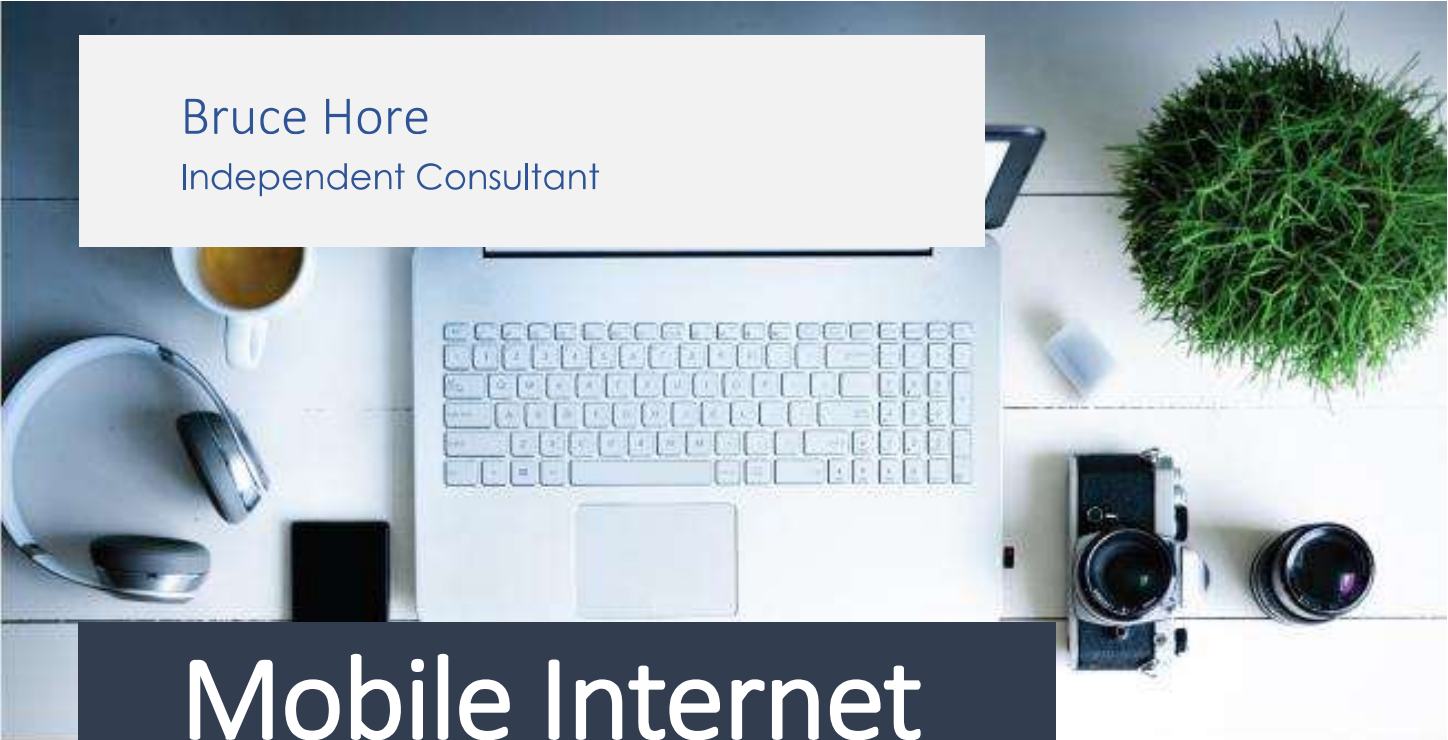




Bruce Hore  
Independent Consultant

# Mobile Internet

## Adapting to Alpine Valley Capacity Issues in 2025 and Beyond

Bright and its surrounding townships (collectively referred to as Bright and Districts) are located in the Alpine Valley of Northeast Victoria and experience significant seasonal population growth. While the permanent population is approximately 3,700, this number can surge to more than 25,000 during peak holiday periods. This seasonal influx delivers a major economic benefit to the region but also places substantial pressure on local infrastructure—particularly mobile telecommunications services.

During these high-demand periods, both residents and visitors frequently report service issues including network congestion, dropped calls, slow mobile data speeds, and general connectivity failures. These disruptions not only affect visitor satisfaction but also compromise the ability of residents, businesses, and emergency services to rely on mobile networks during times of heightened risk—such as the summer bushfire season.

Compounding the issue is the nationwide shutdown of the 3G network in late 2024. While carriers such as Telstra and Optus have claimed improved coverage through 4G and 5G upgrades, user complaints have increased—especially in areas where reception was already limited. In Bright and Districts, users have reported:

1. An increase in mobile blackspots and devices entering SOS mode
2. Difficulty accessing emergency services, particularly in remote or fire-prone zones
3. A lack of competitive alternatives, due to Telstra's dominance in regional coverage

These conditions highlight a growing risk to both public safety and the regional economy and underscore the need for coordinated action and investment in connectivity infrastructure across the Alpine region.

# Purpose

This report has been prepared to explore the likely causes of limited mobile telecommunications performance in Bright and Districts, and to identify potential opportunities for improving the region's ability to adapt to existing and future connectivity constraints.

While the report focuses on immediate and actionable steps, two longer-term issues are acknowledged but not examined in detail:

## 1. **Network resilience limitations due to Apex Hill tower dependency**

Mobile coverage across Bright and Districts is primarily delivered via infrastructure located on Apex Hill. This single-point dependency introduces a significant vulnerability: the site is elevated, forested, and exposed to bushfire risk. Any damage to this infrastructure during a natural disaster could result in a near-total mobile service outage during a critical emergency period.

## 2. **Emerging satellite-based mobile connectivity (LEO networks)**

Some mobile carriers are looking to Low Earth Orbit (LEO) satellite networks as a potential solution for rural and remote areas. While LEO technology may hold promise for very sparsely populated zones, it is unlikely to serve as a suitable replacement for terrestrial infrastructure in high-demand areas such as Bright and Districts. The technology remains in early development: text-based connectivity on selected Apple and Samsung devices is currently in limited trial, with mobile voice services projected for release in late 2026. Full-scale data connectivity for general mobile use has not yet been scheduled. Furthermore, it is anticipated that LEO services will also face congestion challenges in densely populated settings.

