2025 RRAMP SUBMISSION

B.I.R.R.R.

BETTER
INTERNET FOR
RURAL,
REGIONAL &
REMOTE AUSTRALIA

Lisa Alexander Photography

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This submission was prepared in good faith by a voluntary team. Please address any queries to BIRRR at [redacted]

Executive Summary

Better Internet for Rural, Regional and Remote Australia (BIRRR) supports the Government's Regional Roads Australia Mobile Program (RRAMP) as a vital component of the $1.1 billion Better Connectivity Plan. However, to deliver meaningful improvements for rural and remote communities, government policy should consider and analyse how emerging technologies such as Direct-to-Device (D2D) will impact the mobile market in Australia. Likewise, funding should be carefully re-evaluated to address and resolve barriers preventing the achievement of multi-carrier mobile coverage.

Leveraging over a decade of advocacy, experience on two Regional Telecommunications Independent Review Committees, industry discussions and the collective insights of more than 16,000 members, this submission offers focused recommendations to improve funding guidelines for mobile programs.

Key Recommendations

1. Neutral-Host Infrastructure

Government policy and funding should focus on neutral-host terrestrial base stations and capacity upgrades to provide the capacity and reliability required for safety, tourism, business, and emergency services along major regional highways. To achieve multi-carrier outcomes, active sharing should be mandated by tying grant funding to open, neutral-host infrastructure.

2. Mandated Domestic Regional Roaming

To ensure equitable mobile coverage, particularly in underserved areas, the Australian Government should, as stated in the 2024 RTIRC recommendations[1], request the Australian Competition & Consumer Commission (ACCC) to reconsider mandating mobile roaming in rural and remote areas. Funding to prioritise interconnect costs and capacity enhancements to encourage carrier participation and address monopolistic market dynamics and underprovisioned mobile networks will be required.

3. Expand Connectivity Options with Wi-Fi Hotspots

Fund Wi-Fi hotspots at critical locations such as remote roadhouses, rest areas, national parks, and electric vehicle (EV) charging stations to ensure connectivity in areas where traditional mobile coverage is economically unviable or multi carrier coverage is unlikely to be supplied by the market.

4. Strategic Coverage Planning and Gap Analysis

Begin with a thorough strategic coverage planning and gap analysis, utilising data from independent audits and crowd-sourced inputs, to develop an interactive national mobile coverage map, similar to the United States Federal Communications Commission (FCC) Broadband Map[2]. This tool would enhance

[1] *https://www.infrastructure.gov.au/sites/default/files/documents/2024-regional-telecommunications-review.pdf*
[2] *https://broadbandmap.fcc.gov/home*

transparency, enable stakeholders to challenge inaccurate coverage claims, and guide the government in prioritising funding for locations where significant coverage and capacity gaps are identified.

In addition, the Government should develop a comprehensive set of prioritisation metrics to guide decision-making on funding allocations. These metrics should include factors such as distance from emergency services, demand and population density, traffic volumes, availability of existing services and market competition analysis.

5. Robust Operating and Performance Standards

Set robust minimum resilience standards, including a minimum 48 hours of backup power for sites, standardised handheld and in-vehicle coverage map requirements and performance reviews for any funded infrastructure. This should include conducting mandatory mid-project audits and two-year post-launch reviews against set Key Performance Indicators (KPIs).

6. Pilot Project

Trial a neutral-host model along a major regional road or highway to test domestic roaming and shared infrastructure solutions. Use results from pilot projects to scale up successful approaches and refine mobile infrastructure funding guidelines.

7. Pause and Prioritise: Measured Investment in Mobile Infrastructure

Adopt a measured approach to mobile infrastructure investment by pausing funding for new infrastructure builds until direct-to-device (D2D) technology is fully deployed and its effectiveness evaluated. This will also allow for comprehensive coverage maps to be developed.

8. Establish a Working Group

Facilitate cooperation between national Mobile Network Operators (MNOs) by establishing a dedicated working group that includes MNOs, regulators, state and territory governments and other regional telecommunications stakeholders. This group should conduct a thorough analysis of existing challenges, including economic and technical barriers, and develop strategies tailored to address the unique issues faced in rural and remote areas and the impact of emerging technologies.

By implementing these recommendations, RRAMP can ensure it meets its objectives of enhancing safety, supporting regional economies, and delivering equitable, high-quality mobile connectivity along regional Australia’s roads and highways.

