |
|--|---------------------------|---------------------|
| Barwon Region boundary | Highway | Significant places |
| Local Government Area boundary | Railway | Tourism locations |
| Beef grazing | Trail | |
| Winery | | |
| Poultry | | |
| Dairy grazing | Dairy Processing Facility | Forestry and Timber |
| Current Supply of digital services meets or exceeds demand for all relevant technology | | Mobile |
| Intermediate supply shortfall for the specified technologies | | Fixed broadband |
| Major supply shortfall for the specified technologies | | |

Digital issues affecting all regions

Six technology areas have been analysed in the Digital Plans to identify supply shortages in the regions:



Fixed broadband

Ensuring sufficient NBN service quality to meet the needs of residents and businesses



Mobile coverage

Investigating the prevalence of blackspots



IoT (Internet of Things) networks

Availability of low bandwidth networks to support the uptake of next generation technologies



Public WiFi

Availability of free public WiFi for residents and tourists



Access

Access to government assets to improve local services



Digital skills

Assessing digital literacy, supply of IT professionals and workforce preparedness for the future

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

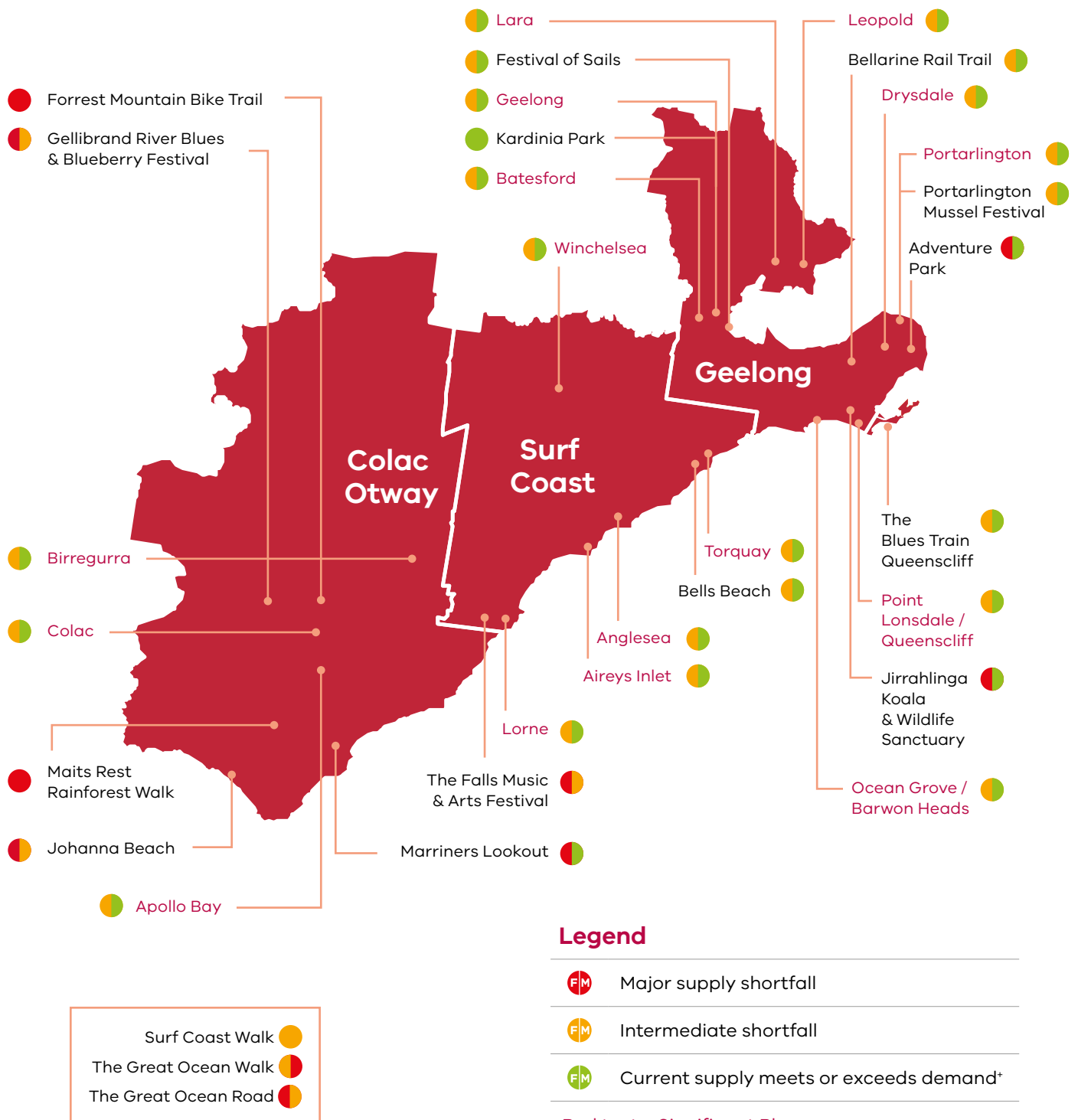
Legend

● Low ● Medium ● High

i There is significant disparity in the current requirements and the forecast demand in the next decade.