Finally, this report does not attempt to restate the broader public interest case for mobile telecommunications access. That need is already well established in numerous federal and state reports, which detail the safety, economic, and social implications of unreliable mobile services in regional areas.

## Version Information

| Version | Information                                     |
|---------|-------------------------------------------------|
| 1.0     | Initial Release for Comment                     |
| 2.0     | Telstra: Page 4, Revised Author's note          |
| 2.1     | Alpine Shire Council: Add/Close various actions |

# Executive Brief

## Key Issues

### 01 **Capacity Over Coverage:**

The problem is not geographic coverage but the ability of existing infrastructure to handle demand. Bright's tower infrastructure cannot manage 20,000+ concurrent users during peak periods.

### 02 **Single Point Vulnerability:**

Much of the mobile coverage is dependent on the Apex Hill tower, which is exposed to bushfire risk. Failure here would result in near-total loss of mobile connectivity.

### 03 **Rising Device Load:**

The average visitor uses 2–4 internet-connected devices; by 2030, this could double. STRs, caravan parks, and public venues all amplify this demand.

### 04 **Insufficient STR Connectivity:**

Most accommodation already offers internet access—but often at outdated speeds (12–25 Mbps). This fails modern guest expectations for streaming, remote work, and smart devices.

### 05 **Inadequate Public Wi-Fi:**

Past trials proved demand exists, but the cost and complexity of deploying public Wi-Fi at scale remains a barrier without centralised investment and coordination.

## Background

Bright and surrounding Alpine townships experience a dramatic seasonal influx of visitors, swelling from a permanent population of 3,700 to over 25,000 during peak periods. While this delivers substantial economic benefits, it also exposes major shortcomings in mobile telecommunications capacity. Residents and visitors face persistent issues—congested networks, SOS-only mobile coverage, and unreliable access during critical emergency periods such as bushfire season.

Since the 3G network shutdown in late 2024, complaints have intensified. Despite carrier claims of 4G/5G upgrades, users report degraded service, limited emergency access, and few viable alternatives in a Telstra-dominated regional market.

## Strategic Framework

To address immediate and long-term needs, the report recommends a three-pronged strategy:

- **Enhance Permanent Infrastructure:**

- Collaborate with carriers to upgrade towers and backhaul.
- Use public fault reporting to evidence congestion.
- Tap federal/state funding for co-located or neutral-host infrastructure.
- Integrate mobile capacity into land-use planning.

- **Deploy Seasonal Infrastructure:**

- Request temporary Cells on Wheels (COWs) during peak seasons.
- Advocate for 5G small cells in high-density visitor areas.
- Prepare shovel-ready proposals aligned with seasonal demand surges.

## Flagship Initiatives

### 01 "Connected Alpine" Awareness Campaign:

Public-facing program promoting Wi-Fi use, STR upgrades, and digital preparedness.

### 02 TNE Digital Badge System:

Visual STR internet speed ratings to be used in marketing and listings.

### 03 Pilot Public Wi-Fi Zones:

Start in Bright CBD and riverfront precincts, with path to broader deployment.

### 04 Caravan Park Wi-Fi Standards:

Best practice blueprint to address high guest density and shared network limitations.

### 05 Add/Enhance Mobile Telecommunications:

Improving the capacity and reliability of existing mobile telecommunications infrastructure, both seasonally and permanently.

- **Reduce Reliance on Mobile Networks:**

- Implement town-wide and precinct-focused public Wi-Fi (modelled on VicFreeWiFi).
- Launch STR internet accreditation badges (Bronze to Platinum) to incentivise provider upgrades.
- Equip STRs and caravan parks with guest comms templates, technical advice, and support for fibre upgrades.
- Educate visitors on Wi-Fi calling and alternatives to mobile data during busy periods.

## Conclusion

Bright and Alpine Districts face growing strain on mobile networks that, without strategic intervention, will worsen as visitor numbers and digital demands rise. This report provides a practical, multi-stakeholder roadmap that blends infrastructure investment, tourism-led incentives, and community education to maintain the region's safety, liveability, and reputation as a connected destination.

## Author's Note

On August 12, 2025, a meeting was held between Telstra, Alpine Shire Council, and the author to discuss mobile infrastructure in Bright and surrounds. Telstra advised that:

- Telstra have an \$800mil national pipeline for upgrades and new infrastructure over the next 4 years. Examples of recent internal/Telstra only funded projects in Alpine would include 5G/Capacity upgrades at Harrietville and Myrtleford. There are no current plans for additional towers within Bright.
- Seasonal infrastructure (COWs) is generally unavailable during peak tourism periods as it is pre-allocated elsewhere or reserved for emergencies.
- An exception has been made for Bright during the Rod Run weekend, when a COW will be deployed. Performance during this period will be measured to inform future planning and advocacy.

## Table of Contents

|                                                           |    |
|-----------------------------------------------------------|----|
| Introduction: Coverage Vs Capacity .....                  | 7  |
| Coverage.....                                             | 7  |
| Capacity .....                                            | 7  |
| Why it Matters .....                                      | 7  |
| Likely Causes of Capacity Constraints .....               | 8  |
| What Needs to be Solved .....                             | 9  |
| Understanding the modern demands on Mobile Networks ..... | 9  |
| High Visitor Concentration Assessment .....               | 10 |
| Short-Term Rental (STR) Accommodation .....               | 10 |
| Caravan Parks .....                                       | 11 |
| Riverfront Area .....                                     | 12 |
| Bright CBD .....                                          | 12 |
| Town Free Wi-Fi History .....                             | 13 |
| What Needs to be Done .....                               | 14 |
| Add/Enhance Permanent Mobile Telecommunications .....     | 15 |
| Add/Enhance Seasonal Mobile Telecommunications .....      | 17 |
| Reduce Reliance on Mobile Telecommunications .....        | 18 |
| Town Free Wi-Fi.....                                      | 18 |
| Short Term Rental (STR) Accommodation.....                | 20 |
| Appendices.....                                           | 23 |
| Tourism Northeast STR Telecommunications Campaign .....   | 23 |
| Title: Connect NE Vic.....                                | 23 |
| Campaign Overview .....                                   | 23 |
| Digital Connectivity Badge System .....                   | 23 |
| Goals .....                                               | 23 |
| Implementation Phases .....                               | 24 |
| Collateral Pack.....                                      | 24 |
| Sample Messaging .....                                    | 24 |
| Regional Brand Alignment .....                            | 24 |
| Potential Partners .....                                  | 24 |
| Summary .....                                             | 24 |
| Connected Alpine Awareness Campaign.....                  | 25 |
| Campaign Objectives .....                                 | 25 |
| Key Messages .....                                        | 25 |
| Target Audiences .....                                    | 25 |
| Campaign Channels & Tactics .....                         | 26 |