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BIRRR Background

Better Internet for Rural, Regional and Remote Australia (BIRRR) is a grassroots not-for-profit volunteer group which advocates for viable and sustainable solutions to a wide variety of rural, regional and remote (RRR) telecommunication issues. BIRRR is independent, apolitical and technologically agnostic. Since 2014 we have provided information, practical support and advice, primarily through our Facebook platform, website and extensive consumer engagement in RRR areas. The organisation boasts a membership of over 16,000 individuals across Australia giving BIRRR a unique appreciation, insight and understanding of the issues and impacts of the connectivity challenges and barriers to access facing regional consumers. Over the past decade, BIRRR has made significant strides in advocating for improved connectivity and services in underserved areas. We have successfully raised awareness of the unique challenges faced by rural and remote consumers, influencing policy changes and encouraging more effective government and industry responses. BIRRR has also provided crucial support to its members through guidance on navigating service issues, advocating for better service standards, and highlighting gaps in coverage and service quality. These efforts have helped drive improvements in telecommunications infrastructure and service delivery, fostering greater equity in access to RRR consumers across Australia. In addition, BIRRR has developed and promoted the concept of 'connectivity literacy,' which empowers individuals, communities and industry to better understand and navigate telecommunications services and infrastructure. BIRRR is a founding member of the Rural, Regional and Remote Communications Coalition (RRRCC).

Design features of the National RRAMP

Mobile coverage needs and demands

In today's digital world, being connected is essential for accessing services, conducting business, and staying safe, whilst all Australians can access a broadband service, mobile service—a convenience often taken for granted in metropolitan areas—remains unavailable across over 65% of Australia's landmass[3]. This includes many major regional roads, tourist destinations, and businesses, as well as the hundreds of thousands of people who rely on mobile coverage while travelling.

Mobile coverage and connectivity is crucial for on-the-road activities such as booking tourism experiences, accommodation, tours, and park entries, which often require two-factor authentication via SMS. It facilitates researching services (e.g. fuel, food, accommodation and medical) in upcoming towns and regions, enables GPS and navigation systems for route planning, and helps users locate electric vehicle (EV) charging stations, many of which require internet connectivity for payment systems.

Additionally, reliable mobile coverage ensures travellers can stay in touch with family, friends, and work teams, access critical weather updates, bushfire warnings, and emergency alerts, and conduct business transactions like remote work and mobile point-of-sale operations. Remote roadhouses and fuel stations increasingly depend on mobile-based systems for fuel dispensing and EFTPOS payments, while councils and emergency services need mobile networks to share vital updates about road closures, flooding, and natural disasters. Mobile coverage also enables truck drivers, grey nomads, and remote workers to maintain compliance with fatigue management systems and digital logbooks and assists with their safety.

Bridging the mobile coverage gap across regional and remote roads is not just a matter of convenience—it’s a matter of equity, safety, economic development, and digital resilience. Reliable coverage supports emergency services, enables business operations, and improves access to essential services for travellers and remote communities. It also drives regional growth by fostering tourism, enhancing productivity, and supporting digital inclusion in underserved areas. BIRRR is concerned that new emergency technologies, such as direct-to-device (D2D) technology, whilst promising, will not have the same usability as traditional mobile coverage, leaving consumers and those areas without existing coverage disappointed and vulnerable. BIRRR advocates for comprehensive, planned solutions that prioritise expanding multi-carrier reliable mobile coverage alongside emerging technologies.

[3] *https://www.infrastructure.gov.au/sites/default/files/documents/2024-regional-telecommunications-review.pdf*

Low-Earth-Orbit Satellites (LEOSats) and Direct-to-Device (D2D) Technology

Low-Earth-Orbit (LEO) Satellites and direct-to-device (D2D) technology hold promise in improving mobile connectivity in remote areas. However, they cannot replace terrestrial mobile networks, which provide the capacity, scalability, and reliability needed to meet the extensive communication demands of high traffic regional highways, major roads and communities. BIRRR is concerned that consumers may expect to use D2D technology in the same way as traditional mobile coverage, especially with the hype from operators and industry, leading to frustration and unmet needs, as D2D functionality and scope differ significantly.

