



2021 Regional Telecommunications Review

Yarra Ranges Council

Public submission

Contact:	Abby McCarthy, Advocacy & Government Relationship Advisor [REDACTED] [REDACTED]
----------	---

Contents

1	Introduction	3
2	Telecommunications and Emergency Management	3
3	Yarra Ranges Telecommunications Accessibility Study	4
4	Responses to the Regional Telecommunication Review 2021 Issues Paper	6
	4.1 Adequacy.....	6
	4.1.1 Changing demand	6
	4.1.2 Service reliability.....	6
	4.1.3 COVID-19.....	8
	4.1.4 Indigenous Australia	9
	4.2 Opportunity	9
	4.2.1 Regional development & emerging technologies	9
	4.2.2 Maximising outcomes	10
	4.3 Awareness.....	11
	4.3.1 Education & public information.....	11
5	Conclusion.....	11

1 Introduction

Yarra Ranges Council welcomes the opportunity to make a submission to the 2021 Regional Telecommunications Review.

Yarra Ranges covers approximately 2,500km² and includes 55 townships, stretching from the outer suburbs of Melbourne into the foothills, agricultural valleys and forested areas of the Great Dividing Ranges. Yarra Ranges is designated an 'interface' local government area (LGA) for its inclusion of both urban and regional areas.

The municipality is home to over 150,000 people, including the largest Aboriginal and Torres Strait Islander population in the Eastern Metropolitan Region (EMR) at 1,359 residents in 2016, which is thought to be an under-estimate.

Around 30% of the population lives in non-urban areas, which represent 97% of the Yarra Ranges landmass.

Our key industries include agriculture, manufacturing and tourism. The challenge of growing the economy through traditional infrastructure is now being exacerbated by the need to also facilitate the delivery of digital infrastructure to meet the needs and expectations of industry, residents, community and visitors, or risk being left on the wrong side of the digital divide.

2 Telecommunications and Emergency Management

Yarra Ranges is an area prone to natural disasters, including bushfires and storms, and relies heavily on telecommunications services for emergency preparedness, response and recovery.

On Wednesday 9 June and Thursday 10 June 2021, significant areas across the Yarra Ranges experienced a severe weather event with strong winds and heavy rains, causing trees and power lines to fall and several rivers to flood. By Friday 11 June, there were over 54,000 households and business in the Yarra Ranges that had suffered ongoing power outages. As a result, all localised NBN and mobile phone communications services suffered prolonged network outages. It is estimated more than 90% of the communication outages were directly caused from the power outages.¹

During and after the storm, many residents were unable to contact 000 for assistance, unable to access emergency information or reach loved ones. Emergency services were unable to reach residents, businesses or volunteer workforces. The majority of mobile services were restored within a matter of days, however, some areas waited more than three weeks for NBN services to be repaired and reconnected, which included periods of lockdown when students and workers were required to work and study from home.

¹ Based on recent events like the 2020 bushfires, Black Saturday bushfires and Hurricane Katrina (USA), communication outages as a direct result of site damage usually equate to under 10% of total site outages.

The abject failure of telecommunications services at a critical time of need has been identified by the community as one of the highest priority issues to address through the storm recovery period (which is expected to last 2-3 years), to ensure system resilience and community safety for future disaster events.

3 Yarra Ranges Telecommunications Accessibility Study

Yarra Ranges Council has made a significant investment into understanding telecommunications service availability, quality and accessibility at a local level, to support advocacy efforts and collaboration with industry and other levels of government.

From 2020-2021, Yarra Ranges engaged an independent consultant, Cart GIS, to assess user experience of broadband services for local residents and businesses, and to test 4G mobile network quality across the region. This study provides directions as to how reliable telecommunications service can be achieved for Yarra Ranges communities in their day-to-day use, and to ensure coverage meets emergency management requirements in terms of system resiliency and redundancy.

The study included delivery of an online community survey to ascertain access to fixed internet services within the council boundaries. As part of this, Council requested that residents and businesses within the municipal boundaries with fixed-line broadband services and/or mobile telephone and internet undertake their own voluntary-based internet speed and coverage testing, and to provide Yarra Ranges Council with the results. More than 1300 results were received.