|                                    |    |
|------------------------------------|----|
| Campaign Tools & Collateral .....  | 26 |
| Campaign Timeline (Example).....   | 26 |
| Measurement & KPIs .....           | 27 |
| Caravan Park WiFi Standards .....  | 28 |
| Recommended Design Principles..... | 28 |
| Infrastructure Requirements.....   | 29 |
| Design Checklist .....             | 31 |

# Introduction: Coverage Vs Capacity

It is important to acknowledge, the key difference between coverage and capacity

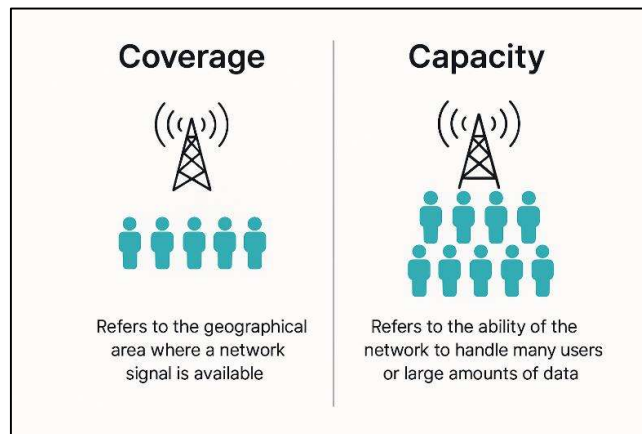


Figure 1: ChatGPT

## Coverage

Coverage refers to the geographic reach of a mobile signal. Unfortunately, official coverage maps provided by carriers often show a binary "on/off" view of service that does not account for real-world usability.

- Telstra's public coverage map shows Bright and surrounding districts as fully covered. However, local users know that locations like the lower Walkers Lane/Gavan Street and the Porepunkah Backroad remain known black spots, where connectivity is unreliable or non-existent.

These discrepancies contribute to user frustration, especially for visitors expecting seamless mobile service.

## Capacity

Capacity refers to a tower's ability to handle simultaneous users and traffic demand. This is where congestion becomes visible — when the signal appears strong, but users cannot make calls, send messages, or access data.

In Bright, capacity is frequently exceeded during even medium density holiday periods, when the population temporarily increases from approximately 3,000 to more than 20,000 people.

## Why it Matters

The difference between coverage and capacity isn't just a technical issue — it's a public safety and economic concern:

- Visitors blame the town, not the carrier, when service fails — creating reputational risk for tourism.
- Peak visitation coincides with bushfire and flood seasons, when mobile-dependent alert systems (e.g. VicEmergency App) are critical.
- Businesses lose digital payment functionality and access to booking systems, impacting revenue.

## Likely Causes of Capacity Constraints

1. Limited Tower Capacity (Spectrum/Bandwidth):
  - Mobile towers have a finite number of simultaneous connections they can support.
  - In summer, Bright's population can swell from ~3,000 to over 20,000+, overwhelming the tower's capacity.
2. Insufficient Backhaul:
  - The connection between the tower and the core internet (often fibre) might not be fast or scalable enough, causing slow data even if you have signal.
3. Carrier Underinvestment:
  - Regional areas often receive lower priority for upgrades unless economic or political pressure is applied.
  - Towers may not be upgraded with the latest tech (e.g. 5G, LTE-A).
4. Single Point of Access:
  - If Bright and Districts relies on one or two towers or lacks microcells/small cells, it becomes a bottleneck.
5. Device Interference / Signal Noise:
  - High device density (many people) creates interference, reducing the quality of service for everyone.

# What Needs to be Solved

## Understanding the modern demands on Mobile Networks

A key challenge that is often underestimated is the sheer number of internet-connected devices Australians use daily, particularly in regions where fixed-line or fixed wireless internet is unavailable, and households must rely on mobile networks for connectivity.

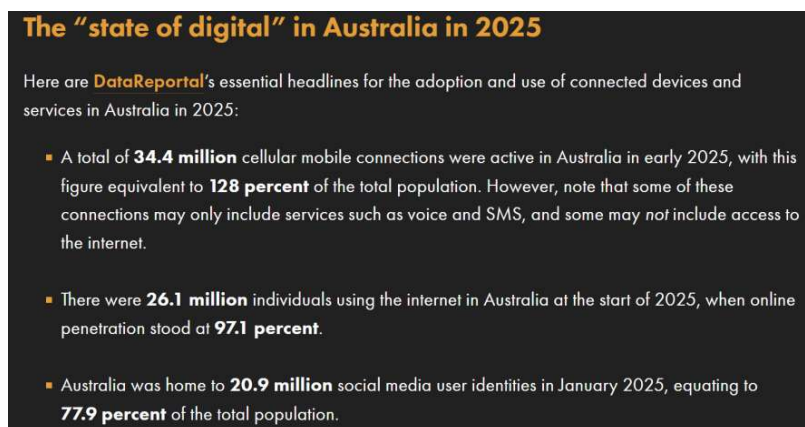


Figure 2: DataReportal<sup>i</sup>

As of early 2025, Australia's population was approximately 26.8 million, yet there were around 34.4 million active cellular mobile connections, or about 1.28 connections per person. While not all of these connections are used for internet, this metric still provides a useful indicator of overall network load. Importantly, it does not account for the many additional devices that connect via mobile hot spotting, including laptops, tablets, smart TVs, and other wireless accessories.