Although not yet available in Australia, D2D technology faces several limitations. Compatibility is expected to be restricted to specific newer mobile devices, and affordability concerns persist due to unclear pricing models and the cost of compatible hardware. Environmental factors, such as weather and physical obstructions, and satellite handovers may impact performance. Initially, D2D services will provide outdoor coverage with line of sight to the sky, and will only support SMS (without multimedia), with voice and low-bandwidth data expected in the future. The time taken to send and receive SMS messages may be extended at first, and not meet consumer expectations of the service. High-speed and high-bandwidth capabilities are unlikely to materialise. Device battery duration may be impacted due to the higher transit power required to use this technology. Additionally, D2D may not function in areas with partial terrestrial mobile coverage, even if that coverage is unusable, and remains constrained by the inherent limited capacity limits of LEOSats.

Further challenges include data sovereignty and national security concerns, particularly given that much of this infrastructure is controlled by foreign entities. Integration with existing networks, device compatibility, regulatory hurdles, and spectrum allocation issues could further complicate deployment. The scope of D2D limitations also remains unclear, as it is an emerging technology with limited real-world user data. Telstra, for instance, has described D2D—which they refer to as satellite-to-mobile (STM) messaging—as a “just-in-case” connectivity layer, explicitly stating it is not designed to be a reliable emergency service[4].

Australia, unlike other jurisdictions, is not equipped for SMS messaging to its Triple Zero emergency services, which greatly reduces D2D's effectiveness in emergency scenarios. This poses critical challenges for remote areas, where voice services are often unavailable, and emergencies rely on timely and

[4] *https://www.telstra.com.au/exchange/telstra-satellite-to-mobile-connectivity--our-latest-trials-and-*

dependable communication. It will be critical to manage consumer expectations and understandings of how D2D will work and the limitations of the technology.

Aside from D2D, other LEO satellite technologies, such as a roaming plan and Starlink mini-dish mounted on vehicles, have the potential to improve connectivity outcomes for RRR Australians, offering secure, high-bandwidth services outside of terrestrial mobile coverage. However, they face notable performance challenges under foliage or during heavy rain and remain unaffordable for the majority of consumers. Telstra's collaboration with OneWeb to improve connectivity in remote Australia[5] also highlights both the potential and the limitations of LEOSat backhaul for mobile connectivity. Regular outages and performance issues have plagued small cell mobile base stations relying on this technology, leading to significant coverage gaps and user dissatisfaction (Appendix 1 Case Study). Transparency has been lacking, with consumers left uninformed about the nature of outages and expected resolution timelines. Although efforts are underway, such as the addition of new satellites, these disruptions emphasise the constraints of satellite-dependent systems and the critical need for effective communication with communities.

OneWeb, now under Eutelsat ownership, has also faced broader reliability issues. A global service outage in late 2024, caused by a software error[6], and delays in deploying ground gateways[7] have highlighted technical and logistical challenges. These incidents raise questions about the long-term economic viability and dependability of LEO Satellite services as a primary and stand alone solution for remote mobile coverage needs.

While LEO Satellites and D2D technology can serve as valuable supplementary solutions, it is BIRRR's view they are not substitutes for robust terrestrial mobile networks, particularly in ensuring comprehensive and reliable coverage for regional and remote roads. Investment in robust terrestrial neutral-host infrastructure must remain a priority to address mobile coverage needs effectively. However, the integration of LEO Satellites and D2D technology should be strategically planned to complement terrestrial networks and enhance connectivity in underserved areas.

A measured approach to funding new mobile infrastructure is essential, pausing further investments until D2D technology is fully deployed and its capabilities are thoroughly evaluated. This would ensure that resources are allocated efficiently, supporting both immediate and long-term connectivity goals.

[5] *https://www.telstra.com.au/aboutus/media/media-releases/telstra-and-oneweb-first-voice-call*
[6] *https://www.theregister.com/2025/01/06/eutelsat_oneweb_leap_year/*
[7] *https://gizmodo.com/eutelsat-oneweb-internet-satellite-delays-starlink-1851209229*

Multi- Carrier Coverage

Achieving multi-carrier coverage in RRR areas requires comprehensive mapping and strategic planning, underpinned by a diverse range of solutions. Policy measures must work hand in hand with targeted funding incentives to address critical barriers such as the lack of trust and cooperation among Mobile Network Operators (MNOs), uneven market share, limited awareness of the unique connectivity challenges in these areas, and logistical hurdles like power supply, land access, and backhaul infrastructure. Without effectively tackling these obstacles, the success of multi-carrier solutions will remain constrained and risk entrenching the existing monopoly, leaving regional communities underserved.