Findings of the Digital Plan

There are 14 cities and towns above 1,000 people in the Barwon Region (based on 2016 ABS data). All of these locations have been analysed in this Digital Plan. Another two localities with less than 1,000 people were also included in the analysis to provide a broader perspective of different sized towns. A selection of 17 tourist locations were also analysed, providing a selection of permanent tourist attractions, periodic events and trails. These places and the adequacy of their fixed and mobile broadband services are summarised in the graphic below.



Significant Places: The analysis looks exclusively at the town centre in each location and has not looked comprehensively at smaller population centres with less than 500 people. This may exclude communities in sparsely populated areas where services tend to be worse.

The public coverage maps indicate good 4G mobile coverage within population centres, however the 'lived experience' for many users can be varied with continuing demand from regional stakeholders for better mobile infrastructure.

Tourist Locations: All tourism locations (except Kardinia Park in off season) have issues with fixed access broadband services. Almost half of the tourist spots analysed appear to have inadequate mobile coverage based on public coverage data, with beaches, national parks and trails unsurprisingly underserved.

Towns included – Geelong, Ocean Grove / Barwon Heads, Torquay / Jan Juc, Lara, Drysdale / Clifton Springs, Colac, Leopold, Portarlington / St Leonards, Pt Lonsdale / Queenscliff, Angelsea, Winchelsea, Apollo Bay, Aireys inlet / Fairhaven, Lorne, Batesford, Birregurra.

i 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.



Findings of the Digital Plan

Of the 16 significant places analysed in the Barwon region, it was revealed that:



Fixed access broadband

Had an intermediate supply shortfall for all cities/towns/localities, indicating the widespread need for business broadband needs to be further considered and addressed.



Mobile coverage

Was assessed as adequate within the main population centres based on multiple carriers coverage maps. There is concern that these maps do not reflect the 'lived experience' and lacks assessment on service deterioration beyond town centres. The impending rollout of 5G technology has the potential to uplift mobile services for early recipients, but smaller regional population centres are at risk of being left further behind.



Public WiFi

Access was a major supply shortfall for the towns of Portarlington and St Leonards.



LP-WAN IoT

Was found to be reasonably good for business, local government and households based on current demand which is constrained by lack of IoT knowledge and applications across the region. Over the next 3-5 years, demand is expected to grow strongly and closer attention will be required to monitor network developments.

Significant Place/ Sector (typology)	Demand Characteristics (place/user)	Digital 'Unmet Needs'
Businesses	Concentration of public services (education, health, admin), retail, small business in cities, larger towns	Access to effective business grade broadband, including on town fringes Improved digital skills
Households	High-medium population densities, suitable for NBN fixed line services	Access to affordable, high-capacity broadband Improved digital skills
Communities	Varying digital literacy & ability to afford broadband	Access to affordable broadband (including public WiFi) Increased digital skills

Barwon Region: Key issues

The Barwon Regional Partnership has identified a number of key digital connectivity issues affecting the region. Some of these are specific to the Barwon region while others are broadly experienced across regional Victoria.

Prioritising digital skills and connectivity for education

Ensuring the education sector service providers and students can access high quality digital training and services is a priority for the Barwon region. A lack of access to adequate digital training and connectivity compared to metropolitan schools is inhibiting the learning outcomes of rural and regional students.

Addressing this issue is important to ensure rural and regional students have access to the same educational opportunities and resources to support population growth, skills retention and attraction into the region. Students also need good connectivity at home and at other off campus locations (including WiFi in public libraries and other shared spaces).



Better connectivity for industry

Mobile coverage for many tourist sites is lacking, particularly at more isolated locations away from population centres. Of relevance to the economic priorities of the region is the lack of continuous, high quality mobile coverage along the high visitation attraction of the Great Ocean Road. Better digital connectivity for both fixed broadband and mobile services across the whole Barwon region and this road link has the potential to unlock significant value to the region's tourism industry in coming years.

Barwon also has a number of hotspots that attract large numbers of tourists on a seasonal basis. At times, these hotspots generate large increases in demand for digital connectivity that strains existing infrastructure raising potential safety issues. Solutions for the fluctuating demand for mobile coverage and digital capacity in the region need to be explored further.