Forecasts show that the average number of connected devices per Australian household is growing rapidly, driven by the rise of the Internet of Things (IoT). Industry estimates suggest that Australians now average 3 to 4 connected devices per person, while the NBN projects that households will average 25 devices by 2025, increasing to 44 by 2030<sup>ii</sup>.

The NBN also reports major increases in data usage over time:

"nbn data shows the average Australian household on the nbn network downloads about eight times more than it did a decade ago, but that number is projected to double again by 2029. Average household uploads will double even sooner, by the start of 2027, and quadruple by 2032."

In tourism-driven regions like Bright and Districts, where visitors expect strong connectivity at accommodations and public venues, these national trends are amplified by seasonal population surges. It is likely that any mobile network planning for 2025 should assume 2 to 4 connected devices per person, many operating simultaneously. By 2030, that figure may double again, effectively requiring a doubling of mobile network capacity within just five years.

Unfortunately, mobile carriers have historically lagged in upgrading terrestrial tower infrastructure and backhaul bandwidth, often basing decisions on outdated demand assumptions. A recent example includes the Telstra Apex Tower upgrade in Bright: while the upgrade improved signal coverage, throughput (actual speed and data performance) remained poor or non-existent, indicating unresolved capacity constraints.

With current levels of over-utilisation, and projections indicating continued growth in both device connections and data demand, Bright and Districts face escalating mobile telecommunications challenges that will only worsen without significant and forward-looking infrastructure investment.

# High Visitor Concentration Assessment

A prudent question to ask is what about existing internet implementations for visitors to take the pressure off the mobile networks. Before considering what is in place today, it is important to consider generally accepted network bandwidth requirements for internet-based services.

| Service Type                  | Recommended Bandwidth (Per User/Stream) | Notes                                                                                                        |
|-------------------------------|-----------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Email & Basic Browsing        | 1–5 Mbps                                | Suitable for checking emails, reading news, and light browsing.                                              |
| Social Media                  | 3–10 Mbps                               | Includes image and video loading; higher speeds improve experience.                                          |
| Video Streaming (SD)          | 3–5 Mbps                                | Standard definition (480p) streaming on platforms like YouTube or Netflix.                                   |
| Video Streaming (HD)          | 5–10 Mbps                               | High definition (720p–1080p); smooth playback requires stable connection.                                    |
| Video Streaming (4K UHD)      | 25 Mbps+                                | Ultra HD streaming; requires high-speed and low-latency connection.                                          |
| Video Streaming (8K)          | 50-80 Mbps                              | requires high-speed and low-latency connection. Available today there is no estimate of widespread adoption. |
| Video Calls (Zoom, Teams)     | 2–4 Mbps per user                       | HD video calls: group calls may require more bandwidth.                                                      |
| Online Gaming                 | 3–6 Mbps                                | Low latency is more important than speed; stable connection is key.                                          |
| Smart Home Devices            | 1–5 Mbps per device                     | Includes cameras, thermostats, lights; bandwidth adds up with more devices.                                  |
| Remote Work (VPN, Cloud Apps) | 10–25 Mbps                              | For file sharing, cloud apps, and video conferencing.                                                        |
| Large File Downloads/Uploads  | 50 Mbps+                                | Faster speeds reduce wait times for large transfers.                                                         |
| Multiple Users/Devices        | 50–100 Mbps+                            | Households with many devices benefit from higher speeds.                                                     |

## Short-Term Rental (STR) Accommodation

In researching this report, it was found that the majority of short-term rental (STR) properties in Bright and Districts already offer internet access for guests. Those that do not typically market themselves as off-grid retreats or isolation-focused getaways where connectivity is deliberately excluded.

However, what emerged as the more significant issue was not whether properties offer internet, but rather the quality and capability of that internet service. Many STRs are operating with outdated or entry-level NBN plans, often the original service installed when NBN became available. This includes properties still on 12.5 Mbps or 25 Mbps plans — speeds that are insufficient for meeting even basic visitor expectations, particularly in properties hosting multiple guests with multiple devices.

This problem is compounded by the reliance on Fibre to the Node (FTTN) and Fibre to the Curb (FTTC) technologies in the area, which are known to suffer from both performance and reliability challenges:

- FTTN connections experience significant performance degradation the further a property is from the node.
- Both FTTN and FTTC are vulnerable to disruption from electrical storms — a notable concern in an alpine climate prone to storm activity and power fluctuations.

Recognising these limitations, NBN Co has begun offering free upgrades to Fibre to the Premise (FTTP) for eligible Bright and District properties. FTTP is significantly more resilient and capable of delivering much higher and more stable speeds. It presents a valuable opportunity for STR operators to modernise their connectivity offering in line with evolving guest expectations and the growing demand for digital services such as streaming, work-from-accommodation, and smart-home amenities.

## Caravan Parks

Caravan Parks have a wide array of internet technologies in use, with Starlink being used more often due to the parks being outside the geographic footprint of the NBN.

Again, the speed of the connection ranges widely as does the technology in use. Caravan Parks are challenged with their guests distributed over a wide area, in vans and cabins which usually block out WiFi radio waves, requiring the signal to be stronger via a larger transmitter or the transmitter being placed closer. The other challenge is that many Caravan Parks use WiFi mesh technology instead of dedicated backhaul links for their WiFi transmitters. Unfortunately, mesh technology is not as reliable as dedicated backhaul links as the WiFi transmitters are trying to be both WiFi and backhaul at the same time, leading to high failure rates for end users.

Of note is that some Caravan Parks reported that their own Internet access is so heavily used during tourism busy periods, that even the office and office functions (like telephones and emails) were disrupted.

A summary of the issues identified within caravan parks:

| Problem                           | Cause                                                                                                |
|-----------------------------------|------------------------------------------------------------------------------------------------------|
| Slow speeds or failure to connect | Too many users per Access Point (AP), or poor signal distribution                                    |
| Weak coverage in cabins/tents     | Poor AP placement (e.g., only in the office), low-power devices, low ability to penetrate structures |
| Office internet also failing      | No separation (VLAN/QoS) between guest and business traffic                                          |
| Interference                      | Consumer-grade equipment, no frequency planning, overcrowded 2.4GHz                                  |
| No handover between APs           | No controller to manage roaming, causing dropouts as users move                                      |

## Riverfront Area

The Bright riverfront precinct is one of the town's most heavily visited areas during summer, drawing large crowds to the splash park, swimming hole, playgrounds, and the Rotary slide. This high visitor density creates a known mobile blackspot — with frequent issues for both calls and data.

