Telstra submission to the 2024 Regional Telecommunications Independent Review Committee (RTIRC) Issues Paper

31 July 2024

Executive Summary

At Telstra we believe a thriving and digitally connected regional and remote Australia is fundamentally important to our nation. Regional and remote Australia is home to almost 10 million people, and according to the Regional Australia Institute is expected to continue growing to just under 10.5 million people by 2032.[1]

Telstra is committed to regional Australia and that is reflected in our investments and services. Our people are on the ground in communities and we engage directly with our customers and a wide range of industry and community groups representing people who live, work or study in regional and remote Australia. This is important so we can appreciate the challenges, needs and ambitions of regional Australian telecommunications consumers.

Our commitment is also reflected in our engagement with the Regional Telecommunications Independent Review Committee (**RTIRC**), including attending all Committee hearings so we can listen and more deeply understand specific questions or concerns.

What we hear is that regional, rural and remote Australians need to be connected. Connectivity is also deeply personal. With more and more services moving online, whether that is to do our day-to-day banking, accessing Government services, the growth of telehealth or online learning, or even working from home – reliable and high-quality connectivity is a must. It enables all Australians to work, learn, be entertained and conduct everyday life wherever they choose to live. On top of that, Artificial Intelligence (**AI**) functionality is also increasingly part of our everyday lives requiring rapidly growing amounts of data to support it. None of these services we depend on work without the underlying telecommunications connectivity.

With this need for connectivity, there is also an expectation that all Australians have ubiquitous, reliable, secure and continually improving telecommunication networks and services. This is the challenge that confronts Governments, telecommunication providers like Telstra, the providers of online services, and the very users and communities themselves.

However, our own research and interaction with customers and stakeholders highlights that connectivity experiences deteriorate with remoteness. And while the users of older technologies are not averse to moving to newer ways of doing things, some perceived barriers like concerns about cost, learning how to use new technologies, and simple resistance to change need to be considered and addressed.

The sheer size of Australia's landmass, coupled with our relatively small population size and population density in coastal areas, all of which have a major impact on the economics and ability to deliver connectivity – are realities that can't be ignored. As an example, Telstra's mobile network covers around 1 million square kilometres more than any other network but still only about 37.5% of Australia's landmass. As a nation we can't afford to bring mobile towers to every part of our country, but what we are now seeing is the promise of technology evolution to deliver a near ubiquitous safety-net of basic connectivity to mobile handsets in areas that are beyond the reach of mobile network coverage.

[1] Regional Australia Institute. (2022). Regionalisation Ambition 2032 – A framework to rebalance the Nation, Regional Australia Institute, Canberra. Rebalance-the-Nation-Report-2022.pdf (rebalancethenation.com.au)

We have the opportunity to do much better. We stand at the very cusp of technology finally being able to deliver on its potential to narrow the metro / regional digital divide in Australia. With collective forward-looking thinking that creates a positive environment for private investment and uses public monies wisely, the combination of capital investments in fibre backbone, mobile connectivity and use of LEO satellite capacity could see many of the key long-standing policy challenges for regional and remote Australia solved for in the next few years, in efficient and affordable ways.

Priority areas for improvement

The priority areas for improvements to regional and remote telecommunications are well canvassed in the RTIRC Issues Paper[2] and reflect our own insights from engaging with regional and remote Australia. In summary, these priorities are:

1. Access to more capable and more reliable regional services

The number one outcome we hear our customers and stakeholders in regional, rural, and remote areas asking for is access to more capable and more reliable telecommunications services. Priorities to achieve access to more capable and reliable services include:

- **Mobile network performance and resilience** – with the reliance we place on our mobile handheld devices, the experience of the mobile network can seriously impact the ability for regional customers to connect. In some instances, this will be caused by genuine blackspots. In others, it will be due to congestion in the mobile network, or the impact of prolonged power outages. We know that there are genuine concerns about the performance of the mobile network, which despite considerable investment and maintenance is an issue in some locations. As consumer usage changes to more and more high data demand, this also places additional pressure on the mobile network, particularly when the network is also being used for fixed broadband purposes by customers. As we outline in our submission, it is imperative spectrum policy ensures adequate spectrum is made available to improve delivery of these services in regional and remote Australia.
- **Transition from legacy technologies to new technologies** – to ensure regional Australia has modern and high-capacity connectivity, there is a point where we need to migrate to newer fixed and mobile technologies. Given the planned closure of the Telstra 3G network on 31 August 2024, our work to deliver 4G coverage equivalence and support the migration of services off the 3G network is of high concern for communities. There is also interest in the potential LEO satellite services like Starlink offer regional and remote Australians to enjoy better broadband and home phone services than available on our legacy copper and CAN radio networks.

To deliver on these priorities, we consider efforts need to focus on:

a) **Network investment to expand connectivity supporting modern regional needs**: Investment in upgrading and expanding telecommunications infrastructure to provide more reliable and high-speed services.

b) **Continued efforts to improve network capacity and reliability**: Enhancing the capacity and reliability of networks to meet the growing demands of regional, rural, and remote areas.

c) **Supporting customers in transitioning to modern networks:** Providing support and resources to help customers smoothly transition to modern networks and services.

[2] Independent Regional Telecommunications Review 2024 (infrastructure.gov.au)

d) **Well-designed investment programs, policies, and regulations**: Developing and implementing pro-investment programs, policies, and regulations that support the unique needs of regional, rural, and remote communities.

In this regard, we make four key recommendations for the Committee's consideration, which are expanded on in our submission as recommendations 1-4:

- **Recommendation 1:** Government and regulators create a positive environment for strong levels of ongoing industry investment in regional telecommunications infrastructure. This includes support to keep deployment costs down and a pro-investment approach to policy and regulation that allows those investing in infrastructure to stay competitive and earn sustainable returns.
- **Recommendation 2:** Government and regulatory policy ensure continued mobile network operator (MNO) access to sufficient spectrum at sustainable market prices and allow 3G exit, so MNOs can meet modern regional capacity demands.
- **Recommendation 3:** Policy makers, regional and remote customers, and communities alike embrace the potential of more capable and more reliable modern technologies.
- **Recommendation 4:** Invigorate and optimise future co-investment initiatives and prioritise deployment related reforms and cost reduction to make it simpler, faster and more efficient to extend and improve regional connectivity.

2. Resilient regional communities and networks

A priority towards achieving resilient regional communities and networks is:

- **Power resilience and reliability** – all telecommunication services rely on power to operate, but modern services are increasingly dependent on power where they are being used (i.e. the home). We need to continue addressing power reliability in regional and remote Australia given the reliance of telecommunications on this essential service.

To deliver on this priority, and to otherwise improve community and network resilience, we consider efforts need to focus on:

a) **Improving power resilience and reliability** – respond to the inherent reliance of telecommunications on the energy sector by prioritising improvements to reduce the incidence and scale of mains power outages in regional and remote areas.

b) **Developing robust telecommunications networks** that can better withstand environmental and operational challenges unique to regional and remote areas.

c) **Continuing to improve access to communications during and after disaster situations**, and enhancing emergency response capabilities and disaster recovery plans

d) **Helping ensure customers can use technology safely**, including protecting regional, rural and remote customers from scams and cyber threats and using AI responsibly to reap its full benefits.

In this regard, we make four key recommendations for the Committee's consideration, which are expanded on in our submission as recommendations 5-8:

- **Recommendation 5:** Governments and the energy sector respond to the inherent reliance of telecommunications on the energy sector by prioritising improvements to reduce the incidence and scale of mains power outages in regional and remote areas.

- **Recommendation 6:** Governments, telecommunication and energy sectors engage in strategic planning and co-investment across energy and telecommunication infrastructure to improve resilience in both networks. This could extend to encouraging and capturing energy company investments in new innovations to support their power systems and supply for example, standalone power systems.
- **Recommendation 7:** Energy companies to prioritise connection and restoration of power for critical telecommunications infrastructure (as part of business-as-usual operations, as well as in cases of Mass Disruption events).
- **Recommendation 8:** Improved information sharing and collaboration when it comes to: (1) planned and unplanned power loss situations (including real-time and accurate restoration estimates); and (2) improving power resilience to climate change and disasters.

3. Empowered regional consumers

Priorities towards empowering regional consumers include:

- **Access and affordability** – telecommunications access and affordability continue to be areas where regional and remote Australians face disadvantage compared with city-based users. Particularly those in regional and remote areas who are on lower incomes or already in financial hardship are feeling the pressures of cost of living challenges unequally. Continuing to address barriers to access and affordability to reduce this gap is critical.
- **Connectivity literacy and digital ability** – getting and staying connected is increasingly important for individuals and businesses, and being aware of how you can connect to the best technologies that will meet your needs is something that collectively needs to be addressed. This could also alleviate pressures on the mobile network where consumers are using it for broadband purposes.

To deliver on these priorities, we consider efforts need to focus on:

a) **Continuing to break down affordability and digital ability barriers** to digital inclusion in regional Australia, ensuring all residents and businesses in regional areas have access to affordable and reliable telecommunications services and the skills to make best use of them.

b) **Supporting thriving First Nations communities** by partnering with communities to make data driven decisions that can help address root causes of enduring inclusion gaps.

c) **Improving connectivity literacy and more advanced digital skills** for regional Australians so all individuals and businesses know how to connect to the best technologies for their needs and so we can start to develop more place-based advanced digital skills within our regional and remote communities.

d) **Access to trustworthy information that is meaningful** in supporting regional telecommunications consumers to make informed decisions when selecting and using technologies.

In this regard, we make three key recommendations for the Committee's consideration, which are expanded on in our submission as recommendations 9-11:

- **Recommendation 9:** Further contributions across government, industry and the community sector to ensure all Australians can afford to stay connected.

- **Recommendation 10:** Support thriving regional First Nations communities by prioritising future efforts around the FNDIAG Initial Report recommendations.
- **Recommendation 11:** Prioritise government and community efforts to uplift digital ability and connectivity literacy of individuals and businesses in regional and remote locations; and to grow and retain advanced digital skills within regional communities.

4. Universal Service Obligation (USO) regulation that supports better regional outcomes

A priority towards achieving USO regulation supporting better regional outcomes is:

- **Modern USO regulations** - tailored to the needs of regional and remote communities, ensuring they receive equitable service quality and access for services delivered to the home.

To deliver on this priority, and otherwise support a framework for USO regulation that supports better regional outcomes, we consider efforts need to focus on:

a) **Modernising current universal service guarantees** – The fundamental outcome of a modern universal service framework should be that all Australian residents have access to reliable fixed connectivity at consistent and affordable prices, and we believe that universal service guarantees remain relevant.

b) **Taking advantage of modern technologies to deliver the USO** by removing the requirement for Telstra to use the outdated copper network to deliver USO telephone services in much of regional and remote Australia. This will mean regional and remote Australia can be migrated over time to newer technologies that are more reliable and have better capability to support our modern digital needs.

c) **Aligning USO and Statutory Infrastructure Provider (SIP) service standards** – the USO is a baseline fixed telephone guarantee. The SIP obligation is an equivalent baseline broadband guarantee. Currently, USO service standards are clearer and more robust than those that apply to nbn and other SIPs. These service standards should be aligned.

d) **Stability in the funding bases for the connectivity obligations** – the funding bases for the USO and the SIP should be retained as they are. The Regional Broadband Scheme which funds the SIP should not be extended to third party fixed wireless or any other nascent broadband access technology given that fixed broadband supply is almost entirely provided by NBN Co.

e) **Strengthening mobile services outside of the USO framework** – while applying a fixed-like USO to mobiles would be unworkable, industry may be able to provide more information to help assess mobile performance and provide confidence in the mobile services which complement USO services.

In this regard, we make two key recommendations for the Committee's consideration, which are expanded on in our submission as recommendations 12-13:

- **Recommendation 12:** Remove the requirement for Telstra to use the outdated copper network to deliver USO telephone services in much of regional Australia.
- **Recommendation 13:** In modernising universal service arrangements, we consider that access to public phone infrastructure should continue.

Working together to achieve better connectivity in regional Australia

Delivering on all these priorities is a significant challenge.

Ongoing capital investment by industry is essential to match ever-growing regional customer needs. Delivering on this for Australia is no mean feat when often what is needed are large amounts of upfront capital invested ahead of long lead times for delivery, in a dynamic global market environment. An environment full of technology developments and disruptions alongside domestic regulatory demands and constraints; all serving to create an uncertain and challenging growth path. In recent years making a positive return on invested capital is a struggle faced by most private telecommunications network operators .

However, we believe it is possible to find ways to make significant progress to improve outcomes for communities by taking a collaborative, place-based, and inclusive approach that supports private investment and uses public monies wisely. Fundamentally, the opportunity to improve the connectivity experience in the regional, rural and remote parts of Australia will come through investment and policy decisions that support increased access to and uptake of more reliable and more capable modern telecommunications infrastructure and services. If we don't take this approach, the risk is we will continue to see the connectivity and digital gap widen between regional and metropolitan Australia.

Our submission outlines two key principles to guide the approach to creating a positive outlook for the future of regional and remote telecommunications. These are:

1. **Grow from learning:** We must learn from past experiences and global best practices to implement policies and technologies that effectively address the unique challenges of regional, rural, and remote areas, taking care to avoid jumping straight into quick fix solution mode.
2. **Effective collaboration:** Achieving significant improvements requires a collective effort from all stakeholders, including government, industry, and local communities, to work together and address the root causes of longstanding issues.

List of Recommendations:

Focussing on the outcomes regional, rural and remote Australians need, and applying these principles, we believe the Committee should consider 13 key recommendations, as expanded on in our response:

Access to more capable and more reliable regional services

- **Recommendation 1:** Government and regulators create a positive environment for strong levels of ongoing industry investment in regional telecommunications infrastructure. This includes support to keep deployment costs down and a pro-investment approach to policy and regulation that allows those investing in infrastructure to stay competitive and earn sustainable returns.
- **Recommendation 2:** Government and regulatory policy ensure continued mobile network operator (MNO) access to sufficient spectrum at sustainable market prices and allow 3G exit, so MNOs can meet modern regional capacity demands.
- **Recommendation 3:** Policy makers, regional and remote customers, and communities alike embrace the potential of more capable and more reliable modern technologies.

- **Recommendation 4:** Invigorate and optimise future co-investment initiatives and prioritise deployment related reforms and cost reduction to make it simpler, faster and more efficient to extend and improve regional connectivity.

Resilient regional communities and networks

- **Recommendation 5:** Governments and the energy sector respond to the inherent reliance of telecommunications on the energy sector by prioritising improvements to reduce the incidence and scale of mains power outages in regional and remote areas.
- **Recommendation 6:** Governments, telecommunication and energy sectors engage in strategic planning and co-investment across energy and telecommunication infrastructure to improve resilience in both networks. This could extend to encouraging and capturing energy company investments in new innovations to support their power systems and supply for example, standalone power systems.
- **Recommendation 7:** Energy companies to prioritise connection and restoration of power for critical telecommunications infrastructure (as part of business-as-usual operations, as well as in cases of Mass Disruption events).
- **Recommendation 8:** Improved information sharing and collaboration when it comes to: (1) planned and unplanned power loss situations (including real-time and accurate restoration estimates); and (2) improving power resilience to climate change and disasters.

Empowered regional consumers

- **Recommendation 9:** Further contributions across government, industry and the community sector to ensure all Australians can afford to stay connected.
- **Recommendation 10:** Support thriving regional First Nations communities by prioritising future efforts around the FNDIAG Initial Report recommendations.
- **Recommendation 11:** Prioritise government and community efforts to uplift digital ability and connectivity literacy of individuals and businesses in regional and remote locations; and to grow and retain advanced digital skills within regional communities.

USO regulation that supports better regional outcomes

- **Recommendation 12:** Remove the requirement for Telstra to use the outdated copper network to deliver USO telephone services in much of regional Australia.
- **Recommendation 13:** In modernising universal service arrangements, we consider that access to public phone infrastructure should continue.

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1. Our positive vision for the future

1.1 Australia's opportunity for a positive outlook of growth

60 years ago, in his book *The Lucky Country*, Donald Horne criticised Australians for our "*limited view of the possible*" and warned us that Australia needed to change. Five years ago, in a powerful address to the International Institute of Communications while still in Opposition, Minister Rowland harked back to Horne's advice, and added her own warning that "*without leadership and action, Australia won't reach its capacity, and may even decline. And Australians will miss out.*"[3]

In words that have only become truer since the intervening pandemic, Minister Rowland called out the choice Australia faced, as identified in the CSIRO 2019 National Outlook to 2060 project:

> *"Australia is at a crossroads – stride towards a more positive future outlook filled with growth, or face a slow decline".*[4]

Digital leadership is a must for Australia to be able to continue to innovate and compete. Recently, Australia's ranking rose from 19th to 13th in the IMD World Competitiveness Yearbook 2024, a global ranking of the competitiveness of 67 nations. However, our overall position is lagged considerably by our ranking of only 23rd for technological infrastructure.[5] There is no version of Australia's future which does not rely on technology; in some form. And there is practically no version of technology which does not depend on connectivity; in some form. This is true across Australia's wide expanse. As we edge further into a digital century where nothing remains untouched by technology, our telecommunications infrastructure is some of the most important infrastructure there is — in every farm, company and small business, in every State and Territory, in every community, in every home.

At Telstra, this excites us and gives us hope. Our vision is to see technology unlock better outcomes for our people, our customers and society. We see immense power in technology to change some of the things that are not good enough today, like access to education in geographically isolated locations. We see connectivity as the invisible beating heart enabling Australians to connect more closely with each other, to sell our goods and services on the world stage, and to exponentially increase the power of our workforce and natural resources. Offering us the chance to reach new heights of Australian productivity, a more resilient and competitive economy, and better social outcomes for all. Perhaps even more so in regional, rural, and remote Australia than in urban areas, "*we will all do better if Australia is viewed as a great place to expand, invest, innovate and employ people*".[6]

In their 2021 paper, *Quantifying Australia's returns to innovation*, the CSIRO find that for every dollar invested in innovation in Australia, there is a $3.5 return on investment and a 10% average annual return, which is even higher incorporating broader societal and environmental benefits.[7]

Telstra see it as our role to support Australian innovation and productivity by providing access to the best possible technology and connectivity. Like making the world's first ever call over a 5G network in 2018 – although our vision is not just limited to world leading mobile connectivity. That's why, over the

[3] SPEECH - ADDRESS TO INTERNATIONAL INSTITUTE OF COMMUNICATIONS (IIC) AUSTRALIAN CHAPTER - 21 AUGUST 2019 (michellerowland.com.au)
[4] Australian National Outlook - CSIRO
[5] 2024-wcy-australia-profile.pdf (cedakenticomedia.blob.core.windows.net)
[6] Philip Lowe, *Opening Statement to the House of Representatives Standing Committee on Economics,* August 2019.
[7] Quantifying Australia's returns to innovation - CSIRO

seven years to the end of FY24, around 40% of our mobile EBITDA has gone straight back into improving our mobile network ($11.8 billion, with $4.3 billion of this invested in regional areas) and it's why we spent more than this amount again on our wider capital investment in Australia.

As a result, Telstra is a driving force behind global technology innovation, earning for example over fifty mobile network world first advancements and records.[8] This March, we are also proud to have partnered with Starlink to launch the world's first low earth orbit (**LEO**) satellite internet service that you can also use as your home phone.[9] In 2022, we also embarked on an ambitious five-year $1.6 billion project to build Australia's fibre backbone network of the future, with nearly 14,000 km of all new intercity dual fibre paths providing infrastructure to connect into the regional centres it passes, to fuel AI and other future applications with data and ensure Aussies can stay on the cutting edge of the hyper-connected global economy.[10] It's a key part of a global infrastructure race Australia must win.

However, commercial realities mean that the Australian telecommunications industry has recently struggled to make investment returns above the costs of capital, and that no single company can deliver all the improvements needed to digital inclusion in regional and remote areas for Australia to reach our potential. For example, the National Farmers' Federation (**NFF**) Roadmap has a bold vision for Australia's farm gate output to exceed $100 billion by 2030. Widespread adoption of digital agriculture is critical to this goal. Yet in the NFF 2023 Report Card, "Access to telecommunications" was the lowest ranked of 15 issues concerning farmers (73% concerned) and "Investing in Rural Infrastructure" was named the top issue where government '*Isn't doing enough*' (49.7%).[11] If we are to reach Australia's ambitions for innovation, productivity and a cohesive and inclusive digital future, we *all* need to start doing things differently when it comes to telecommunications challenges.

1.2 The path to realising our future

> *"There is … very strong growth in the expectations of Australians generally regarding the services they should receive from the telecommunications industry… Australians now expect not only a reliable telephone service, but access to the Internet at reasonable speeds as well as mobile phone services…Of particular note is the greater degree of concern expressed by rural and remote Australians about services levels compared with those in metropolitan areas".*

It may surprise some of you that the quote above is not a recent one. It is not from this year, or last year, or last decade. It is not even from two decades ago. It is in fact from the original Telecommunications Services Inquiry report "*Connecting Australia*", in September 2000.[12]

24 years and seven independent regional telecommunications inquiries later, the expectations Australians have of the telecommunications industry have only continued to grow, and concerns regarding service levels in regional and remote Australia relative to those in urban areas endure.

In this time, telecommunications technologies have become vastly more sophisticated and capable. A great deal of effort, money and care have also been expended by governments, industry, communities and others in improving outcomes for those living and working in regional and remote Australia. And

[8] What's next for Australia's best, largest and most reliable mobile network (telstra.com.au)
[9] Telstra Satellite home internet with Starlink is here – here's what you need to know
[10] How were building the fibre network of the future - Telstra Exchange; Telstra Market Release - Telstra announces new nation-building Intercity Fibre routes
[11] PowerPoint Presentation (nff.org.au)
[12] Appendix 6 (aph.gov.au)

there have been many literally lifechanging advances made as a result.

However, we have the opportunity to do much better. We stand at the very cusp of technology finally being able to deliver on its potential to narrow the metro/regional digital divide in Australia. With collective forward-looking thinking that creates a positive environment for private investment and uses public monies wisely, the combination of capital investments in fibre backbone, mobile connectivity and use of LEO satellite capacity could see many of the key long-standing policy challenges for regional and remote Australia solved for in the next few years, in efficient and affordable ways.

So, how do we create the positive digital future in which all Australians can thrive that we aspire to? Fundamentally, Telstra believes this needs to start by applying two key principles.

First, **we have the chance to grow from learning**. Global digital leaders learn, and they adapt. There is already a rich history of previous RTIRC recommendations and responses to draw upon. In this 2024 review we have an important chance to learn from what worked, from what we tried that didn't work, and from what we wanted to try but haven't been able to follow through. This includes really probing into whether our policy ambitions are matched by the right policy support and public investment. Where there is relevant international best practice or promising advances in technology, we should learn from these too. But above all in learning better, we should seek to be more curious. To ask better, deeper questions of those on the ground in our regional, remote and First Nations communities about what's really going on and what outcomes are most meaningful for them, rather than jumping straight into quick fix solution mode.

Secondly, **we have an opportunity to collaborate more effectively**. Underpinning the telecommunications services Australians use 24/7, 365 days a year to connect with who they want, when they want, how they want lies an invisible, complex, web of different systems. Systems customers barely even notice, until the moment they can't connect, or find themselves experiencing vulnerability or hardship. Systems that involve a vast array of procedures, principles, people and technologies, and which "*can and do span geographic, cultural, political, and regulatory borders*".[13] Realising regional Australia's potential means realising the potential of all players in our domestic and global ecosystem (the telco industry, all levels of Australian government, communities, energy providers and many more) working as one to address root causes of longstanding challenges effectively and efficiently. Like regional service resilience and reliability and improving digital inclusion for First Nations Australians.

As we explain in the remainder of this submission, applying these two principles, Telstra believes the recommendations from this RTIRC should mobilise around the following four outcomes — being those we consider are of most importance to our customers and stakeholders living and working in regional and remote Australia towards achieving the digital future that they want and deserve:

1. Access to more capable and more reliable regional services.
2. Resilient regional communities and networks.
3. Empowered regional consumers.
4. USO regulation that supports better regional outcomes.

[13] Distinguished Professor Genevieve Bell, 2021 Garran Oration- Garran-Oration-2021_publish.pdf (ipaa.org.au)

1.3 Structure of this submission

This submission is structured as follows:

- Section 2 describes four key pillars to achieving **access to more capable and more reliable regional services**:
  - Network investment to expand access to connectivity supporting modern regional needs.
  - Continued efforts to improve network capacity and reliability in regional, rural and remote areas.
  - Supporting customers to smoothly transition to modern networks and services.
  - Well-designed investment related programs, policies and regulations.
- Section 3 sets out how collaboration between telecommunications providers, energy providers, and policy makers across four key areas can deliver **resilient regional communities and networks**:
  - Improving power resilience.
  - Resilience to disasters and other climate change impacts.
  - Access to communications in emergencies.
  - Helping communities be resilient to scams and cyber threats, and benefit from responsible AI.
- Section 4 envisages outcomes for **empowered regional consumers** that covers:
  - An inclusive digital future for all Australians
  - Supporting thriving First Nations communities
  - Improving connectivity literacy in regional Australia
  - Trustworthy customer information
- Section 5 depicts **USO regulation that supports better regional outcomes** with the following principles:
  - Universal service guarantees remain relevant
  - Take advantage of modern technologies
  - Alignment of USO and SIP service standards
  - The funding bases for the connectivity obligations should remain unchanged
  - Strengthen mobile outside the USO framework.

2. Access to more capable and more reliable regional services

The number one outcome we hear our customers and stakeholders in regional, rural, and remote areas asking for is access to more capable and more reliable telecommunications services. Services that use the power of sophisticated modern technologies to let customers and communities do more, better. More for their education, their health, their work and for connection with others.

There is an expectation of access to connectivity and that the services we deliver help keep people safe, are resilient, of high quality, and are backed by investment that meets ever growing year-on-year demand. Especially as alternative in-person ways of doing things are decreasing, this means services that don't just allow people in regional and remote parts of Australia access and manage day-to-day life activities online, but ones that enable a richer and more varied life (without having to move away). As one of our customers in Mount Isa recently put it "*My mobile is my connection to everything and everyone important in my life*".[14]

As we explain in this section of our submission, we believe there are four key pillars to achieving access to more capable and more reliable telecommunications services in regional, rural and remote areas:

1. Network investment to expand access to connectivity supporting modern regional needs.
2. Continued efforts to improve network capacity and reliability in regional, rural and remote areas.
3. Supporting customers to smoothly transition to modern networks and services.
4. Well-designed investment related programs, policies and regulations.

[14] From independent consumer behavioural research conducted by Nature for Telstra in February 2024.

Key recommendations: More capable and more reliable regional services

Recommendation 1: Government and regulators create a positive environment for strong levels of ongoing industry investment in regional telecommunications infrastructure. This includes support to keep deployment costs down and a pro-investment approach to policy and regulation that allows those investing in infrastructure to stay competitive and earn sustainable returns.

Strong ongoing investment in telecommunications infrastructure and services is integral to realising Australia's digital future. Ensuring regional Australia is attractive for telecommunications investors is ultimately a key Government policy challenge to solve – helping investors keep costs down and ensuring there is scope to earn adequate returns. Regulatory certainty and the approach taken to regulation (e.g. by removing regulatory barriers that add costs or impair industry agility) are also key to investment incentives and attractiveness.

Recommendation 2: Government and regulatory policy ensure continued mobile network operator (MNO) access to sufficient spectrum at sustainable market prices and allow 3G exit, so MNOs can meet modern regional capacity demands.

Ongoing provision of regional and remote mobile services and the ability to meet continued growth in customer demand depend on access to spectrum. No access to spectrum, no mobile service. It's that simple. Since RTIRC 2021, demand on Telstra's mobile network in regional areas has nearly doubled. To meet this ever-growing demand, MNOs must have access to adequate spectrum at a sustainable market price. We also need the flexibility to close our legacy 3G networks, to make way for more efficient 4G and 5G services able to carry more data and new services.

Recommendation 3: Policy makers, regional and remote customers, and communities alike embrace the potential of more capable and more reliable modern technologies.

New technologies can only help to unlock Australia's economic potential and support better social outcomes for regional, rural and remote customers if: (1) the policy environment supports their rollout; and (2) individuals and businesses are using them. Newer wireless, satellite and fibre technology is both more reliable and more capable than our outdated copper and CAN radio networks. Sustaining the performance of our legacy copper networks is becoming increasingly harder. At the same time, this effort is benefitting fewer customers (30% decline since RTIRC 2021). Industry, Government, and communities have a real moment of opportunity to embrace the pathway to better connectivity outcomes offered by newer technologies and to collaborate to continue to build confidence in them.

Recommendation 4: Invigorate and optimise future co-investment initiatives and prioritise deployment related reforms and cost reduction to make it simpler, faster and more efficient to extend and improve regional connectivity.

Strong government capex and opex co-funding support to help industry build, upgrade and maintain the infrastructure needed to keep narrowing the metro/regional digital divide in Australia is essential. Public money must be used wisely in support of otherwise uneconomic private investment. This needs: (1) alignment on policy priorities across government at all levels and with industry – including care to avoid and remove policy and regulatory barriers to private investment; (2) a holistic approach to policy and program design factoring in root cause issues such as energy resilience and reliability, and drawing more effectively on industry expertise and place-based community input; and (3) recognising both where expanded or upgraded terrestrial mobile infrastructure is, and where it isn't, likely to be the optimal solution to address connectivity needs. We also recommend reforms to streamline planning and environmental approvals and reduce charges for Crown Land to make it easier to deploy and upgrade telecommunications infrastructure – so more regional communities can enjoy more benefits faster.

2.1 Network investment to expand access to connectivity supporting modern regional needs

In the first regional telecommunications review conducted under Part 9B of the *Telecommunications (Consumer Protection and Service Standards) Act 1999* (**Act**) in 2008, the RTIRC considered the meaning of telecommunications services that are "significant" to people in regional, rural and remote parts of Australia. They decided that "*services are significant if they are likely to have a major impact on people, their communities and businesses in regional, rural and remote areas*".[15]

Sixteen years later, there is not a soul who would suggest telecommunications services have become any less impactful for those living and working in regional, rural, and remote areas. On average, Australians pick up their smartphone between 100 and 150 times per day to use data, make calls, snap pics and more.[16] Ubiquitous, reliable, secure, and continually improving telecommunications networks and services are a critical foundation enabling the activities of everyday life for all of us.

Accordingly, we continue to see asks to deliver services to match the ever-increasing expectations of our customers and communities. To support these, and to stay ahead of increasing data demands on mobile networks in particular, telecommunications companies must continue to invest significant amounts of capital in Australia. This can be quite a tall order. Especially when often, what is needed are large amounts of upfront capital invested ahead of long lead times for delivery, in a dynamic global market environment. An environment full of technology developments and disruptions alongside domestic regulatory demands and constraints; all serving to create an uncertain and challenging growth path. In recent years making a positive return on invested capital is a struggle faced by most private telecommunications network operators

The impact of the sheer vastness of Australia's geography compared with the relatively small size of our population cannot be ignored. Telstra's mobile network covers around 1 million square kilometres more than any other network (an area larger than the entire size of 166 of 200 countries in the world), but even our terrestrial mobile network covers only about 37.5% of Australia's landmass. As we explain further below, in this regard we see the imminent arrival of direct to handset (**DTH**) LEO satellite technology in Australia as already likely to be impacting investment incentives for expanding terrestrial coverage further into current blackspots. That is because we expect DTH will result in basic levels of connectivity becoming near[17] ubiquitous across Australia's entire landmass, direct to customer handsets.

In this section 2 of our submission, we highlight some of the most significant investments Telstra has made recently (since the last RTIRC in 2021, both on our own and through participation in government co-investment initiatives) to deliver more reliable and more capable telecommunications services to our customers in regional and remote parts of Australia. To put the scale of our investments in context, in FY24, nationally, on spectrum alone Telstra spent $1.3 billion. This is roughly thirteen times the amount of money we received from the Government to support our delivery of the USO.

In this part of our submission, we also reflect on our experience as a major regional investor, to consider what more can be done to support ongoing private sector regional investment to help close the digital divide with metropolitan areas. As the following comments from independent industry commentator

[15] HPP022016002141.pdf;fileType=application/pdf (aph.gov.au), p VI.

[16] Brass tacks: 5 things that go into running Australia's biggest mobile network (telstra.com.au)

[17] Excluding radio quiet zones.