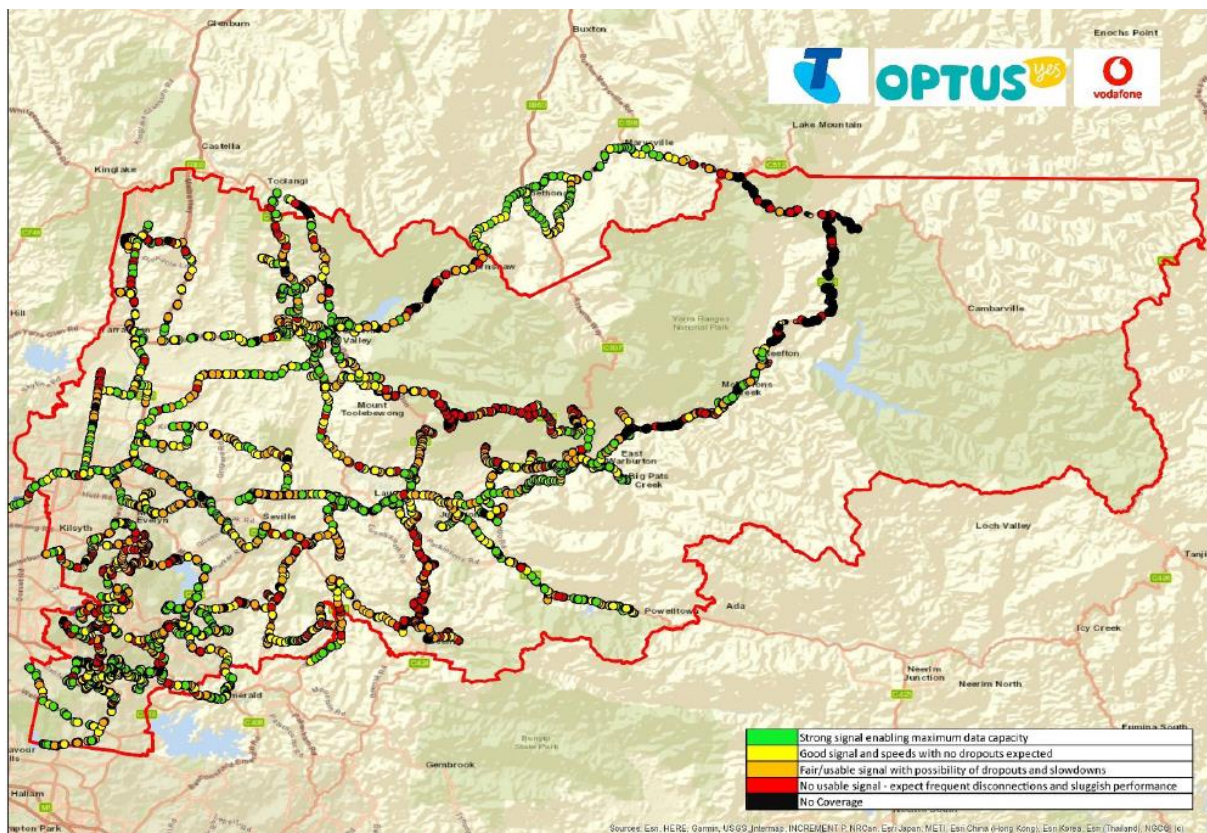
Mobile network quality testing was undertaken at 24,493 sites, including 655 points of interest, including community fire refuges, Neighbourhood Safer Places (places of last resort); ESTA emergency markers, council firefighting water tanks, schools, community centres, aged care and Senior Citizen Centres, Country Fire Authority Stations and regional and rural bus stops. Additionally, key segments of the road transport infrastructure network were tested, to ascertain network quality along routes that are critical to the municipality's tourism industry, transport, safety and community wellbeing and connectedness.

Testing was undertaken using three Samsung A12 handsets, as commonly used by members of the public, to capture information about the signal strength and network performance for each of national carriers: Telstra, Optus & Vodafone. This benchmarking process combines three measurements of power and quality for 4G networks – RSRP, RSRQ and SINR – and provides a robust methodology acknowledged and respected by the carriers.

The key findings from drive testing of the 4G network are:

- When combined across all carriers, based on drive testing, 27% of the network is strong, 27% good, 21% is fair / usable. However, 25% of the network has unusable signal or no coverage.
- As shown on the map below, poor network quality and mobile blackspots are concentrated around:
 - Dandenong Ranges, where depth of coverage is impeded by complex topography, despite carriers' maps indicating adequate coverage. Mobile signals regularly jump between towers and Telstra is particularly unreliable.