A community Wi-Fi trial previously established in Elder Park showed strong usage, but the coverage could not extend to the swimming hole and surrounding areas. This is particularly concerning as the Alpine Shire Council provides seasonal lifeguard services for swimmers in this location. The inability to reliably contact emergency services via mobile networks poses a significant public safety risk.

It is important to consider the type of users in this area. During peak tourist periods, families and groups congregate along the riverfront for extended durations. This results in a high concentration of mobile devices per household, significantly more simultaneous connections than a typical group moving through the town's shopping precinct. Demand on the mobile network in this zone is therefore much higher, both in terms of capacity and sustained usage over time.

Given these challenges, temporary but strategic solutions should be explored. The deployment of seasonal mobile infrastructure, such as a Cell on Wheels (COW), would directly address the coverage and capacity issues in the Riverfront Precinct. A well-positioned COW could also extend benefits to at least three major caravan parks; Riverside, NRMA, and Big4, which themselves experience connectivity strain during peak seasons.

Improving telecommunications access in this area would significantly enhance public safety, visitor satisfaction, and the region's overall tourism reputation.

## Bright CBD

The cost-benefit of implementing a CBD-wide Wi-Fi network in Bright is currently uncertain. Visitor behaviour suggests that the most data-intensive activities (such as video streaming, social media uploads, and messaging) typically do not occur while people are moving between shops. Instead, these activities tend to cluster in static locations such as restaurants and cafes (particularly for dine-in patrons), or in public park areas where visitors gather for takeaway meals, picnics, and events.

These fixed-location usage patterns suggest that targeted Wi-Fi zones in high-use areas could be more impactful in relieving pressure on the mobile network than a blanket CBD-wide deployment. Providing public Wi-Fi in these key zones would help offload data demand during peak periods and improve visitor satisfaction where it matters most.

However, if opportunities arise to extend coverage more broadly—such as through funding support from programs like Connecting Victoria—they should be pursued. A wider network could future proof the town's digital infrastructure and allow for scalable expansion into additional precincts over time.

## Town Free Wi-Fi History

A town Wi-Fi trial was previously undertaken by the Bright and District Chamber of Commerce, initially funded through a grant from Edge Datacentres for a period of 12 months, followed by an additional 18 months funded personally by the author of this report.

The trial network covered a limited footprint along the riverside precinct in Howitt Park, extending to the carpark in one direction and almost reaching the swimming area in the other. Despite the constrained coverage area, the network recorded up to 350 individual device connections during the peak summer period. Usage data showed that most of the activity was concentrated on social media platforms such as Facebook, TikTok, and YouTube.

In 2023, a permanent solution was investigated. Costs were estimated at approximately \$3,000 per site for installation, with proposed deployment across 15 sites in Bright and four sites each in Myrtleford and Mount Beauty. Ongoing maintenance and operations were projected at an additional \$3,000 per site annually, excluding internet service costs.

When adjusted for inflation and increased equipment costs, the total capital investment for a town-wide rollout is now expected to exceed \$100,000, with annual maintenance costs also approaching \$100,000. At the time, Alpine Shire Council indicated it was unable to absorb this level of expenditure without diverting resources from other essential services.

For any future implementation, collaboration with local businesses would be essential to provide rooftop space and electricity for access points. These contributions could be supported through modest reimbursements or incentives.

However, several barriers to business participation were observed during the trial:

- Some businesses lacked a clear understanding of the proposal.
- Others did not have the appropriate networking equipment to safely separate guest and internal traffic.
- Certain businesses, especially cafes with fast service turnover, were reluctant to offer guest Wi-Fi out of concern it would encourage customers to linger.
- Most business-grade internet services in the region are consumer-level, meaning signal strength typically does not extend beyond the premises and would not support reliable outdoor coverage.

These factors highlight the complexity of relying on business partnerships alone for public Wi-Fi infrastructure, reinforcing the need for a centralised, well-funded and professionally managed solution.

# What Needs to be Done

To address the current and emerging challenges with mobile telecommunications in Bright and the surrounding districts, a three-pronged strategy is recommended. Each approach targets a different aspect of the system to improve overall connectivity, resilience, and user experience.

- **Enhance permanent mobile telecommunications infrastructure**
  - Work with carriers to upgrade existing towers, increase spectrum allocation, improve backhaul capacity, and deploy additional small cells in high-demand zones to increase year-round capacity and service reliability.
- **Deploy seasonal mobile infrastructure**
  - Introduce temporary capacity solutions such as Cells on Wheels (COWs) during peak visitor periods to manage population surges and alleviate congestion in known hotspots like the riverfront, parks, and caravan precincts.
- **Reduce reliance on mobile telecommunications**
  - Invest in alternatives that help offload pressure from mobile networks, including public Wi-Fi in high-traffic zones, improved NBN infrastructure in accommodation settings, and better digital planning in tourism and public safety operations.

All three approaches require sustained advocacy and collaboration with telecommunications providers, local businesses, and government agencies. Equally important are public education and awareness campaigns that explain the challenges, set realistic expectations, and promote the adoption of alternative connectivity options where appropriate.

## Add/Enhance Permanent Mobile Telecommunications

Improving the capacity and reliability of existing mobile telecommunications infrastructure is essential to meet the current and future needs of residents, visitors, and emergency services in Bright and surrounding districts.

This effort will require a coordinated advocacy approach involving local government, business groups (such as Chambers of Commerce), and other stakeholders working with federal and state governments, as well as telecommunications carriers. A key focus is to ensure that mobile infrastructure in the region is configured for maximum capacity and upgraded where necessary.

Community engagement also plays a critical role. Local residents and businesses should be encouraged to report mobile congestion and service failures during peak periods to carriers, so that internal performance metrics reflect the true user experience. Consistent and coordinated reporting can help overcome the limitations of current carrier fault metrics, which often understate the severity of the problem due to low or inconsistent complaint volume.