Neutral Host Infrastructure and Active Sharing

Building neutral-host infrastructure—open to all carriers—is critical for fostering competition and improving service coverage in regional and remote areas. However, this approach alone does not guarantee carrier participation and there is limited action the Government can take to compel it. The "if you build it, they will come" mindset often fails, as demonstrated by the NSW Government's $5.5 million investment with OneWiFi and Pivotel in Wilcannia and Brewarrina[8]. Despite fully funded and operational shared infrastructure, no major mobile carriers have signed on, citing concerns over competitive advantage, revenue sharing, and operational complexities.

Previous efforts to encourage infrastructure sharing among MNOs in Australia have largely been unsuccessful due to a range of barriers. One of the primary obstacles is the dominance of a single carrier, Telstra, in RRR areas, which creates a significant coverage advantage. The *Connecting the Country: Mission Critical Report* [9] highlighted that Telstra's dominance provides little to no incentive for the company to share infrastructure with other MNOs. Similarly, the *2024 Regional Telecommunications Independent Review Committee (RTIRC) Report* [10] underscored that domestic mobile roaming could enable more efficient use of existing and new neutral-host mobile networks, yet such sharing is hindered by current market dynamics.

The proposed RRAMP grant funding structure presents several risks and potential unintended outcomes. Barriers to cooperation among carriers could result in limited uptake of funding, particularly for multi-carrier solutions. Recognising that Telstra has already secured a significant competitive regional

[8] *https://www.nsw.gov.au/news/mobile-boost-for-brewarrina-and-wilcannia*
[9] *https://www.aph.gov.au/Parliamentary_Business/Committees/House/Communications/Mobileco-investment/Report*
[10] *https://www.infrastructure.gov.au/sites/default/files/documents/2024-regional-telecommunications-review.pdf*

advantage, largely supported by government funding, the Government must adopt a strategic approach to incentivise cooperation and balance the market. This could involve mandating carrier participation as a prerequisite for funding or subsidising interconnect costs through domestic roaming arrangements. Where market incentives fall short, government ownership and operation of neutral-host infrastructure may be the only viable solution to ensure equitable access and foster fair competition in regional, rural, and remote areas. However, given Telstra's market dominance and the significant funding already allocated to a single carrier, this approach may no longer be feasible.

Domestic Roaming

Mandating regional domestic roaming is fundamental to enabling multi-carrier solutions and reducing monopolistic barriers in regional and remote Australia. Without such measures, new infrastructure risks further entrenching one carrier's dominance, which discourages other carriers from participating and investing.

The RTIRC 2024 report recommended that the Australian Government request the Australian Competition & Consumer Commission (ACCC) to reconsider direct mobile roaming in regional areas in light of emerging satellite technologies[11], which may shift market dynamics and strengthen the case for a mandated mobile roaming service. The Federal Government's announcement of a Universal Outdoor Mobile Obligation (UOMO) legislation[12], will mandate all mobile carriers to provide equitable baseline outdoor mobile coverage through D2D services in areas lacking terrestrial infrastructure, it is poised to effectively ensure mobile roaming in previously unserved regions. This approach underscores the logical progression toward enabling mobile roaming across all areas, promoting mobile competition and enhancing mobile networks that can benefit all users. Furthermore, the RTIRC report endorsed the First Nations Digital Inclusion Advisory Group (FNDIAG) Roadmap[13] recommendation for encouraging shared mobile network coverage in RRR areas and, at a minimum, ensuring emergency roaming capabilities for safety reasons.

Australia can draw lessons from New Zealand's successful implementation of mobile infrastructure sharing, where a more balanced market share among carriers has fostered effective collaboration. New Zealand's Rural Connectivity Group (RCG), is a collaborative venture between Spark, One NZ, and

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[11] *https://www.infrastructure.gov.au/sites/default/files/documents/2024-regional-telecommunications-review.pdf*

[12] *https://www.infrastructure.gov.au/department/media/news/universal-outdoor-mobile-obligation-improve-outdoor-mobile-coverage-across-australia*

[13] *https://www.digitalinclusion.gov.au/roadmap*

2degrees, established in 2017[14]. The RCG was tasked with deploying a shared 4G network across rural areas, delivering mobile and broadband services to over 30,000 homes and businesses, 1,000 km of state highways, and 100 tourist hotspots. This model's success is partly due to New Zealand's more balanced mobile market share among operators, facilitating equitable infrastructure sharing. However, replicating this model in Australia faces challenges due to Telstra's dominant market position, which stifles competition and disincentivises infrastructure sharing.

