

## Regional Telecommunications Review Submission

I attended the public consultation meeting for Southeast NSW and ACT region on Monday 9 August 2021. Thank you for the meeting and the effort and patience of the Review Team.

As my first comment, I need to state how fantastic our modern regional telecommunications communications are. It is an ironic testament to their enabling success that they are now taken for granted and criticised!

It seems many people have forgotten this and are widely criticising government and industry for the technical and cost constraints.

That we could hold the meeting via teleconferencing is thanks to technology that was visionary and, in its infancy, less than ten years ago.

As a starting point, let us not forget the transformative and connective power of what we have now.

My background is an ICT Manager responsible for ICT Services at a regional NSW Council for thirteen years and an IT Manager and specialist for twenty years prior to that. My Council role included telecommunications, both fixed and mobile. It also included Local Area Networking and Wide Area Networking with licensed and unlicensed microwave links between Council facilities.

I had responsibility for the support of landlines and internal phones through a PABX and the mobile phones. This involved negotiation with the supplier (Telstra) for fault resolution and improvement for the overall resiliency of the mobile and landline network.

My role had a secondary responsibility for some communication infrastructure during declared emergencies.

I am retired, maintain a professional interest in ICT and hold membership of the Australian Computer Society. I reside in Bundanoon, a regional village in the Southern Highlands. I have FTTN broadband and good mobile service. Reliability and coverage is generally excellent.

Thank you for providing an opportunity to provide feedback.

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Bundanoon

## Questions and Responses

1. *What telecommunications services are required in regional Australia to meet current and future needs? Are there any things regional communities and businesses need to do, but can't, on their existing services?*

- 1.1. The telecommunications services in regional Australia must be commensurate with the financial return to the providers and/or cost to the entire community.
- 1.2. It is unreasonable to expect "inner city" coverage in a regional area.
- 1.3. Viewing the regional road network is insightful for the coverage required. Urban areas have dense networks of roads, regional areas have highways, and as we get more remote, secondary roads and dirt roads as the population thins.
- 1.4. Telecommunications are the same as roads – although they deliver a different service, the infrastructure is much the same. Small communities need to have expectations managed that they will not receive the same service capacity as densely populated regions.

2. *What changes in demand, barriers or challenges need to be addressed when it comes to telecommunications services in regional, rural and remote Australia?*

- 2.1. Expectation settings are important and missing. The technical infrastructure is not well explained and thus not well understood. A satellite cannot provide the same total bandwidth and low latency as fixed wireless. Fixed wireless cannot provide the same total bandwidth as Fibre. There has been a lot of "spin" around the services. Remote people who would never expect multilane freeways in their communities have been led to believe they will get the equivalent "information superhighway" in their town. This is simply not true.
- 2.2. Terrain is a significant issue in some regional areas. Unless there is line of sight the mobile signal rapidly drops off. In Bundanoon a new (and welcomed) Telstra tower was installed. However, for residents on the southern side of the village there is little or no reception due to terrain. The southern side is the most bushfire prone, evidenced by two Community Fire Trailers within a few hundred metres of each other. The addition of much smaller and lower capacity towers (micro towers) would provide coverage. This is lacking as a technology. Point-to-point microwave from a large tower to a smaller tower would provide improvement. A funding model with part user-pays for those who want the mobile reception may add viability.
- 2.3. The decommissioning of the 3G network will impact many remote areas more so than the decommissioning of the 2G network. This is largely because there are so many more devices than in the 2G period. Especially for remote sensing equipment the 3G function may be custom and embedded. When the 2G network was decommissioned my place of work had telemetry units with embedded modems that could only be replaced as total units. And these were specialised 3G

embedded units that will be replaced again. All of the frequency specific signal boosters will require replacement.