In addition, the program should seek to leverage federal and state funding opportunities, such as the Australian Government's Mobile Black Spot Program, to help finance tower upgrades or new infrastructure. Advocacy should also address the overly complex and time-consuming fault reporting processes currently used by mobile carriers, which discourage public engagement and delay action.

*Note: Alpine Shire Council has already conducted coverage mapping and identified key mobile service gaps, including weak Telstra coverage in areas around Mystic Mountain and Wandiligong, and limited service from both Telstra and Optus in Rosewhite.*

### **Action 1: Coordinate advocacy at multiple levels**

Engage with telecommunications providers and state and federal agencies to ensure that existing mobile towers are operating at full capacity and that coverage planning includes areas of growth and seasonal demand.

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Assigned: Alpine Shire Council

### **Action 2: Identify coverage gaps and prepare 'shovel-ready' projects**

Maintain an updated list of known blackspots and weak signal zones, supported by data and community input. Develop preliminary designs and costings for infrastructure upgrades in these areas so that the region is ready to respond quickly to new funding programs or government initiatives.

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Assigned: Alpine Shire Council

### **Action 3: Establish a local mobile network performance log or reporting portal**

Encourage the public and businesses to report mobile service failures, congestion, or dropouts through a centralised community log or online portal. This data can:

- Provide aggregated evidence to carriers and regulators
- Strengthen funding applications
- Help track improvements or continued weak spots over time

This can be developed in partnership with local Chambers or hosted by Council as a public dashboard.

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Assigned: Alpine Shire Council

#### **Action 4: Engage with telecommunications ombudsman and regulatory bodies**

In parallel with cooperative advocacy, formally lodge issues with:

- Telecommunications Industry Ombudsman (TIO)
- ACMA (Australian Communications and Media Authority)

This creates regulatory pressure and builds a formal case record, especially useful if carriers underreport service degradation.

#### **Action 5: Explore shared tower or infrastructure models**

Advocate for the development of infrastructure that supports co-location (multiple carriers sharing a tower) or neutral host models, particularly in harder-to-service areas. These models:

- Maximise public investment
- Speed up deployment
- Make projects more attractive to state/federal funding bodies

This is especially relevant in Wandiligong or Rosewhite, where multiple carriers underperform.

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Assigned: Alpine Shire Council

#### **Action 6: Include mobile connectivity in planning scheme overlays and developer permit requirements**

Council is encouraged to advocate to the Victorian government to consider mobile connectivity in the Victoria Planning Provisions, and relevant acts and regulations, to inform future rezonings / the assessment of planning permit applications.

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Assigned: Alpine Shire Council

#### **Action 7: Map seasonal population surges and infrastructure strain zones**

Document tourism event periods and align them with connectivity strain data (public reports, local business feedback, etc.) to:

- Support requests for temporary infrastructure (COWs)
- Encourage government oversight of carrier performance via the Australian Competition and Consumer Commission
- Advocate for seasonal bandwidth reallocation or configuration changes

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Assigned: Alpine Shire Council

#### **Action 8: Include mobile connectivity into event planning and permit requirements**

Encourage Alpine Shire to:

- Require telecommunications into event risk assessments for major events
- Include alternative communications for event organisers and emergency services during events (e.g. RF Radios and communication hubs)

---

Assigned: Alpine Shire Council

## Add/Enhance Seasonal Mobile Telecommunications

Alpine Shire's seasonal population surge places immense pressure on existing mobile infrastructure — not only on tower capacity, but also on backhaul bandwidth. To meet the expectations of residents, visitors, and businesses, the region requires a more robust and flexible telecommunications strategy.

This must include temporary infrastructure, like Cells on Wheels (COWs) during peak visitor periods, and long-term upgrades like small cell deployments in town centres and popular outdoor areas such as the riverfront precinct. These enhancements will support emergency response, tourism activities, and day-to-day digital services.

While initial efforts should focus on collaboration with mobile carriers, Council must be prepared to escalate through regulatory and political channels if voluntary action is insufficient — particularly when service levels fall short of contractual obligations.

### Action 1: Deploy Seasonal Mobile Infrastructure

- Partner with Telstra, Optus and Vodafone to request temporary COWs in Bright CBD and Howitt Park during peak holiday periods (e.g. summer, Easter, Autumn Festival).
- Advocate for permanent small cell installations to fill high-traffic micro-zones where full towers are impractical.

### Action 2: Optimise Existing Equipment for Density

- Work with carriers to ensure tower radio configurations and spectrum allocation are optimised for areas of high device density, such as festivals, outdoor dining zones, and event sites.
- Encourage prioritisation of upgrades like 4G LTE Advanced, carrier aggregation, and 5G small cell nodes.

### Action 3: Adopt a Dual Advocacy Strategy

- Short-Term: Engage collaboratively with carriers to build a shared understanding of local pain points and secure commitments to improvements. Include telco participation in tourism and community planning forums.
- Long-Term: If cooperative efforts stall, escalate through:
  - Federal MPs and Senators (advocating via the Minister for Communications)
  - Consumer watchdogs like the ACCC or the Telecommunications Industry Ombudsman (TIO)
  - Media engagement to highlight the gap between service expectations and delivery in regional communities

### Additional Recommendations

- Create a Mobile Infrastructure Watchlist:
  - Map and monitor areas prone to congestion, with seasonal visitor data, to support business cases to telcos.
- Include Telecommunications in Event Planning:
  - Ensure mobile infrastructure planning is part of Council's major events process (e.g. COWs pre-booked months ahead).
- Encourage the community and visitors to report evidence of failures:
  - Collect and submit examples of poor service (call dropouts, data failures, coverage loss) to support regulatory complaints or grant applications.

## Reduce Reliance on Mobile Telecommunications

A proactive approach to reducing the strain on mobile networks involves encouraging visitors and residents to use alternative technologies. This can be achieved by expanding public Wi-Fi access points (Town Wi-Fi), promoting high-speed NBN and satellite internet services to residents, STR accommodation owners, caravan park operators and educating visitors on digital alternatives, such as Wi-Fi calling and messaging apps. By distributing the load across these alternatives, mobile networks can be preserved for essential services, minimising congestion during peak periods.