To adapt the approach, a trial pilot project testing a neutral-host model with mandated domestic roaming, along a major regional Australian highway could be established. Through the use of innovative design and thorough planning, mobile access points could be pole-mounted in areas with sufficient backhaul, to complement terrestrial towers. For example, along Queensland's Flinders Highway, in alignment with the CopperString/Queensland Capacity Network projects[15]. Developing this proof of concept in collaboration with carriers and infrastructure providers, with mid-project reviews and post-launch evaluations, would help refine the model and demonstrate its feasibility. This pilot could test shared infrastructure's feasibility in addressing coverage gaps and promoting competition while accounting for Australia's unique market dynamics. Subsidising interconnect costs and fostering collaboration among carriers would be critical to creating a competitive and sustainable telecommunications environment.

Regional domestic roaming will be fundamental to enabling seamless connectivity across networks, ensuring users can access services regardless of their primary provider, especially in remote and underserved areas

Barriers to Building Mobile Infrastructure and Sharing

Building and sharing mobile infrastructure in RRR areas involves significant market, technical, and logistical challenges. These obstacles not only delay the expansion of coverage and infrastructure build but also discourage collaboration among MNOs. The cost and operational intricacies of shared infrastructure both passive (e.g., towers) and active (e.g., radio equipment) deter many MNOs from participating. Additionally, concerns about increased competition from shared networks potentially reducing overall investment in network expansion and innovation remain a significant deterrent. In sparsely populated areas, where commercial incentives are minimal, these challenges are even more pronounced.

[14] *https://insidegovernment.co.nz/major-rural-connectivity-milestone-reached*
[15] *https://qcn.com.au/qcn-copperstring-2032-update/*

The high costs of constructing and maintaining infrastructure in areas with low population density present a fundamental economic challenge. With limited commercial returns, MNOs are often reluctant to invest in infrastructure along critical transport routes, leaving some regional key highways and major roads underserved. Furthermore, significant subsidies provided to single operators, exacerbate market imbalances, discouraging competition and limiting the potential for collaborative efforts, such as shared infrastructure models.

Establishing reliable power supplies in remote areas is also particularly difficult, with operators faced with substantial delays, often up to several years, in connecting new sites to the grid. Accessing high-capacity backhaul infrastructure, such as fibre or microwave links, can be costly and complex. Additionally, the cost and intricacy of acquiring suitable spectrum for new sites creates additional hurdles, particularly in regional areas.

Logistical and regulatory constraints and complexities compound these issues. Securing suitable locations for tower construction is often often delayed due to native title claims, state and local government planning requirements, bureaucratic red tape, and environmental constraints, such as natural disasters, extreme weather conditions or protected landscapes. These challenges are further exacerbated by geopolitical tensions and competition among equipment manufacturers, community resistance and NIMBYS[16] which can delay projects and complicate stakeholder collaboration.

The deployment of small cells, especially those with omnidirectional antennas, can degrade existing services if not properly integrated, often leading to reduced performance from nearby towers. Well-designed networks with sectorised antennas and appropriate frequency planning should occur to mitigate interference and improve user experiences.

To create a more competitive and efficient telecommunications environment, the Government must address existing barriers strategically, ensuring that public funds are allocated effectively to deliver meaningful and sustainable outcomes. Tackling these challenges head-on—including market dominance, limited cooperation among MNOs, and logistical constraints—is critical to achieving mobile coverage for RRR areas. By incorporating lessons learned from previous programs and restructuring grants to directly address these barriers, the National RRAMP can be positioned for greater success.

[16] *https://www.statedevelopment.qld.gov.au/news-and-events/what-is-nimby*

Existing infrastructure

While funding upgrades to infrastructure, such as tower strengthening or increased power capacity, may provide some incentive for MNOs to share, the historical and systemic barriers suggest that such measures alone are unlikely to achieve significant progress. Funding should ensure current infrastructure is better utilised through government grants targeting interconnects and capacity enhancements. Mandating mobile roaming in regional areas through legislative and policy measures may offer a more effective and equitable solution to encourage shared infrastructure, enhance competition, and deliver better outcomes for RRR communities, roads and highways.