Low uptake of Internet of Things applications in Agriculture and other important industry sectors

The coverage of low bandwidth Internet-of-Things (IoT) networks for agriculture, logistics, delivery of "smart city" public services and other sectors is reasonable at the moment, but availability and knowledge of IoT applications and their value proposition is limited.

It is important for regional businesses to engage with these next generation sensor based business practices. Early adoption across the

region can underpin productivity growth and competitiveness of our industries. If the current demand trend continues we risk being left behind.

The development of skills in deploying IoT technology in the Agricultural industry in the region will be important for the sector's growth and competitiveness in years to come.



Rural and Regional Victoria:

Key issues

The previous page outlined priority digital connectivity issues specific to the Barwon region. There are further issues which are broadly experienced across rural and regional Victoria which significantly contribute to the digital divide and the quality of digital services available to users. These are:

Inadequate mobile coverage

There is a persistent and significant divide in the quality of mobile services available to regional users compared to metropolitan users, with important implications for public safety, economic development and general liveability. Regional users have emphasised this issue recently, registering 176 blackspots[~] experienced across the Barwon region as part of the Commonwealth's black spot funding program.

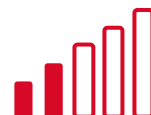
The Digital Plan has relied on public mobile coverage maps provided by the carriers. The analysis reveals the maps are high level and low resolution to enable detailed identification of areas where coverage is unreliable, weak and/or incapable of supporting the data services

which users have come to expect to access 'on demand'.

This means that while an area may appear well served by these maps, the 'lived experience' of regional users is often significantly different.

The analysis in the Digital Plan should be read with this in mind. Better data in the future can provide a more complete picture about mobile coverage issues within towns and in areas not yet analysed by the Digital Plans.

The Regional Partnership calls for continued Commonwealth and state funding to address mobile coverage issues and better data from carriers to enable more informed funding decisions.



Lack of NBN business-grade services

The availability of adequate, affordable business-grade services for regional businesses across all NBN technology types remains a concern. This is despite the introduction of NBN's Enterprise Ethernet business service, which due to technical limitations will not be accessible to many businesses who have not received the higher capacity technologies in the rollout.

The Regional Partnership calls on the Commonwealth, NBN Co and the Victorian Government to prioritise actions that can address underserved regional business precincts with high capacity business grade broadband services.



[~] based on the Commonwealth National Mobile Black Spot Database, last updated October 2018

Barwon priority project

The Barwon Regional Partnership has identified skills and connectivity to support students in education/training as the priority project for the region. This is in part due to the demand and supply of current infrastructure, digital connectivity and the growing needs of the sector.

The region requires digital specialisations to support the emerging industry trends. There is an urgent need to skill disadvantaged people and reskill workers to help support workforce transition into digital economy opportunities.

Our rural and regional students need to gain the necessary skills and training to flourish in the digital economy and get a solid footing in the labour market. The ability for providers to supply those services is reliant on adequate digital infrastructure and connectivity to support the training needs.

Data shows that 6 of the 8 key industries in the Barwon region require a leap in their digitalisation over the next 3-5 years to support technology adoption and competitiveness. Digital skills will be critical to support this transition.



Barwon priority project and recommendations

The Barwon Digital Plan makes a series of recommendations to different groups for their action. These groups will be active custodians or partners who will enable or embed the recommendations to achieve regional digital parity and address the key issues outlined in the plan.



Local Government

Uses their local presence, insights and planning powers to identify localised fixed and mobile blackspots, influence NBN high performance technology deployment, promote early 5G rollout and facilitate digital literacy training in local digital hubs (Local Community Connectivity Centres).



Victorian Government

Continues, reviews and extends its regional telecommunications advocacy, co-investment and pilot programs to address unmet needs and capitalise on IoT and 5G opportunities.



Commonwealth Government

Continues, reviews and extends its mobile blackspot co-funding program, requires NBN Co to maximise deployment of high performance technologies, mandates stronger NBN service connection and maintenance industry requirements, meet and invest in digital skills training programs.



NBN Co

Restructures its wholesale pricing to allow lower retail prices[^], encourage greater utilisation of network capacity, and quickly brings market effective business grade services with strong service level agreements (SLAs).



Telco Industry

Actively considers opportunities to provide competing broadband services to businesses in high demand precincts, particularly if NBN Co fails to restructure its wholesale pricing or does not provide effective business grade services.

[^] The Regional Partnership recognises that NBN Co is making progress on this through its Wholesale Pricing Review 2019.

Recommendations

- Identify and address priority digital infrastructure supply shortfalls in the region, by using this plan to engage with the Regional Partnership, businesses and community stakeholders.
- Build awareness about unviable high quality bandwidth blanket coverage solutions in sparsely populated locations due to cost constraints.
- Leverage available government assets for cost effective bespoke solutions for regional businesses.
- Source and conduct more detailed analysis of unmet needs and possible solutions using the State Level Information Management (SLIM) database.