### Town Free Wi-Fi

Several Victorian councils have successfully deployed public Wi-Fi through the VicFreeWiFi Program<sup>iii</sup>, demonstrating a proven model that could be adapted for the Alpine region. These deployments focus on high-traffic visitor areas, support tourism, and enhance digital equity for both locals and visitors.

Other Shire Councils have had more success with free Wi-Fi, specifically with the VicFreeWiFi Program which delivered free wi-fi to Ararat, Ballarat, Bendigo, Cremone, Geelong, Traralgon, and Shepparton. The model is simple:

- Outdoor hotspot-based coverage focused on town centres
- 5 GB per device per day cap
- Simple access—no ads, no sign-up delay
- Per-city or regional deployment via partnership with carriers like TPG Telecom, Bendigo Telecom, iiNet or Telstra

The program has had tangible success:

- Council partnerships are often enabled via state grants—in Bendigo/Ballarat the upgrade included ~140 hotspot locations and a ~\$6.7 million investment
- Ararat & Lake Bolac launched a Wi-Fi-6 enabled public network with a Telstra partnership, funded by a \$1.56 million government grant, covering retail precincts, parks, visitor sites, and more (48 hotspots)<sup>iv</sup>

### Action 1: Develop a Free Wi-Fi Technical Requirements Brief

Draft a high-level design and operating model, covering:

- Coverage targets (e.g. Bright CBD, VICs, parks, caravan zones)
  - Minimum speeds & concurrent users per site
  - Minimum signal density
  - Maintenance & support structure
  - CapEx/OpEx estimates
  - Preferred vendors and infrastructure types (e.g. Wi-Fi 6, fibre backhaul, outdoor APs)
- Begin engagement with Telstra and Bendigo Community Telco to validate interest and alignment with state/federal funding programs.

Given the current state of telecommunications in the region, a recommended place to start with Telstra and then Bendigo Telecom's Community RSP.

## **Action 2: Launch “Connected Alpine” Community Awareness Campaign**

Develop and deliver a community-facing campaign that:

- Highlights the importance of digital infrastructure for residents, businesses, and visitors
  - Showcases Council’s commitment to improving services
  - Promotes public Wi-Fi availability and appropriate use
  - Encourages engagement with online services in tourism and business
- Leverage community noticeboards, VICs, local media, schools, and caravan parks to expand reach.

## **Action 3: Create a “Business Wi-Fi Readiness Pack” with Chamber of Commerce**

Partner with local Chambers to distribute a practical toolkit to businesses covering:

- Benefits of public-access Wi-Fi (tourism, dwell time, reviews)
  - Risks and how to secure private vs public networks
  - Equipment checklists (e.g. VLAN-ready routers, outdoor APs)
  - Sample network layouts and supplier recommendations
- Include optional site visits or workshops to assist with assessments.

## **Action 4: Pilot Program in Bright (Quick Win).**

Identify 1–2 priority zones in Bright (e.g. VIC, Howitt Park, Gavan St) and implement a 3–6 AP public Wi-Fi pilot in partnership with a telco or integrator. Use the pilot to gather usage data, feedback, and establish long-term feasibility.

## **Action 5: Prepare for Grant Applications.**

Assign resources to begin preparing a Connecting Victoria or Federal RCP grant submission once requirements and partnerships are defined. Include costing models, usage stats from prior trials, and letters of support from business/community groups.

## Short Term Rental (STR) Accommodation

As previously noted, most short-term rental (STR) accommodation providers in Bright and surrounding districts already offer some form of internet access, either via fixed-line or satellite. The core issue is quality, many providers rely on outdated or low-tier NBN plans that do not meet modern visitor expectations for speed, reliability, or streaming capability.

Previous efforts to encourage investment in better connectivity have been largely unsuccessful, particularly when property owners (often remote from their managers) perceive internet provision as a cost rather than a value-added feature.

To shift this mindset, a Tourism Northeast (TNE) Internet Connectivity Accreditation Program could be introduced. This program would allow STR providers to differentiate their accommodation based on internet quality, offering a new marketing tool while setting minimum performance standards that benefit visitors.

The accreditation could be issued as a digital badge or rating, displayed on websites, booking platforms, or in-property materials. Higher-tier ratings would require faster internet speeds and better Wi-Fi coverage, thereby creating a market incentive for owners to upgrade to higher-quality NBN or satellite services.

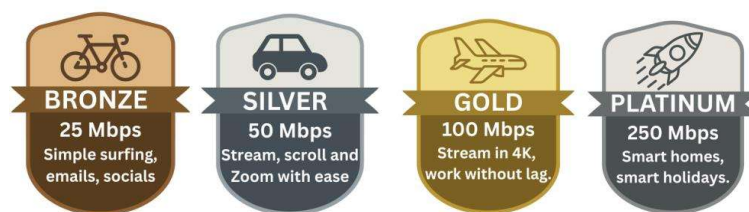


Figure 3: STR Internet Rating System

This initiative could be supported with a practical suite of templates and resources for STR managers, making it easier to communicate connectivity features to guests and reduce tech-related friction during their stay.

Example resources might include:

- Printable or digital Wi-Fi guides (with QR codes) for easy access
- Simple instructions for enabling Wi-Fi calling, including screenshots
- Visitor-facing messages explaining local mobile limitations and encouraging fault reporting to carriers
- Optional fields for STR-specific info (e.g. which streaming services are available, guest data limits, etc.)

It is also important to note that where owners share their internet with guests, more robust infrastructure may be required. STRs that offer multiple indoor/outdoor zones or simultaneous streaming should consider professional-grade networking solutions similar to those recommended for caravan parks.

A sample campaign visual or template is included in the appendix of this document.

### **Action 1: Introduce a TNE Internet Connectivity Accreditation Program**

Develop and launch an accreditation framework, with tiered internet performance levels and visual badges. Integrate the program into the Australian Tourism Data Warehouse (ATDW) profile listings and make accreditation logos freely available to accommodation providers.