BIRRR has concerns about leveraging existing mobile infrastructure to deliver multi-carrier outcomes, without providing incentives to increase capacity. We believe that greater oversight is needed in regards to funded infrastructure, particularly given the current issues with mobile coverage in regional areas following the 3G shutdown. Many users report being unable to make calls, are experiencing frequent call dropouts, and struggling to load data on devices. Funding should not only provide coverage but also ensure that the coverage is usable and of sufficient capacity, with carriers expected to provide transparent information to consumers on issues. Without adequate funding for improved capacity and new infrastructure, a sole focus on multi-carrier outcomes risks exacerbating these problems, leaving regional communities with unreliable and inadequate mobile services.

Strategic Wi-Fi hotspots

There is significant merit in National RRAMP funding for Wi-Fi hotspots at strategic remote locations, such as roadhouses, rest stops and tourist campsites. These hotspots can provide cost-effective, universal connectivity in areas where traditional mobile coverage is unviable, unreliable, or constrained by monopolies; fostering competition and supporting regional tourism, local businesses, and public safety.

BIRRR believes that small cell installations in very remote locations, such as roadhouses and national parks, should be made accessible to all users, either through multi-carrier infrastructure or as Wi-Fi hotspots. This approach would ensure equitable access to services for all, promote competition, maximise the benefit of public and private investment, and minimise unnecessary duplication of infrastructure in these critical areas.

Additionally, Wi-Fi hotspots are economical to roll out and maintain, making them a cost-effective way to improve connectivity while supporting regional tourism, local businesses, and public safety in remote

areas. However, consideration should be given to deploying neutral-host, terrestrial mobile infrastructure in areas without existing coverage, particularly those areas that demonstrate significant social, economic, and safety needs, as mobile networks can offer broader coverage and greater long-term benefits to communities.

While public Wi-Fi hotspots offer significant advantages, careful attention must be given to their management and security. Without proper safeguards, these networks can pose risks such as data breaches, unauthorised access, or misuse, which could undermine their benefits and public trust in their use.

Eligible Roads

The National RRAMP aims to address critical mobile coverage gaps, particularly in areas with no coverage or coverage from only one provider. To achieve this effectively, the Government must adopt a comprehensive and inclusive approach to determine eligible roads and ensure that proposed solutions meet community, industry and consumer needs. BIRRR recommends that the Federal and State/Territory Governments collaborate with stakeholders to develop clear and actionable maps of priority areas **before** engaging carriers, by enlisting experts in mapping, mobile coverage and regional telecommunications. This approach would ensure that public funding is directed to where it is most needed, aligning infrastructure development with community priorities rather than carrier convenience.

Identifying roads for eligibility under the National RRAMP should extend beyond relying solely on carrier-submitted data, as mobile carriers are commercially driven and their priorities may not always align with the best interests of consumers. As recommended by the 2024 RTIRC committee, BIRRR also recommends the development of an independent and standardised platform for mobile coverage, taking inspiration from the United States (US) Federal Communications Commission (FCC) Broadband Map[17] as an effective consumer-facing tool to help guide funding decisions and help identify where the gaps are.