Venture Insights illustrate, without serious change, led by Government, to create a more positive investment environment there is a very real risk the situation declines rather than improves:

> *"...the emerging gap between industry revenue and the capital investment required to meet rapid data usage growth, is ...a key determinant of the overall health of the digital economy... Wider coverage and faster data networks have been achieved despite declines in industry revenue...*
>
> *The current capex slowdown risks the emergence of a digital investment gap...*
>
> *...this occurs against a backdrop of long-term decline in returns on invested capital (ROIC) in the Australian telecommunications industry since the Global Financial Crisis (GFC)....*
>
> *The rising cost of capital exacerbates this ROIC challenge... This has happened in all advanced markets and is not confined to Australia. But as an island continent with a dispersed population, Australia has high demand for telecommunications infrastructure...*
>
> *The 1997 telecommunications reforms represented a national commitment to facilitating private investment in telecommunications... In many ways, the last decade has been a reversal of this program. A new wholly government-owned incumbent now dominates fixed telecommunications... The private sector share of industry profit is falling, along with industry capex. This is worrying because significant investment demands in the Australian market still exist: fibre upgrade, expanded mobile coverage, and the spread of new technologies like 5G. The history of telecommunications over the last decade shows that private companies make an indispensable contribution to the efficiency of such investments. This requires a healthy industry that can achieve commercial returns on capital invested.*
>
> *This is a policy challenge as well as an industry challenge, and regulation is an important determinant of investment attractiveness. The telecommunications industry is subject to:*
>
> - *A regulatory regime of exceptional complexity, covering consumer protection, privacy, wholesale prices and access, service standards and complaints procedures, advertising standards, spectrum access, local council planning, universal service obligation, and national security.*
> - *High costs from spectrum allocation policies that inflate spectrum unit prices, even as demand for spectrum to support wireless communications is surging.....*
>
> *These issues must be addressed to create the investment environment that will attract the capital Australia needs. In a global economy where capital is mobile, private capital investment cannot be sustained unless returns meet industry benchmarks.*
>
> *Nations that create attractive investment environments for telecommunications investors will reap the benefits of better digital infrastructure and a stronger digital economy. Nations that do not will be laggards...."*[18]

2.1.1 Mobile network investment

Over the seven years to the end of FY24, Telstra has invested $11.8 billion nationally in our mobile network, with $4.3 billion of this invested in regional areas. These headline investment figures only reflect capital expenditure — they do not include our substantial additional operational expenditure in areas such as equipment maintenance by our field technicians, customer service support, or site rental

[18] REPORT: State of the Australian Telecommunications Industry - Venture Insights

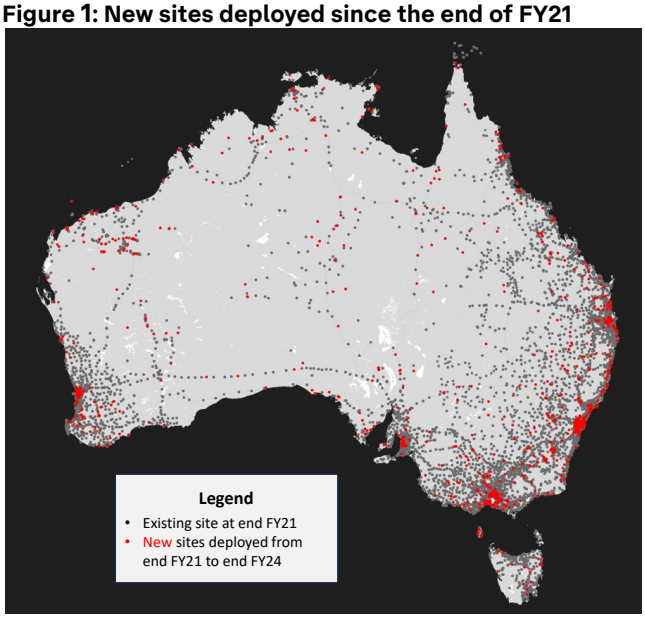
and power costs; costs that continue to increase year on year as we expand the network. Proportionately (on a population basis), we spend more in regional areas, especially in remote areas and areas outside regional centres, than in metro areas, due to the greater distances and logistical challenges this creates as well as environmental considerations (e.g. for towers that are in extreme cyclonic zones). To illustrate these cost impacts, consider that since Amplitel was established in 2021, [c-i-c] [c-i-c] of its capital expenditure on mobile infrastructure has been in regional Australia.

In the Issues Paper, it is stated that "*the level of impact private investment is having in providing new and improved connectivity for people in regional, rural and remote areas of Australia remains unclear*".[19] Let us help clarify.

Since the start of FY21, the investments we have made in our mobile network in regional and remote areas (in our own right and through our contributions to government co-investment initiatives) have allowed us to add over 500 new regional and remote mobile sites, and to upgrade over 2,700 regional and remote mobile sites. For our customers, the beneficial impacts of these substantial regional network investments by Telstra include:

- Eradicating 240,000 km^2 of blackspots in regional and remote areas (an area larger than the State of Victoria). As shown in Figure 1 below, these new sites provide mobile coverage to regional and remote areas far and wide across Australia.

Figure 1: New sites deployed since the end of FY21

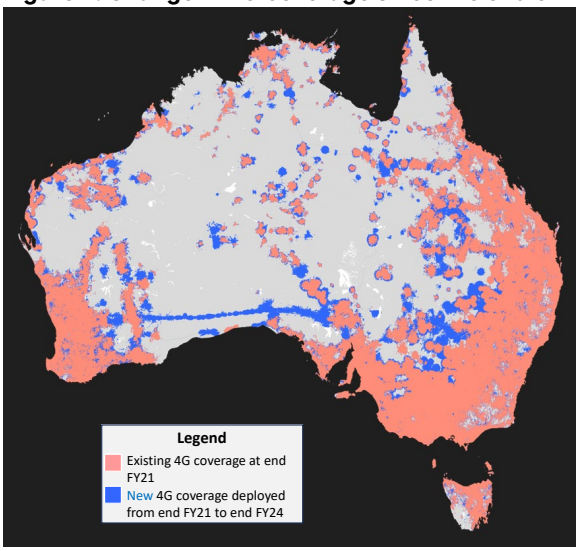


- Adding over 700,000 km^2 of new 4G mobile coverage. Our 4G coverage now reaches 99.7% of the population with over 2.88 million km^2 of land area covered. This means customers in regional and remote areas who could previously only access legacy 3G services can now enjoy the benefits of faster and more advanced 4G mobile services, as well as expanded choices for their home internet through access to 4G Fixed Wireless services, subject to service qualification. Expansion of our 4G coverage has also expanded our Internet of Things (**IoT**)

[19] Independent Regional Telecommunications Review 2024 (infrastructure.gov.au), p 19.

coverage, which is important to support Australia's agricultural industry. The scale of this new 4G coverage is shown in Figure 2 below.

Figure 2: Change in 4G coverage since the end of FY21



- Extending our 5G network to another 200 regional cities and towns, increasing to over 500 the total number of regional cities and towns now able to benefit from our advanced 5G mobile services — far more than any other carrier. More than 50% of our total mobile traffic is now on 5G.

As illustrated in the case study in Box 1 below, we're not just delivering new mobile sites and coverage. We are also making investments to improve the connectivity, capacity, performance, and reliability of both mobile and fixed services across entire regional areas, such as the King Island connectivity project Telstra has co-invested with government in under the Regional Connectivity Program (**RCP**).

Box 1: Connectivity transformation via technology innovation for King Island

Telstra, with the support of King Island Council, the Tasmanian and Federal Governments, completed a transformation of the network servicing King Island in April 2024 that will support the island's future social and economic development.

The program delivered additional capacity to both the on-island and off-island transmission network, four new mobile sites and upgrades to the other existing mobile network facilities. Key achievements have included:

- Building the world's longest 10G Microwave transmission link (from Mt Cowley to Cape Wickham) delivering 10.8Gbps at 116km over Bass Strait. This increased existing on-island network capacity more than six-fold.
- New fibre routes including 37km along the west coast connecting Cape Wickham to Currie, 10km into Naracoopa and 7km through Grassy Township to the Wharf.
- Providing new and enhanced mobile services to residents, businesses and visitors via two new mobile sites at Naracoopa and Yambacoona, two new small cell sites at Currie and Grassy, and 4G upgrades at Lymwood, Loorana, and Cape Wickham.

Following the closure of our 3G network, refarming of our low-band spectrum from 3G to 5G will also allow us to provide 5G services on King Island (see details on the benefits of 5G services in section 2.3.5 below).

Less noticeably but no less important than our investments in network expansion and upgrades, Telstra also continues to invest in *maintaining* our mobile network and providing services; in a footprint that extends around 1 million square kilometres further into the regional and remote parts of Australia than any other mobile network. To put that in context in terms of Australia's geography, that's an area very nearly the size of New South Wales and Victoria combined!

The vast majority of this 1 million km^2 has little if any residential population. But for the ~ 80 First Nations communities (where around 50,000 people live)[20] and ~170 smaller towns and localities of less than 200/300 permanent residents we alone invest in covering, the service we provide is vital to their ability to participate in today's modern digital world. Our unique mobile coverage also supports:

- Mining (and gas) areas with high concentrations of fly-in fly-out workers (~650[21] mine operations);

[20] Based on Australian Bureau of Statistics (ABS) Indigenous Location (ILOC) definitions for locations/areas with >90 First Nations people and regional towns with majority First Nations populations.

[21] Based on "point of interest" data in November 2022, may count separate areas of a mine complex and dormant mines.

- Farming and agricultural properties;
- ~9,800km of our major regional highways and connecting routes between communities;
- Remote roadhouses and rest stops along highways;
- ~3,300km of Australia's major regional rail network corridors – covering both freight and long-distance passenger rail;
- Around 65 state and national parks, plus camp sites and other isolated tourist destinations; and
- Large stretches of coastline and beaches – supporting recreation and fishing/shipping.

Figure 3: Types of locations and activities covered by our additional 1 m km² of mobile coverage

If you think the small residential population covered by this part of our mobile network means our customers don't get much value out of using it, you would be wrong. To give you an idea, in 2022 the 1 million km² of unique Telstra mobile coverage we continue to invest in supplying was carrying the following traffic for our customers:

- around 57,000 emergency calls every year;
- access to this coverage by around 1.5 million unique customer services every month;
- over 700,000 voice calls and around 750,000 SMS text messages every day;
- over 300 terabytes of data — equivalent to streaming over 200,000 hours of high definition video every day.

The investment we have made in our regional mobile coverage footprint also supports an extremely wide availability of IoT solutions.[22] Telstra now offers 3.5 million km^2 of Long Term Evolution for Machines (**LTE-M**) network coverage across Australia (good for things like asset tracking and smart buildings), and around 4.4 million km^2 in Narrowband IoT (**NB-IoT**) network coverage (good for things like agricultural monitoring).[23] Both of these networks reach even further than our already extensive mobile network coverage. Our IoT footprints have grown by ~10% since 2021, due to our recent investments in expanding 4G mobile coverage. This kind of network investment is vital for ensuring Australia's agricultural industry remains internationally competitive. For example, Deloitte predict that, globally, the installed base of IoT end points for precision crop farming, livestock management, and agricultural equipment tracking will near 300 million by the end of 2024 — a 50% increase over the 200 million installed base in 2022.[24]

2.1.2 Investing in innovative satellite services to support regional areas

In recent years there have been significant advancements in LEO satellite technology. As recognised in the February 2024 report of the cross-industry LEO satellite working group convened by the Government,[25] LEO satellite services show strong potential for improving access to communications in even the remotest parts of our country.

The most prominent development has been the entry of Starlink into the Australian market, as the first of several expected LEO-based satellite broadband providers. In 2023, Telstra established a world first agreement to resell Starlink consumer broadband combined with voice, resulting in the launch of our *Home Satellite* product in Australia in March 2024. Consumer benefits of Telstra's new Home Satellite service include access to onshore support and a USO compliant home phone line, with professional installation to be offered next year. We also have a Starlink Enterprise Internet product with high performance kits suitable for commercial needs, with options for both fixed and portable services.

[22] See some examples of the benefits of this IoT coverage for the agricultural industry at IoT in Focus: Transforming the agriculture industry (telstra.com.au) and AgTech and sustainable agribusiness | TelstraDev

[23] IoT Network from Telstra Enterprise

[24] Agriculture technology | Deloitte Insights

[25] This report is available here: https://www.infrastructure.gov.au/department/media/publications/low-earth-orbit-satellite-working-group-2023-chairs-report

Box 2: Telstra's Home Satellite Starlink service comes to Gippsland

In March 2024, Telstra installed our new Satellite Home Internet service for a family based at Goon Nure in Gippsland, Victoria.

The family had ongoing connectivity issues on their property. They cancelled their home phone service due to reliability issues and were relying on a 4G Nighthawk for broadband services, but that had limited range and connectivity. They were excited to be a part of a trial and to see how Satellite technology could improve their experience.

Since the installation, the family home has been transformed and a range of activities, communities and entertainment has opened up for the family. Their daughter is now able to watch art tutorials and has just enrolled for an online art course – something that was unattainable in the past. Her Dad, being a night owl, is very pleased with Netflix.

Another important aspect of LEO satellite technology in which Telstra has been investing is its potential to be used for remote backhaul that is more economic and has superior performance characteristics to traditional (geostationary) satellite backhaul. Following commencement of our partnership with OneWeb in 2022,[26] work is now underway by Telstra and OneWeb on the world's largest rollout of OneWeb LEO satellite enabled mobile backhaul. We plan to connect hundreds of existing remote mobile base station sites currently using traditional satellite backhaul with OneWeb's LEO satellite solution by the end of 2025. This solution will increase the size of the backhaul 'pipe' at those sites to 25 Gbit/s. Consequently, we expect to see average bandwidth increase by at least 15 times and see a tenfold reduction in average latency, improving the performance of real-time applications such as video calling.[27] There's also potential for the OneWeb backhaul solution to be used as a backup to improve reliability in areas where terrestrial backhaul is susceptible to natural disasters and isolate communities.

From late 2024, we expect to see LEO satellite-based DTH for SMS text messaging to anyone become available in Australia, then with voice and possibly some limited data services by the end of 2025. However, some capability similar to DTH is already available today to customers with the latest generation iPhone devices. These capabilities include Apples SoS — allowing text messaging to emergency services and "find my friend" — which enables customer devices to send their location to other users when outside of mobile coverage virtually anywhere in the country and offshore, a great safety aid for those going off the beaten track.

[26] How we're working to improve connectivity with LEO satellites - Telstra Exchange
[27] Telstra and OneWeb begin world's largest deployment of LEO backhaul with first voice call

Telstra is currently investing our resources in exploring LEO satellite DTH technology[28] and we expect to offer a full service in future once the capability is sufficiently developed to provide a good customer experience. Even though Telstra's mobile network is Australia's largest covering over 2.88 million km^2 of the country's landmass, there remains nearly 5 million km^2 of remote Australia without coverage that could benefit from the presence of DTH connectivity. We see the potential of DTH for economically covering blackspots in these areas within the next few years as a significant one for Australia, given how economically challenging the case is for further terrestrial coverage expansion in these sparsely populated remote areas (due to the combination of high deployment and maintenance costs and low subscriber revenues). DTH services also have the potential to deliver improved disaster response capabilities and to provide a basic 'safety net' by enabling calling for help when emergencies occur beyond the terrestrial coverage footprint (where there is clear access to the skyline).

However, while DTH offers coverage benefits, its capacity will be far less than the mobile network can support in the same nominal coverage area as one LEO satellite. Hence, DTH is unlikely to be a substitute for the mobile network in more populated regional areas, where we expect a continued need for investment in improving coverage and capacity within the existing terrestrial mobile footprint.

2.1.3 Investing to evolve our national fibre backbone network

Through InfraCo, Telstra owns and operates the largest fibre and duct network in Australia with around 250,000 kilometres of fibre optic cable deployed across the country. Our fibre assets are vital for connectivity in regional and remote areas. For example, these fibre assets provide regional and remote mobile sites with backhaul connecting them to the rest of our network — enabling our regional mobile customers to connect with each other, with the rest of Australia, and with the rest of the world.

In February 2022, we announced we would be bolstering our fibre network by embarking on a new intercity fibre (**ICF**) project.[29] Underlying our investment in this project is continued growth in customer data usage, with a 24% to 33% projected compound annual growth rate in Australia's data use through connected devices expected between late 2023 and 2031.[30] The ongoing explosion in the use of data in Australia and the need for fibre capacity to support this is part of a global trend. For example, in the last 12 months, plans for hundreds of new large-scale data centres have been launched around the world, with intensity in the US. Many of these will be gigawatt sized complexes. In Australia we are seeing similar trends.[31] Driving this demand is the continued growth of private and public cloud services, along with a massive surge in Artificial Intelligence (**AI**) compute engines and new AI use cases. Satellites too depend on fibre capacity, as part of their supporting ground infrastructure, and this demand is skyrocketing. Globally, Space X is producing 30 new satellites a week and plans to increase the number of their Starlink satellites in the sky from 5,000 to 7,500 in 2024 alone.[32]

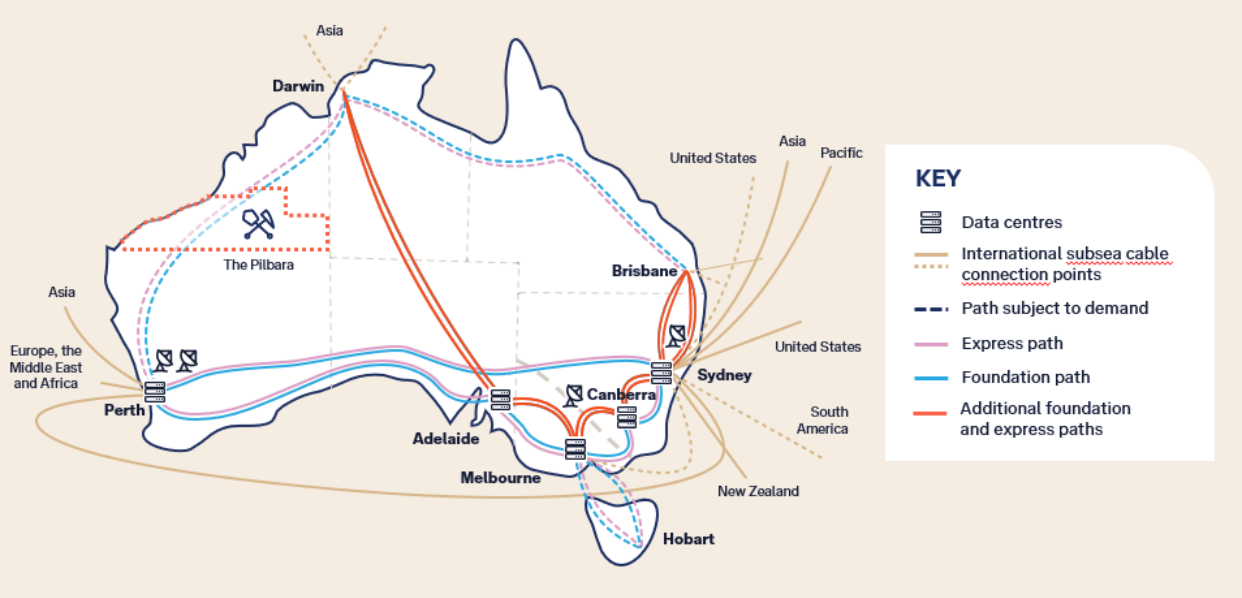
To meet this demand, our ambitious five-year, $1.6 billion ICF project will lay new high capacity, ultra-low latency fibre between Australia's mainland capital centres. The ICF is a long-haul, fibre "backbone" network. It's different to the nbn and other fibre networks servicing people's homes in that it is secure, core infrastructure.

[28] What's next for Australia's best, largest and most reliable mobile network (telstra.com.au)
[29] How were building the fibre network of the future - Telstra Exchange
[30] Telstra Investor Day, 14 November 2023 (slide 25).
[31] Australia key driver of APAC data centre capacity growth - Strategy - Cloud - Data centre - CRN Australia
[32] See current satellites mapped at: Live Starlink Satellite and Coverage Map (satellitemap.space)

In November 2023, we announced the project was expanding with additional routes, including a connection between Adelaide and Darwin. Collectively the ICF project will now connect every mainland capital city with the laying of nearly 14,000 kilometres of fibre. No other carrier or organisation is currently building or replacing as much of this backbone as Telstra.

Figure 4 below depicts the routes which will form part of the ICF project. Construction is currently underway on five routes across five states and territories, with design and planning well underway on another five routes, including Darwin to Adelaide which is scheduled to commence construction in 2025.

Figure 4: Route map for Telstra's Intercity Fibre (ICF) project



By improving the size, reach and bandwidth of Telstra's existing optical fibre network, the ICF project will help support Australia's digital economy for the next twenty plus years, delivering unprecedented levels of connectivity across Australia. In addition to supporting the needs of our mobile network, the ICF project will also support demand from hyperscalers, subsea cable companies, domestic and international carriers, enterprise and government services, and satellite providers. By design, benefits in both redundancy and resiliency will also be realised.

Through its extensive scale, the ICF will unlock opportunities for industries to locate in new locations and provide an expanded footprint for future mobile infrastructure to connect. The cornerstone of this network is the construction of dual fibre paths – an express path and a foundation path. The express path is designed for those seeking high-speed, long-distance connections. Key for regional communities is the foundation path, which provides access points to connect to regional and remote locations (through regional "off-ramps").

However, the ICF is not just about scale – it's also about speed and capacity. Telstra has collaborated with global leaders in fibre optic cable technology including Corning and Ciena to develop fibre that is high capacity and ultra-low latency. As a result, the ICF will enable transmission rates over six times faster than today's commonly available rates (up to 650 Gbps based on current technology) and capacity of nearly seven times what is typical today (up to 61.3 Tbps per fibre pair capacity in a recent simulated network trial). At the same time, the new fibre optic cables we are producing with support

from our local partner Prysmian are more than 50% smaller and lighter than the previous design used in Telstra's existing fibre network.[33]

Figure 5: Optical fibre cable used for the ICF

The ICF is a nation-building investment that benefits those living and working in regional communities as much as those in cities. It absolutely responds to the Australian Broadband Council's Agri-Tech Expert Working Group's (**AEWG**) 2021 call of "*we need fibre highways with more stops*".[34] When complete, the ICF will provide thousands of new network access points into the regional towns and communities is passes through, enabling industry investment, supporting innovation and the adoption of new technologies, as well as helping to bridge the digital divide.

We're also investing in critical fibre infrastructure in the Pilbara region in Western Australia in support of the booming mining and renewables sector. We're building two new fibre routes – the first section between Parry Range and Tom Price, and the second section between Nullagine and Marble Bar. This new fibre infrastructure will support the growing data needs of these primary industries as they increasingly look to incorporate AI, automation, and big data analysis in their processes. For example, Rio Tinto's Gudai-Darri mine in the Pilbara is one of the most technologically advanced in the world. It uses autonomous trucks, trains and drills, as well as the world's first autonomous water trucks, and a robotic ore sampling laboratory.[35]

[33] Prysmian and Telstra partner to expand optical cable manufacturing plant | Prysmian
[34] Agri-Tech Expert Working Group (infrastructure.gov.au), p 69
[35] Rio Tinto Opens Gudai-Darri, its Most Technologically Advanced Mine

To help regional, rural and remote communities and industries get the most out the massive investment in the ICF Telstra is making, we recommend the RTIRC focuses its report recommendations on the second two elements of the "desired future state" recommended by the Australian Broadband Advisory Council's AEWG (with Telstra's ICF now creating the infrastructure to enable the first):

> *"The desired future state has three main elements:*
>
> - *fibre highways across the country with back haul off-ramps into every rural community*
> - *every rural town or area has a locally developed connectivity plan that connects their off-ramp to a range of place-based, locally supported infrastructure*
> - *government investment to achieve this takes place within a long term, intergovernmental planning framework, and which is complementary to business investment*."

Importantly – we are building the ICF right now; presenting an opportunity never before seen for governments and regional communities to consider co-investing with us to build new fibre connections to regional centres and other locations while we have the construction crews in the area.

2.1.4 Keeping Australia connected to the world through our subsea cables

It might surprise you to know that about 99% of Australia's digital connectivity to the rest of the world comes through underwater subsea cables. Telstra currently owns or operates about 400,000 kilometres of these cables across the ocean floor — enough to lap the world ten times![36] Whether you live in regional or remote Australia or in one of our cities, just about every bit of communication you make goes through these cables — from Instagram posts and calls with family and friends overseas, to movies you stream and games you play online with others.

Figure 6: Preparing for the ICF cable landing, Sydney Harbour, June 2024

Manufacturing, laying, and connecting subsea cables across the ocean is a big task on its own, and maintaining them can sometimes take almost as much work. Some of our subsea cables run thousands of metres long; under some of the deepest water on the planet. Even just getting the grappling hook down to reach the cable to repair it can take a whole day. Many years ago, if a cable went down due to an event like a typhoon, it might have significantly impacted Australia's ability to connect to the world. Now, because of the investments we've helped make to ensure Australia has a diverse and large network path, if a cable is broken and getting repaired, we can reroute traffic to other cable segments.

[36] Subsea cables: Keeping Australia connected to the world - Telstra Exchange

Telstra has multiple subsea cable paths that connect Australia to the rest of the world with resilient capacity, and we continuously invest in upgrading and commissioning new cables, to ensure Aussies can stay on the cutting edge of the hyper-connected global economy.[37]

2.1.5 The importance of industry financial sustainability for ongoing investment

While Australia's ranking in the IMD World Competitiveness Yearbook 2024 recently rose from 19th to 13th out of 67 nations, when it comes to communications technology, we rank only 45th, and only 40th when it comes to investment in telecommunications as a percentage of GDP — well below most of our global peers.[38]

To achieve our ambitions for the future, Australia's regional, rural and remote communities need private capital investments like those Telstra is making in the ICF and our subsea cables; in continuously improving and extending our mobile network; and in new technologies such as LEO satellites. Those investments cannot happen unless Australia's telecommunications industry is economically sustainable. In simple terms, that means the ability for operators to make sufficient commercial returns to justify further and ongoing investment. Unfortunately, where the industry finds itself today is on the precipice of economic unsustainability.

In the first RTIRC Report in 2008, the importance of mobile communications to all Australians, including those in regional, rural and remote areas, was considered to be reflected in the fact that *"on average, people spend more than $600 per person per annum on mobile telephony"*.[39] Fast forward to 2023, and recently published data by Canstar Blue reveals the average Australian pre-paid phone bill was $30 per month, which works out to just $360 per year. Customers who chose a SIM-only postpaid plan paid on average $41 per month in 2023 — that's $492 per year. Even factoring in the cost of mobile devices provided on bundled postpaid plans, customers in Australia only paid on average $1,080 per year in 2023.[40]

If you think that suggests Australian telecommunications services have become cheaper over the years, you'd be right. According to research by BCAR, affordability of telecommunications services in Australia is improving. Australian households now spend a lower share of their disposable income on telecommunications. In 2021, average Australian household spending on telecommunications services accounted for 3% of disposable income. In 2008, when the first RTIRC was convened, that figure was 4.1%.[41]

At the same time, the expectations Australians have of their mobile services are exponentially higher than they were 16 years ago. In 2008, the first ever Apple iPhone had only just been launched globally in 2007,[42] and the speeds we now take for granted on the 4G networks today covering 99.7% of Australia's population were still three years away. Today, the average Australian spends 6 hours and 24 minutes a day using the internet.[43] While much of the data traffic generated when we are online is still carried over fixed networks like the nbn, in June 2023, 13% of it was downloaded over Australian mobile networks — up 36% from just 12 months before. One reason for this (alongside the key driver in growth

[37] See a map of these at: Global network infrastructure map - Telstra Enterprise
[38] 2024-wcy-australia-profile.pdf (cedakenticomedia.blob.core.windows.net)
[39] HPP022016002141.pdf;fileType=application/pdf (aph.gov.au), p VIII.
[40] What is the Average Mobile Phone Bill Per Month? | Plan Types - Canstar Blue
[41] Australian households and the affordability of telecommunications—Evidence from Household Income and Labour Dynamics in Australia (HILDA) data—Working paper—November 2023 (infrastructure.gov.au)
[42] A History of Mobile Technology – From brick phones to breakneck data speeds - Part 3 - Steve Bauer (telstrawholesale.com.au)
[43] Digital 2023 October Global Statshot Report — DataReportal – Global Digital Insights

of more data usage per customer) is that in June 2023, there were approximately 29.1 million pre-paid and post-paid mobile services in Australia. This is an increase of 1.1 million services (4%) since 30 June 2022, due to factors like population growth. [44]

Consistent with these overall Australian trends, and facilitated by the near doubling in average national mobile speeds resulting from our network investments over the past five years, Telstra has continued to see strong growth in customer demand for mobile data in recent years. In the five years to end of FY24, traffic on our mobile network has more than tripled (3.5 times increase). In just the last three years since RTIRC 2021, demand in regional areas has nearly doubled. In FY24, more than 41% of the total data downloaded on Telstra's mobile network was downloaded in regional and remote parts of Australia.[45] The volumes involved are enormous — 1313 petabytes, which is 1,313 *million* Gigabytes — the equivalent of around 1,313 million hours of Netflix streaming.

Telstra sees an economically sustainable industry in which operators can earn the returns they need to keep investing as being entirely consistent with — in fact, a critical enabler of — our ability to support this kind of growth in data usage, to deliver the best possible services to our customers and to support the future economic and social prosperity of regional Australia.

In recent times Telstra has announced several measures to simplify our operations and improve our productivity. We've also announced price rises for some products, to ensure we can keep investing in our network, products and services while responding to the ever-increasing data usage needed to keep up with the modern digital needs of our customers. These changes are key to ensuring we can remain competitive and sustainable in the long term and continue to deliver a great service for our customers.

However, the economic sustainability challenges we face are not just an industry challenge. While a lowering of industry telco infrastructure investment might be one way to improve financials, it's not the answer Australia needs. Strong ongoing investment in telecommunications infrastructure and services is integral to the strength of Australia's digital future. That means ensuring regional Australia is attractive for telecommunications investors is ultimately a key Government policy challenge to solve: to support those outside of metropolitan areas to innovate and compete; to improve Australia's productivity; and to improve social outcomes. Regulators, too, have a part to play, with regulatory certainty and the approach taken to regulation also being a key determinant of investment incentives and Australia's overall investment attractiveness. Some important suggestions we have on this are set out in section 2.4 below. The potential windfall for Australia if we get these conditions right is high. Considering the agricultural sector alone, estimates by the Australian Farm Institute endorsed by the AEWG are that:

> *"The size of the prize from digital agriculture is $20.3 billion per annum and a lift of 1.5% to the Australian economy".*[46]

2.2 Improving network capacity and reliability

Telstra invests considerable amounts (and expends considerable effort) to maintain and improve the capacity and reliability of our regional telecommunications networks. This work is another key aspect of

[44] Internet Activity Report - Period ending 30 June 2023 (accc.gov.au), p 4.
[45] Remote areas comprise the ABS zones remote and very remote, while regional areas comprise the ABS zones inner and outer regional.
[46] Agri-Tech Expert Working Group (infrastructure.gov.au), p. 9

how we are helping to ensure regional Australia is not left behind in Australia's digital future.

We know from listening to our regional customers and stakeholders there are some concerns about congestion on our 4G mobile network. In particular, we have heard concerns about customers migrating from 3G to 4G having impacts to their service experience in areas where there is congestion. We explain in this part of our submission the work we are doing to improve the 4G (and 5G) experience for our customers. In section 2.3 of our submission below, we explain the key role that our use of newer generations of mobile technologies plays in this task. In addition, in section 3 of our submission, we explain the work we are doing to improve the resilience of our mobile network.

2.2.1 Upgrading capacity to keep up with regional mobile demand growth

Telstra invests heavily to ensure our networks can keep up with the ever-growing need for data of our customers in regional and remote areas, as well as everywhere else in Australia.

As explained further in section 2.3, key to this is our use of modern generation mobile technologies that create more capacity in our network by adding bandwidth and allowing us to use our spectrum more efficiently. Our 5G network now reaches around 89% of Australia's population,[47] targeted to address areas where this additional capacity is most needed. Looking to the future, we will continue to expand our 5G footprint across more of Australia towards our goal of reaching 95% of the population in 2025.[48] While 6G is not expected until after 2030, we expect it to eventually enable increased integration between terrestrial and non-terrestrial networks, opening up many new opportunities for connectivity in regional and remote areas.

We also continue to improve the capacity of our existing sites by making network upgrades where this is economic (and where there is government co-funding support to do this where it is not). For example, since RTIRC 2021, we have allocated over [c-i-c] [c-i-c] to bolster capacity at selected locations, reducing congestion and providing performance uplifts for our customers through the planned upgrade of over [c-i-c] [c-i-c] optical rings and [c-i-c] [c-i-c] microwave links by the end of Q1 FY25.

However, keeping up with Australia's veracious appetite for mobile data is no easy feat. Traffic on our mobile network in regional areas has nearly doubled since the 2021 RTIRC, and more than tripled in the last five years to end of FY24. To view the traffic growth challenge that we face in a different way, imagine for a moment vehicle traffic on a national highway nearly doubled in three years, or tripled in five years. There would be no quick or simple way to expand the highway sufficiently to keep all traffic moving at the same rate as before. It's a similar story for the mobile network.

It's also important to appreciate that the rates of data growth can vary considerably between different locations across Australia. Managing this variable demand growth is challenging for network operators, because it's impossible to fully predict where growth is going to be greatest, and correspondingly where the need for capacity augmentation and upgrades is greatest. People are also continually moving between locations which creates further variability in demand. Other swing factors include differing availability and capacity of alternative access technologies (such as the type of nbn connection available) to support customer data needs. Lastly, our network capacity — for historical reasons — is not always uniform across the entire network. This means that growth in data usage at a

[47] What's next for Australia's best, largest and most reliable mobile network (telstra.com.au)

[48] Breaking upload speed records on 5G - Telstra Exchange

location where we have spare mobile network capacity may not impact the customer experience, whereas data growth in an area with less capacity may result in congestion.

Telstra has in place carefully considered annual programs for site upgrade activity (adding capacity to network sites with known or anticipated congestion issues). We also take pre-emptive actions to minimise congestion at busy holiday locations and major events (via the use of deployable solutions for example). However, there remain times when the rapid growth in customer demand runs ahead of our ability to add capacity. This can be a particular challenge in some regional and remote locations where, for example, we face constraints in available backhaul that are both technically and economically challenging to address.

These issues can result in congestion, something we understand can be very frustrating for our customers. Sites identified as experiencing sustained congestion are incorporated into our ongoing site upgrade programs. However, it is an incredible challenge for any mobile network operator to keep up with modern customer demand growth. This is especially true in regional and remote areas where:

- Logistical complexity and costs to deploy are higher compared to more built-up areas, making the overall site economics more challenging; and
- Lack of alternative infrastructure can also mean customers use our mobile network for data intensive activities like video and TV streaming and gaming, which customers in urban areas are able to do using nbn fixed line services or by watching free-to-air broadcast television. (Note the particular impact of lack of access to VAST TV services in remote First Nations communities is discussed below in section 4.2).