- Maroondah Highway towards Fernshaw and the Black Spur. This is a major tourist route where travellers must have reliable access to mobile signal, particularly in an emergency. A nearby tower has been funded through the federal Mobile Black Spot Program, however, the mountainous landscape means blackspots remain.
- Areas along Gembrook-Launching Place Road, toward Beenak and Hoddles Creek, are not adequately serviced by any carriers. This is a key agriculture area that requires coverage to ensure occupational safety and opportunity for businesses to innovate through smart farming technologies.
- Woods Point Road, from East Warburton northward toward Yarra Ranges National Park, is an area with severe bushfire risk, where telecommunications infrastructure must account for population and tourism growth over the coming years.
- Of the water tanks tested 24% (18) had unusable or no coverage.
- Of the emergency markers tested 23% (12) had unusable or no coverage.
- Of the other POI's tested 9% (10) had unusable or no coverage.
- There was a total of 493 bus stop locations tested. Of the those tested 10% (47) had unusable or no coverage.
- It was also found, through the community survey, that broadband connections are particularly slow in regional areas serviced by NBN's SkyMuster satellite and fixed wireless, including Don Valley, Macclesfield, Gladysdale, Hoddles Creek and Powelltown. These technologies are most vulnerable to interference by smoke and other weather events but do maintain telephony during power outages.



Combine network quality (Telstra, Optus, Vodafone)

4 Responses to the Regional Telecommunication Review 2021 Issues Paper

4.1 Adequacy

4.1.1 Changing demand

Yarra Ranges telecommunications study found that 50% of respondents reported a significant increase in internet usage during the COVID-19 pandemic. Only 1.5% of users reported a decrease in internet usage during the pandemic.

Most common uses were for: email (99.24%), web browsing (97.2%) communication and virtual meetings (91.4%), online shopping (91.2%), social media (90.7%), downloading files (86.4%), TV streaming (81.9%) and entertainment (80%). Internet usage for remote learning applied to 47.2% of respondents, business for 44.5% and home business for 33.6%.

98.4% of the respondents identified that they use internet to access emergency information during a bushfire or other event (e.g. flood, weather event or another emergency).

As is increasingly common across the Australian population, Yarra Ranges communities require services that enable reliable and equitable access to broadband internet, particularly for work, education and emergency purposes.

While Yarra Ranges communities have access to a range of NBN services – including fibre and wireless technologies – significant and persistent connectivity issues remain.

Poor connection within homes has meant that many residents struggle to work from home, both as part of business-as-usual practices and under stay at home restrictions that have been in place throughout the pandemic. This is particularly true for residents in regional areas serviced by NBN fixed wireless and satellite technologies – please see section 4.1.3 for further detail.

Particularly during COVID, with many businesses looking to relocate to regional areas. This presents a positive opportunity for the Yarra Ranges to grow its economy and boost employment across regional townships. However, co-working spaces and business incubation centres are reporting significant connectivity challenges. As an example, the Yarra Ranges Enterprise Centre, located in the Upper Yarra township of Warburton, has reported persistent connectivity issues, despite making substantial investments in improving its internal system architecture, and cannot guarantee service levels required by its 20+ existing tenants and other prospective tenants. This places the centre at risk of losing tenants. More broadly, the lack of reliable service may trigger other businesses to relocate out of the region.

As demand for telecommunications services increases in regional areas, attention must be given to the quality and reliability of services, in addition to the availability of services and service levels indicated by the carriers. This should include: upgrading telecommunications systems to ensure an adequate level of service is available to regions that are experience significant increases in usage, as well as provision of community education to ensure that users understand how to optimise service within their premises, in line with the broadband technologies available to their area.

4.1.2 Service reliability

As stated in section 2, telecommunications outages are critical to the ability of Yarra Ranges communities to prepare for, respond to and recover from emergency events. The risk of mobile phones towers failing due to power outages during emergencies poses an extremely high risk to vulnerable communities.

The severe storm event that took place on 9 June 2021 was a key example of the dangerous situations that occur when the community experience telecommunications outages during and immediately following a disaster event.