[17] *https://broadbandmap.fcc.gov/home*

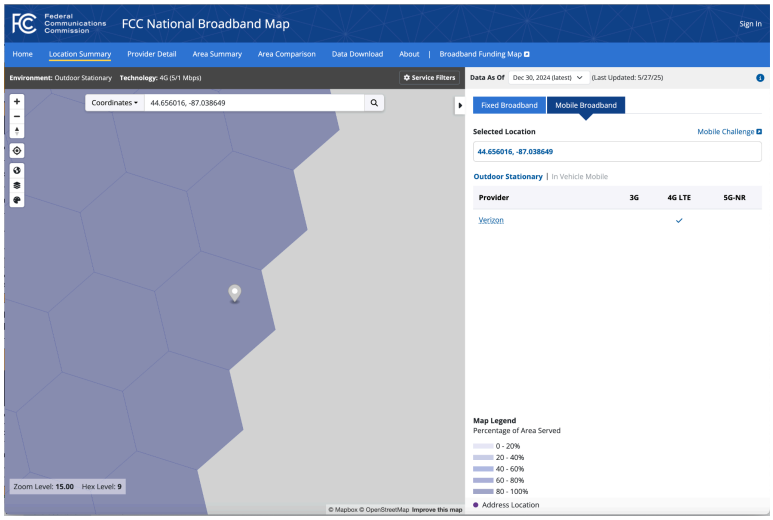

Figure 1: US FCC National Broad Map Mobile Broadband

This platform should incorporate data from the National Audit of Mobile Coverage [18], existing coverage maps submitted by carriers, other mobile coverage maps, such as Powertec's National Coverage Model (NCM)[19] and crowd-sourced real-world performance data, to reflect the usability and availability of mobile coverage at specific locations. Consumers and stakeholders such as local governments should have the ability to input locations via address or GPS coordinates to view the estimated coverage at a given location. The data should include expected speeds, the necessity for equipment such as antennas or repeaters to access coverage, and clear distinctions between outdoor and in-vehicle coverage, as demonstrated by the FCC Broadband Map. Additionally, the platform should allow consumers to challenge coverage claims made by telcos, ensuring accountability and transparency. As per the FCC map, if the information on mobile coverage submitted by your provider does not match your experience, you should be able to dispute that information by taking outdoor or in-vehicle challenge speed tests on your mobile device using an app similar to the FCC Mobile Speed Test app[20].

To ensure the platform is accurate, accessible and practical, the Government could enlist independent experts in mapping and mobile coverage to design it and work with stakeholders to ensure RRR communities and consumer needs and concerns are included in the design process. This collaboration would provide a reliable baseline for identifying coverage gaps and prioritising areas for investment for RRAMP funding. By incorporating crowd-sourced data and engaging stakeholders, the platform would

[18] *https://d1zckiwudrcznp.cloudfront.net/*
[19] *https://powertec.com.au/mobile-coverage-surveying/*
[20] *https://help.bdc.fcc.gov/hc/en-us/articles/10468786141723-How-to-Use-the-New-FCC-Mobile-Speed-Test-App-to-Challenge-Mobile-Coverage*

offer valuable insights into areas critical to industries like tourism, agriculture, mining, and transport. It would also serve as a public-facing tool, enabling consumers and policymakers to make informed decisions regarding mobile telecommunications infrastructure.

As part of this effort, BIRRR recommends the federal government, with the support of state and territory governments and telecommunications operators, conduct a comprehensive connectivity infrastructure audit and mapping exercise of all RRR telecommunications infrastructure. This audit would assess current regional mobile and broadband infrastructure, capacity, and coverage, forming a foundation for strategic decision-making and investment prioritisation. Additionally, BIRRR advocates that all new major roads and road upgrades should incorporate telecommunications infrastructure and upgrades in their planning and development stages to prevent future gaps.

Strategic Locations and Prioritisation Metrics

Strategic locations—such as roadhouses, national parks, emergency service hubs, remote schools, tourist hotspots, rest areas, truck stops, campgrounds, service centres, EV charging stations, and areas of cultural or environmental significance—should be prioritised for their critical role in ensuring safety, supporting tourism, and enhancing connectivity in regional and remote areas.

To effectively guide funding decisions, along with the above mentioned coverage platform, a comprehensive set of prioritisation metrics should be developed. These metrics should consider factors like proximity to emergency services, seasonal population fluctuations, regional economic activity (e.g., agriculture, mining), traffic patterns, community demographics and cultural needs and existing service availability. Submissions from local governments, tourism operators, and community groups highlighting specific connectivity needs should also inform this process. Additionally, the analysis should include population density, demand, and market competition to ensure resources are allocated to areas with the greatest impact.

Operating Requirements

Resilience requirements should include a minimum of 48 hours of backup power. BIRRR believes 12 hours to be insufficient to ensure reliable connectivity during extended power outages, particularly in remote and disaster-prone areas where restoration efforts may face significant delays. Power resiliency is particularly important as many areas where remote mobile infrastructure is installed face persistent issues with reliable power, not just during natural disasters but also during routine power outages, which

can disrupt communications networks for extended periods. Funding for innovative power solutions, permanent solar power setups, such as those used on High Capacity Radio Concentrator (HCRC) networks, and other power initiatives could be included in grants processes to ensure that power resiliency is prioritised as a key metric by operators.

Additional operating requirements could include operators being required to submit mandatory, standardised coverage maps that clearly indicate predicted handheld and in-vehicle coverage. Areas that would require antennas or repeaters should be explicitly shaded or labeled, ensuring transparency and setting realistic expectations for users.

Operating requirements for grants should include built-in audits and performance reviews measured against clear KPIs, such as coverage quality, speed, usability, capacity, and power resiliency. Community engagement metrics must be embedded into all grant contracts, with telecommunications operators expected to educate communities and provide accurate, transparent information about network capabilities, limitations, and build timelines. Periodic evaluations, including mid-project assessments and 2-year post-launch reviews, would also ensure that funded infrastructure achieves its intended outcomes, delivering reliable, high-quality mobile services to regional roads and communities.