2.2.2 The role access to spectrum plays in helping us support our regional customers

Telstra's ongoing provision of mobile services in regional and remote areas, and our ability to meet continued growth in customer demand, depends on continued access to spectrum. The significance of this fact cannot be overstated. No access to spectrum, no mobile service. It's that simple.

Low band spectrum is the most important spectrum for the delivery of mobile services in regional and remote Australia. That's why, for example, in the 2021 850/900 MHz spectrum auction, Optus and Telstra spent (combined) more than *$2 billion* acquiring licenses to continue meeting service demand from our customers, particularly in regional areas.[49] Given the critical role spectrum plays in the provision of Telstra's mobile services to our customers, one of our key advocacy positions in the ACMA's current Expiring Spectrum Licence (**ESL**) review is that existing licensees must be given the option to renew existing holdings they're actively using, or plan to use (because this will support service continuity).[50]

While we have a strong track record of investing in spectrum and then using it in an efficient and effective way — as illustrated by our progressive refarming of 850 MHz spectrum from 3G to 5G as part of 3G closure — we also support policy measures which can result in additional spectrum being made available for mobile usage. This is particularly important where spectrum is lying fallow or underutilised for prolonged periods, which is the worst possible outcome for regional communities. In the context of the ESL review we've therefore submitted that where spectrum in regional and remote areas is not

[49] 850/900 MHz band auction results | ACMA

[50] Expiring spectrum licences (stage 2) – information gathering, and views on uses of frequency bands and alternative licence conditions | ACMA

being utilised adequately and it is decided to reallocate that spectrum, any applicable allocation limits may need to be revisited. The purpose of this would be to increase the chances that the spectrum can be acquired by a licensee who will put it to use to improve service coverage and/or quality.

It is also relevant to consider in this context the regional network sharing deal announced by Optus and TPG Telecom in April 2024. This proposal is similar to the network sharing arrangement Telstra previously proposed with TPG Telecom, which was rejected by the Australian Competition and Consumer Commission (**ACCC**). We welcome Optus and TPG's proposal to step up to the challenge of improving connectivity across regional Australia. Should the arrangement be approved to proceed, this will be a material new factor relevant to the future allocation of spectrum in regional areas – to ensure it is being put to best use for regional communities. Currently there is a mismatch between MNOs who have significant spectrum, and the MNOs that have invested in regional Australia to deploy that spectrum for consumers, resulting in a poorer regional consumer experience.

Also looking to the future, it will be important to avoid any potential adverse impacts to existing terrestrial mobile networks in regional, rural and remote locations that could arise due to interference from new LEO satellite-based services using the same spectrum. To avoid this risk, MNOs need to retain full control over the spectrum held under their spectrum licences, and satellite operators providing complementary services using the same spectrum must enter into agreements (along with appropriate technical measures) with the MNOs to access the spectrum and avoid interference between the two services. This will help maximise the public benefit for regional communities from allowing these new services into the Australian market.

Finally, as noted above, industry financial sustainability is key to the ability of the telecommunications operators to keep making major investments in assets like spectrum that we need to deliver quality, reliable services in regional, rural and remote areas. In FY24 alone, Telstra spent $1.3 billion on spectrum acquisitions, renewals and leases nationally. These kinds of investments in Australia's future are not sustainable unless we can demonstrate appropriate returns to our shareholders on the capital we invest.

2.2.3 Harnessing the power of the cloud and AI to improve our network reliability

In February 2024, we announced a world first achievement with Amazon Web Services (**AWS**) and Nokia through a resiliency trial of IP Multimedia Subsystem (**IMS**). This groundbreaking trial promises new ways to build network resilience and reliability in Telstra's fixed and mobile networks. It works by delivering voice services over the cloud network, so that even if the primary solution is not working properly due to unplanned network interruptions, we can maintain continuity of voice calls. The IMS trial stems from our long-standing strategic relationship with AWS to help improve our network, particularly through activities to increase our network reliability, resiliency, and customer experience.[51]

Telstra is also exploring how we can radically transform our network using AI. One early application we've developed is the AI-based 'Transmission Link Chain Assessment' tool, which we use to help optimise our investments in power and transmission upgrades. In future, we anticipate AI allowing us to better foresee potential network outage scenarios, and also help manage outages more effectively when they occur. As our network advances towards 6G, AI will be at the heart of network operations. The network will become more intelligent and autonomous with everything happening in real time.

[51] Telstra collaborates with AWS and Nokia on world first network resiliency trial

To get us started, we've already begun training on massive sets of alarm data and telemetry in our fixed network. This allows us to quickly detect any anomalous events in our network, and then do proactive and predictive analytics, to reduce the resolution time and increase resiliency (as well as to potentially prevent network and security related customer issues). In the next phase, we plan to make the real-time tuning we already do in our mobile network even more powerful using AI and machine learning.[52]

2.2.4 Devices available to help regional customers get the best out of our mobile coverage

The 2021 Report of the AEWG observes that "*Some farmers have resorted to quite ingenious but not ideal DIY solutions that stretch the boundaries of the fixed wireless network and boost mobile signals*."[53] Instead, we recommend a number of actions customers living and working in regional and remote areas can take, if they are looking to get their most out of our mobile coverage.

Figure 7: The Telstra Blue Tick

In terms of devices, we recommend those that have been awarded a Telstra 'Blue Tick' for superior voice coverage in rural and regional areas. Our Blue Tick signifies that a mobile device has been thoroughly tested by both laboratory and field tests, ensuring customers can enjoy an optimal device performance.[54]

Figure 8: Blue Tick devices offer superior coverage in rural and regional areas

Telstra also sells a range of coverage extension devices such as the Telstra GO Repeater — with models for both stationary and mobile use (e.g. in vehicles) available. These coverage "boosters" can help maximise coverage indoors and outdoors as well as when customers are on the move — delivering both clearer voice quality and consistent data performance in rural and remote areas.[55]

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[52] What's next for Australia's best, largest and most reliable mobile network (telstra.com.au)
[53] Agri-Tech Expert Working Group (infrastructure.gov.au), p 5.
[54] Blue Tick Devices from Telstra
[55] Telstra GO Repeater - Telstra

All devices we sell are ACMA approved. It is important for customers to understand it is illegal to possess or operate mobile repeaters or other types of coverage boosters that have not been approved by the ACMA, for a very good reason. [56] This is because unauthorised devices have a high potential to cause interference with the performance of mobile networks, negatively impacting the experience of other mobile users.

Smart antenna technology has also improved in recent years, and providers such as Zetifi (with whom Telstra is proud to partner)[57] now have location aware, variable gain antennas for sale, which automatically adapt to their surroundings to maximise access to available different coverage sources.[58] This can be a particularly valuable tool to, for example, help support Australia's farms into the future.[59]

2.2.5 Measuring mobile performance

Telstra recognises there have been calls to adopt some form of framework to assess and measure the performance of mobile networks. We are open to exploring what kinds of information (e.g., potentially, transparency metrics) might be beneficial for giving customers and stakeholders confidence in the performance of Australia's mobile networks. However, some considerations must be kept in mind.

Figure 9: Field technician in North Queensland, October 2023

The most important consideration is that mobile networks function very differently to fixed networks. Fixed services (predominantly provided over the nbn) are delivered to premises at fixed locations. This makes it relatively straightforward to manage capacity in the network to support the desired end-customer experience (for example, target throughput).

By contrast, the experience of a customer on a mobile network is never static. Mobile network performance is always impacted by a range of different factors, including that mobile customers typically *move around*. Accordingly, at any given point in time, the customer's mobile experience will be impacted by things like how close to the nearest mobile site they are; demand from other nearby users; whether the signal has to pass through buildings or trees; what device the customer is using (and even how they are holding the device); and any demands on local backhaul capacity there may be from other

[56] ACMA: Cellular Mobile Repeaters. https://www.acma.gov.au/cellular-mobile-repeaters

[57] Zetifi and Telstra Labs unite under one roof to accelerate tech innovation - Zetifi

[58] See further details at: Products by Zetifi (ZetiRover, ZetiCell, Smart Antennas)

[59] See Farms of the Future | Supporting the adoption of farm digital solutions — NSW Department of Primary Industries and. ZetiRover — NSW Department of Primary Industries

services. Fundamentally, the technology and its mobile use case means it's normal for experience to vary at different times. Thus, the performance standards which are commonly associated with fixed networks (such as speed and throughput measures) are unlikely to be suitable for mobile networks.

Given the many variables impacting a customer's received mobile experience, we suggest information designed to provide greater transparency of and confidence in mobile performance in Australia might most helpfully initially focus on *network level performance*, as is done by the National Reliability Framework in respect of the fixed network today. Information might potentially cover, for example, network uptime measured at the base station. Further details on this might conceivably form part of future USO reforms, arming regional customers with more information about mobile service availability. Potentially, some of the existing USO funding could even be redirected to this area.

2.2.6 Performance of our legacy fixed networks

One of the key challenges Telstra faces in seeking to sustain and improve the reliability of the fixed line services we supply to our customers in regional, rural, and remote Australia is that our legacy copper network is at the end of its useful life. As we explain below in section 2.3.2 below, this is one of the key reasons we're investing in more capable and reliable alternatives to our copper network.

At the same time, we are seeing all the effort we put into maintaining our legacy copper services benefitting fewer of our customers. Following the last RTIRC, at the end of December 2021 we had 386,000 customers using our legacy copper network in regional and remote areas. In less than three years, this figure has declined by 30% to 268,000 customers as at the end of June 2024 (with the average monthly decline of ~ 4000).

Telstra continues to meet the commitments we have made to our customers and stakeholders regarding these legacy services, including those under the Customer Service Guarantee (**CSG**) and Network Reliability Framework (**NRF**).[60] As an example, to improve our fixed network reliability, since RTIRC 2021 we have allocated [redacted] on proactive remediations work of our copper network in regional and remote areas to reduce fixed network faults – completing remediations on over [redacted] high priority ranges and over [redacted] joint remake tasks by the end of FY24.

However, sustaining the performance of our legacy copper networks is becoming increasingly harder. This is due to factors including the age of our equipment (making it, for example, harder to access spare parts), and the increasing incidence of natural disasters and other weather-related events we have seen in Australia in recent years (see further details in section 3 of our submission below).

Servicing fixed line faults efficiently is also increasingly challenging, as we now have a very small number of active legacy services spread across the more remote parts of Australia (i.e. outside of the nbn fixed line footprint). This creates a real challenge for our field teams in looking to maintain the right mix and level of resources and skills. We are also now seeing around 20% of network faults impact less than five customers, with the cost to restore these faults the same as for the other 80% of faults (which benefit larger numbers of customers).

[60] Since 2022, we have also reported on our performance in connecting and maintaining telephone services over our networks in regional Australia and dealing with inquiries and complaints in relation to those services – see Regional service performance (telstra.com.au)

To mitigate the impacts of faulty parts and equipment, which typically date back to the early 1980s or earlier, we have in recent years undertaken some consolidation of remaining services at locations identified as our most reliable network sites. This activity helps sustain service provision by removing the weakest links, and it also frees up scarce network parts which can be used as spares at remaining sites. At the same time though, service consolidation at fewer sites means more customers can be impacted when something goes wrong. Thus, faults or power outages affecting a given area are tending to have a greater cascading effect on customers than previously. As we explain in section 3, we've also observed extreme weather events increasingly impacting our legacy networks, which often manifests as either faults and/or power outages.

It is important to appreciate that our copper network is *not* immune to the impact of mains power outages. Because there are parts of our copper network that still need a connection to power to work, we do have backup power solutions in place at key network sites. However, the geographical breadth of the copper network means there are thousands of sites across regional areas, particularly exchanges and roadside cabinets, where the installation of backup power is not feasible.

Similarly, our CAN Radio network is also approaching end of life and is also impacted by issues relating to power, aged equipment, scarce spare parts, and damage from extreme weather events. We explain in section 2.3.2 below how LEO satellite alternatives are proving more reliable than CAN Radio services.

Figure 10: Locating faults on a 56 km copper pair gain system (Australia's longest), Biloela, Qld, Oct 2023

The challenges discussed above will likely increase with time and it is notable that across the world there are many incumbent operators which have exited, or are in the process of exiting, their legacy fixed networks. With legacy equipment continuing to age and parts becoming more limited, sustaining fixed legacy performance in Australia will become more difficult in the future. Our understanding of this risk is a key motivator for Telstra's advocacy for the USO to be reformed to take advantage of new technologies that are superior to copper and capable of far better network performance over time.

2.2.7 Notifying our customers about mobile outages

With close to 12,000 mobile sites, our people are out in the field every day climbing towers, maintaining infrastructure, working on upgrades and connecting remote communities all over the country.

Because we know just how much our customers rely on our telecommunications services – we know how important it is that we keep customers updated if we have any planned outages, and on expected service restoration times where we experience unplanned outages.

Localised outages in our network occur regularly for both planned and unplanned reasons. For example, each year on our network, Telstra experiences around 90,000 interruptions. While the vast majority of these don't result in an interruption to services (as our back-up power systems take over), there are occasions where the lack of mains power results in an outage.

In cases where we do experience a mobile network outage, Telstra's notification system for alerting our customers of outages differs depending on whether the outage is planned or unplanned.

For planned mobile outages: Our systems are set up to send out text messages to any device connected to the base station planned to be offline. Information on planned outages is also published on the Telstra.com/outages page. We aim to provide a view of planned outages seven days in advance, although sometimes (e.g. if for safety reasons a third party needs to work on our site at short notice) we can only give a shorter period of prior notice. If the planned outage is significant, we will also inform communities, customers and other stakeholders through other means such as media releases.

For unplanned mobile outages:

1. Information is published on the Telstra.com/outages page within ten minutes of the outage being identified by our network. Recent improvements to the outage page have included:
    - updated map information showing the predicted outage impact area, including overlapping coverage from other sites;
    - faster response times for publishing information about outages;
    - new restoration phase updates – to provide customers with an understanding of where our service restoration activities are up to; and
    - showing any areas impacted by mass disruptions such as natural disasters.
2. We communicate directly with impacted customers via SMS and email in respect of outages lasting longer than 15 minutes in regional and remote areas. We understand that when the network is down, customers may not receive these communications until the network at their location is restored; they move to an area that is not impacted; and/or they are able to connect to an alternative network (e.g. using Wi-Fi to receive SMS over Wi-Fi).
3. Where there are community wide impacts (e.g. loss of mains power and subsequent exhaustion of backup power reserves at our sites and facilities following a natural disaster) – we try to use the media to get information out to customers and the wider community as quickly and broadly as possible. As an example, during the storm events impacting regional Victoria and Melbourne in February 2024, our communications included:
    - Nine media interviews over two days by our Regional Australia team;
    - Updates to media twice a day (morning and afternoon) plus organising a daily ABC radio slot;
    - A paid post live on "X" and Facebook, which we updated regularly with restoration achievements;
    - A rolling blog live which we updated three times a day;
    - SMS sent to ~700,000 of our customers in impacted areas linking to our blog; and

- A link on our blog to our T.com outage page, which we kept updated.

2.3 Smooth transition to modern networks

New technologies can only enable realisation of Australia's ambition for new heights of agricultural productivity, more resilient and competitive regionally-based industries, and better social outcomes for those living in regional, rural and remote areas if: (1) there is support for these new technologies to be rolled out in Australia; and (2) Australian consumers and businesses are using them.

But we know that is easier to say than it is to do. Telstra has been working on constantly improving our networks and services using new technologies as they become available from our earliest days. International bodies such as 3GPP develop new standards for improved capabilities in mobile networks resulting in a new mobile generation roughly every decade. Time and again, while we see many customers embrace the chance to enjoy the benefits of more modern and better-quality telecommunications services, we see others struggle with the disruption that change can involve.

It is human nature to find it hard to let go of something you have come to know and depend on, and it is common to be wary of change. It is also very common for our customers not to fully appreciate the benefits for them of switching over to a new technology, until *after* they have done so. In particular, we know that transitioning to more modern networks can be challenging for some customers (e.g. where there may be additional expense involved in the purchase of new equipment or ongoing service costs, or where extra support is needed for customers to become familiar with a new technology). Each technology transition is always slightly different too, and while we are constantly learning and striving to get things right, we acknowledge the experience is not always as smooth for our customers as we would like it to be.

We want all our customers to be able to enjoy the exciting benefits that new and improved network capabilities offer. To this end, we remain focussed on delivering a good customer experience in all transitions and we are also testing and continuously improving the new technologies available for customers to transition to ensure they will support the needs of our customers. We are also working hard to answer the questions our customers in regional and remote areas may have about the transition options available, and to explain the benefits for them of these new technologies. However, we are sure there is still more work to do, and we welcome the opportunity presented by this review to hear from our customers and stakeholders on this.

To assist with this conversation, in this section of our submission, we provide an update on what we have been doing so far to support a smooth transition for our customers to:

- More capable and reliable alternative services to our legacy copper fixed network; and
- More modern 4G and 5G mobile networks, from our legacy 3G mobile network.

2.3.1 What options are there for legacy copper fixed line customers to transition to?

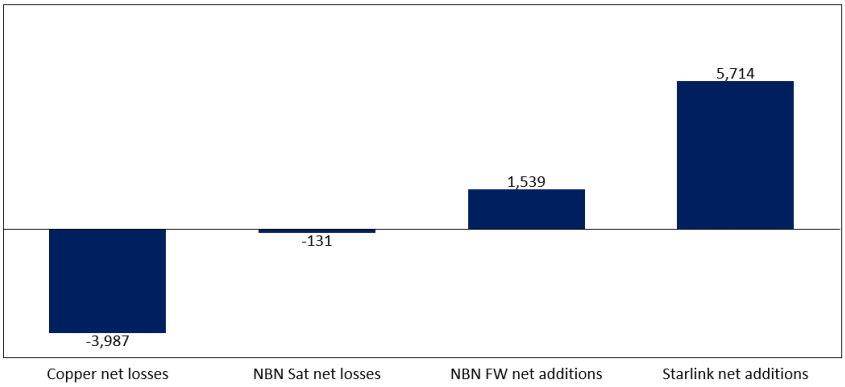
For customers in regional, rural, and remote Australia looking to transition off their legacy copper services to more modern alternatives, the main choices available are either fixed wireless or LEO satellite technology.

For customers who currently use broadband via Asymmetric Digital Subscriber Line (**ADSL**) on Telstra's copper network (which delivers an average speed of ~8 Mbps), these newer technologies will be far superior in terms of the latency, download and upload speeds and general experience. For customers with voice services, the new technologies will support services that are equivalent to what exists today (including in the case of Telstra's Home Satellite service and our Home Wireless Voice (**4G Fixed Wireless**)) including all the requirements of a USO telephone service.

Outside of the nbn fixed line footprint, nbn fixed wireless or Sky Muster satellite services have been available throughout Australia for many years. We note nbn and the Government have made significant investments in improving these services in recent years, and these are very welcome.[61]

However, the most significant recent development for many of the regional customers and stakeholders we speak to has been the arrival of Starlink in the Australian market. As shown in Figure 11 below, this new technology has already had a marked impact.

Figure 11: Average monthly SIOs changes in Regional Australia, SIO thousands, by access technology/provider, since Starlink launch (April 2021)



The roll out of Starlink in Australia has been significant and successful in terms of customer adoption. Through our engagement with customers and stakeholders Telstra has heard from many customers about the benefits that this technology has brought to their businesses, families, and everyday lives. Box 3 includes some verbatim comments from regional and remote customers about this technology.

[61] See further details at: Boosting speeds for Fixed Wireless customers | nbn (nbnco.com.au)and New satellite plans offer more choice and flexibility for regional Australia | nbn (nbnco.com.au)

Box 3: Recent Starlink customer testimonials

Case study 1 – [redacted] Farmer from Tahara, Victoria

Starlink has transformed the way I can connect digitally, both personally and for my business. On a personal level, to have the comfort of streaming sport, movies and television shows at home was impossible for me before I got Starlink 2 years ago. I can also make phone calls from inside my house which was impossible before this, I would need to drive to the top of the hill about 1 kilometre to make phone calls.

From a business point of view, I do on average around 5 online meetings a week. Prior to Starlink, I would have to drive 25 kilometres to the closest town to do this. A lot of driving for meetings.
I cannot recommend Starlink highly enough.

Case study 2 - [redacted] Community Representative, Wellingrove NSW

I lived east of Deepwater for 17 years and only had copper Telstra lines with a landline. For 22 years, I homeschooled my children but struggled with connectivity issues. I had to get satellite internet for homeschooling; the education department even set up their own satellite.

Now, I live in Wellingrove, which is a remote area between Glen Innes and Inverell, NSW. Although we have a Telstra landline, we're in a Telstra blackspot, so mobile phones don't work at home. We couldn't get TV reception and had to use Foxtel for television. I could only make mobile calls by going up the road and had to travel for work, as my mobile phone would only work outside the house. During the COVID-19 pandemic, my work shifted online.

My son, who completed five years in the Army and got a job afterward, suggested we switch to Starlink because we were running out of data with WestNet due to his usage. We calculated the costs and found that Starlink would be the same as what we were paying for Foxtel, WestNet, and mobile phone (Aldi). With Starlink, we now have Wi-Fi calling on mobile, can watch Netflix and free-to-air TV, and stream live shows. My son can game and video call his friends overseas without data limits. We still have our Telstra landline and mobile services.

Switching to Starlink has cost exactly the same as our previous expenses. We've been using Starlink for two years now, being early adopters. It has saved us a lot, especially since I'm involved in boards and community organisations. Due to the blackspot, I couldn't previously receive SMS notifications from organisations I'm involved in. Now, I can receive those messages and do online banking from home.

The main benefit is that I can do all my work from home without worrying about data usage or internet connectivity issues.

Case study 3 – [redacted], Gunning NSW

Previously used mobile broadband for their internet service that was getting progressively worse. Engaged with the Regional Tech Hub about mobile and internet reception, who did a check on the best approach and highlighted there might be a chance to use the Starlink satellite access with the option of a Telstra plan.

Starlink is working extremely well compared to what we had before. We are pleased we waited for it as we weren't convinced that the alternatives were going to be any value, especially as the guaranteed downloads were only at around 5mbps. We are getting 50mbps all the time. Would and have recommended Starlink to others. Our daughter has put it on at her place, not far out of Goulburn, and is also happy.

2.3.2 How reliable are the new alternatives to legacy copper fixed line services?

We understand there remain important concerns by some of our regional customers and stakeholders about the alternatives to Telstra's legacy copper fixed line services that are available to them.

No two technologies are the same, and all have strengths and challenges, but newer technologies are better placed to support the demands of regional and remote customers. Wireless technology is less prone than wireline technology to destructive natural forces including extreme weather events and corrosion. There are fewer physical points of potential interruption between the point of transmission and the premises, and less physical exposure to the elements. These new technologies are also superior to copper in that they can deliver high speed data services as well as high quality telephone services.

We are committed to helping build within our customers and stakeholders the same high level of confidence in the modern alternatives to Telstra's legacy copper network that we have.

One common concern raised with us is whether LEO satellite services perform as well as existing copper services when it rains, especially in the more tropical parts of Australia where it can rain heavily for long periods of time. This issue is known as "rainfade". As outlined in Box 4, we have investigated this issue and found that, in fact, a customer in the tropics who chooses to migrate from legacy technology to Starlink is likely to experience *three times less* outage time if coming from legacy copper fixed voice, and *ten times less* outage time if coming from legacy CAN radio.

The reason for this is heavy rain and other extreme weather events can impact our legacy copper fixed network via the flooding of network assets, cable washouts and landslides. The impact of these events can often take days to repair, which in turn reduces aggregate availability. In contrast, during our investigation the average duration of LEO satellite outages was just four minutes, meaning when a dropout occurred the connectivity was typically re-established very quickly. Also, because Starlink is a very high bit rate technology, it has a lot of margin to adjust to adverse weather conditions (i.e. to sacrifice some bit rate to maintain a robust service). This appears to allow the service to largely avoid adverse rainfade related impacts on service availability.

In future, we expect the superior availability of LEO satellite services over our legacy copper services to only increase as our copper network continues to age. Whereas, being a brand-new technology, LEO satellite can be expected to only improve further in the years ahead as more, and newer satellites are launched.

Box 4: Rainfade appears to have a limited effect on LEO satellite service availability

As there is little public information about the effect of rainfade on LEO satellite services, Telstra in mid-2023 acquired seven off-the-shelf Starlink LEO satellite services and paired them with rain gauges to monitor service performance and rainfall at each of seven service locations.[62]

Between November 2023 and May 2024, a period covering the 'rainy season' in northern parts of Australia, a total of 1,323 customer service days were monitored. Heavy rainfall events (defined as 1 mm per 5-minute period) occurred in 0.6% of the time during the above period across those seven locations.

The average service availability during heavy rainfall events was 99.323%. During dry/low rainfall periods it was 99.812%. **The overall average availability was 99.809%.** The impact of heavy rainfall on the overall availability was minute and not statistically significant.

We also looked at the impact of extreme rain events (defined as >60 mm/h). **Even during extreme rain events, the service still showed 98.3% availability**. Since extreme rain events are even rarer (0.02% of time) than heavy rain, the slightly lower availability during those events has a negligible impact on overall availability. We did not observe an outage during the most intense rain event we measured (>100 mm/h).

The overall availability of the LEO satellite services of 99.8% (as measured during the rainy season) is higher than the national annual average of 99.6% availability we reported for existing fixed voice services under the Network Reliability Framework. The service availability of fixed voice services is also lower during the rainy season, with the national average availability figure falling to 99.4% during the rainy season to ensure a like for like comparison.

Starlink's availability compared even more favourably with our legacy CAN Radio services. CAN Radio has an average national availability of 98.6%, which declines to 98.3% during the rainy season, and declines further to 97.4% if focussing on the tropics during the rainy season — Starlink still achieved 99.7% in the tropics during the rainy season.

Even customers using nbn's fixed line technologies (which is the case for many living in urban areas) experience outages to their broadband service. Data published by the ACCC in June 2024 reports that 44% of nbn fixed broadband services using Fibre to the Node (**FTTN**) technology and 29% of nbn HFC broadband services experienced outages at least once per day. Even on nbn's most reliable technology of full fibre (Fibre to the Premises or **FTTP**) – over one in five customers (22%) still experienced an outage at least once per day.[63]

We understand that reliability of power supply is a particularly important issue for our regional and remote customers and stakeholders. Like the voice services supplied over the nbn, the wireless and satellite networks that will eventually replace copper are voice-over-IP (**VOIP**) technologies that require a powered modem at the customer's premises to work. Customers in areas prone to power outages may therefore benefit from the option of sourcing a backup power supply.

By contrast, the copper network is powered from the local exchange. This can be an advantage when there is a localised power outage at the premises. However, as we note above in section 2.2.8, power outages affecting the local exchange can and do interrupt the services we supply over our copper network, even if our customers maintain or restore power at their premises. The copper network cannot be relied upon to retain power in all circumstances.

[62] Test services are in Katherine, Darwin and Berry Springs in the Northern Territory, Cairns in Far North Queensland, Bonnie Doon and Port Melbourne in Victoria and Murbko in South Australia.

[63] Fibre to the premises delivers most reliable broadband connection | ACCC

2.3.3 Should we be worried about who is providing some of the modern alternative services?

A question we hear sometimes is whether we have any assurances that regional, rural and remote communities won't find themselves "left in the lurch" by the international providers of some of the new alternatives to our legacy copper services, such as the LEO satellite services supplied by Starlink. We also understand some stakeholders may be concerned about using Starlink's LEO satellite network to provide critical services, because it is not owned or operated by an Australian entity.

From our perspective, Telstra will always be there to support our customers and we have trust in both our Australian and our international partners to deliver on our agreements. We consider partnerships to be key to our success and we undertake supplier due diligence on all our new supply partners. This includes, but is by no means limited to, our supply arrangement with Starlink for our new Telstra Home Satellite service. We would not enter an agreement with a supplier we did not think was trustworthy.

It's also important for our customers and stakeholders to understand that SpaceX's Australian Starlink entity operates its LEO satellite internet service in Australia under licences granted by the Australian Communications and Media Authority (**ACMA**). Starlink therefore operates and is subject to Australian regulations just like any other internet service provider in Australia, including Telstra. To protect customer privacy and security, there are, for example, very strict limitations on the ability of any internet service provider to access the content transmitted through these services.

In the unlikely event that an international provider such as Starlink were to suddenly cease operating, there is a range of available and emerging connectivity options that we would look to use to make sure we could continue to provide our customers with suitable alternative services. Importantly, when it comes to LEO satellite services, the market is evolving and growing rapidly, and we expect that in future the range of alternative suppliers interested in serving the Australian market will continue to grow.

2.3.4 Listening to our copper fixed line customers to understand their needs and concerns

In H2 FY24, we commissioned a rigorous research study with an external agency (Nature) with the aim of understanding the lived-connectivity experiences of a representative sample of over 1000 regional and remote Australians. We explored whether current and emerging services, technologies and policies are adequate to meet their future needs. Our research shows that while most customers are not averse to newer technologies, for those who are averse to technology migration the barriers include affordability, redundancy, and fear of change and isolation.

Forty-one per cent of those surveyed had a fixed landline. However, only one in five said their landline was necessary to get through the day. Over half of those surveyed (58%) said a landline wasn't important at all. For many respondents, it was the case that no-one called them on their landline (apart from telemarketers), and they "*never called anyone on it*" either.

Reactions to Universal Service Obligation (**USO**) modernisation were mixed. Two-thirds of respondents (66%) were excited about this and thought it would be better for them and their communities. An overwhelming 87% of those surveyed expected this to happen, given technology is always developing .

Most people didn't care what technology was used to deliver their home phone, so long as it worked. However, 72% of those surveyed were worried they would have to pay more for newer technologies. For those surveyed in remote and very remote Australia, actual and perceived lack of access to newer technologies was also seen as a key barrier to migration from legacy services.

For all respondents, hesitancy in relation to migrating away from fixed home landlines stemmed primarily from a lack of motivation (*there is no benefit to migrating to something new)* and concerns about the impacts of change on their digital capability (*fear of having to learn to use new devices/do things differently/prefer to keep things unchanged)*.

Not surprisingly, the natural human preference in many for the known over the unknown, which is always a behavioural challenge competing with any modernisation objective, was reflected in 41% of those surveyed stating they "*prefer the way things are currently and really don't want anything to change."* However, aversion to learning new technology plays a larger role amongst the 65+ age cohort, who are significantly more worried about learning new technology.

For Telstra, we see this important feedback as indicating a real moment of opportunity for the telecommunications industry, Government, and regional stakeholders to leverage the optimism of the estimated two-thirds of people who are already excited about the potential for USO reform to improve the status quo. We think we can do this by working to build even broader confidence in newer technologies as a pathway to provide better and more reliable services and improved customer experience in regional, rural, and remote Australia. As the AEWG has found, we are optimistic that "*Australian farmers will embrace digital technologies, just as they have always innovated, in order to solve problems and when there is a clear value proposition*".[64]

Of course, we will also need to work together to ensure the promise of these new technologies is accessible to all through continued work to close the regional/metro and First Nations digital divide and to uplift digital access, affordability and ability in Australia more generally (see further section 4 below).

2.3.5 Why are we shutting down our 3G network?

Across the world, most network operators are facing the challenges of ongoing demands for increased coverage and capacity, at the same time as managing the finite lives of their network equipment. While network capacity can be increased by building additional infrastructure (i.e. densification), there are limits to this in mature markets. Hence operators instead focus on upgrading their network equipment to add spectrum and/or take advantage of newer technologies and the capabilities they offer. Modern generation mobile technologies like 4G and 5G are also more secure than earlier generations – with improvements to features such as encryption very important to support the range of modern activities customers use mobile services for, such as making payments and banking. Australia is not the first country to shut down our 3G networks. Globally, 3G network shutdown is already complete in many other countries, including by all major operators in the USA.[65]

Our 3G network closure, like the network closures we have done before it and other 3G network closures around the world, is essentially a function of this technology lifecycle. As a mobile technology closure in Australia, 3G follows 2G which closed in 2016, and CDMA which was closed in 2008. Nearly all our customers now have 4G and 5G capable phones and in June 2024, less than one per cent of our network traffic was supported by our 3G network.

Each new mobile generation has changed the way we use mobile technology. For example:

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[64] Agri-Tech Expert Working Group (infrastructure.gov.au), p. 7
[65] Global 2G & 3G Network Closure Dates | KORE (korewireless.com)

- 2G brought us SMS and minimal data capabilities (e.g., WAP[66]).
- 3G formally introduced mobile internet suitable for early social media and some data applications, but still with low data speeds (maximum theoretical capability per cell of 42 Mbps).[67]
- 4G made streaming and sharing part of everyday life, and can deliver theoretical speeds of up to 1 Gbps.[68]
- 5G increases the capacity of the network, facilitates massive numbers of IoT devices (e.g., for agricultural IoT), and lowers latency for real-time applications (also important for agri-tech applications).[69]

There are clear benefits for our customers in the regional, rural, and remote parts of Australia from the investments we have made in rolling out 4G and 5G in these areas, and the ability that closing our 3G network will give us to re-farm our 850 MHz spectrum to use in supplying 5G mobile services. 4G is around four times more spectrally efficient than 3G, with 5G being around 15 times more spectrally efficient, meaning they have much greater ability to meet ongoing customer demand growth. Indeed, our ability to meet increasing demand in recent years while also increasing average customer speeds at the same time would not have been possible without 4G and 5G technologies.

2.3.6 Key actions we have taken to support customers to transition from 3G

Our 3G network closure is planned for 31 August 2024. We announced our intention to close our 3G network in October 2019 (with the closure date originally 30 June 2024), providing our customers around 5 years' notice of our plans.