- 2.4. The enduser cost of technological advances needs to be factored in as well as the infrastructure investment cost. 5g is only available on a 5g capable device – the iPhone 12 at \$1,000 is the Apple entry point. There are android devices in the \$300 range for a base model. To take advantage of low earth orbit (LEO) communications, a LEO receiver is required.
- 2.5. For all mobile users, the extension of the 000 service into a data rather than a mobile POTS (plain old telephone system) is a technological goal. Emergency Plus is an excellent stop gap initiative but still relies on the caller being able to read and clearly provide the geo-location coordinates. Having a data hosted 000 service would allow callers to have the equivalent of video calls with the responding agency. Showing live stream vision of a patient to an ambulance service, or a fire to a fire agency would enhance assistance. The limits of POTS for emergency are well known and the back-end is badly lagging as our 000 service is effectively a nationwide PABX with switchboard operators. We can transfer phone calls but not (as yet) video calls. This has been recognised in the US with their 911 service and there are moves to transform this into a data service. Apple, Motorola and RapidSOS are developing solutions in the space<sup>1</sup>.
- 2.6. At the consultation, the proliferation of scams targeting the vulnerable was raised. The scam robocalls from Telstra/NBN, Microsoft etc may be annoying to the computer literate, however to the less literate they are dangerous because of the financial damage they can bring. The calls come from mobile numbers, while some are now spoofed, the issuing of mobile numbers appears not to be well regulated. The role of the regulator (ACMA) to manage and tighten the issue of mobile numbers as well as investigate and remove devices to spoof mobiles should be strengthened.

3. *How have the Government's policies and programs affected telecommunications service outcomes in regional, rural and remote Australia? How can these be improved?*

- 3.1. The winding back of the NBN from FTTP to FTTN some years has affected regional services. The “last mile” of copper is damage prone. The FTTN boxes have little resilience apart from a small battery to smooth over short-term outages.
- 3.2. At “nation building” cost, remove the FTTN model and replace it with fixed wireless for regional communities. Or do a cost comparison for Fixed Wireless vs FTTP replacement.

4. *How do service reliability issues impact on regional communities and businesses? How do outages, including in natural disasters, impact on communities and businesses?*

- 4.1. In emergencies regional communities rely on telecommunication services for real time or near time information.

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<sup>1</sup> <https://www.cnbc.com/2021/02/18/apple-motorola-and-start-ups-such-as-rapidsos-aim-to-fix-911-system.html> retrieved 27-Aug-2021

- 4.1.1. The FTTN model in regional areas leaves those communities badly exposed. Once the Node loses power and the small battery runs out, all services are lost.
  - 4.1.2. If the home loses power and has no UPS for the modem and IP phone, all services are lost
  - 4.1.3. In areas where there is poor mobile coverage, the FTTN or Fixed Wireless are the only telecommunication services
  - 4.1.4. Smartphone Apps have proved critical in emergencies. Emergency Plus for contacting emergency services, Fires Near Me (NSW) for fire notification are now essential. They require functioning mobile infrastructure to operate.
5. *How might such impacts be addressed to ensure greater reliability? How can the network resilience be addressed in regional areas?*
- 5.1. Hardening the infrastructure to better balance reach versus reliance. The current network is largely daisy-chained and the loss of one part impacts all parts after that.
  - 5.2. Daisy chaining provides reach at the expense of single points of failure
  - 5.3. Meshing the network with multiple paths and multiple modes creates resilience at the expense of reach
  - 5.4. TCP/IP is designed for multiple paths and multiple nodes and can reroute packets so long as another path exists
  - 5.5. Fibre between towers as a loop provides two paths to all except the tower with a fault
  - 5.6. Microwave between towers as a loop provides a third and fourth route
  - 5.7. Adding power autonomy will provide greater resilience. Uninterruptable Power Supplies (UPS) have a limited runtime. Currently most sites have generator access points.
  - 5.8. Towers are ideally placed to add solar panels at a lower level. Adding a powerwall or other stored energy device would, if well scoped, provide continuous runtime in the event of power disruption.
  - 5.9. The design needs to be built to provide capacity for resilience and not, over time, allow the resilience to be traded for reach. If this occurs, then when there is a failure of a primary route, there will be congestion on the secondary route.