Over 54,000 residents – or roughly one third of the Yarra Ranges population – were impacted by power outages. Battery back-up at local phone towers lasted less than half a day, failing to provide service to residents who were still trapped in their homes and to those isolated within their communities, such as residents in the Dandenong Ranges who could not leave the hills region. These communities had no line out of the impact zone. They could not call for emergency assistance, access emergency information or contact friends or family. Emergency services, such as the CFA, were unable to contact other services or their volunteer workforces.

It is understood that many businesses and services were unable to operate, including petrol stations, supermarkets and ATMs unable to complete transactions.

One local community services provider was unable to operate for three days, incurring over \$100,000 in direct and indirect costs. This service provider could not operate from either of its two sites in the Yarra Ranges due to the telecommunications and power outages. Roughly 70 staff were unable to work or provide critical services to their clients over this time. Business continuity arrangements could not be realised due to the widespread impact, with around 20 staff residing in Yarra Ranges also impacted by the outages in their homes for 7-10 days. There are significant costs associated with making organisations such as this more resilient to severe weather events, including implementing cloud-based systems. Additionally, these systems come with a range of risks and limitations, such as privacy issues related to the storage of confidential records, adding to corporate overheads and redirecting resources away from client services. This highlights the need for improved system resiliency and redundancy.

Following the storm event, it took several days to restore mobile networks, and some areas were without NBN for more than a month. This occurred during periods of lockdown, when students and workers were required to study and work from home. Some residents opted to purchasing pre-paid technologies such as Wifi dongles, which were costly and not eligible for reimbursement from their mobile carriers or broadband retailers.

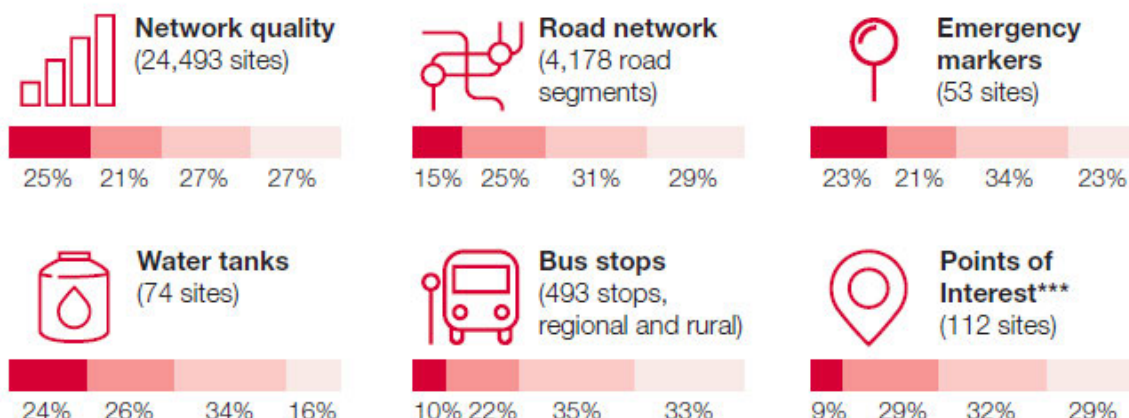
NBN Road Muster trucks were located at key sites throughout the response period, however, these were removed once lockdown restrictions were instated, again, leaving some residents without any access to broadband services, impeding work and study.

Community feedback has been that the failure of telecommunications services was one of the most traumatic factors in this disaster event, and that improving system resilience and redundancy should be a priority throughout the recovery period.

It should also be noted that a significant proportion of sites that are critical in an emergency event, tested as part of the Yarra Ranges Telecommunications Accessibility Study, had no service or unusable service. These results are shown below.

4G network quality

■ Unusable or no coverage ■ Fair ■ Good ■ Strong



***POIs include community fire refuges; neighbourhood safer places; educational facilities, community centres, aged care, senior citizen centres (excluding urban locations) and CFA stations

Service to regional areas, particularly those prone to natural disasters, can be improved by:

- upgrades to existing infrastructure to improve resiliency and redundancy in instances of widespread mains power outages, including extended battery back-up at macrocell towers.
- provision of additional small-scale broadband infrastructure and services to key community facilities, such as the satellite technologies provided through STAND, the Federal Government program to strengthen telecommunications against natural disasters
- provision of microcells and other smaller scale mobile infrastructure to ensure reliable and consistent services, particularly in mountainous regions such as the Dandenong Ranges, where complex topography impedes signals from macro towers.
- swift provision of NBN Road Muster trucks to impacted areas in emergency situations.