As part of our 3G closure announcement Telstra has committed to expanding 4G so it is equivalent in coverage to 3G, by the time of 3G closure. We are on track to achieve this. Delivering 4G coverage equivalence relies on the expansion of our 4G network. This requires upgrades to 3G-only sites and the building of a few greenfield 4G sites to provide additional 4G coverage, where unique site configuration or limitations means 4G coverage is currently less than 3G. As at the end of June 2024, our 3G to 4G site upgrades were very nearly complete, with only a handful of sites yet to be upgraded. We are on track to complete all remaining upgrades before our planned 3G closure.

We've also worked with our radio equipment vendor to develop and deploy software that increases the maximum distance range of 4G technology up to 200 kilometres, and this technology will also help ensure we match 3G in all areas. There may even be some small pockets of "fortuitous" 4G coverage not appearing on our coverage maps, in the same way as this has sometimes happened with our 3G coverage.

We have also been supporting our customers to smoothly transition from our legacy 3G network in several other important ways. These include:

- Putting a lot of work into making sure our regional customers are aware of our 3G network closure and the actions they need to take to stay connected. We have communicated with customers via

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66 Wikipedia Wireless Application Protocol (WAP). Available at: https://en.wikipedia.org/wiki/Wireless_Application_Protocol

67 Wikipedia, 3G. The 3G downlink data speeds vary depending on the underlying technology deployed; up to 7.2 Mbit/sec for HSPA, and a theoretical maximum of 21.1 Mbit/s for HSPA+ and 42.2 Mbit/s for DC-HSPA+. See https://en.wikipedia.org/wiki/3G#:~:text=42.2%C2%A0Mbit/s%20for%20DC%2DHSPA%2B

68 Wikipedia, 4G. "*4G networks offer faster data download and upload speeds compared to 3G. Theoretically, 4G can achieve speeds of up to ... 1 gigabit per second (Gbit/s) for stationary users*." https://en.wikipedia.org/wiki/4G

69 See e.g. Agri-Tech Expert Working Group (infrastructure.gov.au), p 32.

media updates, social media, direct mail and SMS in the lead up to the closure date and our 3G closure website sets out resources to assist customers self-manage their transition.

- Extensive regional engagement, including a range of targeted community and stakeholder discussions via our regional teams, to ensure our regional customers understand what they need to do to transition to 4G. Our 3G closure has been discussed in over 550 interactions with our regional stakeholders, and in FY24 we delivered over 220 further community engagement activities. Regional events we have had a presence at includes Agfest (Tas), Riverina Field Days (NSW), Primex (NSW), Beef Week Australia (Qld), Mildura Field Days (Vic) and Farm Fest (Qld).
- In addition to the opportunity to address concerns and individual circumstances of some of our customers afforded by our regional engagement activities, setting up an internal team to manage individual cases to ensure customers are comfortable with their options.
- In April 2024, launching an SMS Checker tool so customers could send a simple text (send "3" to "3498") to check if their mobile device would be compatible with our network after 3G closure.[70] In May 2024, we followed this by playing a short warning before every outgoing call made by one of our customers using a mobile handset that we detected would not be compatible with our network after 3G closure.[71] (Note, customers calling Triple Zero from a 3G device will not hear this message, to avoid adding a delay in reaching a Triple Zero operator).

We know that some of our remaining 3G customers, including but not limited to those in regional and remote areas, need extra care and actions from us to help them smoothly transition. Examples of the support we have provided to our customers in this situation include the following:

- Providing extra support to customers using the Next Generation Wireless Loop (**NGWL**) fixed line service delivered over our 3G network. We appreciate the transition has not been as smooth as we had hoped for our NGWL customers. We have been proactively working through issues with our NGWL customers and supporting their migration to an alternative access technology. The alternatives we have identified for our NGWL customers include Telstra's 4G-Fixed Wireless (4GFW) service, which is also a fixed line service, only delivered over our 4G network. Other alternatives include our Telstra Satellite Home Internet service powered by Starlink,[72] nbn's Sky Muster satellite service,[73,] or going to Starlink direct. For some customers taking up a Telstra Satellite Home Internet service we have supported their migration by assisting with service installation. On 14 May 2024, we introduced a recorded announcement warning our remaining NGWL customers of the impending network closure to ensure they are aware of the need to transition and how to contact us about this.

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70 Send us a SMS to check your phone will work after we close 3G (telstra.com.au)

71 We're helping our customers say goodbye to 3G (telstra.com.au)

72 Telstra Satellite Home Internet powered by Starlink. See https://www.telstra.com.au/exchange/telstra-satellite-home-internet-with-starlink-is-here---here-s-w

73 Noting that Telstra does not resell nbn Sky Muster, and so this necessarily means moving away from Telstra to another service provider who does resell nbn Sky Muster.

- Pro-actively providing around 12,000 complimentary replacement mobile devices[74] compatible with our 4G network to some of our 3G customers with incompatible devices who are in difficult situations, live rurally or are elderly.[75]
- Collaborating with Medical Alert/Personal Emergency Response Services suppliers and providers for them to identify and reach out to their customers who are using devices that may rely on our 3G network and inform their customers of the need to upgrade their device. (It is not possible for Telstra to trace individuals who may be using these devices because the individual using this device is not a customer of Telstra.)
- Ensuring our First Nations Connect staff are trained and familiar with our 3G closure, and the actions we need our First Nations customers to undertake to transition. Telstra's First Nations Connect phone line is dedicated to helping our Aboriginal and Torres Strait Islander customers, respecting culture and community. This phone service has access to interpreter services for approximately 50 different First Nations languages and dialects. We have also created First Nation specific radio advertisements playing on 29 radio stations, as well as specific flyers and fridge magnets for distribution around First Nation communities to help raise awareness.
- Ensuring our multilingual service staff[76] and bespoke community-of-interest support services are trained and familiar with our 3G closure and can support customers to transition.
- Working to identify non-handset devices such as IoT and M2M devices (including EFTPOS machines), wearables such as smart-watches, and mobile repeaters that may be affected by the shutdown.[77] Noting that in many cases, we do not have a direct relationship with the device user, hence cannot identify or contact them.
- Actively communicating with our Enterprise and Small Business customers, which may have clients using our 3G network, to ask them to upgrade any non-handset devices that require 3G to operate.

2.3.7 Some valuable lessons from our 3G transition

With every technology transition we undertake, Telstra is always looking to learn and improve. One of our key reflections regarding our 3G exit concerns the timing of our communications.

Telstra announced our planned 3G network closure almost five years in advance, in October 2019. This ensured our customers and others likely to be impacted by the shutdown had plenty of time to prepare for the transition. However, at this time, there wasn't much direct action that needed to be undertaken. Accordingly, for many, this information would have quickly faded into "something to worry about later".

Hence, our first reflection is that transitions related communications are likely to be most impactful at the point in time when they can be coupled with a direct "call-to-action". A relevant comparison is the retail service provider communications provided to legacy fixed line customers within nbn's fixed line footprint. As an industry, we have worked out over the years that these communications are best to start in earnest only from the point when customers can place orders for nbn services in their location – so the customer can take action to migrate straight away.

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74 Including devices from Apple, Samsung and Telstra branded devices, the latter include push-button phones and flip-phones. Devices offered to customers as a replacement will be the device that most closely matches their existing device, i.e., Apple for Apple, Samsung for Samsung, flip-phone for flip-phone.

75 We're helping our customers say goodbye to 3G (telstra.com.au)

76 See https://www.telstra.com.au/contact-us/multilingual-services

77 See 3G closure - what do I need to know? - Telstra

Like the pattern of customer behaviour seen when it comes to the 18-month window for migrations from our legacy copper services to nbn fixed line services, we have also seen with our 3G exit that as some customers are keen to adopt newer technologies as soon as they are available, there tends to be a flurry of activity at the start. There is then commonly a fairly long lag when not a lot happens, until it comes to the time when customers absolutely have to take action to transition or risk losing service continuity. This suggests communications campaigns may be most efficient and effective when coupled with a reasonably confined transition window, ensuring a strong customer incentive to take responsive action to any communications throughout the window.

2.4 Well-designed investment related programs, policies and regulations

Even leveraging the power of more efficient modern technologies, there are many parts of regional and remote Australia where the economics cannot support the level of private investment required to achieve the telecommunications outcomes communities in those areas need, without some form of additional Government funding support. In these cases, Federal, state and territory co-investment programs such as the Regional Connectivity Program (**RCP**), Mobile Black Spot Program (**MBSP**) and Strengthening Telecommunications Against Natural Disasters (**STAND**) Program have been, and will continue to be, critical to extending and improving regional connectivity to the levels needed to achieve Australia's future digital ambitions.

In these cases, and also when it comes to deployments in regional, rural and remote areas more generally, there are also other important changes to Australia's complex mix of federal, state and local policy and regulation needed to support more efficient and timelier rollout and upgrade of communications infrastructure – to allow more benefits to be shared with more communities sooner.

In this section 2.4 of our submission, we outline:

1. Highlights of Telstra's support for governments' various recent co-investment initiatives to support better connectivity outcomes in regional and remote areas;
2. Our thoughts on what well designed co-investment related policy should look like (importantly including place-based community input on design);
3. The impact for Australia's future approach to co-investment policy of growing economic and technology disruptions to the historic regional deployment investment case;
4. Our thoughts on how government and regulatory policy and programs can best support regional competition and choice; and
5. Our suggestions for reforms to improve access to land, towers and facilities for telco infrastructure.

2.4.1 Telstra's recent participation in government co-investment programs

Telstra remains committed to participation in Government co-investment programs, to help Australia achieve a connected future where everyone can thrive. We illustrate below some of the benefits our commitment has recently delivered for regional Australia, since conclusion of the last RTIRC in 2021. As set out in Table 1 below, these include 41 new sites now delivered and on-air under the MBSP (predominantly locations awarded under MBSP Rounds 4 and 5).

Table 1: MBSP sites delivered (and on-air) by Telstra, December 2021 to April 2024

Location	State	Location	State	Location	State
Top Naas	ACT	Teelba State School	QLD	Cudgewa	VIC
Nerrigundah	NSW	Tirranna Roadhouse	QLD	Kennedys Creek	VIC
Tuena	NSW	Beerwah	QLD	Nannup North	WA
Carcoar	NSW	Palm Island	QLD	Burkett Rd Rest Area (E)	WA
Yerranderie	NSW	Borthwick Hill	SA	Burkett Rd Rest Area (W)	WA
Moorland	NSW	Cadney Park	SA	Coalseam Campground	WA
Finke	NT	Fowlers Bay	SA	Drysdale River Station	WA
Tara Community	NT	Koonibba	SA	Hamelin Pool	WA
Archer River Roadhouse	QLD	Nundroo Roadhouse	SA	Kutkabubba Community	WA
Curra Estate Rd	QLD	Kyancutta	SA	Nanson	WA
Booloumba	QLD	Trial Harbour	TAS	Wananami Remote Community	WA
Dunkeld	QLD	Woodsdale Exchange	TAS	Yakanarra	WA
Fitzroy Island	QLD	Freeburgh	VIC	Yulga Jinna Remote Community	WA
Hungerford	QLD	Winchelsea South	VIC		

In addition to the new site build activity above, we were awarded 40 sites under Round 6 of the MBSP (the Improving Mobile Coverage Round) in October 2023, with Telstra committing $10 million in funding. We were awarded a further 35 sites under Round 7 of the MBSP in December 2023 and committed a further $6 million in Telstra funding.

Telstra has also been an active participant in the Federal Government's RCP. We are strong supporters of the holistic, "place-based" approach to improving regional connectivity taken under the RCP, and the flexibility the program design allows to support works being undertaken to improve the capacity and capability of services, in addition to extending access to basic connectivity. We believe regional and remote Australians would benefit greatly from continued priority on government funding for future rounds of this or a similar program.

Notable projects we have delivered under Round 1 of RCP include the connection of two transmission spurs in Gippsland, Eastern Victoria to form a ring which considerably improves resiliency and the upgrade of King Island's telecommunications infrastructure outlined in Box 1 earlier. In RCP Round 2 announced in May 2022, Telstra was awarded 63 projects, to which we have committed over $30 million in funding. In December 2023 we were awarded a further 23 projects under Round 3 of the RCP and committed a further $13 million in funding. Table 2 below sets out some of the transformational connectivity projects we will be partnering with Government to deliver under RCP Rounds 2 and 3.

Table 2: Overview of major projects Telstra will deliver under the RCP

Project / Location	Description
Burketown to Normanton Fibre (Round 2)	The project will deploy 226 km of fibre optic cable between Burketown and Normanton, and supporting infrastructure to complete a fibre loop encircling North-West Queensland. This will create additional network redundancy for 66% of Queensland, enhancing network resiliency for 780,000 Queenslanders across 15 local government areas.
North-West Coast Tasmania mobiles upgrade (Round 2)	The project will deploy four new Telstra macro mobile sites at Boat Harbour, Port Latta, Marrawah/Redpa and Lower Scotchtown, greatly improving coverage across Tasmania's North-West Coast.
Esperance mobiles upgrade (Round 2)	The project will improve connectivity through deployment of three new macro sites (at Myrup, Bandy Creek and Pink lake South) and one new small cell (at Munglinup Camp).
Limestone Coast mobiles upgrade (Round 3)	This project will deliver 27 new mobile sites, across South Australia's Limestone Coast area, providing a significant improvement in connectivity across seven local government areas. Anticipated benefits of this project include attracting more local tourism, operating efficiencies for forestry, fishing and agriculture businesses, and enhancing digital inclusion for the communities in these local government areas.
Central Riverina (NSW) (Round 3)	This project will deliver two new Macro base stations at Cowabbie and Ariah Park in NSW's Central Riverina area. These sites will significantly improve coverage and capacity both across both localities and benefit local residents and the many users of adjoining regional roads and highways. The two sites were combined into one proposal to capture efficiencies around uplifting of connectivity in this region.

Related to other work to continue to uplift the resilience of our network discussed in section 3 of this submission, in FY23 we also completed 70 committed STAND projects to deliver a mix of battery upgrades, permanent generators, and portable generators at locations across Australia, with over 100 further projects completed in FY24.[78] Additional to this work, it was announced in May 2024 that we were successful in our applications to participate in round 2 of the Federal Government's Mobile Network Hardening Program (**MNHP**).[79] Our participation in MNHP Round 2 will allow us to uplift the resilience to unplanned events of 122 Telstra transmission feeder sites in remote and very remote locations by improving power resiliency and increasing battery reserves to 12 hours, bolstering our operational capability at an additional 365 dependent Telstra mobile sites. Combined with Government co-funding, our contribution of $2.51 million under MNHP Round 2 will see the resiliency of remote and very remote sites improved across Australia, as set out in Table 3.

[78] Telstra - Bigger Picture - 2023 Sustainability Report, p 40.

[79] Boosting community safety through improved telecommunications resilience | Ministers for the Department of Infrastructure

Table 3: Telstra remote and very remote sites to benefit from improved resilience under MNHP Round 2

State/Territory	Transmission Site Count
WA	71
QLD	14
NT	14
NSW	8
SA	8
VIC	5
TAS	2
Total	**122**

2.4.2 Going forwards, what should well designed co-investment related policy look like?

To optimise the potential of future co-investment initiatives (and related policies and regulations) to help set regional Australia up for success, we believe there needs to be adherence to three common "golden rules":

1. There must be **frequent and ongoing engagement on regional telecommunications policy priorities** between government at federal, state and local levels; industry; and regional communities and stakeholders; **to achieve alignment and avoid overlap or conflict**. These priorities may focus on a "place-based" outcome in one or more particular regional, rural or remote locations. Others may involve achievement of a broader, nationwide digital objective. Importantly, achieving alignment includes ensuring government policy and regulation does not inhibit regional telecommunications investment and deployment by imposing costs or barriers.

2. **All players in the ecosystem** (including all those above, plus others like Australian energy providers) **need to be brought into the design and implementation** so they are working as one to address true root causes of longstanding challenges effectively and efficiently. This includes asking better, deeper questions from those on the ground in our regional, rural, remote and First Nations communities about what's really going on and what outcomes are going to be most meaningful for them, rather than jumping straight into quick fix solution mode. It also includes ensuring we learn from past experiences, in terms of what worked and what didn't or hasn't yet been given a chance to, and why. For example, in our experience the most successful co-investment programs designed to improve coverage have involved drawing effectively on industry expertise to help determine the optimal placement of assets.

3. Policies and programs must be designed to support regional Australia to **access the power of available modern technologies and to leverage these to their best advantage**. This includes funding to remove affordability, ability or connectivity literacy barriers to uptake of optimal available connectivity choices (see section 4 below). It also means making appropriate policy adjustments to reflect the fact that new technologies and shifting global trends are continuing to rapidly disrupt our telecommunications industry – such as the entry of LEO satellite providers, the activities of global tech giants, and the increase in demand for data across Australia.

2.4.3 Adapting to disruptions to the historic regional deployment investment case

Changing economics: The initial focus of co-investment programs in Australia for many years was mobile blackspots. While this was a logical and pragmatic focus, there have now been around 1,400 mobile sites funded through co-investment programs. We've observed a gradual decline in the commerciality of blackspot locations over the seven rounds of the program run to date, with the overall economics being even more challenging for many remaining blackspots. While some scope for targeted co-investment in blackspot locations remains, future programs may need to provide a greater proportion of upfront costs than has previously been the case, with provision also made for some contribution towards ongoing operational costs. It's also important to note that cost is only half of the commerciality equation for infrastructure investment, the other being return. Any revision to co-investment policy that seeks to reduce cost can only be effective if it doesn't similarly diminish returns.

Expanded funding priorities: Lately, we have seen a welcome expansion in the focus of government co-investment programs to include funding for initiatives designed to uplift the regional user experience of existing coverage. Examples of this include multi-site proposals (i.e. the Limestone Coast, as per Table 2) and transmission ring projects funded under the RCP, and recent funding for the development of a LEO satellite-based back-up or fail-over transmission capability solution for remote sites via the Federal Government Telecommunications Disaster Resilience Innovation (**TDRI**) program. Recent natural disasters and climate related impacts have highlighted just how exposed to varying risk factors Australia's vast regional, rural, and remote telecommunications networks are. It's also clear that very high levels of investment are likely to be needed to bolster regional, rural, and remote network capacity so it can support current and future data usage by the communities and businesses located in these areas. Telstra accordingly strongly supports adjustments to the focus of future co-funding programs to place appropriate priority on measures to deliver improved capacity and/or resiliency of existing coverage, where it would otherwise be uneconomic for the industry to support such important improvements to the end-user experience in regional, rural, and remote communities.

Technology disruption: As noted in section 2.1, one of the most exciting developments in recent years has been the arrival of LEO satellite technology in Australia. This technology is developing at a rapid pace, and new solutions for regional connectivity — both coverage and capacity — are already available or shortly coming to market. It is no understatement to say that this technology has the potential to transform the investment and competitive landscape in regional Australia and is likely to make a marked difference before even the next triennial RTIRC:

- Within the regional co-investment space, we anticipate there will remain important opportunities for government to partner with industry to invest in expanding and improving regional terrestrial mobile coverage (especially in more populated locations). However, equally we expect LEO satellite-based capabilities may in many scenarios be able to deliver basic coverage outcomes more economically and faster.[80] Thus, the design of future co-investment programs should have regard to satellite-based capabilities, and opportunities for the use of these to improve regional connectivity.

[80] Indeed – some early initiatives using LEO satellite services in innovative new ways are already happening – see e.g. Satellite tech provides state-wide connectivity for WA Police (criticalcomms.com.au)

- We note, for example, that under the Federal Government's Better Connectivity Plan,[81] there is significant funding earmarked for the delivery of mobile coverage along regional roads. The use of terrestrial mobile coverage solutions may be appropriate for some of the nominated highway segments, especially those with minor gaps and significant vehicle traffic. However, for more remote roads and neighbouring locations where the typical use cases are fairly basic voice/text connectivity such as what is needed for safety purposes, LEO and DTH based solutions are likely to deliver connectivity much more cost effectively and faster than could be achieved using terrestrial solutions alone. Similarly, the economics and utility of Wi-Fi hotspots that allow customers of any carrier to connect — at locations such as highway roadhouses, regional tourism locations or camp sites — will be supported by the emergence of LEO-enabled backhaul solutions. We recommend these are included in the program scope.

2.4.4 Promoting regional competition and choice

Recently, we've seen interest in proposals relating to active network sharing emerging in Australia (including in the context of government co-investment programs), with the desired outcome being an expansion of the connectivity options open to regional communities. Telstra is also aware of views raised in, for example, the ACCC's Regional Mobile Infrastructure Inquiry (**RMII**) that:

- Telstra has an enduring coverage and competitive advantage in regional areas;
- Government policies have entrenched Telstra's position; and
- This has served to undermine the incentives of other mobile network operators to invest in expanding their own coverage.

For the reasons set out in Telstra's submission to the RMII,[82] we do not believe there is any merit to these claims. Government co-investment programs such as the MBSP have always involved an open tender process, allowing any operator to invest in regional Australia. Telstra's addressable market[83] is only 1.2% greater than Optus' addressable market of 98.5% of the population.[84] With access to revenue from only an additional 1.2% of the Australian population, we have chosen to invest in regional Australia to deliver an extra 1 million km^2 relative to other mobile network operators.[85] Any competitive advantage we have gained from our approach can be attributed solely to the strong financial commitment Telstra and our shareholders have made to investing in regional, rural and remote.

Equally, there is no evidence that any current competitive coverage advantage Telstra may have are "enduring". As recently acknowledged by the ACCC since the RMII, LEO satellites "... *have the potential to impact the competitive dynamics in the mobile services market by allowing mobile network operators to extend service coverage beyond their terrestrial network*".[86]

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81 Better Connectivity Plan for Regional and Rural Australia | Department of Infrastructure, Transport, Regional Development, Communications and the Arts

82 Public consultation | ACCC

83 Telstra mobile coverage is 99.7% of the population.

84 For example, see Optus' pre-budget submission to Treasury for FY2020-21, paragraph 4, p.2. Available at: https://treasury.gov.au/sites/default/files/2020-09/115786_OPTUS_0.pdf

85 https://www.telstra.com.au/exchange/what-s-next-for-australia-s-best--largest-and-most-reliable-mobi

86 ACCC submission to the ACMA's Stage 2 Consultation on Expiring Spectrum Licences, p.3. Available at: https://www.acma.gov.au/consultations/2024-03/expiring-spectrum-licences-stage-2-information-gathering-and-views-uses-frequency-bands-and-alternative-licence-conditions

However, Telstra continues to support the potential for commercially negotiated active terrestrial mobile network sharing arrangements to improve competition, choice, and service quality in regional Australia. To this end, in May 2022, we proposed a mobile infrastructure and spectrum sharing in certain regional and urban fringe areas of Australia under a Multi-Operator Core Network (**MOCN**) commercial arrangement with TPG Limited. This proposal involved an innovative approach to sharing regional network infrastructure to improve regional service provision, with clear scope to improve both end-user choice and competition. In April 2024, Optus and TPG Telecom proposed a regional network sharing deal very similar. We know improving connectivity across regional Australia is important, so we welcome Optus and TPG's proposal to step up to this challenge. While the ACCC's consideration of the Optus and TPG Telecom proposal is ongoing, its emergence affirms the reality of very difficult economics around the delivery of regional coverage, especially the building of new sites and supporting infrastructure.

Because of these challenges, we believe the best outcomes for regional communities are achieved by allowing operators commercial freedom to select the most suitable deployment and sharing arrangement case-by-case. This includes existing and enhanced passive sharing and/or commercially agreed active sharing (led by a carrier) on future government co-funded sites where costs are shared between participating operators and government. It could also include funding for Wi-Fi installations (e.g. at roadhouses and other stopping points), which can be a very cost-effective way to deliver "multi-carrier" coverage – as the data can be used by any customer regardless of their mobile provider.

Conversely, we continue to believe that any requirements mandating particular forms of active mobile network sharing (such as roaming) would impair the incentive and ability of major investors in regional Australian connectivity such as Telstra to improve this connectivity over the short, medium and long term (noting the importance of both returns and cost to the investment equation). Telstra does not support mandated roaming as it undermines competitive differentiation and reduces investment. In this regard, we endorse the findings of the AEWG:

> "*Mandated supply and rollout obligations ('the push'), in effect, stretch the carrier business model to serve otherwise uneconomic areas by requiring other customers, through explicit or implicit cross subsidies, to cover the costs. Government funding programs ('the pull') stretch the carrier business model by the taxpayer contribution to network rollout which otherwise would not occur. But there must come a point where it is inefficient, unreasonable and potentially distorting to competition and private investment to stretch the carrier business model too far in solving low scale issues for which those business models are not adapted.*
>
> *As we have discussed above, the carrier networks, particularly the mobile networks, also are 'over-engineered' for many agri-tech applications. Mobile network infrastructure, with its capability to support roaming, intercell handover and now high speed data services, is expensive to deploy*."[87]

During the recent Parliamentary Inquiry into Co-Investment in Multi-Carrier Regional Mobile Infrastructure,[88] there was interest in the potential for neutral host or joint venture models (such as used in New Zealand) to improve regional coverage and choice. We do not believe these models would deliver any more public value than solutions agreed between MNOs. They would take longer to

[87] Agri-Tech Expert Working Group (infrastructure.gov.au), p. 63
[88] Inquiry into co-investment in multi-carrier regional mobile infrastructure – Parliament of Australia (aph.gov.au)

establish, and only serve to deliver inferior mobile services for regional consumers – e.g. due to spectrum interference impacts. Commercially negotiated and market-driven infrastructure sharing solutions will deliver superior outcomes. In Confidential Appendix 2 we compare the joint venture and neutral host models with MNO led commercial sharing arrangements. This comparison makes it clear the perceived benefits of joint venture and neutral host models — that is, supporting different forms of active sharing (MOCN, roaming, Multi Operator Radio Access Network (**MORAN**), etc) and ensuring equal treatment for access seekers — can all readily be achieved without the complexity and other downsides these models entail. The key challenge to be overcome by industry under all models is initial establishment of the arrangements.

Lastly, we believe it is important that government co-funding continues to be focussed on activities which are uneconomic; as well as paying due regard to the role competitive differentiation plays in stimulating private investment in regional infrastructure and services. This is to avoid distorting broader investment incentives. For example, we believe very careful consideration should be given by policymakers before proposing to subsidise over-build by a second or third operator or mandating multi-carrier outcomes, given the likelihood that these approaches will effectively nullify any incentives for participants to contribute funding in order to offer additional unique coverage to their customers.

2.4.5 Improving access to land, towers and facilities for telco infrastructure

No need for changes to the facilities access regime

Telstra does not believe any changes to the *Telecommunications Act* 1997 (or subordinate legislation) are necessary to promote facilities and tower access. MNOs have many options for the location of their network infrastructure. These include access to a range of mobile network infrastructure provider (**MNIP**) assets; building their own towers; or using alternative facilities such as rooftops, water tanks, light poles and silos. Increasingly, there are also options to deliver services using alternative technologies to terrestrial mobile – such as LEO satellite. We believe commercial arrangements for access to regional mobile infrastructure (enhanced by the creation of new MNIPs including Amplitel) are working effectively to facilitate access and promote multi-carrier outcomes, where access seekers desire to share infrastructure. Telstra's experience is that where access seekers desire to share infrastructure, commercial agreements to facilitate this are being reached.

We recommend Government efforts aimed at supporting mobile competition and service availability, especially in regional and remote areas, are prioritised on other reforms and initiatives that are likely to be of much greater benefit to end-users.

These include prioritising network deployment related reforms to make it easier, faster and more cost effective to extend coverage.[89] There needs to be significant streamlining and modernisation of current planning and approvals processes across Australia for expeditious and economic roll-out of the modern network infrastructure (like our ICF). Otherwise, regional and remote communities may suffer from reduced or delayed digital benefits.

[89] See further details in Amplitel's submission to the HoR Inquiry, at Submissions – Parliament of Australia (aph.gov.au)

Reforms to streamline planning arrangements

When it comes to changes to help support deployment of mobile network infrastructure, Telstra welcomes the Government's revised Telecommunications in New Developments Policy[90] and the national principles to support streamlined telecommunications planning arrangements in new developments and growth areas recently outlined by the Mobile Telecommunications Working Group.[91] Telstra stands ready to work with state and territory governments to deliver on the Minister's expectations for a nationally consistent planning approach across jurisdictions.[92]

Currently, permit and planning costs vary widely between jurisdictions. However, on average, they represent a significant component of the cost to deploy regional mobile telecommunications infrastructure. For example, in the six years between 2015 and 2021, Telstra commissioned in aggregate [redacted] sites in regional and remote locations at a total planning approval cost of [redacted], which averages to [redacted] per site.

Current approval and consent processes can add *years* to us being able to even *commence* construction, especially when we need to engage with both state and local levels of government for approvals. It is also challenging where there is heritage considerations or requirements to access Aboriginal land. A recent example in [redacted]

Ensuring we comply with relevant rules, land rights, regulations and community wishes is an important part of the deployment process. However, as set out in greater detail in Amplitel's response to this Inquiry, we think this can be done significantly better. Reform opportunities include the streamlining of some processes and potential inclusion of new approval pathways and exemptions. In NSW and Victoria, we have seen changes to planning laws generate real efficiencies. Under these planning regimes, certain telecommunications developments are exempted from development application approvals or consultation requirements within certain parameters – for example if the structure is government funded, is under a certain height, zoning or in scenarios of replacement or extension of an existing facility.

Deployment can be challenging where there are conflicts between interested local community groups and local councils, or between Crown land authorities. For example, a local council may approve a planning application, to then have a community or other group raise objections or impede site construction. This requires additional stakeholder engagement and consultation, which adds to the time and cost it takes to extend and improve our network. At other times, we have been unable to proceed due to outright refusal of the relevant local government to consider our proposed solution.

We would like to see more consistent application of existing state and territory planning policy across different local government areas. As an aspect of this, we support proposals for consideration of a 'presumption of approval' for mobile telecommunications deployments (within appropriate guidelines) unless Council can justify why deployment cannot proceed within those guidelines. This would include

[90] 2024 Telecommunications in new developments policy | Department of Infrastructure, Transport, Regional Development, Communications and the Arts

[91] National principles agreed for improved mobile connectivity and coverage | Department of Infrastructure, Transport, Regional Development, Communications and the Arts

[92] New national approach to improving mobile coverage in housing growth areas | Ministers for the Department of Infrastructure

amendments to both State and Territory legislation for planning, and in relation to Crown land tenure arrangements (see further discussion on access to Crown Land below).

We feel strongly about the need for reform in this area because too often we see projects responding to community requests to improve our network and coverage (e.g. in natural disaster-prone areas), that we cannot progress because local planning permission cannot be obtained to install our infrastructure.

[redacted]

Environmental approvals

A major challenge to the efficient rollout of critical infrastructure, such as the ICF, is the complex, time -consuming and often costly processes for environmental approvals for land access (at local, state and federal levels).

The ICF is being constructed across Australia. As such, it presents unique reach and scale not seen across many other significant infrastructure projects. Where possible, we have worked to use existing utility corridors and fibre locations and routes which have been previously disturbed. However, the last time Telstra built a national backhaul network connecting all major capital cities was in 1988. Given the amount of change in the nearly 30 years since some of those fibres were laid, these locations and routes are not always the most suitable for new fibre (and our experience has been that some utilities are resistant to telecommunications infrastructure being placed in utility corridors).

Fibre deployments are generally considered to be 'low impact facilities' and therefore benefit from Schedule 3 of the *Telecommunications Act 1997* land access carrier powers and immunities. However, if an area is classified as having environmental or cultural significance (such as a national park), those powers do not apply. This means we need to adhere to a significant number of additional processes under relevant state and federal environmental legislation. Our experience to date suggests there is significant room for improvement to reduce the complexity, time, and cost for a nationwide project like the ICF, especially in terms of:

- **Fragmented processes**: which contain disparate approvals with differing objectives at all levels of government (as opposed to a streamlined process which recognises that infrastructure projects are in the national, state and territory interest).
- **Multi-layered approval and decision-making**: between and within different levels of government.
- **The current lack of priority placed on the public interest in having access to critical communications** under the current mix of regulations, relative to other public interest considerations. We consider that the following areas are worthy of further exploration:
    - How the public interest is considered when it comes to use of public land to deploy communications infrastructure;
    - Better differentiation between greenfields and brownfields deployments, recognizing the likely lower impact of brownfields deployments; and
    - Whether carriers deploying critical communications have adequate carrier powers and immunities to carry out these public interest deployments.

Reducing the cost to use Crown land

As detailed in Amplitel's submission, we believe that state and territory governments are in a unique position as a landowner to reduce the cost of infrastructure (and thereby increase efficiencies) by reducing and maintaining reasonable rents with reasonable escalation rates on Crown lands. This is particularly relevant in some states, such as Western Australia (where Crown land owned and managed by the State accounts for over 90% of all land) and New South Wales (where approximately half of all land is Crown land). Improving industry's access to Crown Land would also be valuable to support service continuity for communities in cases where arrangements for access to private land for existing sites expire and are unable to be renewed (where Crown Land offers a suitable potential alternative site location).

[redacted]

In considering the appropriate rents, we believe government land agencies should explicitly set Crown land access terms and rents prioritising:

- the maximisation of social welfare outcomes, including the interests of the public in maintaining telecommunications infrastructure in regional and remote locations (where a business case would not otherwise support its deployment);
- the positive externalities generated by telecommunications infrastructure such as mobile towers;
- promoting consumer choice and competition, including in regional and remote areas, through rental arrangements that do not discourage co-location; and
- where telecommunications infrastructure is being government funded (e.g. under a co-investment program), the effect of deployment costs caused by rents which are out of step with the market.