Mobile access

- Continue and commit future funding to blackspot programs, including funding models that support widespread voice, emergency alert, data and IoT coverage in marginal and remote areas
- Develop a 5G priority locations list by examining the effectiveness of market

enhancement models and advocate to influence 5G rollout in high demand areas

- Develop a statewide schedule of significant visitor events, where network capacity problems exist and tender for a mobile operator to provide a solution



IoT access

- Advocate and pilot a low power (LP-WAN) IoT blackspot program for both state and Commonwealth and include IoT as a decision criterion in mobile blackspot funding initiatives
- Advocate for mobile carriers to provide standard geospatial coverage data and maps that include supported IoT applications and shows probable coverage and quality (e.g. areas where streaming, browsing, voice calls, emergency calls/SMS warnings are reasonably

predicted to work – disclosure of ‘real’ performance) to better inform future black spot funding

- Undertake feasibility and benefits research into statewide blanket deployment of LP-WAN and IoT network rollout market facilitation models with mobile carriers and network operators



Public WiFi access

- Identify value adding opportunities for public WiFi in smaller regional localities and examine public WiFi co-investment models (e.g. Federal Capex and LGA Opex)
- Compile information on public WiFi networks to inform decisions and policies on location, footprint, target audience and use trends

- Fast-track the compilation and distribution of information on public WiFi trials currently being conducted in Shepparton, Geelong, Ballarat and Bendigo



Recommendations

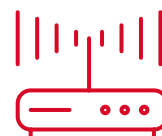
Skills

- Implement multipurpose digital hubs that can address a range of access, skills and affordability needs (including providing access to reliable high-speed broadband access for those in NBN fixed wireless and satellite footprints)
- Invest in the preparation and delivery of digital education and training, focusing the training across regions on skills needs and service affordability information gaps



Fixed access

- Engage with NBN Co on their rollout and network upgrades using the information in this report for progression and prioritisation
- Promote competing provision of fixed broadband (e.g. Enhanced Broadband projects taking place in Horsham and Morwell) for businesses in consultation with local governments and Regional Partnerships particularly if NBN Co fails to offer effective business grade services and reset its wholesale pricing
- Explore the feasibility of public network and bespoke solutions that address serious anomalies with local businesses and community groups to better understand the incidence and impact of technology boundary issues (the 'have nots' next door to the 'haves')
- Investigate funding models including contributions by precinct tenants (incl. quotes under the NBN Technology Choice program) to upgrade existing or proposed NBN infrastructure to meet the needs of their local business users or precincts
- Create preferred locations for businesses critically requiring reliable high bandwidth services by designating business precincts in greenfield locations with higher grade connectivity (e.g. fibre-optic, high-speed wireless)
- Develop a web-based application for users to register their need for improved fixed (and other) access services
- Make submissions to the periodic ACCC Domestic Transmission Capacity Services (DTCS) inquiries in relation to backhaul routes where market insights indicate regional users are adversely impacted by high backhaul pricing
- NBN Co to maximise the deployment of technologies with the highest performance potential in the remaining rollout areas – with assistance from local governments by highlighting areas where demand for high performance is expected to be greatest
- NBN Co to expeditiously introduce high-speed, business-grade NBN services, including symmetric high bandwidth services with strong service level agreements (SLAs) to regional areas
- Restructure NBN wholesale pricing to align retail service provider incentives and encourage uptake of higher capacity services to unlock the potential of the NBN
- Lower the threshold number of premises above which FTTP must be incorporated in greenfield developments
- Implement stronger service connection and maintenance requirements for NBN services to underpin the service-related obligations that legislation imposes on RSPs
- Implement programs that can support public WiFi networks, building off the experience of Victorian pilot projects



Next steps

The analysis and recommendations that have come out of the Barwon Digital Plan will form the basis of our Regional Partnerships' advocacy to the Commonwealth, Victorian and local governments, as well as industry and community groups in developing the region's future digital landscape.

This Digital Plan highlights the region's current gaps in digital infrastructure and where our future demands may lie, bringing to light the areas where our efforts should be focused to bridge the digital divide. By addressing these priority areas, we will ensure our local residents, businesses and community flourish as the digital age continues to advance.

The Barwon Regional Partnership would like to thank the members of Barwon Regional Digital Plan Working Group and the Department of Jobs, Precincts and Regions' Telecommunications Infrastructure Group and local government representatives who contributed to the development of the plan.

Contact Us

If you would like to discuss the Barwon Digital Plan please contact Barwon Regional Partnership on:

E barwon.partnership@rdv.vic.gov.au

T (03) 5215 6000

We look forward to hearing from you.