Through Yarra Ranges Council's advocacy efforts and networks, we understand several mobile network operators are undertaking work to upgrade battery systems at key sites. This includes a project by [Optus and CSIRO](#) to identify key mobile towers that are in high-risk bushfire zones and have a number of dependencies, and are therefore deemed a high priority for hardening through programs such as STAND. Telstra is also engaging communities to explore the feasibility of delivering hybrid generators that can be rolled out to power local mobile towers during natural disasters. Government funding should continue to support these initiatives, as Council continues to liaise with carriers to understand what role it can play in supporting system improvements and managing the impact of severe weather events on the telecommunications network.

4.1.3 COVID-19

As in section 4.1.1, Yarra Ranges telecommunications study found that 50% of respondents reported a significant increase of internet usage during the COVID-19 pandemic. Only 1.5% of users reported a decrease in internet usage during the pandemic.

However, the mix of services available across the region – among other factors – mean that the quality and reliability of service differs greatly between communities and is adding to isolation and unequal work and education opportunities.

It is understood that during periods of lockdown, some students in the Yarra Ranges have been unable to use internet for remote learning purposes at all, resorting to paper-based learning while their peers in nearby suburbs have the benefit of connecting online.

Indeed, Yarra Ranges telecommunications study received over 1,300 speed tests from residents and businesses, representing 61 localities, of which 18 had a mean speed less than the 12MB minimum NBN speed plan. These localities were largely concentrated in the Valley region where fixed wireless, satellite and ADSL connections are most commonly available and used. These regional areas experience social isolation, and better services are needed moving forward to ensure they are not further disadvantaged or isolated, particularly as we face ongoing lockdowns and move into the recovery phase of the pandemic and storm events.

4.1.4 Indigenous Australia

Yarra Ranges is privileged to be home to a significant Aboriginal and Torres Strait Islander population – the largest in the Eastern Metropolitan Region (EMR) at 1,359 residents in 2016, which is thought to be an under-estimate.

Whilst the Yarra Ranges telecommunications study did not provide any specific insights into the accessibility and affordability of telecommunications services for Indigenous communities, it should be recognised that improved access across the municipality – particularly in regional townships – will support equitable service for the local Indigenous populations.

4.2 Opportunity

4.2.1 Regional development & emerging technologies

There are over 13,000 businesses operating within the Yarra Ranges, accounting for over 41,000 jobs and contributing a total economic output of \$13.3 billion. Agriculture is a critically important element of the Yarra Ranges economic landscape, and provider of local employment. Our agriculture industries contribute \$640 million or 3.5% of the output generated by the agriculture sector in Victoria.

The Yarra Ranges telecommunications study found that several key agricultural areas were not currently serviced adequately by at least one cellular telecommunication carrier with usable network quality. This included: Beenak, Hoddles Creek and Steels Creek.

It is critical to local, state and national economy that agriculture industries have equitable access to telecommunications service, to enable them to sustain and innovate through the use of IoT and smart farming technologies, particularly through COVID recovery. Yarra Ranges agribusinesses have been hard-hit by the storm events and the pandemic, including the impacts of seasonal workforce shortage, due to reduced migration of skilled workers and inadequate public transport links.

The abovementioned areas should be prioritised for new and improved infrastructure, so that businesses can sustain and maintain competitiveness moving forward, and in the more immediate term, businesses and residents in these areas can maintain access to emergency information.

Additionally, Yarra Ranges telecommunications study found that there was no service or unusable service across the 4G network at 10% of the 493 bus stops tested across regional and rural areas, and only fair coverage at 22% of bus stops. Better public transport services are a key factor to strengthening links between job seekers and agribusinesses, including through the provision of telebus services and on-demand services. Stronger, more reliable connectivity is required along public transport routes to enable better transport connections through the hills, urban and valley regions, to improve access to jobs in the agriculture sector, now and in the future.

More broadly, quality telecommunications services are increasingly valued and factored into a region's 'liveability' by residents and businesses. For the Yarra Ranges to attract and retain a population of skilled workers, telecommunications services must be improved across key mobile black spot areas and areas with slow broadband speeds.