Applying these considerations, we recommend that Crown rents should be based on a reasonable rate of return applied to the unimproved freehold value of the land. This approach aligns with Australian Property Institute and International Valuation Standards. We also recommend that co-user fees are not charged under Crown leases. This is to ensure the competition and customer choice benefits of co-location of carriers on infrastructure are fully realised. We are concerned that the draft report recently released by the Independent Pricing and Regulatory Tribunal in NSW[93] proposes to raise rents by classifying regional and national park in such a way that the annual rental would be higher than the purchase price of land. This is likely to actively discourage colocation.

[93] Draft report - Review of rents for communication sites on certain Crown land - July 2024 | IPART (nsw.gov.au)

3. Resilient regional communities and networks

Underpinning the reliability of telecommunications services in regional, rural, and remote Australia is their resilience. As recent natural disasters and the ongoing impacts of climate change have reinforced – continuing to strengthen the resilience of regional communities, networks and services to these risks is not a nice to have – it is a must.

All players in the ecosystem, including Australian energy providers, will need to work better together in order for the telecommunications services in regional, rural and remote that customers *rely on* to be ones they can *depend on*. As we explain in this section of our submission, we see this collaboration covering improvements in four key areas:

1. Improving power resilience.
2. Resilience to disasters and other climate change impacts.
3. Access to communications in emergencies.
4. Helping communities be resilient to scams and cyber threats, and benefit from responsible AI.

Key recommendations: Resilient regional communities and networks

Recommendation 5: Governments and the energy sector respond to the inherent reliance of telecommunications on the energy sector by prioritising improvements to reduce the incidence and scale of mains power outages in regional and remote areas.

The telecommunications industry will always play a vital role in supporting telecommunications power resilience. However, based on our experience and efforts to date, we believe the single most effective and efficient way to improve the future power resilience of regional telecommunication networks is through improvements to Australia's power grid resilience and redundancy – to reduce the current incidence and scale of mains power outages. Especially in more remote areas, this is where we believe the biggest investment in time and money should go.

Recommendation 6: Governments, telecommunication and energy sectors engage in strategic planning and co-investment across energy and telecommunication infrastructure to improve resilience in both networks. This could extend to encouraging and capturing energy company investments in new innovations to support their power systems and supply for example, standalone power systems.

We recommend continuation of co-investment programs such as STAND and MNHP, which have helped industry to deploy back up power options at mobile sites that would have otherwise been uneconomic. We also recommend co-investment aimed at exploring the potential of new technologies like LEO satellite backhaul and services and renewable power sources and under programs such as TDRI and the Victorian Government's Renewable Hydrogen Commercialisation Pathways Fund to improve telco network redundancy and resilience. Both government and industry energy related investment decisions should thoughtfully consider telecommunications footprints and the need for power reliability at key locations.

Recommendation 7: Energy companies to prioritise connection and restoration of power for critical telecommunications infrastructure (as part of business-as-usual operations, as well as in cases of Mass Disruption events).

We face minimum lead times in many cases of more than a whole year to complete mains power connections to new sites before we can commence services. The time to get new connections to the grid must fall. We recommend cross-sector telco and energy collaboration to explore practical ways to reduce current timeframes (as well as improving scheduling certainty and the cost of grid connection).

Recommendation 8: Improved information sharing and collaboration when it comes to: (1) planned and unplanned power loss situations (including real-time and accurate restoration estimates); and (2) improving power resilience to climate change and disasters.

We recommend State and Territory Command Centres look to play a bigger role in coordinating the telco industry response in emergencies by providing information such as estimated outage times, to help prioritise generator placement and restoration activity. Energy providers can help by providing more real-time data on outages to help telcos respond. This along with telcos sharing more information about restoration times with each other would result in better outcomes for impacted communities. We also recommend industry collaboration with scientists, the Bureau of Meteorology, universities and other bodies to improve power resilience as part of climate change and disaster and preparedness activities.

3.1 Improving power resilience and reliability

Australia's telecommunications networks don't work unless they are powered in some form. This is because modern technology, including mobile towers and our fixed network, relies on electricity to

operate. That makes the actions being taken within Australia's energy sector significant to the telecommunications sector. In turn, this makes them even more important to geographically isolated communities in regional and remote areas – for whom the ability to stay connected can mean everything.

Yet in the 112 page 2021 RTIRC Report,[94] there were only two references to the energy sector – in each case focussed on collaboration with others in emergency situations. As we explain in this section of our submission, we believe this RTIRC 2024 should contain a much stronger focus on the symbiotic relationship between telecommunications reliability and resilience and power reliability and resilience in regional, rural and remote areas, with recommendations covering four key areas:

1. Governments and the energy sector respond to the inherent reliance of telecommunications on the energy sector by prioritising improvements to reduce the incidence and scale of mains power outages in regional and remote areas.
2. Strategic industry planning and co-investment across energy and telecommunications infrastructure. This includes investment decisions being made with thoughtful consideration of telecommunications footprints and power reliability at key locations.
3. Prioritised connection and restoration of power for critical telecommunications infrastructure (as part of business-as-usual operations, as well as in cases of Mass Disruption events).
4. Transparent information sharing with telecommunications infrastructure providers in cases of both planned and unplanned power loss situations, including real-time and accurate restoration estimates.

3.1.1 Telstra's efforts to improve the power resilience of our regional networks

Particularly in the wake of recent natural disasters, questions have understandably continued to be asked about what more can be done to help keep telecommunications networks and services operating during long power outages. We understand that improving telecommunications resilience to power outages is of significant concern to our customers and stakeholders in geographically isolated locations.

Telstra has been focussed on improving the power resilience of our networks for many years. However, the challenge we face is significant. Our network includes, for example, over 7000 exchanges and shelters, and close to 12,000 mobiles sites. These network assets are spread across the furthest corners of Australia, powered by separate electricity networks in each state and territory, which are themselves of significant breadth and complexity. As a result of climate change, we are also experiencing more frequent and extreme weather events, and these can impact both telecommunications and electricity networks over a wide area, sometimes in unexpected ways.

Last year Telstra experienced around 90,000 interruptions to our mains power supply. Localised outages across the mains power grid occur regularly for both planned and unplanned reasons. Given most of these power outages occur for short periods (hours not days), we have installed backup solutions, like diesel generators and batteries, where feasible. Temporary generators are also deployed in response to power outages. These tools help us to continue to provide coverage if the power goes out.

[94] 2021 Regional Telecommunications Review A step change in demand (infrastructure.gov.au)

However, our networks need *a lot* of power to keep running, making us one of the twenty largest energy users in Australia. Every standard mobile site in our network, for example, needs around 10kWh per hour – roughly equivalent to ten family homes (CSIRO 2018).[95] These enormous power requirements make mains power reliability critical to the reliability of our mobile network, given the practical limitations on how long we can keep sites running using backup sources.

Existing battery backup at Telstra mobile sites varies, but generally provides between three to nine hours of backup depending on demand. Telstra continues to invest to maintain and uplift power reserves at mobile sites, focussing on key sites to maximise the benefit of this investment for our customers. Our annual battery replacement program ensures our battery fleet is continually upgraded. In FY23, we completed battery lifecycle replacements at 640 mobile sites and battery lifecycle and upgrade works were carried out at around 1,455 network transmissions sites. However, due to their large size, it is not practically possible to accommodate battery back-ups at all sites.

To provide long term, generator-based back up power capabilities to all of our mobile sites would cost billions of dollars. Setting aside cost, it would still not be possible to install generators at all sites. Most notably, for safety reasons, generators are not suitable for installation at all locations, such as in bush-fire zones, as they can be fire risks themselves. Also during emergencies like fires and floods, re-fuelling of generators is sometimes not possible for safety and access reasons. Of course, in such situations it is also often the case that the impact of the disaster causes physical damage to our network rendering it out of service, even where there is an available back-up power source like a generator.

Nevertheless, where it is feasible, Telstra does undertake extensive preparation for potential power grid outages by pre-positioning generator fleets in high-risk areas and through our regular and structured refuelling programmes. Generator run-time is dependent on the size of the fuel tank that can be installed at a site. Where outages last longer than the site's power reserves, we will look to deploy portable generators and/or fuel wherever we can. Although, in addition to safety and access considerations, we also need to balance the time it would take to dispatch a portable generator against expectations around the return of mains power, to avoid wasted resources if power is restored whilst the generator is enroute.

Figure 12: Trailer mounted (portable) generator connected to a mobile hut, Korrelocking, WA, January 2024

We also consider renewable energy sources for our network. Telstra has committed to enable renewable energy generation, equivalent to 100% of our consumption, by 2025 and we are well on our way to meeting this target. In addition to our current resilience program involving the installation and deployment of battery and generator back-ups, we are continually exploring the potential of alternative power sources to improve the energy resilience of our network. Current initiatives include:

[95] Insight 28 Household types and energy use.pdf

- Using solar-powered solutions, where these make sense;[96]
- Trialling the use of lithium-ion batteries;
- A 3-year trial in Victoria commencing in Neerim in July 2024, using hydrogen fuel cell systems at five mobile sites that are capable of providing 72 hours of backup power. This trial is co-funded under the Victorian Government's Renewable Hydrogen Commercialisation Pathways Fund. We would welcome recommendations from RTIRC 2024 for other governments to consider similar co-investment initiatives designed to support the use of innovative new energy sources to improve telecommunications network power resilience; and
- Working on a 100% renewable standalone power system (**SAP**), utilising solid state storage for hydrogen produced using the excess energy from solar. As we explain below (section 3.1.3) we would like to collaborate with energy companies in a more coordinated way on SAP technology and deployments.

3.1.2 Leveraging new technologies to improve resilience - ATUs

A recent innovation supporting wider usage of generators is the development of automatic transfer units (**ATUs**). ATUs are a power switching technology, which simplifies the way portable generators can be deployed. Normally, we need to deploy a technician to changeover a site from mains to generator power and start the generator. However as noted above, sometimes this is not feasible (at least in short timeframes) due to site inaccessibility. The benefit of an ATU is that it can automatically detect loss of mains power and facilitate the start-up of a co-located generator, facilitating remote switchover. To date we've invested [redacted] in installing 250 ATUs at some of our most high-risk regional sites across Australia. We expect this action to improve power resilience at these sites. However, other disaster impacts to our network – such as hardware faults or a broken transmission line – could still render a site non-operational until technician attendance is possible.

Figure 13: Automatic Transfer Unit

ATUs may also create the possibility for local groups, such as emergency services or councils, to deploy a generator quickly to a site during an emergency, to assist their local community at times when Telstra technicians are unable to reach the site. We're currently exploring this with the Western Australian government via a pilot program. Several ATUs have been installed at mobile base stations and associated exchange sites and we've permitted appropriately skilled and onboarded community members to connect a portable generator to Telstra infrastructure when requested during times of mass mains outages or inaccessibility. After the pilot, we plan to refine and test the processes and

[96] Solar solutions can be used where mains power is not available or is unreliable. They are typically combined with a battery solution that can store energy, providing power at times when solar-generated energy is not available, and act as a back-up for other times when required.

safeguards required to engage with stakeholders more broadly on this power resilience improvement (noting that strict controls on the situations and conditions under which parties other than Telstra access our ATUs are likely to be needed for reasons of safety and security, etc.).

3.1.3 All players involved in power resilience collaborating more effectively

Today, without connectivity and power, society can come to a grinding halt. That includes when there are major weather events which can cause a loss of mains power, often leading to hundreds of sites without power and leaving many communities without connectivity.

During those events, Telstra does everything it can to restore telecommunications services as quickly as possible given how critical connectivity is particularly during and following emergencies. However, this is often not enough to meet the expectations of customers and the communities.

We've identified that while energy resilience has always been a significant risk for Telstra to manage, there is a need to think differently about how to prepare for emergencies, operate during them, and recover following the event. Furthermore, the telecommunications sector is a key part of that ecosystem but not the only part, which also includes communities, power companies, and governments. And everyone needs to do more.

To improve the future power resilience to natural disasters and climate change of telecommunication networks in regional, rural and remote areas (and to improve the resilience of the very communities served by these networks), we believe there needs to be much less siloed effort than we see today.

Telstra is proposing the industry come together on energy resilience, to work towards developing a clear and aligned position that will help customers and local communities. To achieve this, Telstra has developed a draft action framework for discussion with industry, Government, energy suppliers and other key stakeholders. Table 5 below sets out the ten elements in our proposed framework and associated callouts.

Table 5: Telstra's proposed discussion framework for improving regional resilience

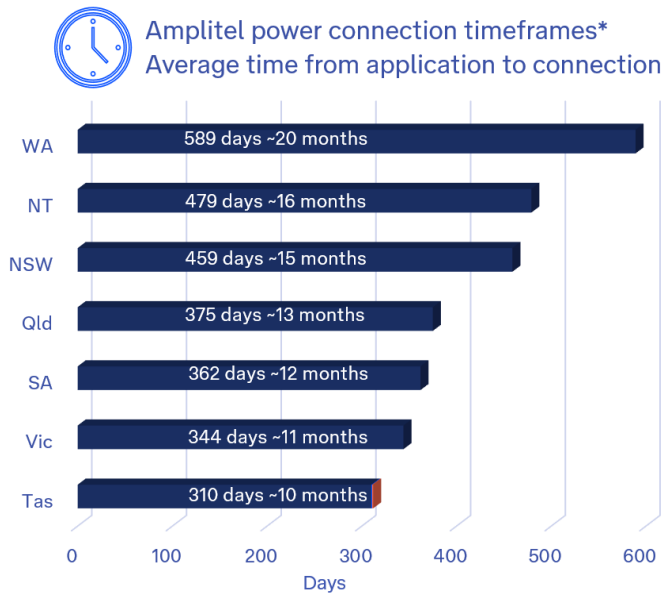
Element	Key call outs
1. **Climate science**	Are we analysing the climate science and collaborating effectively with scientists, the weather bureau, universities, and other bodies to help us develop the AI models and improve power resilience, as part of disaster preparedness activities?
2. **Network design**	How do we evolve network design to further simplify networks with fewer nodes and take advantage of new energy solutions especially in regional and remote locations to improve network resiliency?
3. **Battery upgrades**	There will be a continued need to upgrade batteries, but how do we shift to new battery technology? Can collaboration with energy and battery suppliers create innovative solutions that are standardised and affordable for all key industries, including telecommunications?
4. **ATUs and generators**	While reliant on diesel and the risk of refuelling, should this solution be more widely adopted? What role can local communities play in the deployment and management of generators in a disaster? How should costs be apportioned to deploy and operate generators during an extended power outage?
5. **Standalone power systems (SAP)**	How do we collaborate with energy companies in a more coordinated way on Standalone Power System (**SAP**) technology and deployments?
6. **Energy grid**	The reliability of the grid in remote areas needs to improve and the time to get new connections to the grid must fall. In an environment of surging energy demand and a transition to renewables, how can telecommunications be better prioritised nationally?
7. **Event management**	All telcos, emergency services and energy suppliers have operating or response centres. How do we improve on current arrangements and get better connected during major events to securely share data and information, and coordinate a more efficient, collective response?
8. **Emerging technologies**	DTH services, expected to emerge from late 2024, will be largely immune to terrestrial power outages. How do we plan for the availability of emerging satellite services and what adjustments should we make to plans in other areas?
9. **Government policy and support**	Energy resilience is a real issue across most States, with a range of different actions and approaches in train. How do we coordinate activities across the States and what role does the Federal Government play? How do we help identify the changes in policy settings we, as a country need, to support additional investment in energy infrastructure?
10. **Industry collaboration**	Energy Resiliency is important for both the telecommunications and energy sectors, and the wiser community. How do we collaborate together, and with major stakeholders, to own of this issue and deliver real improvements to the resiliency of Australia's telecommunications environment?

Within this framework, the telecommunications industry will always play a vital role in supporting telecommunications power resilience. However, based on our experience and efforts to date, we believe the single most effective and efficient way to improve the future power resilience of Australia's telecommunication networks is *through improvements to Australia's power grid resilience and redundancy* – to reduce the current incidence and scale of mains power outages. We realise that's not an easy task, but this where we believe the biggest investment in time and money should go.

Relatedly, we feel it is important to highlight the challenge we currently face to complete timely mains power connections to our sites. As set out in Figure 14 below, average times for connections to our mobile sites operated by Amplitel currently range from around ten months to a maximum of around 20 months. This means minimum lead times in many cases of more than a whole year before we can

commence services at a new site (with many cases across regional Australia where the expected power connection date is later than the expected date of completion for the telecommunications works).

Figure 14: Average time to connect power to Amplitel mobile sites as at July 2024[97]



We actively engage with power companies regarding our applications. However, we believe there may be a common interest to benefit many regional, rural and remote communities in further engagement to explore some practical ways in which these time frames can be reduced (as well as improving scheduling certainty and the cost of grid connection).

The other two key areas on which we suggest collaborative efforts by energy providers, the telecommunications industry and government on power resilience are:

1. **Ongoing investment**: in addition to the ongoing investment by individual network providers, the recent co-investments between the telco industry and the Federal Government through the STAND program has improved back up power options at mobile sites and added to our fleet of Cell on Wheels (**COW**). We support continuing this program and exploring other collaborative ways to provide backup power.

2. **Better information sharing**: There's an opportunity for State and Territory Command Centres to play a bigger role in coordinating the industry's response in emergencies by providing information such as estimated outage times, to help prioritise generator placement and restoration activity. Energy providers can help by providing more real-time data on outages to help telcos respond. This along with telcos sharing more information about restoration times with each other would result in better outcomes for impacted communities.

[97] (i) Amplitel sites where an energy company network upgrade is required in addition to a mains power connection; (ii) Sites delivered in FY23 ,FY24 and forecast for FY25. Connection refers to completion of both the network upgrade and the mains power connection

3.2 Resilience to disasters and other climate change impacts

We know that staying connected is especially crucial during times of crisis. In our long history, we have had extensive experience in dealing with natural disasters. We expect extreme weather events only to increase in frequency and intensity in Australia, with many of these likely to adversely impact our networks and services

Resilience, in a network sense, includes both the capacity to prepare for disruption and the ability to recover rapidly. We work year-round to ensure we are prepared to respond when a disaster hits and to take pragmatic actions to harden our networks against the impacts of climate change. In this section of our submission, we highlight some of our recent activities to continue to improve the resilience of our networks and services in regional and remote areas. We also explain the context in which this action is being taken.

3.2.1 Increasing frequency and extremity of events

Australia is experiencing more frequent and extreme weather events. In FY24 our emergency Incident Management Teams have been engaged in at least 116 events, up significantly from the 79 events we responded to in FY23. While we are continually looking for ways to improve the resiliency of our network and our response to major events, the scale of some recent events has been highly challenging. Box 5 below details the top three incidents we faced in December 2023 and January 2024.

Box 5: Top three network incidents in December 2023 and January 2024

Cyclone Jasper, QLD – On 13 December 2023, Tropical Cyclone Jasper made landfall near Wujal Wujal in Far North QLD as a Category 2 system. Across this event, 72 physical mobile sites were impacted along with fixed line, ADSL, IP and Telstra nbn Services. A total of 90 network sites were impacted throughout the event by the loss of mains/primary power source.

South East and South West QLD – On 24 December 2023, severe thunderstorms, flash flooding, giant hail, extreme rainfall and a confirmed tornado on the ground for 30 minutes in the Gold Coast region resulted in significant damage to houses, roads and power infrastructure. The severe weather conditions continued for several days extending the impact to areas as far as Rockhampton. Across this event, 358 mobile sites were impacted along with ~ 10K fixed line, ~700 ADSL and ~65K Telstra nbn Services. A total of 373 network sites were impacted from loss of mains power.

Wheatbelt, Goldfields and Great Southern, WA – On 16 January 2024, severe thunderstorms, heavy rainfall, cyclone level winds, hailstones and lightning strikes resulted in significant damage to homes, roads and the Western Power grid infrastructure with 100 power poles affected. Across this event, 94 physical mobile sites were impacted along with ~2.5K fixed line voice, ~700ADSL and ~7K Telstra nbn services.

3.2.2 High-risk weather season preparations

To better identify how climate change could impact our networks, we undertake Climate Scenario Planning. This planning involves identifying, assessing, and managing climate-related risks that are integrated into our operational decision-making. Historically, across Australia high-risk weather events tend to occur in the period November through to March, encompassing all of summer. In anticipation of these events happening, each year we undertake a range of preparatory activities at sites across our network. Access tracks are cleared, vegetation around network sites is cut-back and fire breaks are created for sites in high-risk locations. Thorough site inspections occur across our regional footprint, and emergency maintenance is undertaken where required. Our fibre assets are also subject to

inspection to identify and repair any points of weakness before disaster events occur, and this includes our core network transmission sites in northern Australia that are at risk of cyclone activity. In this financial year alone, this work was carried out at over 8,000 sites.

To inform our overall disaster planning and preparatory activities, we also engage on a regular basis with other relevant stakeholders. We draw upon weather information provided by the Bureau of Meteorology (**BOM**), and we attend regular climate briefs in the lead up to the high-risk weather season and during real time events. Ahead of the 2023/24 season, Telstra and nbn co jointly presented to State and Territory Emergency Services Organisations (**ESOs**) on what we were doing to prepare for disaster events and what we generally require at these times. The information we collect through these engagements is shared with our field teams, and this supports integrated workflows across business units and timely preventative actions, such as the sandbagging activity depicted below before expected flooding of the Cudegong River (Figure 15).

Figure 15: Mudgee Exchange NSW, sandbagged following Burrundong dam spill, October 2022

3.2.3 Network design and use of new technology to improve resilience

Telstra's infrastructure assets are being designed for the climate of the future. Our focus is to build simplified and resilient infrastructure, identifying and removing single points of failure where possible, replacing end-of-life equipment, and increasing automation.

To improve the overall reliability of our network, redundancy and diversity are designed into our network topology where possible. Where we can, we have network elements fulfilling common functions and multiple paths in case one is disrupted with automatic fail-over to a working element or path as needed. There is considerable design work around transmission - leveraging terrestrial fibre, microwave and satellite solutions.

There is a mix of project types we pursue to improve redundancy and diversity across our network. Larger projects tend to involve new fibre builds to create a transmission ring, which provides alternate paths for network traffic if a fibre break occurs —where deployed, this solution often benefits multiple mobile sites. Examples of this project type include the Gippsland and Northwest Queensland transmission rings (supported via RCP) that are currently progressing.

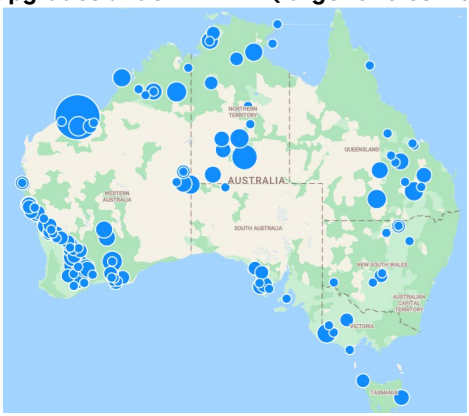
More targeted solutions can also be used. Our OneWeb LEO satellite enabled backhaul solution is a new option for transmission diversity in more remote areas. We are currently exploring the suitability of using OneWeb as a failover transmission solution for sites that are vulnerable to upstream outages under the Commonwealth Telecommunications Disaster Resilience Innovation (**TDRI**) program.

We note the 2023 Report[98] of the cross-industry LEO satellite Working Group convened by the Government recommends the continued monitoring of LEO satellite services including DTH with respect to the role they may play in supporting continuity of service during disasters. Through our ongoing participation in the Working Group, we will continue to explore this potential.

3.2.4 Network hardening

Our network hardening actions often relate to improving power resilience, as discussed in section 3.1. Through our ongoing focus on hardening our network in regional and remote areas, we recently applied for co-funding under Round 2 of the MNHP so we could complete power upgrades at a number of sites that would otherwise have been uneconomic. In May 2024, we were awarded co-funding enabling us to upgrade 149 systems at 122 sites across Australia (with a particular focus on linked sites in WA). Figure 16 shows the wide geographic spread of the areas covered by this network hardening uplift.

Figure 16: Planned power system upgrades under MNHP2 (larger circles indicate more than one site)



Network hardening can also extend to measures we take following disaster events to prevent either a repeat or further damage being sustained. Examples of this activity include elevating assets (such as roadside cabinets) where these have experienced flood events and proactive fibre re-trenching where mains cable are threatened.

Figure 17: Trenching for a fibre relocation after a land slip threatened a major transmission cable, Falls Creek Victoria, November 2022

3.2.5 Telstra's Emergency Management Framework

Under our Emergency Management Framework, the operational teams directly involved in a natural disaster lead in the incident response. They do this through a range of cross-functional Incident

[98] https://www.infrastructure.gov.au/department/media/publications/low-earth-orbit-satellite-working-group-2023-chairs-report

Management Teams and Regional Emergency Councils, which are coordinated by the National Emergency Manager (**NEM**) in our Global Operations Centre (**GOC**).

Figure 18: Telstra Emergency Response Team

We use our Emergency Management Framework to carry out vital work to help impacted communities and parts of our network recover from disaster situations. This includes fault fixing by our field services team, answering calls from our customers in our Contact Centres, handling 000 calls in our Triple Zero centres, Telstra participation in disaster management groups that have activated during disaster events and keeping key stakeholders and the media informed of relevant developments. We also have Emergency Service Liaison Officers (**ESLOs**), who join relevant State Command Centres at times of disaster to ensure there's a direct line of communication between emergency services operators and Telstra. Ultimately it is the emergency service operators that determine what areas Telstra employees can enter and work safely in during an emergency and who help us to prioritise the allocation of Telstra resources to best help communities in need.

In responding to natural disaster events, our key principles are:

- We never risk our people's safety;
- We focus on restoring services as soon as it is safe to do so;
- We work closely with Emergency Services; and
- We strive to support our customers.

3.2.6 Helping recovery actions with our fleet of deployable assets

Telstra's disaster response and recovery toolkit also includes a fleet of deployable assets that we maintain. This includes cells on wheels (**COWs**), mobile exchanges on wheels (**MEOWs**) and portable generators on a trailer (**GOATs**) — that can be used to provide interim connectivity in the aftermath of major disasters. Some of these assets have been delivered under the Australian Government's STAND program. In FY23 we completed 70 projects under the STAND program, delivering a mix of battery upgrades, permanent generators and portable generators at locations across Australia and we expect over 120 similar, additional projects will be completed in FY24.

Our deployable generators were put to good use recently when major storms hit the Wheatbelt, Goldfields and Great Southern regions of Western Australia in January this year. Our incident management team prioritised the restoration of sites to maintain availability of inter-capital links, inter-exchange links and mobile sites until mains power could be restored by power authorities. This was especially critical for the Wheatbelt and surrounding area where we risked losing all three core

network paths — a possibility that was averted by deploying an additional 50 generators to stabilise our interstate links and mobile coverage until Western Power could restore mains power.

Similarly, when severe weather including strong winds and heavy hail swept through large parts of regional Victoria and Melbourne in February 2024, a peak of 600+ sites (core, fixed & mobile) in our network were impacted. In line with critical priorities to protect inter-capital and major regional communications links, overnight we deployed generators to restore one of two inter-capital links from Victoria to Tasmania, to prevent a complete state isolation of Tasmania. We also deployed multiple generators the next morning, to restore the major network linkages to eastern Victoria.

3.2.7 Boots on the ground

Telstra's service restoration teams are at the frontline of our service restoration activity, travelling far and wide across the country. Our teams travel by trucks, trains, planes, and helicopters to get to where they're needed most, ensuring people can call for help and connect with loved ones. When disaster strikes, our people are often the first on the ground, working around the clock to restore the network, reconnect our customers and assist communities impacted as quickly as possible. Ahead of the 2023/24 annual summer bushfire season, in November 2023 we mobilised more than 3,000 of our people to respond on the ground across the country or via our dedicated disaster assistance line (1800 888 888), as and when we're needed with a tailored approach dependent on the weather event.[99]

Figure 19: Telstra field staff

Following a disaster event, we mobilise Telstra's response teams on: (i) a three-day time horizon for immediate crisis response; (ii) a three-week time horizon for service restoration (e.g. where we might repair fibre cables or deploy temporary infrastructure like COWs, MEOWs and GOATs); and (iii) a three-month (or longer) time horizon for full network recovery — where we restore damaged sites and equipment, and sometimes permanently relocate facilities to avoid future risk of damage.

3.2.8 How regional customers can use LEO satellites to improve their disaster resilience

LEO satellite technologies are increasing the options available to customers in regional, rural and remote areas for maintaining connectivity in the event of natural disasters impacting the availability of terrestrial fixed or mobile networks.

One of these is our new Home Satellite product powered by Starlink. In some cases, a natural disaster might impact one or more of our terrestrial mobile base stations, taking them offline. By contrast, it

[99] More data, better payphones, less stress: how we're supporting you this disaster season (telstra.com.au)

may be that the power remains on at the customer's home or business premises. In this scenario, the customer could use Wi-Fi calling via Starlink to maintain connectivity even though our mobile network is down. An extension of this scenario is if the customer had a basic home generator installed at their premises as a back-up power supply. This arrangement would allow connectivity to be maintained via Wi-Fi calling using Starlink even if there was a loss of mains power to the customer's premises. We appreciate there is clearly a cost element to this solution. However, for customers who highly value the ability to remain connected, that cost may be a worthwhile investment in their disaster preparedness.

Box 6: Queensland Health trial backup via LEO satellite using Starlink

Queensland Health manages hundreds of sites across the state from large hospitals through to small community health clinics in remote areas.

A significant proportion of network outages that occur in regional Queensland are due to loss of mains power. On other occasions outages in the transmission network or exchange equipment can lead to loss of connectivity.

Telstra and Queensland Health worked together to forensically construct a heatmap of resiliency to identify and grade Queensland Health's sites by their vulnerability to loss of connectivity.

One solution which has been successfully trialled at Ingham hospital in North Queensland is use of an Adaptive Networks Fixed solution with a primary terrestrial network connection and a backup via LEO satellite using Starlink. The clever part is that the hospital's communications equipment has been connected to their onsite generator, so that no matter what the network issue is, the Starlink connection keeps the hospital connected at all times.

We understand Queensland Health are delighted with the outcome and 43 other vulnerable sites are being lined up for a similar solution.

Another option already available today to customers is the LEO satellite-based emergency calling capability of Apple iPhone 14 and 15 devices. This capability works in a similar way to DTH technology. From late 2024 onwards we expect that DTH capabilities will become available. Initially SMS functionality will be supported. This is then likely to be expanded to include voice calling and data from late 2025. A key feature of DTH technology is that it is relatively immune to events impacting the availability of terrestrial services. That is, should a natural disaster or mains power outage take out one or more mobile base stations, connectivity in that area will still be possible via DTH capabilities.

3.3 Communications in emergencies

Helping regional and remote communities to stay connected during times of emergency means more than ensuring our services remain operational. As outlined below, in recognition of this we've been working on a range of new and innovative solutions and other support for our customers to improve communication capabilities during emergencies.

3.3.1 Giving our mobile customers more data automatically in a crisis

In November 2023, we announced that all customers on our monthly mobile plans would automatically receive 100GB of extra data, if their service is registered to an area where disaster assistance is available. There is no need for customers to contact us to get the extra data activated, customers will

simply receive a text message from us informing them of the extra data for use in Australia within 30 days.[100]

As we explain in section 4.1.3, our new "Get ePrepared" initiative we launched earlier this year in partnership with Justice Connect is also helping communities build digital skills and legal resilience to potential disaster situations - by coaching people how to electronically store important documents.

3.3.2 Making our payphones more resilient

In August 2021 we made local and national calls to standard fixed line numbers and calls to standard Australian mobiles on our public payphones free.[101] When bushfires rolled across the coasts of Australia, we knew how important they were, as lines formed in affected towns of people wanting to let their families and friends know they were ok. From August 2022, we followed this by rolling out free Wi-Fi for over 3,500 payphones.

We're now in the process of upgrading 1000 payphones in disaster-prone areas around Australia to help keep communities connected during a disaster. This includes upgrades for 70 remote Indigenous communities. The upgrades provide technology including USB charging for devices and free Wi-Fi connectivity to help people get online, as well as backup power to provide additional power resilience. At the end of June 2024 around half of the planned upgrades were complete, and we expect all 1000 payphones will be upgraded by mid-2025.[102]

Figure 20: Wi-Fi upgrade at a Telstra payphone

3.3.3 Temporary connectivity for recovery using portable LEO satellite services

Since 2023, we have been trialling the use of portable satellite connectivity using Starlink LEO satellites to support evacuation and recovery centres. What's great about these kits is that they are easy to assemble, helping to provide basic connectivity even if both fixed line and mobile connections are down in a disaster area. Other applications might potentially include use by affected communities near local supermarkets and other essential services suppliers, so they can still operate and accept payments even if their local infrastructure is down.[103]

[100] More data, better payphones, less stress: how we're supporting you this disaster season (telstra.com.au)
[101] Payphone usage is surging with nearly two million free calls being made every month (telstra.com.au)
[102] More data, better payphones, less stress: how we're supporting you this disaster season (telstra.com.au)
[103] More data, better payphones, less stress: how we're supporting you this disaster season (telstra.com.au)

3.3.4 National Messaging System

Telstra is working with the Australian Government to build a trusted National Messaging System (**NMS**) that targets messaging in real-time during emergencies.[104] In the event of a natural disaster, the NMS will allow all nearby mobile base stations to use "cell broadcast" to send critical alerts and warning messages out to every compatible mobile phone and device in that area, irrespective of the customer's mobile provider. Government funding for the NMS has been provided for four years, commencing in FY23/24. We are hopeful this new ability to get accurate, up-to-date information out quickly and universally to all mobile users in an affected area will prove very valuable in supporting regional, rural, and remote communities to act quickly and decisively in disaster situations.