Community and Stakeholder Engagement and Connectivity Literacy

One significant barrier to effective telecommunications planning in RRR areas is the lack of connectivity literacy among communities, local governments, industry and stakeholders. This gap limits their ability to understand, plan, analyse and advocate for their telecommunications needs. The Government should support targeted connectivity literacy education initiatives to build this understanding, empowering stakeholders to participate meaningfully in planning and prioritisation processes.

Simply funding infrastructure does not guarantee demand—governments must also play a role in building awareness and enabling usage through education and support initiatives. Pilot programs under the RRAMP, including the $50 million allocated for innovative solutions, should actively involve local governments, regional telecommunication experts, and industry groups. Doing so ensures projects address real-world challenges and align with the priorities of the communities they serve. Engaging communities in the planning and implementation of telecommunications infrastructure fosters local

ownership, increases the likelihood of project success, and ensures that infrastructure investments effectively meet safety, economic, and connectivity needs.

Appendices

Appendix 1 Case Study: Small Cell Mobile Coverage Challenges

[redacted] located near [redacted] is owned and operated by [redacted] The property has a Telstra-installed small cell base station that was partially funded by a significant co-contribution of $67,000 from [redacted] is also the [redacted] of the local council. In October 2024, Telstra transitioned the small cell's backhaul to a LEOSat system provided by OneWeb, a change that has since resulted in persistent connectivity issues.

Issues Experienced:

- **Unreliable Connectivity:** Following the transition to LEO satellite backhaul, the small cell began experiencing frequent and extended outages. These issues include dropped calls, devices failing to connect, and prolonged periods of unusable service. For example, over a recent three-day period, the small cell provided no service at all.
- **Impacts on Business and Safety:**
    - The [redacted] Landwatch cameras and monitors, essential for property management, cannot function without mobile connectivity, a decision made after the installation of the small cell.
    - A recent fire at [redacted] required urgent communication, which was hindered by the lack of service.
    - Council operations have been disrupted, as [redacted] responsibilities as [redacted] often necessitate reliable communication.
    - [redacted] in the same Shire also faces significant business disruptions, including issues with payment systems and non-functional fuel pumps requiring mobile connectivity for transactions and unreliable communication for contractors and guests.
    - The small town of Middleton in North-Western Queensland has had similar issues with their Telstra small cell.
- **Limited Transparency and Communication:** Despite repeated attempts to log complaints, [redacted] were unable to obtain timely updates from Telstra. Feedback from Telstra often came indirectly through advocacy by BIRRR and to our knowledge there have not been any public statements made by Telstra to consumers, businesses or councils affected by the small cell backhaul issues.

Telstra's Response:

- **Technical Issues:** Telstra's Network Team confirmed that the some OneWeb site's performance have been impacted by:
    - Configuration issues and hardware faults with satellite equipment.
    - Weather-related disruptions at the satellite ground station in [redacted], numerous heavy rainfall events since 31st March at the provider's satellite ground station in [redacted]—the nearest location where the satellite signals connect back to the terrestrial network—have disrupted service.

    - Current known issues with the OneWeb LEO satellite network, in particular - gaps in the OneWeb LEO satellite constellation, have resulted in Telstra's OneWeb small cell sites experiencing frequent daily coverage gaps, each lasting up to two minutes.
- **Planned Improvements:** Additional satellites are being launched in March, May, and June 2025 to address constellation gaps. Telstra has assured BIRRR that improvements should be noticeable by mid-2025.
- **Apologies and Acknowledgments:** Telstra acknowledged the challenges, citing a current OneWeb outage as a separate issue and offering apologies for the inconvenience caused. However, no direct compensation or exact resolution timeline has been communicated to [redacted]

Feedback from Stakeholders:

- [redacted] expressed frustration with Telstra's lack of proactive communication, particularly during critical periods such as the wet season, where reliable connectivity is essential for safety and disaster response. [redacted] highlighted the reputational damage to Telstra in the [redacted] due to these ongoing issues.
- **Business Continuity Concerns:** [redacted] emphasised the need for standalone communication systems in remote areas, independent of external factors, to ensure health, safety, and business continuity. The outages at [redacted], Middleton and [redacted] underscore the broader need for reliable, fit-for-purpose terrestrial telecommunications infrastructure.

This case study underscores the critical need for reliable mobile infrastructure and transparent communication, particularly in remote areas where connectivity is a lifeline for safety, business, and community operations.