4.2.2 Maximising outcomes

Mobile Blackspot Program

The Mobile Black Spot Program (MBSP) was announced by the Commonwealth Government in 2015. Since 2015, there have been six rounds of funding completed.

Rounds 1 and 2 of the MBSP led to a disproportionate funding model, favouring some areas with comparatively higher levels of existing coverage. These areas achieved funding reflective of providing an even spread of spending nationally on an eligible electorate basis. Commonwealth electorates are based on population, which may have impacted Yarra Ranges disproportionately in the early rounds.

There was a program shift from round 4 onwards to focus on funding sites to promote regional and remote locations, including Public Interest Premises, across Australia. These criteria did not have linkages to resilience of mobile telecommunications infrastructure however and were purely based on coverage. The program did not fund black spots on the need for 'site hardening' alone. This has left regional and remote areas vulnerable to network outages due to severe events, such as storm and bushfire.

Mobile Black Spot Program Registration Database

For the initial MBSP rounds, the Department of Communications invited crowd sourcing of mobile phone black spots. Residents, business, industry, and government could contribute to map black spot areas across Australia. Following the initial consultation there were 6,221 black spots submitted to the national database. This database increased to 10,802 during round 2 program, mainly due to the extra publicity the program received after the initial consultation. Although the national database has provided an insight for the selection of locations to be funded, mobile network operators are now (from round 3 onward) requested to nominate where they would build new or upgraded base stations.

The issue of using crowd sourcing to identify mobile phone black spots is the subjective way nominees identified coverage issues. Nominations did not link to proven coverage testing benchmarks. Furthermore, the national database was not qualified. For example, nominees with an Optus coverage issue could nominate a blackspot even if a competitive carrier had coverage at that location.

Recommendations: data-gathering to identify true blackspots

To ensure the MBSP and other government investment programs are effective, state and federal programs must support identification of 'true' blackspots, and recognise that coverage maps provided by carriers do not offer a reliable picture of usable coverage or adequate levels of service for all users. For instance, the entire Yarra Ranges municipality has indicative coverage by all three carriers, however, 25% of the 24,000+ sites and points of interest tested as part of the municipal telecommunications study delivered a result of no coverage or unusable coverage.

All levels of government and industry must work together to understand areas with inadequate service, and support robust data gathering to understand real user experiences. This is particularly needed in areas prone to natural disaster, where coverage is key to community safety and preparedness, as well as response and recovery efforts.

The Victorian Government's *Connecting Victoria* survey provided strong mechanisms for gathering information on user experiences from the public as well as local governments, through the provision of a public survey, place-based data gathering via councils, and a roundtable discussion with key stakeholders. However, it should be noted that while Yarra Ranges has dedicated resourcing to capture reliable industry-standard data on telecommunications accessibility, not all local government authorities have the resources and capacity to do undertake these studies and contribute equally to such surveys. Consideration should be given to how such data can be captured at a local level, to enable fair and equitable allocation of funding for new and upgraded infrastructure.

4.3 Awareness

4.3.1 Education & public information

Yarra Range Telecommunications report recommends that community education be delivered to ensure consumers are aware of the services available in their area.

Consumers should be better supported to understand what services are available to them, and how to optimise quality of service within their premises. Anecdotally, Council has heard that some residents have paid excessive amounts to maintain voice calling services at their properties, not realising or being informed by carriers that other services are already available within their home, such as Wi-Fi calling.

The establishment of the Regional Tech Hub has supported consumers, including communities in the Yarra Ranges, to understand what services are available locally, how to optimise service quality on their premises and how to report and resolve service issues. The offline provision of such information should also be supported to ensure that consumers who do not have adequate internet service can access these resources. Local governments and their partnering agencies could play a role in this as a distribution partner, for example, by distributing hard copy information via libraries, community centres and other public facilities.

5 Conclusion

Mobile and broadband technologies are increasingly central to how people live, how businesses operate and how services are delivered to communities.

Ensuring equitable investment in telecommunications services across metropolitan, regional and rural communities is critical to ensuring fair access to economic and social opportunities, particularly through the COVID recovery period.

Yarra Ranges, as a municipality with both urban and regional areas, strongly urges continued investment in improving services for regional areas (including regional areas within interfacing LGAs) and areas prone to natural disasters.

New and improved mobile and broadband infrastructure, including site hardening, alongside targeted community education, will be key to realising the potential of telecommunications technologies in regional areas across Australia.