3.3.5 Temporary Disaster Roaming

Recently, we've investigated the feasibility of deploying in Australia a solution known as Temporary Disaster Roaming (**TDR**). TDR would enable mobile roaming between the mobile networks of the three MNOs within a localised area during emergencies or disasters in that area, for a short, specified duration.[105] For mobile customers in the disaster zone, this would mean that, even if the mobile network of their mobile provider goes down, the TDR capability would allow them to stay connected using any other mobile network in the area that is still working. In February 2024, Telstra conducted a successful TDR test to show what might be possible.[106]

While TDR is an innovative solution with the potential to improve access to communications for regional, rural, and remote communities in disaster situations, there are several challenges to be managed. These include ensuring any surviving network is not overloaded from an influx of TDR traffic causing it to fail — which would be even worse for the impacted community.

Importantly, TDR will only work if there is participation by all of Australia's MNOs and appropriate support from government and emergency service stakeholders. We continue to engage on these matters. We are cognisant that DTH satellite services will, in the near future, also improve the ability for customers to stay connected using their mobile devices even when the terrestrial network goes down (see section 3.2.8 above).

3.3.6 Public Safety Mobile Broadband

Another initiative we've been supporting is the work being led by NEMA to develop a national communication system for Australia's first responders. Currently, emergency service organisations including fire, ambulance, and police primarily rely on voice-only land mobile radio telecommunication systems, which have limited data services and capability. To allow first responders to be better equipped with mission-critical communication technology, we've been engaged with the work underway to progress a Public Safety Mobile Broadband (**PSMB**) capability. The objective of this ambitious program of work is to provide emergency service staff with access to fast, safe, and secure voice, video, and data communications and near instant access to data, images, and information in live

[104] https://nema.gov.au/about-us/budget-2023-24/National-Messaging-System#:~:text=The%20NMS%20delivers%20telephony%2Dbased,devices%20in%20a%20specified%20area

[105] See public details at: 9433883.pdf;fileType=application/pdf (aph.gov.au)

[106] Temporary Disaster Roaming: successful simulation shows what's possible (telstra.com.au)

situations, emergencies, and critical incidents. A national PSMB solution will also mean that critical communications can be carried out irrespective of organisational and/or geographical boundaries.[107]

We support the $10.1 million over the 2023-24 and 2024-25 financial years the Government is investing to establish and fund the operations of a PSMB Taskforce to create a framework for the delivery of a national PSMB capability. The PSMB Taskforce commenced operations in August 2023 and we look forward to ongoing engagement with the Taskforce as its work continues.[108]

3.3.7 Supporting Triple Zero access

When anyone in Australia calls 000 or 112, they speak to a Telstra Triple Zero Emergency Call Service Operator first. As directed by the caller, Telstra transfers the call to the required emergency service operator — Police, Fire or Ambulance services. Emergency calls to the Triple Zero Emergency Call Service can be made without charge to the caller, whether the service is active, suspended, disconnected (in the case of a mobile service), or out of credit for a pre-paid service.[109]

Recently, an Independent Review led by Mr Richard Bean has identified several areas for improvement in existing legislative and regulatory requirements concerning the Emergency Call Service, as well as opportunities for greater collaboration and information sharing between the many parties involved in the telecommunications ecosystem. This is particularly relevant to the Emergency Call Service and its resilience in times of major network outages.

Telstra takes our Triple Zero responsibilities, both as the Emergency Call Provider and as a carrier, extremely seriously. We look forward to working closely with the Government, ACMA and industry on implementing the recommendations in the Bean Review, noting, as the Minister has acknowledged, the recommendations have considerable implications for mobile network operators. [110]

3.4 Safety first when it comes to scams, cyber threats and responsible AI

Resilient regional communities and telecommunications networks don't just need to be resilient to physical threats like natural disasters. As technology increasingly supports every aspect of daily life and work in our regional, rural and remote communities — we must also build resilience against new forms of threats. In this section of our submission, we explain some of the important work Telstra is doing to keep our networks, and all the customers who use them, secure and safe from scams and cybersecurity threats, and some of the actions regional customers should be taking to help protect themselves too. We also highlight the actions Telstra is taking to lead responsible AI adoption in Australia, to support realisation of the immense benefits AI has to offer in a safe and responsible way.

3.4.1 Our actions to protect regional and remote customers from scams

Telecommunications scams is a topic of real concern for all of us — including those living and working in regional, rural and remote areas. For example, scam reports to the ACCC's Scamwatch in the first 6

[107] Public Safety Mobile Broadband | National Emergency Management Agency (nema.gov.au)
[108] See further details of the PSMB Taskforce's engagement with industry at PSMB Industry Engagement | National Emergency Management Agency (nema.gov.au)
[109] Triple Zero (000) and 112 Emergency Call Service (telstra.com.au)
[110] Australian Government Response to the Bean Review Final Report - Review into the Optus outage of 8 November 2023 - April 2024 | Department of Infrastructure, Transport, Regional Development, Communications and the Arts

months of 2022 advised of losses of over $1 million just relating to the sale of tractors and heavy machinery.[111]

Figure 21: ACCC Scamwatch Infographic

Telstra invests in 24/7 network monitoring and blocking of scam calls, scam and malicious SMS and emails to protect our customers against scams — blocking millions every single day. In 2023 we introduced a new reporting number to help our systems learn what scams are trending to stop them reaching more people. Any customer on the Telstra network can report SMS and MMS scams to us by forwarding SMS and MMS scams to 7226 (SCAM). [112] To date, we've already seen around 400,000 potential scam messages reported.

In another important initiative for our customers, in October 2023, we also teamed up with the Commonwealth Bank of Australia (**CBA**) to launch a Scam Indicator.[113] Following a successful proof-of-concept (using technology which was conceived and developed in partnership with Quantium Telstra),[114] the Scam Indicator now helps protect joint CBA and Telstra customers from phone scams where criminals try to trick people into transferring them large amounts of money. The tool is designed to detect certain high-risk scam situations in real time using a Telstra API that CBA calls on as part of

[111] Farm businesses warned as scams targeting agricultural sector grow | ACCC (See Figure 21)

[112] Keep snitching on scammers: how our new 7226 reporting number is fighting off SMS and MMS Scams (telstra.com.au)

[113] CBA extends scam disruption technologies as part of 'whole-of-ecosystem' national approach (commbank.com.au)

[114] Telstra Scam Indicator - How it works

its scam detection processes. In March 2024, we extended these protections even further to cover joint CBA and Telstra landline customers — with the Scam Indicator now covering calls from nearly 15 million Australian telephone numbers.

It's estimated that millions of scam and other unwanted (spam) communications originate globally every single minute,[115] and scammers constantly evolve their tactics. However, because of the effectiveness of our scam blocking capability:

- We're now blocking, on average, more than 10 million scam calls per month as well as millions of incoming scam and unwanted Bigpond emails each month;
- Between January and December 2023, we blocked, on average, 11 million scam SMS every month; and
- Calls using Telstra held mobile and fixed numbers that did not originate on our network are sent to an interactive voice recording 'challenge'. This has resulted in millions of additional calls per month being blocked.

3.4.2 Our collaboration on scams for even greater impact

We don't, and cannot, do the important work of protecting Australians from telecommunications scams on our own. Since 2020, the telecommunications industry has registered an Industry Code aimed at reducing scam that is enforceable by the ACMA. Originally focussed on reducing scam calls, in 2022 it was expanded to include obligations for SMS. As a result of this code, the telecommunications industry blocked more than *one billion* scam attempts in the year to 30 June 2023.

Telstra is also supportive of the SMS SenderID Registry being tested by the Government and the ACMA.[116] The SenderID Registry is designed to help with the fact that scam SMS with fake sender IDs to imitate trusted brands are often difficult to distinguish from legitimate SMS communications, meaning they pose an increased threat to both consumers and legitimate businesses and organisations. Telstra has been engaged with the ACMA on the design of the Registry since this initiative was announced, and we have also been participating in the voluntary pilot of the Registry. Phase 1 of the pilot commenced in December 2023 and Phase 2 is expected to start later this year.

We expect the SMS SenderID Registry to help amplify the success of initiatives such as Telstra's "Trusted Sources" registry we began piloting in 2020, as part of our Cleaner Pipes program. Trusted Sources enables companies and government entities like MyGov that use a single provider to originate SMS to register approved SenderIDs associated with their brands — helping us to block the sending of messages from unauthorised SenderIDs to prevent scams.[117]

Telstra has also been a leading participant in the National Anti-Scam Centre (**NASC**) managed by the ACCC.[118] We were a part of the NASC's first "fusion-cell" focussed on disrupting investment scams, along with other industry stakeholders including from the banking sector. Other NASC initiatives we are

[115] Spam Text Statistics (Growth and Severity of Fraud in 2024) (techreport.com)

[116] SMS Sender ID Registry - Fighting SMS Impersonation Scams | Department of Infrastructure, Transport, Regional Development, Communications and the Arts

[117] New pilot program to block cyber criminals impersonating Services Australia (telstra.com.au)

[118] National Anti-Scam Centre | ACCC

actively involved in include working groups on Communications & Awareness, Data Integration & Technology, and Emerging Issues & Responses.

Recently, the Government undertook consultation on a potential Cross-Sector Scam Framework covering banks, digital platforms, and telco providers, which may be incorporated into the *Competition and Consumer Act 2010*, supported by industry-specific regulatory codes. We support the intention of improving 'whole of ecosystem' coordination against scams, provided any new regulatory obligations are designed and implemented appropriately.

3.4.3 The behind the scenes work we do to keep communities safe

Telstra invests a lot of time, effort, and money in keeping Australians safe by sustaining and uplifting the security and cyber resilience of our networks. Australia faces a complex and threatening cybersecurity landscape and in recent years there has been a steady increase in malicious cyber activity targeted at Australian private and government organisations.[119] In fact, with cybercrime now the third largest global economy, behind just the United States and China[120], there has never been a time when we need to care more about cybersecurity.

This is not just a problem for large organisations. Small businesses such as those in more geographically isolated areas who depend on their online presence and social media accounts for sales have also become prey for cyber criminals. All consumers and businesses are spending more time online and cyber criminals are taking advantage; launching an attack every six minutes in 2022-2023.[121]

Telstra's network is large and complex, and we touch the lives of every Australian every day. We recognise it's vital for us to keep that network as safe and secure as we possibly can. That's why we invest so much in cybersecurity — building processes and investing in our people over decades to protect our own network and those of our customers. For example, in addition to our work to block scams, Telstra's Cleaner Pipes initiative works to reduce instances of customer data being compromised through malware, ransomware, and phishing by using tools such as Domain Name Server (**DNS**) filtering. We're also providing secure, sovereign, scalable networks for our enterprise customers, and ensuring the cybersecurity capability we use for ourselves is also helping them.

3.4.4 Championing the responsible use of AI to benefit regional communities

There are not many conversations you can have about telecommunications these days without the topic of artificial intelligence (**AI**) coming up. Telstra has a set goal to become a data-driven and AI-fuelled organisation, and a leader in responsible AI adoption nationally. We are doing this because we believe our focus on AI will be key to driving and supporting Australia's industries of tomorrow and to help uplift Australia's economic potential through technology. We have a commitment to Responsible AI and we consider and adhere to the AI Ethics Framework developed by the Government, which includes the AI Ethics Principles.[122]

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[119] See e.g. Telstra and Cyber Security Cooperative Research Centre End of Traditional Resilience

[120] The World's Third-Largest Economy Has Bad Intentions — and It's Only Getting Bigger (bloomberg.com)

[121] ASD Cyber Threat Report 2022-23

[122] How we use artificial intelligence and machine learning - Telstra

Recently Telstra joined a select group of global organisations to champion and advance the ethical development and application of AI. Telstra is the first Australian company and sixth globally to join the UNESCO business council to promote the implementation of its recommendation on the ethics of AI.[123]

Used responsibly, we see huge opportunities for AI, combined with telecommunications technology such as 5G and IoT, to allow Australian consumers, businesses, and government entities to find smarter ways of doing things in a wide range of sectors — including but not limited to agriculture, mining, and energy industries.

For example, through our partnership with Humanitech, (an initiative of the Australian Red Cross), we funded a pilot project by innovative drone-planting company AirSeed using AI to replant lands of rural landowners washed away in the devastating 2022 Lismore floods. Pioneering AirSeed technology used giant drones to drop carefully prepared seed pods in precise locations mapped by its GPS and AI algorithms. AirSeed's drones can plant 40,000 pods a day and carry up to 16 different species on each flight. [124]

Figure 22: AirSeed drone

3.4.5 What regional customers can do to use technology safely

As we explain further in section 4.3 of our submission, one of the best things consumers in regional, rural, and remote areas can do to protect themselves from scams, to stay safe online, and to use new technologies like AI safely, is to use the simple practical tips like those found on the Regional Tech Hub's website[125], as well as on Telstra's website.[126] Tips include how to create hard-to-crack passwords.

[123] Telstra becomes the first Australian company to join UNESCO's Business Council to promote ethical AI | UNESCO

[124] Planting new life with AI - Telstra

[125] Keeping you safe online - Regional Tech Hub

[126] See e.g. Cyber Security and Safety from Telstra

4. Empowered regional consumers

When it comes to empowering regional consumers, what we hear from our customers and our stakeholders is, a desire to ensure that industry players; government policies, programs and legislation; regulators; and community-based organisations all need to work together to ensure the benefits of Australia's competitive national communications markets are being delivered to individuals and businesses located in regional, rural, and remote communities.

While no one organisation can achieve this outcome alone, we see ourselves as having a leadership role in creating a better digital world for all Australians. We are therefore eager to continue to work with our regional customers, stakeholders, and policymakers, to address the systemic barriers that contribute to and reinforce vulnerability or disempowerment, and to understand how we can use technology to drive inclusion and better empower Australia's consumers.

As we set out in more detail in this section of our submission, we see these collaborative efforts as having four key limbs:

1. Continue work to alleviate the **affordability and digital ability barriers** to an inclusive digital future for all Australians. These barriers most significantly impact regional consumers. This work includes making sure we look after our most vulnerable community members, and those experiencing payment difficulties.
2. Setting up **First Nations communities to digitally thrive**, ensuring the voices of those impacted are amongst those proposing solutions, and acknowledging the larger gaps to digital equality faced by Aboriginal and Torres Strait Islander peoples in remote locations.
3. Improving **connectivity literacy** in regional, rural, and remote communities.
4. Ensuring regional consumers have access to **trustworthy information** that is meaningful in helping empower them to make informed telecommunications purchasing decisions.

Key recommendations: Empowered regional consumers

Recommendation 9: Further contributions across government, industry and the community sector to ensure all Australians can afford to stay connected.

There is scope for more to be done to help keep all Australians connected. This can only be achieved with contributions across industry and government. Currently, Telstra is the only telco with a requirement to offer a low-income product suite. We continue to advocate for solutions to improve nbn affordability for customers on low incomes. ACCAN has proposed an nbn wholesale broadband product for those receiving government income support, which we support. We also support the recommendations by the First Nations Digital Inclusion Advisory Group (**FNDIAG**) to review the Telephone Allowance administered by the Department of Social Services (**DSS**), which is a standard rate of $33.40 per quarter to eligible welfare recipients – far less than the average Australian pre-paid phone bill of $30 per month.

Recommendation 10: Support thriving regional First Nations communities by prioritising future efforts around the FNDIAG Initial Report recommendations.

Telstra is committed to improving digital inclusion in First Nations communities and delivering against Closing the Gap Target 17 (**CTG17**). The Initial Report of the FNDIAG contains practical recommendations towards achieving CTG17, which we support. These include recommendations to: (1) collect further data on the First Nations digital inclusion gap; (2) improve digital ability through community based digital mentoring networks and a First Nations tech support hub; (3) address access and adoption barriers to use of connectivity options that may be better suited than the mobile network for access to data intensive content like broadcast media; and (4) involve community for deep and place-based design and implementation of all initiatives.

Recommendation 11: Prioritise government and community efforts to uplift digital ability and connectivity literacy of individuals and businesses in regional and remote locations; and to grow and retain advanced digital skills within regional communities.

Uplifting connectivity literacy and digital ability in Australia's regional and remote communities needs prioritised collaboration. There is a role for the telecommunications industry. There also needs to be effective and coordinated funding and programs run at all levels of government, and communities themselves need to be actively involved. Initiatives need to consider both individuals and business consumers. This includes uplifting the awareness of the nbn portfolio, coupled with making these services more affordable or offering flexible options in some communities to support adoption. Through such measures there is a real opportunity to not just support regional industry and business, but to really fuel them to adopt new technology that increases productivity, drives innovation and ultimately delivers jobs in thriving communities.

We also welcome Government's continued support for the Regional Tech Hub. We also support the Agri-business Expert Working Group's 2021 recommendation for vocational and university education and training and digital demonstration farms aimed at developing and attracting digital capacity in and to regional and rural areas. This is aligned with the National Farmers Federation's Roadmap objectives for every Australian farm to have access to IoT skills and to double the number of tertiary and vocational agriculture graduates.

4.1 An inclusive digital future for all Australians

4.1.1 Breaking down affordability and ability barriers to digital equality in regional Australia

Australia will only realise the full benefits of a digital economy and a digitally connected society if everyone can participate in it. This is digital inclusion. But this is still not what we see when it comes to the regional/remote/metro digital divide.

> *"Within states and territories, digital inclusion declines with remoteness, illustrating a persistent capital city gap. States and territories with large areas classed as remote and very remote, and those with smaller capital cities, such as the Northern Territory and South Australia, record lower scores than more populous states or states with larger capital cities"* (ADII, 2023)[127]

The Australian Digital Inclusion Index (**ADII**)[128] measures digital inclusion according to three lenses: (1) access; (2) affordability; and (3) digital ability. Table 6 below provides the results from the 2023 ADII report according to remoteness level.

Table 6: 2023 ADII scores and dimensions by remoteness level

Remoteness	Index Score	Access Score	Affordability score	Digital Ability score
Major cities	74.6	73.3	95.2	66.9
Inner regional	71.3	70.4	94.6	62.0
Outer regional	66.3	66.5	93.5	54.6
Remote	70.0	67.0	95.3	61.3
Very remote	62.6	55.1	93.8	56.6
National average	**73.2**	**72.0**	**95.0**	**64.9**

In sections 2 and 3 of this submission, we have covered highlights of the work Telstra is doing and our recommendations for future collaborative efforts to improve access to telecommunications infrastructure in regional, rural, and remote areas. In this section 4.1 of our submission, we focus on the outcomes we hear our regional and remote customers and stakeholders asking for when it comes to improving telecommunications *affordability*, and the *digital ability* of regional and remote individuals and businesses:

- **What do we mean by affordability?** When telecommunications services are affordable, it means consumers can afford to pay for suitable services and suitable devices to use those services without having to cut back on essentials. The ADII considers Australians to be in telecommunications affordability stress if they need to pay more than 5% of household income to maintain quality, reliable connectivity.[129] In the 2023 ADII, 27.6% of Australians were found to be experiencing telecommunications affordability stress, and were in the lowest two household income quintiles (household income of less than $52,000 per year).[130]

[127] Australian Digital Inclusion Index 2023

[128] Home - Australian Digital Inclusion Index

[129] Australian Digital Inclusion Index 2023, p. 5.

[130] Australian Digital Inclusion Index 2023, p 19.

- **What do we mean by digital ability?** Digital ability means being able to do what you want to do online; confidently, and safely. Digital ability, broadly construed, encompasses connectivity literacy. However, given the focus specifically on connectivity literacy in the Issues Paper, we discuss this separately in section 4.3 of our response. Especially as services increasingly move online and access to in-person alternatives reduce, digital ability for those living and working in regional, rural, and remote areas means skills must keep pace with rapidly evolving technologies and their applications; and that gains in previous years cannot be taken for granted. The current digital ability gap between regional and metropolitan areas in Australia is considerable. Areas outside capital cities recorded a 2023 ADII digital ability score (out of 100) that was 5.2 points less than the national average, and 7.7 points less than capital cities.[131]

In section 4.2 we discuss the efforts needed in these areas to support thriving First Nations communities.

4.1.2 Working together to help regional customers with affordability challenges

We know that many customers in regional, rural and remote Australia are doing it tough right now. Particularly those who are on lower incomes or already in financial hardship are feeling the pressure of cost of living challenges unequally. The Consumer Action Law Centre (**CALC**) reported in March 2024 a 30% increase in demand for CALC's services due to the pressure from the increases in the cost of living.[132] While telecommunications services have not been a central contributor to the increase in household spending, we know it all adds up, particularly for those already struggling.

It is clear there is scope for more to be done to help keep all Australians connected. This can only be achieved with co-ordination across industry, government and regulators. Currently, Telstra is the only telco with a requirement to offer a low-income product suite. Recently, in the context of improving telecommunications affordability for First Nations customers, the First Nations Digital Inclusion Advisory Group has found:

> *"Current measures addressing affordability have not kept up with the costs associated with getting and staying connected in 2023. The Telephone Allowance, administered by DSS is a standard rate of $33.40 per quarter to eligible welfare recipients – significantly less than the expenditure … paid by some customers in remote First Nations communities. Critically, we note that affordability assistance is a key gap in current efforts to support digital inclusion, with no direct measures in place at the state and territory level. Industry assistance tends to focus on financial hardship support for existing customers. We recommend that the Australian Government considers increasing the Telephone Allowance prior to the next budget to reflect the contemporary costs of connecting to telecommunications services".*[133]

Telstra helps keep regional communities connected no matter what their circumstances by providing affordable and accessible connectivity options and ensuring we support our customers in a way that meets their individual needs. This financial year, across Australia, we helped 1.26 million customers in vulnerable circumstances stay connected, and have contributed over $90 million in value, through our

[131] Australian Digital Inclusion Index 2023, p. 8.

[132] CALC032_Cost-of-Living-Snapshot_FA_WEB_Scroll.pdf (consumeraction.org.au)

[133] first-nations-digital-inclusion-advisory-group-initial-report.pdf (digitalinclusion.gov.au), p. 16.

social and community investment programs and billing and payment assistance. The wide range of services and support options we make available to help ensure our services are affordable includes:

- Having no lock-in contracts and no pay-as-you-go call or data charges on our Telstra Upfront Mobile and Internet plans, so customers can change their plan monthly or cancel at any time;
- Offering Pre-Paid plans allowing customers control over costs; and
- Our long-standing low-income package and concession arrangements. Our Access for Everyone package[134] includes:
    - concession offers for those on a low income;
    - a range of payment assistance options for those having difficulties paying their bill or invoice for any reason, including more time to pay, or a tailored payment plan;
    - providing safe and secure communications for victims of domestic and family violence, in partnership with the Women's Services Network (**WESNET**). This includes a smartphone, a Pre-Paid starter kit, and information to help victim survivors stay safely connected. Since its inception in 2014, our Safe Connections program has distributed more than 40,000 phones with 6,000 phones distributed in FY24 alone;
    - up to 6-months of free Pre-Paid credit ($160 Pre-Paid recharge[135] with 70GB of data) under our Pre-Paid Top Up program. This program will benefit up to 30,000 customers most in need, including those experiencing homelessness; domestic violence; a natural disaster; and those needing financial assistance who may also face food insecurity, mental health challenges, a disability, or are refugees[136];
    - free Telstra mobile calls to crisis lines and unmetered mobile data access to Ask Izzy, a mobile website that connects people in crisis with support services;
    - free calls to standard national fixed and mobile numbers from all Telstra public payphones and free Wi-Fi access available at designated payphones; and
    - ability to pay bills via Centrepay for those in receipt of welfare payments.

Telstra also offers a comprehensive suite of devices to cover budget and usability needs of customers. In addition, Telstra devices can be made more affordable through Telstra Plus (points + pay),[137] trade-in offers,[138] and repayment plans. We also offer lower cost device options through Belong.

Of course, when it comes to affordable alternatives to Telstra's services in regional and remote locations, there are other choices. Boost Mobile, for example, provides reasonably priced pre-paid mobile plans with 100% of Telstra's mobile network coverage.[139] [redacted]

[134] Access for everyone - Telstra

[135] The value increases to $180 in October with changes to the Pre-Paid plans announced on 9 July 2024, see https://www.telstra.com.au/exchange/changes-to-our-mobile-pricing-and-why.

[136] Up to 6-months of free pre-paid credit to ease cost of living pressures for Aussies in need (telstra.com.au)

[137] Reward Store - Telstra Plus

[138] Phone and Tablet Trade In - Telstra

[139] Prepaid Mobile SIM Only Plans - Boost Mobile

[redacted] We also find that some customers are unaware of the good value connectivity they may be able to receive using nbn based satellite and fixed wireless services, rather than looking to rely on mobile data for activities like video streaming.

We know the cost of fixed broadband can be a significant one for many households, and a barrier to digital inclusion. Recently, Telstra is proud to have been able to support the Government's School Student Broadband Initiative (**SSBI**),[140] through Belong.[141] [redacted]

Telstra is committed to working with stakeholders, industry and nbn to find even more solutions to help make fixed broadband on the nbn more affordable for those on low incomes. The peak consumer communications group, ACCAN, proposed an nbn wholesale broadband product for those receiving government income support. This proposal is supported by Telstra. We continue to advocate for solutions to improve nbn affordability for customers on low incomes through the nbn Low-Income Forum. We would welcome further efforts by nbn to offer wholesale products targeted to help bridge the digital divide for those who cannot afford to pay full market prices, supported as needed by relevant government funding.

Recently, we announced that we would increase prices across our fixed products from July 2024. We also announced changes to our mobile plans (from August for postpaid customers and October for pre-paid customers), with prices increasing by $2 to $4 per month for most customers.[142] We know that price increases can be tough for some, especially when cost of living pressures are high. As a business, we are constantly striving to balance the needs of our customers while ensuring we remain financially sustainable. These price changes will help us to keep investing in our network, products and services while responding to increased customer data usage. In addition, nbn is increasing the price they charge us for wholesale internet, and this was an important factor for the changes we have made to the prices for our fixed products. Importantly, the price on our Starter Internet plan[143] has not increased, and we have retained our voice only plan concession discount.[144] This means these customers have not had a price increase for two years. From 27 August 2024, we will also increase the data allowance on our Starter Internet plan (for use in Australia). This means customers, including eligible concession customers who receive a discount, get more value for the same price. We are also removing speed caps on the postpaid Starter and Basic plans from 27 August 2024.

While we make every effort to support our customers to afford to stay connected, we value the feedback we receive from our regional customers and stakeholders to help ensure the support we provide is tailored in the best way for those living in regional, rural and remote areas; and to ensure we are providing best practice responses to customers experiencing vulnerability. We welcome the opportunity this RTIRC presents to continue to engage on these important matters.

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[140] School Student Broadband Initiative (SSBI) | Department of Infrastructure, Transport, Regional Development, Communications and the Arts

[141] School Student Broadband Initiative | Belong

[142] We're making some changes to our mobile pricing this year, here's why (telstra.com.au)

[143] Getting started on the Internet (telstra.com.au)

[144] Concession offers - Telstra

4.1.3 Uplifting the digital ability of regional communities

Telstra is committed to improving digital ability for all Australians. In addition to several broad customer education programs, we partner with governments and community organisations to deliver comprehensive digital literacy programs for those most at risk of digital exclusion.

Some of our recent and important ongoing initiatives include:

- Tech Savvy Seniors - which is delivered in partnership with the NSW Government and helps build the skills and confidence of older Australians through group training sessions in libraries and community colleges.[145]
- Get ePrepared - which is delivered in partnership with Justice Connect and is building digital skills and legal resilience for people impacted by disasters and crises by coaching them in how to electronically store important documents in case they need them in an emergency.[146]
- Digital Sisters - which is delivered in partnership with Microsoft and Good Things Foundation and is building AI Literacy for women from migrant and refugee backgrounds.[147]

Our recent initiatives tohelp our regional customers to improve their digital ability include:

- Increasing the number of team members trained in regional connectivity issues to help answer calls from customers located more than 100km from a Telstra store.
- Having in place ten Regional General Managers (**RGMs**). It is the job of our RGMs to deeply understand the needs of the regional communities they serve and to liaise collaboratively with community members to solve problems. Last year, this team has been engaged in community initiatives in collaboration with nbn Local (the community engagement arm of nbn) and the Regional Tech Hub. These initiatives aim to provide education to communities regarding suitable network and technological choices.
- In April 2022, we launched a program called Connected Communities. This initiative brought together employees from regional and peri-urban areas to collaborate and provide assistance to 39 locations in regional and remote Australia. As part of the initiative, extra members from regional areas were enlisted to work directly within these communities, fostering close partnerships with nbn Local to educate and support customers. This support encompasses providing advice and information related to connectivity to stakeholders and community groups within these regions.
- Expanding our team of highly skilled Regional Network Advisors (**RNAs**) stationed throughout Australia to a team of fifteen. Our RNAs work closely with customers in regional and remote [redacted] to provide our RNAs with additional equipment to assist them in better identifying connectivity issues and solutions for our regional customers.

We urge the Committee to recognise that uplifting the digital ability of Australia's regional and remote communities will be an ongoing team effort. Telstra and the other members of the telecommunications

[145] Telstra - Tech Savvy Seniors

[146] Get ePrepared (justiceconnect.org.au)

[147] * Good Things Foundation | Closing the digital divide (goodthingsaustralia.org)

industry need to play our role. But there also need to be effective and coordinated government funding and programs run at federal, state, and local levels. And communities themselves need to be actively involved. Those who are digitally savvy need to keep finding new and creative ways to lend a hand to those who are less so.

In this regard, we welcome the Government's support for the Regional Tech Hub,[148] which provides a valuable independent service to help regional customers gain the ability to get online, stay online and do what they want and need to do online. We also support nbn's investment in community support and engagement, such as through nbn local,[149] described above.

Telstra commends the Government for extending funding to the Be Connected digital literacy program for older Australians to June 2028.[150] We consider more needs to be done, at scale, to equip those in cohorts identified by the ADII as having no or low digital ability with the essential skills to thrive in the digital economy and stay up to date with technological advancements. This is particularly important for those living outside capital cities.

Other suggestions for policy makers and regional communities considering how to uplift regional digital ability and close the regional/metro divide in this respect include:

- **Community workshops**: free or low-cost digital literacy workshops in community centres and libraries to teach basic to advanced digital skills;
- **Online resources**: create and promote online courses and tutorials covering a range of digital literacy topics, accessible to all skill levels (covering both individual and business audiences);
- **Tailored seniors programs**: develop programs specifically designed to teach digital skills to seniors, focussing on practical applications like communication, online banking, and accessing government services;
- **Support for people with disabilities**: ensure that digital platforms and devices are accessible to people with disabilities by promoting the use of assistive technologies. Provide specialised training to help people with disabilities use digital tools effectively;
- **Success stories**: share success stories of consumers (individuals and businesses) and communities who have benefited from improved connectivity and digital literacy;
- **Collaborate with industry**: partner with telcos and technology companies to provide resources and expertise for digital literacy programs; and
- **Leverage existing reach of community organisations**: use local community organisations to reach a broader audience and ensure programs are tailored to community needs.

Importantly, initiatives need to consider both individuals and business consumers. For example, as identified by the AEWG, farmers also need advice, skills and support to evaluate agri-tech value propositions, to deploy, operate and maintain agri-tech solutions and to assess and apply the outputs in their farm management practices.[151]

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[148] Regional Tech Hub | Department of Infrastructure, Transport, Regional Development, Communications and the Arts

[149] nbn® network for regional and remote Australia | nbn (nbnco.com.au)

[150] Keeping more older Australians safe online with Be Connected | Ministers for the Department of Infrastructure

[151] Agri-Tech Expert Working Group (infrastructure.gov.au), p. 54.

4.1.4 Helping regional consumers and businesses stay safe online

A pre-requisite for being an empowered regional consumer in today's digital age is knowing how to stay safe online. In section 3.4 of our submission, we explained some of the things Telstra and others are doing to help with this, especially when it comes to safety from scams and cybersecurity risks.

Another important aspect to staying safe online is having the digital ability to know how to protect yourself and your family from harmful online content and behaviour. There are resources for parents, young people, educators, First Nations communities and others living in regional, rural and remote areas on the website of the e-safety commissioner (https://www.esafety.gov.au/key-topics), and on the Regional Tech Hub website too (for example https://regionaltechhub.org.au/managing-child-safety-online/).

Telstra also publishes information designed to help our customers get involved to keep themselves and their families safe online.[152] In addition, in furtherance of our objective to see all children and young people thrive in the digital world, we have partnered with a number of different evidenced-based non-profit organisations that provide services and resources that create a safer digital experience for children and young people. These partnerships include our work with:

- The Alannah and Madeline Foundation to create Digitalk, an online safety hub that provides parents and carers with expert advice and practical strategies for keeping children and teenagers safe online.
- PROJECT ROCKIT, a social enterprise with a mission to give young people the skills, empathy, and confidence to build kind and inclusive communities at school, online, and beyond.[153]

Telstra is also supportive of ensuring there are appropriate regulatory safeguards in place to protect Australian consumers from online harms. It is important that regulators and Government take a considered and holistic approach. Communications Alliance has recently identified some 15 separate in-train reform processes, covering overlapping online safety reforms. These include the review of the *Online Safety Act 2021*, which coincides with the creation of industry standards and codes for various classes of material as designated by the eSafety Commissioner, a pilot of age assurance technology, the modernisation of Australia's classification scheme, and the review of the *Privacy Act 1988*.[154] We do not believe it will best serve the cause of empowering and protecting regional consumers, or Australian consumers more generally, if these concurrent reform processes result in inconsistent, impractical or unduly complex or burdensome obligations for telecommunications providers.

We encourage policy makers and regulators to continue to collaborate with each other and with industry and consumer groups to deliver a set of proportionate obligations, which will be genuinely beneficial in protecting customers, and which align with equivalent international regimes (like the UK Online Safety Act) in recognising the role of telecommunications services in the ecosystem and their lower risk profile.

4.2 Supporting thriving First Nations communities

Telstra supports the Government's commitment to improving digital inclusion in First Nations Communities and delivering against Closing the Gap Target 17 (**CTG17**). This work includes, but is not

[152] See e.g. - Our tips to keep your little ones safe online - Telstra
[153] Helping young people with safer internet use - Telstra
[154] 240705_CA-sub_OSA-Review-Issues-Paper_SUBMITTED.pdf (commsalliance.com.au)

limited to, ensuring the many First Nations people living in regional, rural and remote areas are able to actively participate in and enrich Australia's digital future.

The Government's establishment of the First Nations Digital Inclusion Advisory Group (**FNDIAG**) in January 2023[155] is a welcome move towards achieving this outcome. The FNDIAG follows through on an important recommendation of the 2021 RTIRC to ensure a focussed and consultative approach to First Nations digital inclusion. Telstra is proud to be able to support FNDIAG's valuable work through the contributions of our Head of First Nations Strategy and Engagement as a member of the Expert Panel advising the FNDIAG.[156] It is clear there remains much to be done before Australia achieves CTG17 for Aboriginal and Torres Strait Islander people to enjoy levels of digital inclusion equal to those of other Australians.

The extracts below come from the first RTIRC report under the Act, published sixteen years ago:

> *"Nearly 70 per cent of Aboriginal and Torres Strait Islander people live in regional, rural or remote areas of Australia…The particular nature of Indigenous communities poses specific challenges in the provision of important services such as health care, education, financial and social services.*
>
> *Telecommunications has the potential to improve access to these services as well as improving the day to day lives of Indigenous Australians…Despite the potential benefits, access and use of telecommunications in remote Indigenous communities is low…**Indigenous communities require a unique approach to the provision of telecommunications, not a 'one-size fits all' policy**…*
>
> *The Committee heard claims that **broadband services were not being taken up** by Indigenous communities…Instances of communities **paying a high price when the download limit was exceeded** were raised…*
>
> *…**Prepaid mobile services** resolve issues of customers **defaulting on monthly payments** and also solve problems associated with Indigenous cultural issues of **resource sharing**…A fixed telephony service may also be less useful to **people who may be more mobile**…**pre-paid home phone services are attractive**…A respondent…stated that, "Everyone uses my phone and makes the bill bigger for me…*
>
> *The **current Universal Service Obligations (USO) provides little benefit for remote Indigenous communities**…"*[iii 157]

Most of the findings above are as applicable today as they were then. In particular, gaps in equality for First Nations Australians continue to extend far more broadly than just those relating to access to telecommunications services. In the Prime Minister's own words "*the status quo in everything from housing and health to jobs and justice remains unacceptable*".[158]

We believe it is possible to get to the root cause of some of these longstanding challenges; if we start collaborating more effectively. This will take in some cases breaking with traditions of more siloed approaches — so that all relevant parties involved are working as one. The saying "less haste, more

[155] See - 8974533.pdf;fileType=application/pdf (aph.gov.au)
[156] Digital Inclusion Expert Panel | First Nations Digital Inclusion Advisory Group
[157] HPP022016002141.pdf;fileType=application/pdf (aph.gov.au), Chapter 1.5 (emphasis added)
[158] Closing the Gap (niaa.gov.au)

speed" is also applicable here. Policy makers and industry alike need to be wary of quick fixes, and instead ask better, deeper questions of those on the ground in our regional and remote First Nations communities about what's really going on and what outcomes are going to be most meaningful for them. First Nations employment growth targets such as those Telstra has committed to under our Reconciliation Action Plan[159] will also help ensure First Nations perspectives are generated from within industry, and by those making policy.

In this spirit, the FNDIAG has researched and published an Initial Report making recommendations on accessibility, affordability and ability to improve digital, economic and social outcomes in First Nations communities.[160] This report provides a valuable compendium of thoughtful, practical recommendations the overwhelming majority of which, if implemented, would help Australia to make genuine strides towards achieving CTG17.

The FNDIAG is also currently consulting on a Roadmap with a focus on addressing inclusion through place-based solutions and with a strong focus on community engagement.[161] Telstra supports this work and continues to actively engage with the FNDIAG on the design and development of the Roadmap. We hope to see the Roadmap encompass a combination of targeted place-based solutions, which may differ by region and remoteness; and "umbrella" style initiatives designed to uplift First Nations digital inclusion on a broader national scale (which may at times cross-over with initiatives designed to uplift digital inclusion for other socio-economic cohorts, such as those on low-incomes).

As we explain below, Telstra is doing three key things in response to the recommendations in the FNDIAG Initial Report, to ensure we are playing our role in achieving CTG17:

1. National Coordination Hub to support First Nations digital mentors — to help advance this major new initiative designed to support digitally thriving First Nations communities in remote areas, we will be funding this new hub to support the new Federal Government funded First Nations digital mentors.
2. Funding the Mapping the Digital Gap research, which is currently the most detailed source of data and insights into digital inclusion across remote communities.
3. Playing our part in supporting telecommunications affordability in remote communities. [redacted]

These measures are in addition to our existing and substantial other ongoing work to promote First Nations digital inclusion, highlights of which we also detail below.

4.2.1 Data driven decisions

Telstra is a proud founding sponsor and provider of funding for the ADII. For the last decade, the ADII has been a critical source of detailed information about the state of digital inclusion across Australia. It reveals detailed differences in levels of access, affordability, and digital ability between different socio-

[159] See Telstra Reconciliation Action Plan Year 1 Report, July 2023, p 10.
[160] first-nations-digital-inclusion-advisory-group-initial-report.pdf (digitalinclusion.gov.au)
[161] A roadmap for First Nations digital inclusion | Department of Infrastructure, Transport, Regional Development, Communications and the Arts

economic cohorts and provides an important starting point for developing effective, data driven policy responses to address digital inclusion gaps.

However, as identified in the FNDIAG Initial Report, there remains a lack of reliable data on the First Nations digital inclusion gap in Australia. To focus in more granular detail on First Nations communities, the ADII was complemented in 2024 by the Mapping the Digital Gap research project. The project is the first comprehensive study of remote First Nations communities' participation in, and access to, the digital economy. This project provides critical data to track progress on remote digital inclusion and to inform evidence-based responses by government and industry to close the digital gap.

Examples of the specific conditions in remote First Nations communities that are not revealed by the ADII data include the preference for mobile over fixed devices and connectivity, the composition of typical households and the implications for assessing the affordability of connectivity services, and the implications of those characteristics for the design and presentation of digital government services.

Telstra is proud to have been a driving force behind the Mapping the Digital Gap project and its reports to date, capturing invaluable insights from ten remote First Nations communities.[162] From 2025-2028, we have committed funding of [redacted] to support continued research focussed on deepening our current understanding of the telecommunications issues facing First Nations communities. Most importantly, the research is conducted in partnership with First Nations communities.

The research team partners with local organisations and employs co-researchers in each community to ensure Indigenous leadership is involved in all steps of the process, and local engagement in the project. In the spirit of Indigenous data sovereignty and to support local planning and programs, detailed outcomes reports are provided back to each community. These reports provide full survey and qualitative research findings, an infrastructure and services audit, analysis of the factors impacting digital inclusion, and suggested strategies to address identified challenges through local digital inclusion plans.[163]

4.2.2 Improving access to telecommunications infrastructure

Telstra is deeply aware of the lifechanging impact that a lack of, or loss of, access to telecommunications services can have for those living in Australia's regional, rural and remote First Nations communities.

Given the economic challenges of building, upgrading, and maintaining telecommunications infrastructure in some of these locations we explain in section 2 of our submission, Telstra welcomes opportunities to partner with federal and state governments to make the required investments.

Telstra does not believe that the USO is an appropriate mechanism to improve connectivity in remote communities. Instead, more specialised and tailored solutions need to be developed in partnership with Government, communities and industry. Round 3 of the Federal Government RCP Co-Investment Program is, in our view, a good example of this process working well. Twenty-five of the projects under RCP3, attracting $41.2 million in Federal Government funding support, are focussed on improving

[162] Mapping the Digital Gap - ADM+S Centre
[163] See further details in the 2023 Outcomes Report - apo-nid324397_0.pdf

connectivity solutions in First Nations communities.[164]

Some of the recent co-investment programs we have participated in to help close the digital divide in First Nations Communities include completed RCP projects such as the Arnhem Land Fibre Upgrade Project and major transmission upgrades to Aurukun, Palm Island and Lockhart River. [redacted]

Box 7: Palm Island 4G Tower upgrade

Palm Island is a remote First Nations community with more than 2,500 residents off the coast of Townsville, North Queensland. The community is heavily reliant on mobile phone services and Telstra is the only telecommunications provider on the Island. Limitations of the telecommunications capacity to Palm Island became particularly evident during the COVID-19 pandemic, where travel was restricted and reliance on the network increased. The provision of reliable internet coverage was identified as the Island's top priority infrastructure need in a 2019 report, which the Palm Island Aboriginal Shire Council commissioned. The report noted that improved internet coverage would benefit education and training, tourism, employment opportunities, investment attraction, and retail and small business establishment.

To support the ever-growing digital needs of this remote community, our RCP project upgraded the 4GX base stations on the island and an upgrade of the backhaul capacity back to the mainland which included the construction of a new 40m tower. The upgrade provides improved capacity to the northern parts of the Palm Island community as it grows, and improved capacity to Palm Island exchange and mobile base station, which supports critical essential services, local businesses, and residents.

4G Tower, Palm Island (Source - ABC North Queensland: Rachael Merritt)

[164] Regional Connectivity Program | Department of Infrastructure, Transport, Regional Development, Communications and the Arts

As explained in section 2.4 of our submission, at times we are faced with challenges that impede or negate the progress of building or upgrading telecommunications infrastructure our customers and stakeholders have called for. The approval process, timing, and/or cost to access land, sometimes means that we are unable to proceed with the project. Regarding the protection of Aboriginal cultural heritage sites, we understand and appreciate the criticality. We believe there may be room for the streamlining of current processes (approvals etc) through the establishment of guidelines developed in collaboration with First Nations communities and stakeholder groups, resulting in more efficient and effective outcomes for both communities and industry. We are progressing further collaborative work with community and stakeholder groups in this regard.

4.2.3 Improving affordability of services and devices

The Bureau of Communications, Arts and Regional Research has found that, between 2006 and 2021, where 'all' members of a household were First Nations people, those households spent 1.4 percentage points more of their disposable income on telecommunications services than other households (4.9% compared to 3.5%).[165] This is only just below the 5% threshold the ADII considers to represent a household in telecommunications affordability stress.

Relatedly, Telstra is acutely aware of the concerns that have been raised about the high number of Pre-Paid Mobile data recharges and resulting high monthly cost for mobile services provided by Telstra impacting many First Nations customers, particularly those living in remote communities.

[redacted]

[165] telco-affordability-access-first-nations-households-june-2024-hilda.pdf (infrastructure.gov.au)

> *"post-paid services – whether mobile or broadband – are typically cheaper per gigabyte than pre-paid…Our survey found only 14% of participants used post-paid ADSL or Sky Muster services, which provide cheaper data rates than individual pre-paid data"*[166]

As evidenced by the findings from the Mapping the Digital Gap research, other options for mobile voice and data services available in First Nations communities that may, depending on customer circumstances, represent the most cost-effective option, include our existing Postpaid plans, our other Pre-Paid plans, and mobile plans from Boost. In addition to mobile services, other telecommunications options that can be effective (where available and made accessible) for reducing average household telecommunications spend in remote communities include nbn Sky Muster and Fixed Wireless services, noting that these are now complemented by the availability of new LEO satellite services. This includes Telstra's new Starlink Home Internet product.[167]

Free community Wi-Fi can also act as a data connectivity lifeline, supplementing the connectivity consumers are able to access through personal telecommunications services. We welcome recent initiatives by the Government to extend access to free community Wi-Fi services in more remote First Nations communities — including the community co-design work currently underway in partnership with nbn to roll this out in an additional 18 communities.[168] We understand the 2024/2025 Budget includes an additional $20 million in funding (over three years) for further rollout of free community Wi-Fi in more First Nations communities via a contestable program.[169] We look forward to the release of further details regarding this program. Through Telstra Purple, we already have a public Wi-Fi solution in market that is designed to serve remote communities.

Telstra is also expanding the rollout of free public payphones equipped with free Telstra Wi-Fi, which have now been installed in more than 20 remote communities and in 80 towns with greater than 10% of the population identifying as First Nations residents with more planned in 2024 and 2025.[170]

We see a key opportunity for further collaborative efforts by industry, government, and First Nations community organisations to help First Nations communities in regional, rural and remote locations

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[166] Mapping the Digital Gap Outcomes Report 2023 - apo-nid324397 0.pdf, p 45

[167] Telstra Satellite Internet – powered by Starlink

[168] Narrowing the digital Gap through community Wi-Fi | Ministers for the Department of Infrastructure

[169] Boosting connectivity and safety for Australians | Ministers for the Department of Infrastructure

[170] Digital inclusion in remote First Nations communities - Telstra

understand the full range of options available to affordably meet their telecommunications needs. We consider this critical to empowering First Nations consumers to choose the service most suited to their individual circumstances.

Due to the combination of mobile convenience and portability; resilience to power shortages in the home; and the ease with which pre-payment via recharge supports shared use and variable customer financial circumstances, preferences are very likely to continue to be centred around data usage via the pre-paid mobile network. But this shouldn't be due to a lack of awareness of, access to, or trust in other options.

Where there is interest in other connectivity options better suited than the mobile network for access to data intensive content like broadcast media, or content streaming services, work should be done to drill down further in understanding *why* those options are not in use. Importantly in this regard, an expressed preference for "pre-paid mobile services" doesn't necessarily equate to a preference for telecommunications services delivered over a terrestrial mobile network. To illustrate this point, consider that:

- Amongst Australia's general population, mobile devices are commonly used to access data services delivered over fixed networks (via Wi-Fi). For example, in 2023, 95% of all Australian adults used a mobile phone to connect to the internet, but only 13% of data overall was downloaded using mobile networks (with the rest mainly downloaded over the nbn).[171] A preference for using mobile *devices* is thus not necessarily the same as a preference (or need) to access data using a mobile *network*.
- Similarly, the ability to *pay upfront* for telecommunications services through pre-paid recharge is in no way inherently limited to mobile services. For example, in many countries around the world this form of pre-payment is used to make fixed line voice and broadband services more financially accessible to consumers and to avoid the barrier that credit and identification checks for postpaid services can present.[172]
- The use of mobile data services in remote First Nations communities to access news and entertainment content (delivered to customers via free-to-air television and radio services in metropolitan areas) may be a "choice" borne much more of necessity than genuine preference. The Mapping the Digital Gap research and FNDIAG Initial Report reveal there is much room for improvement to access media content through existing broadcast channels and Viewer Access Satellite Television (**VAST**).[173] We welcome the recent legislative proposals introduced by the Government designed to expand access to VAST services in more remote locations.[174] Other important areas for improvement identified in the FNDIAG Initial Report include:
    - installing VAST equipment for households that have never had it;
    - supplying a more robust set-top box (satellite receiver) with built-in power surge protection, an enclosed smart card holder (to prevent the card from being removed) and a software change to reduce the need for smart card re-activation upon reset;

[171] ACMA_How we use the internet_Executive summary and key findings.pdf

[172] Pre-paid fixed broadband plans available as an affordable flexible option internationally include: from Telikom in PNG - Telikom - Cheap Home Data; from BSNL in India - Prepaid Broadband Service (bsnl.co.in); and from Our Telekom in Honiara - Our Telekom | Our Telekom rolls out High-speed Prepaid Broadband Service.

[173] MySatTV

[174] New legislation to support access to broadcast television in regional Australia | Ministers for the Department of Infrastructure

- simplifying the process for activating smart cards so that they can be activated in sites without phone or Internet access;
- establishing an ongoing monitoring and maintenance program to ensure that communities have timely and affordable access to technical services and replacement equipment in case of service failure; and
- more generally, the Australian Government raising the issue of stable power supply to communities with state and territory Ministers as a factor that is hindering progress towards achieving CTG 17.[175]

- In some cases, research suggests First Nations consumer preferences for mobile services and public Wi-Fi are motivated by *issues of power insecurity* in the home. When power to premises in remote locations can be unreliable, or unaffordable (to the point where First Nations people in remote communities are even making decisions not to buy or run refrigerators), paying for a fixed line or satellite-based service reliant on power, is unlikely to rate as a top priority. This is where a holistic approach and collaborative effort is required, across the broad ecosystem of players, aimed at meeting *all relevant* Closing the Gap Targets and not just CTG17. In this regard, we wholeheartedly endorse the FNDIAG Initial Report recommendation for the Australian Government to raise the issue of stable power supply to communities with state and territory Ministers as a factor that is hindering progress towards achieving CTG17.[176] Our recommendations above in section 3.1 of our submission are relevant here.
- In some cases, preferences for accessing data using mobile handsets may be motivated less by customer preferences for this form of device and more by affordability and availability barriers to other more suitable devices — such as laptops or desktop computers for schoolwork. As found in the Mapping the Digital Gap 2023 Outcomes Report "*larger households correlate with lower levels of digital inclusion. This points to issues of overcrowded housing, shared devices, and a lack of computers or other devices*".[177] Or, in the case of LEO satellite services, the upfront cost of the equipment may be an additional barrier alongside the ongoing monthly cost. Here, there may be role to play for government, such as the recently announced initiative of the Queensland Government Customer and Digital Group to put $1.25 million towards funding Starlink satellite equipment, installation and services in 17 Indigenous Councils in high priority remote First Nations community locations.[178]

4.2.4 Technology related skills and employment to support thriving communities

Telstra's many First Nations digital inclusion programs[179] focus on working with community to understand how they want to use digital services. These include inDigiMOB,[180] a pioneering project addressing digital inclusion and cyber safety awareness delivered by First Nations Media Australia. They also include our Community Services Program, a telecommunications literacy initiative, delivered in 20 remote communities in FY24 across the Northern Territory, South Australia, and Western Australia, engaging with over 2,800 First Nations customers.

[175] first-nations-digital-inclusion-advisory-group-initial-report.pdf (digitalinclusion.gov.au), pp 26-27.
[176] first-nations-digital-inclusion-advisory-group-initial-report.pdf (digitalinclusion.gov.au), pp 26-27.
[177] apo-nid324397 0.pdf, p. 37.
[178] Starlink satellite initiative bringing immediate relief to digitally excluded First Nations communities - Ministerial Media Statements
[179] First Nations Australians Community Engagement and Programs - Telstra
[180] inDigiMOB – Digital inclusion in remote communities

Alongside digital training, Telstra has begun a concerted program to deliver telecommunications advice and support to First Nations customers through our First Nations call centre, and through community call centres owned by local First Nations organisations and staffed with local people:

- In 2021, Telstra established our First Nations Connect centre in Darwin, which provides advice and support for First Nations communities. Telstra receives an estimated 40,000 calls to the centre each year; and
- In July 2023, Telstra helped launch one of two community owned call centres — the first was on Palm Island, a small community off the coast of Townsville. The centre has delivered jobs and training for 20 local operators in a newly constructed retail precinct in the island's town centre.[181] The second centre was launched in Jumbun — a small community located halfway between Cairns and Townsville.[182] Not only do these community-based contact centres help Telstra serve our customers better, by taking jobs to community we get to attract and retain great local talent, and we can also help communities build self-sustainable local businesses.

Figure 23: Telstra Landcruiser with First Nations artwork, Remote Australia, July 2024

We have 40 remote community visits planned in FY25 in the Northern Territory and Queensland. These visits provide the opportunity to engage directly with First Nations communities and provide support and advice including information on the 3G network shutdown and ensuring customers have 4G compatible devices, assisting customers with historical debts or payment issues by connecting them to our First Nation Connect Centre, explaining various mobile phone recharge options, answer any questions and providing contact information for our First Nations Connect call centres in Darwin, Jumbun and Palm Island.

Looking to the future, and to more ways in which we can partner with remote First Nations communities to help them thrive, we are excited at the opportunity to be involved in the Government's major new initiative to establish a network of First Nations digital mentors. Telstra will fund a National

[181] See details of this joint initiative between Telstra, community and government stakeholders at: Palm Island Digital Service Centre Case Study | TAFE Queensland (tafeqld.edu.au)
[182] See home (jumbun.com.au)

Coordination Hub to support the place-based digital mentors, who will receive salary support from the Federal Government. Telstra has committed funding from 2025-2028 to support the Hub.

Telstra also notes the Government has recently announced a new Remote Jobs and Economic Development Program, designed to help close the gap in employment outcomes in remote communities by creating 3,000 jobs in remote Australia.[183] We see promising potential in programs like this to uplift the telecommunications related skills and experience base within remote First Nations communities, setting these communities up to meet CTG17 and for a thriving digital future.

Telstra has partnered with the Centre for Appropriate Technology[184] in Alice Springs to pilot a remote tech training program. Telstra will provide support for training and other necessary qualifications for First Nations trainees to work on our network infrastructure.

We note that telecommunications providers such as Telstra and nbn rely on fly-in fly-out labour to work on and maintain network infrastructure in remote locations. There may be a future opportunity for industry to join forces, and through a First Nations led program such as the Centre for Appropriate Technology, create a shared pool of skilled, place-based resources that industry can access. The skills and experience gained could also support digital inclusion action plans for First Nations communities, as recommended in the Mapping the Digital Gap research, to develop and lead their own digital inclusion solutions while ensuring cultural appropriateness.

Lastly, we note that closing the digital divide between First Nations and all Australian students is an important but often overlooked part of closing the gap in First Nations education outcomes more generally[185] — a foundational element in fostering an empowered First Nations communications and digital technology sector to help communities adapt and thrive into the future. We acknowledge the Government's SSBI mentioned above in section 4.1.2 has been designed with such considerations in mind.

4.3 Improving connectivity literacy in regional Australia

As explained in the Issues Paper, connectivity literacy is the "*knowledge needed by a consumer to understand how to get and stay connected to services that meet their needs and budget*".[186]

Frequently in our engagements with regional and remote customers and stakeholders, we encounter a lack of awareness and understanding of available telecommunications services options. Not uncommonly, it surprises our customers and stakeholders that even in the remotest parts of Australia, there is quite a broad array of connectivity and technology options available to support communications for both personal and business uses.

The AEWG made similar findings in their 2021 Expert Report:

> *"...there continues to be a widespread view in rural and regional areas that connectivity is all about the coverage of mobile networks in general. As several people said to us, "many farmers think that if they cannot make a mobile phone call in their paddock, then they have no options for digital agriculture on their farm".*

[183] Next steps on closing the gap: delivering remote jobs | Ministers for the Department of Infrastructure

[184] CfAT is a Registered Training Organisation

[185] See e.g. the findings by World Vision - in connecting-on-country.pdf (worldvision.com.au)

[186] Independent Regional Telecommunications Review 2024 (infrastructure.gov.au), p. 9

There is a dimension to salt and pepper connectivity which reflects gaps in knowledge in rural and regional communities about the technologies which are available to address their connectivity problems. This includes how different technologies can be combined together – such as on-farm Wi-Fi solutions in the paddocks coupled with a carrier-provided fixed or wireless solution serving the homestead or farm office."[187]

We want to help change that, so that all individuals and businesses in regional, rural and remote locations know what options are out there to connect in the best way possible to meet their needs.

From the most tech savvy consumer to the least — it's also no understatement to say that choosing the right mix of telecommunications products and services for their needs can be challenging and sometimes stressful. We also want to help change that.

As we explain below, a key part of how we do this is by providing clear, accurate and transparent information about the telecommunications services Telstra provides. Combined with our work to support digital ability for regional and remote consumers more broadly (discussed above in section 4.1), we also support a range of initiatives designed to improve the ability of those living and working in regional and remote areas to connect, to use that connection safely, and to resolve basic issues. Beyond these basic levels of connectivity literacy, Telstra also supports and is supportive of initiatives designed to help build more skilled digital workforces within regional, rural and remote communities.

4.3.1 Measuring Australian connectivity literacy levels

The ADII provides an important insight into overall levels of Digital Ability in Australia. Aspects of connectivity literacy are addressed in the measures of basic and advanced operational skills, as well as information navigation as these skill sets are relevant to setting up devices and troubleshooting connections and finding information about internet plans or data usage on a mobile device. These are very important elements of understanding how to get and stay connected to connectivity services to meet consumers' needs and budgets.

For reasons including methodological consistency over time, the ADII may not be the right tool for measuring connectivity literacy specifically. Nevertheless, we can see that there could be merit in developing more specific consumer research (potentially covering both individuals and business consumers) to measure connectivity literacy levels in Australia (i.e. the extent of respondents' knowledge of how to get and stay connected to services that meet their budget and facilitate the activities they want to use the service for). Relevant questions may cover:

a. selecting internet technologies (e.g., fixed line; fixed wireless, nbn; satellite Sky Muster; non-nbn fixed wireless, Starlink Satellite, ADSL non-nbn fibre and cable; mobile broadband);
b. selecting a provider and plan;
c. choosing and installing equipment;
d. troubleshooting a connection;
e. staying connected in an emergency; and
f. knowing where to go for help.

[187] Agri-Tech Expert Working Group (infrastructure.gov.au), p. 17

Having a dataset to understand more about current levels of connectivity literacy in Australia across different demographic, socioeconomic and geographic cohorts (including levels of connectivity literacy amongst consumer groups, e.g. small business) would facilitate evidence-based targeting of future digital ability programs to consumers most in need of this particular type of support.

4.3.2 Helping our customers and regional communities improve their connectivity literacy

The majority of the work Telstra does to support regional and remote customers and communities to improve their connectivity literacy is integrated within the work we do to improve consumer digital ability more broadly, as discussed in section 4.1 of this submission above.

However, some of this activity is more targeted towards uplifting consumer connectivity literacy. For example, during 2023, Telstra has been engaged in spontaneous community initiatives in collaboration with nbn Local and the Regional Tech Hub. These initiatives aim to provide education to communities regarding suitable network and technological choices. The outcomes of these efforts have revealed that a significant number of individuals residing in remote and regional areas rely on the mobile network for their home broadband needs, despite encountering subpar service quality relative to the alternatives available (e.g. LEO satellite, fixed wireless, or fixed-line nbn where available), due to a lack of understanding or misconceptions about these alternatives.

Telstra has a dedicated Regional Australia Team[188] as well as webpages focussed on supporting our regional customers (see: https://www.telstra.com.au/connected/rural-and-regional). We have worked hard to make sure our online content is relevant and helpful for those located in regional, rural and remote locations looking to get and stay connected and to get the most out of the technology we have to offer. To that end, we provide information on an array of topics such as choosing a “Blue Tick” phone for the best possible coverage in regional and remote locations, how to boost Wi-Fi coverage at home or in the office, tech troubleshooting, and bill payment explainers.[189]

In 2022, we increased our support for customers in regional and outer metro areas through our new Connected Communities program, which provides more on-the-ground advocates and network experts to help solve complex local issues. We’re also training more customer service agents specifically on regional and remote connectivity so they can assist our customers that are located more than 100km from a Telstra store. [190]

4.3.3 Prioritising efforts to gain, maintain and improve regional connectivity literacy

Maximising connectivity and digital innovation in rural and regional Australia are priorities for us. We’re excited by the opportunities of technology to transform the regional industries and communities and contribute to more productive and connected communities.

However, while Telstra will continue to engage with our customers to explain the options we offer and to provide education and support through our Connected Communities programs, there is also an important role to be played by “provider neutral” community and government organisations to support regional consumers to understand and make informed choices about their connectivity. This education activity is most likely to be best done addressed by incorporation into broader consumer and business digital ability uplift initiatives, as discussed above in section 4.1. We support the establishment of the

[188] Contact Telstra Regional Australia
[189] See Regional Services and Regional Coverage from Telstra
[190] More boots on the ground in regional Australia, and more support for customers - Telstra Exchange

Regional Tech Hub by the Federal Government. Funding from the Federal Government should continue to build the profile of the Regional Tech Hub and its support of regional customers. We work closely with the Regional Tech Hub and will continue to do so to support improvements in understanding connectivity. We also agree with the comments in the Issues Paper that consumer advocacy groups offer valuable guidance and resources — for example, ACCAN's "Talking Telco" tip sheets.[191] This valuable work should continue.

As the Bureau of Communications Arts and Regional Research notes:

> *"Given Information and Communication Technology (ICT) applications on farms tend to represent a relatively small share of capital assets, technology plays an enabling role—that is, it makes other assets more productive, and boosts overall business efficiency".*[192]

There are many more examples, but to illustrate, consider a research study by Birchip Cropping Group quoted by the AEWG. It found that "*poor connectivity has the potential to reduce farm profitability by approximately $5 per hectare across the grain belt, equivalent to $15,000 per annum for the average (3000 hectare) Victorian grains property*"[193] as well as more recent commentary by NSW Farmers that "*As technology gets better and cheaper and labour becomes more expensive and harder to find, the return on investment for technology such as remote monitoring and control becomes increasingly compelling*".[194]

Understanding the connectivity options available, and what connectivity you need for a particular technology you want to use, is an essential part of the decision making process. For regional and remote sectors, such as agriculture, asking the deep questions and understanding how they can leverage the connectivity that is already available is important. The productivity and efficiency gains unlocked by technology are great for industry sectors, but it requires an investment of time and resources to maximise the opportunities.

4.3.4 Taking connectivity literacy skills to the next level

We see merit in viewing connectivity literacy as a foundational element to the building of more sophisticated digital skills within regional, rural and remote communities – including digital agronomy skills within Australia's agricultural sector.

We agree with the AEWG that a 'build it and they will come' approach to improving digital infrastructure in regional, rural and remote areas without also focussing on developing the digital skills necessary to use this infrastructure to its full potential will hold back the transformation of Australia's agricultural sector needed to achieve its future ambitions.[195] The "Modernise" theme in the Victorian Government's Agriculture Strategy is a good example of Government policy supporting in these areas[196] and is aligned with Pillar 3 in the NFF's 2030 Roadmap - Unlocking Innovation.[197]

The AEWG found that digital agronomy skills in particular were "*very thin on the ground*" in rural

[191] Talking Telco tip sheets (accan.org.au)
[192] bcarr-working-paper-economic-impact-ubiquitous-high-speed-broadband-agriculture-sector.pdf (infrastructure.gov.au), p.10.
[193] Agri-Tech Expert Working Group (infrastructure.gov.au), p. 18.
[194] Farm connectivity driving efficiency and profitability (thefarmermagazine.com.au)
[195] Agri-Tech Expert Working Group (infrastructure.gov.au), p. 26
[196] See What is the agriculture strategy? | Agriculture strategy | About | Agriculture Victoria and Modernise | Agriculture strategy | About | Agriculture Victoria
[197] NFF_Roadmap_2030_FINAL.pdf

communities, but that they needed to be much closer to hand for farmers, as "*waiting for a technician to drive hundreds of kilometres to fix a critical agtech application can affect crop or livestock value*." The AEWG therefore recommended "*...efforts at the state/territory and national level, as well as the delivery of vocational education and training (VET) and university courses education services and digital demonstration farms aimed at developing and attracting digital capacity in and to regional and rural areas*".[198] We support that recommendation, noting it also aligns with Recommendation 3.1.3 in the NFF's 2023 Roadmap to "*Invest in the capacity of digital and human networks to share and promote new practices and tools*".[199] There are strong synergies here with both the NFF's Pillar 3 Roadmap objective for every Australian farm to have access to infrastructure and skills to connect to the Internet of things and the Pillar 4 objective to double the number of tertiary and vocational agriculture graduates.

Building place-based leadership capacity is another important area of skills development within regional and rural communities that is key to regional Australia's future success. Telstra has been focussed on developing this for many years. For generations, regional Australians have faced the dilemma of wanting to stay in the community they love but moving to metro areas due to jobs and education opportunities.

The Australian Rural Leadership Foundation aims to stem this 'brain drain' through programs such as its Australian Rural Leadership Program - providing in-depth leadership training to bright, young and motivated regional Australians.[200] Telstra has had a 24-year affiliation with the ARLF. We started by sponsoring our own people to participate in the ARLP, but now we offer an open scholarship, making our scholarship open to all regional and remote people irrespective of their background. We believe this investment supports the development of leaders in regional Australiathat can build stronger networks and support regional Australia to realise its productivity, creativity and innovation ambitions.[201]

4.4 Trustworthy customer information

An important aspect of consumer empowerment highlighted in the Issues Paper is the need for consumers and businesses in regional, rural, and remote areas to have access to reliable and independent information when making telecommunications related purchasing decisions. We agree it is important for industry to play our part in supporting this outcome.

Telstra invests in processes, staff training and the dissemination of up-to-date information about our networks and services, so consumers can benefit from information that is not only accurate and reliable, but also *useful* to guide their purchase choices. We see the kinds of information that may be generated by independent third parties as complementary to the tailored, verified and more technically detailed information we are able to provide to who are buying (or considering buying) services from us.

4.4.1 The science that goes into our coverage maps

We understand the concerns we hear sometimes from our customers and stakeholders about the accuracy of mobile coverage maps when it comes to reflecting the on-the-ground experience of mobile coverage in regional, rural and remote areas. We also understand the frustrations that can be

[198] Agri-Tech Expert Working Group (infrastructure.gov.au), p. 7
[199] NFF_Roadmap_2030_FINAL.pdf, p. 28.
[200] Who We Are - Australian Rural Leadership Foundation (rural-leaders.org.au)
[201] ARLF and Telstra are connecting Rural Leaders across the country (rural-leaders.org.au)

experienced when it comes to trying to make comparisons of coverage between operators, which can be difficult to judge.

However, this is not down to inaccuracies in our published maps. Telstra's coverage maps are created using highly sophisticated, science-based, modelling. This precision modelling incorporates all factors affecting mobile coverage (discussed above in section 2.2.6) to enable us to predict the likely available coverage on our mobile network accurately for most of our customers, when using the devices that are most used on our network.

Different devices and use cases, combined with the rapidly changing local environment in which our network operates — from new buildings to vegetation growth — mean that no singular map view can represent coverage with the same accuracy for all customers in all situations.

We account for as many variables as possible to ensure our maps are representative for most customers most of the time. Our coverage maps are based on models we have progressively improved over *decades*, based on the latest and most accurate data of factors affecting coverage. Our modelling includes, for example, data on our network sites in terms of their exact signal strength, height, direction and beamwidth of the actual antennas used and an array of other data points. We then correlate our model parameters against field survey data. This work enables us to improve our map accuracy with inputs such as terrain data at a much higher level of granularity.

4.4.2 The trade-off between map accuracy and comparability between MNOs

The Issues Paper states "*It is... unclear if the operators publish their coverage maps using the same predictive modelling settings, making comparisons of coverage between the operators difficult to judge*."[202] We confirm that the parameters underpinning current mobile coverage maps in Australia differ across the MNOs, and can also change over time for a given MNO. As we explain below, the maps differ to ensure they are as accurate and reliable as possible for each MNO which has its own network characteristics.

Each MNO maps its network based on its own distinct network and ecosystem (i.e. spectrum, equipment, device fleets, mobile services/products offered). These factors differ between different MNOs. Hence, there will inevitably be differences in some of their mapping parameters, unless maps are highly simplified. While this simplification is possible, doing this does reduce the *accuracy* of the map when used by customers to predict their likely coverage by a particular MNO. There will always be an inherent trade-off between accuracy and comparability.

Simplifying coverage maps to a standardised specification across MNOs for the purposes of comparability results in maps that are worse for predicting the "on the ground" experience a customer is likely to receive from any one of the MNOs being compared. For example, third party multi-MNO comparison maps in Europe are typically designed according to "conservative" coverage assumptions. As a result, they often show no coverage where coverage can be accessed by many customers.

We don't believe this sort of outcome would be of benefit to regional, rural and remote customers in Australia. The feedback we hear from our customers and stakeholders is that they are most interested to gain an *accurate* representation of the coverage they can expect to access from Telstra, and would

[202] Independent Regional Telecommunications Review 2024 (infrastructure.gov.au), p. 15

not necessarily want this accuracy diminished from where it is today for the sake of comparability between carriers' coverage maps. For example, the AEWG's 2021 Expert Report observes:

> *"Connectivity required to support digital agriculture is often required across an entire farming operation, rather than just at the homestead... If a farm or part of a farm is in the coverage gap... it means that digital technology cannot work properly on that farm. If there is a lack of coverage at the homestead, the family is unable to undertake online schooling and work from home...*
>
> *According to coverage maps, Birchip Victoria (VIC) has strong mobile coverage from Optus and Telstra... However, beneath these broad brush strokes of connectivity, there is considerable variability in connectivity, with localised patches of no or poor connectivity...*
>
> *Salt and pepper connectivity, in physical geography terms, is all about the local terrain of any one local community around or between small towns. The slightly hilly riparian landscape of Narrabri works the communications infrastructure very differently to the vast flat plains of the Victorian Mallee. The unique elements in any given landscape will alter signal strength, even down to the trees surrounding a farm house".*[203]

Similarly, Murraylands and Riverlands Local Government Association's input to the ACCC's 2023 Regional Mobile Infrastructure Inquiry (**RMII**) stated that:

> *"It is unanimously supported by all that coverage maps are not accurate and do not reflect 'real-life' on ground experience ...The gap between coverage maps and 'real-life' has reached a degree of inconsistency that continues to weaken the relationship between provider and regional customer...".*[204]

We acknowledge the comparability aspect of mapping coverage is more important for regulators, government and other stakeholders involved in network co-investment policy. We suggest the coverage data already provided to the ACCC under Record Keeping Rules here in Australia might be suitable for this purpose, based on some defined coverage metric/s to enable comparability. So long as the basis and limitations of such comparable maps are clearly articulated (and the maps are not portrayed as substitutes for the MNOs' own published maps), we consider the two approaches should be able to coexist and deliver both accuracy and comparability respectively when most needed.

4.4.3 Role of the Federal Government's Mobile Coverage Audit

We support the Australian Government's National Audit of Mobile Coverage (**Audit**) and are hopeful the audit will provide a valuable additional source of information to help guide government investment decisions. We consider the audit will be helpful for identifying blackspot co-investment opportunities.

However, for the reasons explained above in sections 4.4.1-4.4.2 and in section 2.2.6 above, we believe the Audit will be of limited value in assessing the accuracy of MNO coverage maps for their individual customer bases and will also be unable to measure mobile performance in a manner meaningful to overall mobile customer experience. Given the inherent limitations in such audit results, we believe they should only ever be considered as complementary to other forms of coverage and mobile performance related data, including each MNO's own network and coverage information.

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[203] Agri-Tech Expert Working Group (infrastructure.gov.au), pp 15-17.
[204] Murraylands and Riverlands Local Government Association, submission to ACCC RMII dated 3 April 2023.

We encourage the Committee to have regard to the following three factors when interpreting the findings of the Audit as they become available:

1. On **coverage**, the primary collection mechanism for the Audit is via a "drive survey", involving devices for each MNO mounted on a vehicle. This use of a single identical device type for all three MNOs recording side by side measurements is the ideal way to generate an "apples-to-apples" comparison of coverage and to achieve the Audit's primary purpose to identify shared blackspots for potential investment focus. This approach and its results, however, are inadequate and potentially misleading if extended to providing general coverage guidance for customers in place of MNO's published coverage maps. Firstly, this is because different device types have different sensitivities. So, the coverage results measured using one device would not necessarily be the same if you used a different device. In practice, Australian mobile customers use a range of different mobile devices, and each MNO will have a different mix of devices in use on their network. Secondly, this is because (for consistency) drive surveys measure coverage from the chosen device in a single position — on a vehicle, fixed at a particular height and angle etc. This doesn't reflect how most mobile customers use their devices most of the time. By contrast, a great deal of science goes into producing our maps, so they are more relevant for our customer base.

2. For **congestion/performance** measurement, the drive survey data can only capture a periodic snapshot in time, just a few minutes at most in a location in a week or more. That's not very meaningful for assessing true mobile network performance. This is because congestion levels on a mobile network and related data speed fluctuate with time of day even within a 24-hour period. Further, events such as a vehicle traffic accident can cause transient spikes in congestion at a location. The planned use in the Audit of 24/7 monitoring at selected post-offices can help account for this variability. However, what is limited here compared to the real network performance "on the ground" that regional customers experience is that (for understandable budget reasons) the Audit will only be able to do this 24/7 monitoring at select locations. Telstra has around 30,000 mobile cells in our network. What the Audit will measure is performance at only a handful of these mobile cells, being the ones that service the selected post-office locations.

3. We welcome the inclusion in the Audit design of **crowd-sourced data.** This will allow the Audit results to reflect measurements from a wider range of devices than the drive testing, in a wider range of situations and times to supplement the audit's fixed location 24/7 monitoring and drive test runs. However, for crowd-sourced data to be helpful there needs to be a crowd. On remote regional roads and other remote locations — it is very likely there will be no relevant crowd sourced data available. The current published views of the Audit crowd-sourced based coverage acknowledge this.[205] These show large areas of Australia as "white-space" — with the legend explaining that this does NOT mean that there is no coverage by any MNO. Merely that in remoter areas the crowd-sourced data provider has no or insufficient devices providing them with the data they need to measure the coverage.

Acknowledging the above limitations, we look forward to working with the Government as work on the Audit progresses and remain committed to ensuring our customers are receiving the best information to inform their purchasing decisions.

[205] National Audit of Mobile Coverage (d1zckiwudrcznp.cloudfront.net)

4.4.4 Improving customer trust through changes to our sales processes

Telstra works hard to ensure that our frontline staff are armed with the best and most accurate knowledge to serve our customers. As noted above in section 4.1, through our Connected Communities program, we have supported regional communities with more on-the-ground advocates and network experts to help solve complex local issues. We have also trained more customer service agents specifically on regional connectivity so they can assist our customers without easy access to a Telstra store. [206] This is in addition to the online self-serve information we publish, which we frequently update to ensure it is providing meaningful and accurate information for our regional customers. [207]

We have also implemented changes to improve sales quality since entering the Undertaking with the ACCC in relation to mis-selling to some First Nations customers. [208] These include:

- We removed individual sales targets;
- We changed the way we train our people and the tools we provide them to have a quality sales conversation, including better conversations around affordability;
- We put system level controls in to limit the amount we can sell to customers based on affordability and other factors;
- We strengthened our credit assessment process; and
- We have more quality and control checks in place with the tools identified above to continually scan for breaches of our policy and processes.

[206] More boots on the ground in regional Australia, and more support for customers - Telstra Exchange
[207] See Regional Services and Regional Coverage from Telstra
[208] Microsoft Word - Telstra - s87B Undertaking - execution version (003) (accc.gov.au)

5. USO regulation that supports better regional outcomes

The Universal Service Obligation (**USO**) has for decades ensured that all Australian residents can be connected regardless of where they live and work. To ensure it remains relevant into the future and supports better regional outcomes, the USO should be reformed to take advantage of new technologies that are available. This means removing the requirement for Telstra to use the outdated copper network to deliver USO telephone services in much of regional and remote Australia. Customers in those areas could then be migrated over time to a newer wireless or satellite technology that is more reliable and more capable.

Key recommendations: USO regulation that supports better regional outcomes

Recommendation 12: Remove the requirement for Telstra to use the outdated copper network to deliver USO telephone services in much of regional Australia.

Removing Telstra's obligations to continue to use our aging copper network to provide USO services will enable customers in regional areas to be migrated over time to newer wireless or satellite technology that is more reliable and more capable.

Recommendation 13: In modernising universal service arrangements, we consider that access to public phone infrastructure should continue.

Usage of Payphones increased to over 25 million calls in FY2024. The most frequently called numbers from payphones including the Emergency Services (Triple Zero), banks, taxi services, Directory Assistance, Centrelink, Telstra, the police, and community support services including Headspace and Lifeline. We see an important role for Payphones in supporting our communities, including remote First Nations communities, and providing affordable (free) connectivity options for customers in vulnerable circumstances.

We're now in the process of upgrading 1000 payphones in disaster-prone areas around Australia to help keep communities connected during a disaster. This includes upgrades for 70 remote First Nations communities. The upgrades provide technology including USB charging for devices and free Wi-Fi connectivity to help people get online, as well as backup power to provide additional power resilience.

5.1 Universal service guarantees remain relevant

The fundamental outcome of a modern universal service framework should be that all Australian residents have access to reliable fixed connectivity at consistent and affordable prices. We believe that universal service guarantees remain relevant, and that consistent national pricing of USO telephone services (same price for the same service no matter where you live) should continue, with prices constituting a reasonable share of wallet for most customers.[209]

We recognise that customers on low incomes can struggle to afford basic services. As described in section 4.1 above, Telstra has a range of programs to assist customers facing financial hardship who may need payment assistance or more affordable products and services — all aimed at keeping

[209] See Telstra's submission to the consultation on Better delivery of universal services for more detail.

customers connected.[210] Government also has a role to play in supporting customers that otherwise cannot afford to stay connected.

In modernising universal service arrangements, we consider that access to public phone infrastructure should continue. Since Telstra took a commercial decision in 2021 to make local and national calls to standard fixed line numbers and calls to standard Australian mobiles from payphones free of charge, payphone usage has increased. In FY24, usage increased to over 25 million calls (two million more calls than in FY23). The organisations and services most frequently called from payphones are the Emergency Services (Triple Zero), banks, taxi services, Directory Assistance, Centrelink, Telstra, the police, and community support services including Headspace and Lifeline. This pattern of usage demonstrates the important role that payphones play in supporting our communities.

5.2 Take advantage of modern technologies

To ensure the USO regime remains relevant in Australia's digital future, we believe the USO should be reformed to take advantage of the new technologies that have recently become available (as described in section 2.3 above). This means removing the requirement for Telstra to use the outdated copper network to deliver USO telephone services in much of regional and remote Australia. Customers in those areas could then be migrated over time to a newer wireless or satellite technology that is more reliable and more capable.[211]

Current arrangements require ongoing investment in outdated, inefficient, expensive technology that is not capable of delivering the best possible service for customers (some of the issues we face detailed in section 2.2.7 of our submission above). For the reasons we explain in section 2.1 of our submission, the telecommunications industry cannot subsidise inefficient networks and remain sustainable, especially in the face of increasing competition from technology companies that are not subject to the same requirements. Conversely, reform to allow the use of the most efficient technologies would ultimately release Commonwealth funding that could be redirected to mobile resilience programs such as those detailed in section 3 of our submission above — a win-win for customers and all industry participants.

As we explain in section 2.3 of our submission above, we are committed to helping build within our customers and stakeholders the same high level of confidence in the modern alternatives to Telstra's legacy copper network that we have. We remain focussed on testing and continuously improving these new technologies, to ensure they will support customer needs.

5.3 Alignment of USO and SIP service standards

While the USO is a baseline fixed telephone guarantee for all Australian residents, no matter where they live and work, the Statutory Infrastructure Provider (**SIP**) obligation is an equivalent baseline broadband guarantee.

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[210] https://www.telstra.com.au/aboutus/access-for-everyone.

[211] See Telstra's submission to the consultation on Better delivery of universal services. Other organisations whose submissions clearly support a technology neutral USO include ACCAN, Communications Alliance, Internet Association of Australia, NBN Co, Optus, TPG, Pivotel, Commpete, NSW Government, Alliance of Western Councils (NSW), East Gippsland Shire Council, Eurobodalla Shire Council, Gippsland Regional Executive Forum, Regional Chambers of Commerce and Industry WA, Broome Circle, Regional Development Australia – Southern Inland (NSW), Ricegrowers Association, South Australian Forest Products Association, Starlink, Stradbroke Island Chamber of Commerce, and TAS ICT.

The obligation holders of both the USO and the SIP must continue to provide universal services according to a set of parameters and benchmarks and provide public reporting to regulators and Government on their performance in meeting those standards. However, the standards that apply to the USO are more robust and clearer than those that currently apply to nbn and other SIP obligation holders. Telstra supports the making of SIP standards as provided for in legislation to bring accountability for the SIP obligation up the level of the USO.[212]

Telstra is required to report to Government on the number of CSG-eligible telephone services in market and on our performance in meeting the CSG timeframes for connecting services, fixing faults, and keeping appointments with customers.[213] We are also required to publish detailed information on our CSG and related performance metrics in regional, rural, and remote areas.[214] Telstra has not failed to meet a CSG benchmark since 2012.

Telstra faces similar requirements in relation to the operation of public payphones. We must follow detailed rules on when and where payphones are to be installed or removed, and we must fix payphone faults within specific timeframes and meet those timeframes to a benchmark level.[215] We provide regular reporting to the ACMA on our performance against these requirements. Telstra has never failed to meet a payphones performance benchmark.

We acknowledge that some customers have an unsatisfactory experience even when the CSG and payphones benchmarks are met. These benchmarks could be increased through changes to regulation, but doing so would inevitably increase the cost of meeting them, and therefore the subsidies required to offset those costs. Any consideration of changes to regulated benchmarks must take into account the costs of those changes, how those additional costs should be funded, and by whom.

Nevertheless, when it comes to the broadband guarantee under the SIP, we do believe it is appropriate for the minimum speed guarantees to take account of customer needs and evolving technologies. We recommend reviewing the current 25/5 Mbps minimum speed guarantee, which seems out of line with the continued expansion of nbn Fibre to the Premises (**FTTP**) networks and the speeds now available on nbn fixed wireless technologies. Reliability is also a key factor in customer satisfaction, with customers who are regularly impacted by outages (planned or unplanned) likely to be more dissatisfied with their experience. As such, network availability metrics in relation to the SIP that accurately reflect the lived customer experience should be considered. However, as noted above, changes to regulated benchmarks and the associated reporting requirements do come at a cost and we recommend reviewing existing metrics such as those contained in the ACCC *nbn service quality and network performance Record Keeping Rule* and ensuring alignment where possible.

5.4 The funding bases for the connectivity obligations should remain unchanged

We consider the funding bases for both the broadband and telephone/payphone obligations are appropriately matched to their respective funding mechanisms. There is a good argument that the Regional Broadband Scheme (which funds NBN Co's broadband obligation) should be replaced with direct funding from the Commonwealth, but if it remains in place the funding base should be kept as it is and not extended to third party fixed wireless or any other nascent broadband access technology

[212] Division 4, Part 19 of the Telecommunications Act 1997.
[213] Telecommunications (Customer Service Guarantee) Record-Keeping Rules 2023.
[214] https://www.telstra.com.au/consumer-advice/customer-service/regional-service-performance
[215] Telecommunications (Payphones) Determination 2022.

given that fixed broadband supply is almost entirely provided by NBN Co. Telstra is open to a discussion with Government about whether there is an appropriate means to extend the levy to other industry participants.

5.5 Strengthen mobile outside the USO framework

We have heard the calls from some stakeholders that Australia needs a "mobile USO". We think it is widely recognised that applying a fixed-like USO to mobiles is unworkable, because a terrestrial mobile network that provides coverage anywhere that anyone wants it is not commercially possible. That said, given the importance of mobile connectivity to Australians today, we understand the calls for more information to help assess mobile performance. Important considerations in this regard are detailed above in section 2.2.6 of our submission.

We also acknowledge there are valid concerns about the levels of customer support and network reliability of the mobile alternatives to USO services. We are open to conversations on what measures would be appropriate to provide customers and stakeholders with confidence in mobile network performance. Any performance measures should encourage efficient investment in and use of infrastructure, recognise that service levels that cannot be provided economically will need to be funded, and be both technology and provider agnostic.

Also noting the importance of mobile connectivity to regionally based and indeed all other Australians, if the current USO requirements are scaled back (for example, via removal of the copper continuity obligation, shrinking of the USO footprint, or removal of the USO altogether) this would allow the corresponding portion of the Commonwealth's contribution to USO funding to be redirected to operator-agnostic mobile resilience programs. This could be a way for modernisation of the universal service regime to deliver additional benefits to regional and remote customers, without trying to shoehorn mobile service delivery into a universal service framework in which it does not belong.

Response to Issues Paper questions

1. **What initiatives or tools could be implemented by the telecommunications industry or government to improve connectivity literacy, and make it easier for regional consumers and businesses to understand their connectivity options and help them to choose affordable services that meet their needs?**

   Please see our suggestions as set out in sections 4.3 and 4.1.3 of our response.

2. **What further initiatives can be implemented to support First Nations communities in developing and leading their own digital inclusion solutions while ensuring cultural appropriateness?**

   Please see the detailed recommendations set out in section 4.2 of our response.

3. **How can government and industry address any misleading and inaccurate information surrounding telecommunications services in regional, rural and remote areas, to ensure consumers and businesses have access to reliable and unbiased information when making decisions about their connectivity options?**

   Please see our thoughts on this issue as set out in section 4.4 of our response.

4. **Deploying and maintaining telecommunications infrastructure in remote areas requires a skilled workforce. What initiatives can be implemented to ensure there is a skilled workforce in regional and remote Australia capable of supporting the construction, maintenance and operation of future proof telecommunications infrastructure?**

   Please see some initial suggestions on this matter in sections 4.1.3 and 4.2.5 of our response.

5. **Could the nbn fixed wireless network or other alternative networks be used to provide reliable and affordable voice services in remote areas? Are there any consumer safeguards or guarantees that need to remain or be changed under reformed universal service arrangements?**

   Yes - nbn's fixed wireless network and Telstra's 4G fixed wireless network are both already successfully being used to provide USO voice services. These services are subject to the same consumer safeguards and guarantees as USO voice services provided on every other technology, in the form of the CSG and related regulation. Please see further details as set out in the body of our response – particularly sections 5, 2.3, and 2.2.5.

6. **In modernising universal service arrangements, should access to public phone infrastructure continue and are there particular areas of need? Could technologies beyond traditional payphones be explored to meet this need?**

   As set out in section 5.1 of our response, payphones continue to offer community benefit and we believe that access to public payphone infrastructure should continue under modernised USO arrangements.

7. **What should the minimum internet speed guarantee be (currently a peak speed of 25/5 Mbps) to meet modern needs? Should minimum data download/upload allowances be regulated? What other factors are important, like latency, reliability and affordability?**

   Telstra has consistently advocated for nbn to support minimum internet speeds of 50/20 Mbps at affordable wholesale prices. This is the minimum speed ACCAN have also advocated for nbn to make available (for a wholesale charge of $20 per month), to support digital inclusion for households on low incomes.[216] Factors that are important to the quality of the broadband services provided over the nbn include those covered in the ACCC's recent service quality and network performance record keeping rule.[217] Affordability is important, and for that reason we support the development of a low-income product at the wholesale SIP level as well as specific government assistance for low-income customers where it is not commercially feasible to provide broadband services at prices they can afford.

8. **How can we achieve equity with respect to mobile services (voice, data and SMS) in regional, rural and remote communities and on regional and remote roads?**

   Please see our suggestions to improve access to more capable and more reliable modern services in section 2 of our response. Note in particular our suggestions for future co-investment initiatives in section 2.4.

9. **How can we ensure regional, rural and remote areas have access to the networks, equipment and capacity they need for improved household connectivity and to foster innovation and efficiency across regional industries, including for IoT applications?**

   Please see our suggestions to improve access to more capable and more reliable modern services in section 2 of our response. In terms of fostering regional, rural and remote industry innovation and efficiency, note in particular our recommendations regarding the opportunity for regional communities to connect into Telstra's new ICF in section 2.1.3.

10. **The cost of building and maintaining telecommunications infrastructure in rural and remote areas can be a barrier to offering better services. What can be done to improve the fixed broadband options available to regional, rural and remote Australians?**

    As explained in section 2.1 of our response, fundamentally, the opportunity to improve the connectivity experience in regional, rural and remote areas will come through investment and policy decisions that support increased access to and uptake of more reliable and more capable modern telecommunications infrastructure and services. This requires the Government and regulators to create a positive environment for ongoing industry investment in regional telecommunications infrastructure. Ways to do this include keeping deployment costs down such as addressing planning complexities and by taking a pro-investment approach to policy and regulation that allows those investing in infrastructure to stay competitive and earn sustainable returns.

11. **Have you had experience with new or alternate service providers such as Starlink or WISPs? If not, why not? What additional measures would persuade you to consider new technologies?**

[216] No Australian Left Offline: ACCAN pushes for affordable broadband
[217] NBN service quality and network performance record keeping rule | ACCC

Details of the positive experience Telstra and our customers have had regarding Starlink LEO satellite services are set out in sections 2.1.2, 2.3, 3.2.8 and 3.3.3 of our response.

12. **What can be done to maximise access to multiple connectivity options in case of outages?**

    As explained in section 3.2.8 a key feature of DTH technology is that it is resilient during events impacting the availability of terrestrial services. That is, should a natural disaster or mains power outage take out one or more mobile base stations, connectivity in that area will still be possible via DTH capabilities.

13. **What can be done to increase capacity and improve the reliability of telecommunications services in regional, rural and remote Australia?**

    Please see the suggestions in section 2 of our response

14. **How can the energy and telecommunications sectors work more effectively, especially with respect to redundancy?**

    Please see the suggestions in section 3.1 of our response.

15. **What innovative solutions can be explored to ensure telecommunications infrastructure remains operational during and after natural disasters? How could partnerships with local communities improve the maintenance, security and availability of infrastructure?**

    Please see the suggestions in sections 3.1, 4.2.5 and 4.3.4 of our response.

16. **What lessons can be learned from private sector investment in regional telecommunications in closing the digital divide in regional and remote areas?**

    Our views on this are covered in detail in sections 1 and 2.1 of our response. Fundamentally, Government and regulators should create a positive environment for ongoing industry investment in regional telecommunications infrastructure. Ways to do this include keeping deployment costs down such as addressing planning complexities and by taking a pro-investment approach to policy and regulation that allows those investing in infrastructure to stay competitive and earn sustainable returns.

17. **What has been your experience as a consumer of Australian Government programs aimed at improving regional communications? What improvements would you suggest?**

    N/A. However, note our suggestions for improvements detailed in section 2.4 (regarding co-investment programs as a whole) and in section 4.2 (regarding programs designed to improve access for First Nations consumers).

18. **What changes to Australian Government investment programs are required to ensure they are successful, efficient and effective in delivering improved, reliable and equitable telecommunications for regional, rural and remote consumers?**

    Our response contains many recommendations aimed at improving reliable and equitable telecommunications outcomes for regional, rural and remote consumers and communities. Our key recommendations are summarised in Appendix 1 to this response. Our recommendations focussed

on maximising benefits from government investment / co-investment initiatives are mainly set out in sections 2.1.3, 2.4, 3.1 and 4.1-4.3 of our response.

19. **How could Australian Government programs better align with state, territory and local government planning and funding processes in delivering telecommunications services and infrastructure?**

    Please see section 2.4.5 of our response.

20. **What other matters should the Committee consider in its review and why are they important?**

    We welcome the Committee's engagement with the range of matters set out our response extending beyond the preceding 19 questions. We have taken the time to engage deeply with the challenges, needs and ambitions we hear from our customers and stakeholders in regional, rural and remote areas and to lay out our recommendations for a path forwards towards a positive future outlook.

Appendix 1 – Summary of recommendations

Recommendations towards achieving access to more capable and more reliable regional telecommunications services:

Recommendation 1: Government and regulators create a positive environment for strong levels of ongoing industry investment in regional telecommunications infrastructure. This includes support to keep deployment costs down and a pro-investment approach to policy and regulation that allows those investing in infrastructure to stay competitive and earn sustainable returns.

Strong ongoing investment in telecommunications infrastructure and services is integral to realising Australia's digital future. Ensuring regional Australia is attractive for telecommunications investors is ultimately a key Government policy challenge to solve – helping investors keep costs down and ensuring there is scope to earn adequate returns. Regulatory certainty and the approach taken to regulation (e.g. by removing regulatory barriers that add costs or impair industry agility) are also key to investment incentives and attractiveness.

Recommendation 2: Government and regulatory policy ensure continued mobile network operator (MNO) access to sufficient spectrum at sustainable market prices and allow 3G exit, so MNOs can meet modern regional capacity demands.

Ongoing provision of regional and remote mobile services and the ability to meet continued growth in customer demand depend on access to spectrum. No access to spectrum, no mobile service. It's that simple. Since RTIRC 2021, demand on Telstra's mobile network in regional areas has nearly doubled. To meet this ever-growing demand, MNOs must have access to adequate spectrum at a sustainable market price. We also need the flexibility to close our legacy 3G networks, to make way for more efficient 4G and 5G services able to carry more data and new services.

Recommendation 3: Policy makers, regional and remote customers, and communities alike embrace the potential of more capable and more reliable modern technologies.

New technologies can only help to unlock Australia's economic potential and support better social outcomes for regional, rural and remote customers if (1) the policy environment supports their rollout; and (2) individuals and businesses are using them. Newer wireless, satellite and fibre technology is both more reliable and more capable than our outdated copper and CAN radio networks. Sustaining the performance these legacy networks is becoming increasingly harder. At the same time, this effort is benefitting fewer customers (30% decline since RTIRC 2021). Industry, Government, and communities have a real moment of opportunity to embrace the pathway to better connectivity outcomes offered by newer technologies and to collaborate to continue to build confidence in them.

Recommendation 4: Invigorate and optimise future co-investment initiatives and prioritise deployment related reforms and cost reduction to make it simpler, faster and more efficient to extend and improve regional connectivity.

Strong government capex and opex co-funding support to help industry build, upgrade and maintain the infrastructure needed to keep narrowing the metro/regional digital divide in Australia is essential. Public money must be used wisely in support of otherwise uneconomic private investment. This needs: (1) alignment on policy priorities across government at all levels and with industry – including care to avoid and remove policy and regulatory barriers to private investment; (2) a holistic approach to policy

and program design factoring in root cause issues such as energy resilience and reliability, and drawing more effectively on industry expertise and place-based community input; and (3) recognising both where expanded or upgraded terrestrial mobile infrastructure is, and where it isn't, likely to be the optimal solution to address connectivity needs. We also recommend reforms to streamline planning and environmental approvals and reduce charges for Crown Land to make it easier to deploy and upgrade telecommunications infrastructure – so more regional communities can enjoy more benefits faster.

Recommendations towards achieving more resilient regional networks and communities:

Recommendation 5: Governments and the energy sector respond to the inherent reliance of telecommunications on the energy sector by prioritising improvements to reduce the incidence and scale of mains power outages in regional and remote areas.

The telecommunications industry will always play a vital role in supporting telecommunications power resilience. However, based on our experience and efforts to date, we believe the single most effective and efficient way to improve the future power resilience of regional telecommunication networks is through improvements to Australia's power grid resilience and redundancy – to reduce the current incidence and scale of mains power outages. Especially in more remote areas, this is where we believe the biggest investment in time and money should go.

Recommendation 6: Governments, telecommunication and energy sectors engage in strategic planning and co-investment across energy and telecommunication infrastructure to improve resilience in both networks. This could extend to encouraging and capturing energy company investments in new innovations to support their power systems and supply for example, standalone power systems.

We recommend continuation of co-investment programs such as STAND and MNHP, which have helped industry to deploy back up power options at mobile sites that would have otherwise been uneconomic. We also recommend co-investment aimed at exploring the potential of new technologies like LEO satellite backhaul and services and renewable power sources and other programs such as TDRI and the Victorian Government's Renewable Hydrogen Commercialisation Pathways Fund to improve telco network redundancy and resilience. Both government and industry energy related investment decisions should thoughtfully consider telecommunications footprints and the need for power reliability at key locations.

Recommendation 7: Energy companies to prioritise connection and restoration of power for critical telecommunications infrastructure (as part of business-as-usual operations, as well as in cases of Mass Disruption events).

We face minimum lead times in many cases of more than a whole year to complete mains power connections to new sites before we can commence services. The time to get new connections to the grid must fall. We recommend cross-sector telco and energy collaboration to explore practical ways to reduce current timeframes (as well as improving scheduling certainty and the cost of grid connection).

Recommendation 8: Improved information sharing and collaboration when it comes to: (1) planned and unplanned power loss situations (including real-time and accurate restoration estimates); and (2) improving power resilience to climate change and disasters.

We recommend State and Territory Command Centres look to play a bigger role in coordinating the telco industry response in emergencies by providing information such as estimated outage times, to help prioritise generator placement and restoration activity. Energy providers can help by providing more real-time data on outages to help telcos respond. This along with telcos sharing more information

about restoration times with each other would result in better outcomes for impacted communities. We also recommend industry collaboration with scientists, the Bureau of Meteorology, universities and other bodies to improve power resilience as part of climate change and disaster and preparedness activities.

Recommendations towards empowering regional consumers and communities to fully participate in Australia's digital future:

Recommendation 9: Further contributions across government, industry and the community sector to ensure all Australians can afford to stay connected.

There is scope for more to be done to help keep all Australians connected. This can only be achieved with contributions across industry and government. Currently, Telstra is the only telco with a requirement to offer a low-income product suite. We continue to advocate for solutions to improve nbn affordability for customers on low incomes. ACCAN has proposed an nbn wholesale broadband product for those receiving government income support, which we support. We also support the recommendations by the First Nations Digital Inclusion Advisory Group (**FNDIAG**) to review the Telephone Allowance administered by the Department of Social Services (**DSS**), which is a standard rate of $33.40 per quarter to eligible welfare recipients – far less than the average Australian pre-paid phone bill of $30 per month.

Recommendation 10: Support thriving regional First Nations communities by prioritising future efforts around the FNDIAG Initial Report recommendations.

Telstra is committed to improving digital inclusion in First Nations communities and delivering against Closing the Gap Target 17 (**CTG17**). The Initial Report of FNDIAG contains practical recommendations towards achieving CTG17, which we support. These include recommendations to: (1) collect further data on the First Nations digital inclusion gap; (2) improve digital ability through community based digital mentoring networks and a First Nations tech support hub; (3) address access and adoption barriers to use of connectivity options that may be better suited than the mobile network for access to data intensive content like broadcast media; and (4) involve community for deep and place-based design and implementation of all initiatives.

Recommendation 11: Prioritise government and community efforts to uplift digital ability and connectivity literacy of individuals and businesses in regional and remote locations; and to grow and retain advanced digital skills within regional communities.

Uplifting connectivity literacy and digital ability in Australia's regional and remote communities needs prioritised collaboration. There is a role for the telecommunications industry. There also needs to be effective and coordinated funding and programs run at all levels of government, and communities themselves need to be actively involved. Initiatives need to consider both individuals and business consumers. This includes uplifting the awareness of the nbn portfolio, coupled with making these services more affordable or offering flexible options in some communities to support adoption. Through such measures there is a real opportunity to not just support regional industry and business, but to really fuel them to adopt new technology that increases productivity, drives innovation and ultimately delivers jobs in thriving communities.

We also welcome Government's continued support for the Regional Tech Hub. We also support the Agri-business Expert Working Group's 2021 recommendation for vocational and university education and training and digital demonstration farms aimed at developing and attracting digital capacity in and to regional and rural areas. This is aligned with the National Farmers Federation's Roadmap objectives for every Australian farm to have access to IoT skills and to double the number of tertiary and vocational agriculture graduates.

Recommendation to achieve USO regulation that supports better outcomes for regional consumers and communities:

Recommendation 12: Remove the requirement for Telstra to use the outdated copper network to deliver USO telephone services in much of regional Australia.

Removing Telstra's obligations to continue to use our aging copper network to provide USO services will enable customers in regional areas to be migrated over time to newer wireless or satellite technology that is more reliable and more capable.

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Appendix 2 – Comparison of JV and neutral host models