### **Action 2: Include Accreditation in Regional Marketing Campaigns**

Position the connectivity rating as a value-add feature in TNE-led tourism campaigns, promoting the region as a modern, digitally ready destination — ideal for remote work, digital nomads, or family streaming needs.

### **Action 3: Provide Practical Communication Resources for STR Operators**

In partnership with Chambers and local tourism associations, create downloadable or printable resource packs that include:

- Visitor-facing Wi-Fi access instructions (with QR codes)
- Wi-Fi calling guides
- Short messages that can be included in pre-arrival emails or booking platforms

### **Action 4: Launch a Community Education Campaign**

Roll out a localised campaign using Facebook, Instagram, Visitor Information Centres, and posters to help inform visitors about:

- Mobile congestion in peak periods
- Alternatives like Wi-Fi calling
- The availability of higher-tier STR connectivity options

### **Action 5: Offer NBN upgrade support information to STR owners**

Provide clear, region-specific guidance on how owners can take advantage of free Fibre to the Premises (FTTP) upgrades or identify which services are eligible. Include links to NBN's Technology Choice Program or retailer options for upgrading.

### **Action 6: Create a shared equipment guide**

Develop a brief technical guide or checklist for STR owners sharing internet with guests, helping them understand:

- The need for separate guest and private networks
- Signal coverage considerations
- The benefits of business-grade routers or managed Wi-Fi solutions

## Caravan Parks

Caravan parks face significant connectivity challenges due to varied internet technologies, reliance on NBN satellite or mobile telecommunications in non-NBN areas, and widespread guest distribution in cabins and vans that block WiFi signals. To address these issues, parks should replace unreliable mesh systems with dedicated backhaul links, increase and better position professional-grade access points, and implement centralised WiFi controllers to improve coverage and roaming. Separating guest and business traffic through VLANs or QoS is essential to protect office operations, while careful frequency planning will reduce interference. Finally, parks should provision internet capacity for peak tourism periods, supported by monitoring and supplementary services, adding additional Starlink connections or Starlink business class services, to ensure reliable performance for both guests and operations.

A full summary of recommendations can be found in the appendices but are summarised as:

### **1. Upgrade Access Point Deployment**

- Increase the number of APs with stronger transmitters and position them closer to cabins/vans.
- Use professional-grade equipment with frequency planning to reduce interference.

### **2. Replace Mesh with Dedicated Backhaul**

- Transition from WiFi mesh systems to wired or point-to-point backhaul links between APs.
- This ensures each AP delivers consistent performance without overloading.

### **3. Segment Guest and Business Traffic**

- Implement VLANs and/or QoS policies to prioritise office traffic (phones, booking systems, emails).
- Prevent guest demand from disrupting core business functions.

### **4. Improve Coverage & Roaming**

- Deploy a central WiFi controller to manage APs and enable seamless roaming.
- Ensure overlapping coverage zones for reliable handover between APs.

### **5. Plan for Peak Demand**

- Size internet capacity for busy tourism periods, potentially supplementing with Starlink or other satellite options.
- Monitor usage to adjust capacity and advocate for infrastructure upgrades where needed.

# Appendices

## Tourism Northeast STR Telecommunications Campaign

Title: Connect NE Vic

Tagline: Stay Connected. Stay Inspired.

### Campaign Overview

The “Connect NE Vic” campaign transforms NBN/Satellite download speed tiers into recognisable, visitor-focused digital connectivity badges for accommodation providers. These badges help showcase the digital readiness of Northeast Victoria, appealing to digital nomads, remote workers, and modern travellers.

### Digital Connectivity Badge System

Each badge represents an NBN download speed tier and sets clear expectations for visitors about digital connectivity during their stay.



| Badge    | Speed Tier (Download)                          | Use Case                          |
|----------|------------------------------------------------|-----------------------------------|
| Bronze   | Basic 25Mbps (or less)                         | Emails, browsing, basic streaming |
| Silver   | Standard 50Mbps                                | Video calls, general use          |
| Gold     | Standard Plus 100Mbps (minimum target for STR) | HD streaming, multi-device        |
| Platinum | Premium 250mbps                                | Remote work, 4K video, gaming     |

A consideration should be made to upload speeds as well – although the NBN is already taking steps to upgrade the upload speeds of the underlying wholesale plan that they offer. Of note, satellite services, such as Starlink, have a significantly reduced upload speed at the consumer plan level and consideration should be made to use business plans with better uploads – if available.

### Goals

1. Showcase Digital Capability in regional accommodation.
2. Help Visitors Choose stays based on internet needs.
3. Encourage Operators to upgrade internet services.
4. Position NE Vic as a smart, connected destination.

## Implementation Phases

### Phase 1: Research

- Use NBN/Satellite coverage tools or ISP API to verify speeds at operator addresses.

### Phase 2: Operator Onboarding

- Self-assessment tool or online form for badge request.
- Optional verification through NBN data or on-site tests.

### Phase 3: Badge Delivery

- Digital Badge Kit (SVG, PNG, usage guidelines).
- Print-ready files for stickers and brochures.
- Website widgets and social media templates.

### Phase 4: Marketing Launch

- Regional press release.
- Feature operators on Visit Victoria/Tourism NE channels.
- Social media campaign with #ConnectNEVic.

### Phase 5: Ongoing Engagement

- Annual reviews.
- Upgrade incentives or spotlight features for higher tiers.

## Collateral Pack

- Badge icons (Bronze, Silver, Gold, Platinum)
- Quick guide for visitors ("What the badge means")
- Template social media posts and banners
- In-room and reception posters
- Website widget code snippets
- Inclusion guidelines for third-party listings (Airbnb, Booking.com)

## Sample Messaging

For Operators: "We're proudly Platinum Connected so you can work, stream and relax with ease."

For Visitors: "Need to Zoom from the mountains? Look for a Gold or Platinum badge on your stay."

## Regional Brand Alignment

This campaign aligns with broader NE Victoria goals: - Smart tourism initiatives - Digital infrastructure advocacy - Sustainable visitor experience management.

## Potential Partners

- NBN Co / Retail ISPs: Data access, funding support
- Visit Victoria & Tourism Northeast: Promotion, endorsement
- Local Councils & Chambers: Operator engagement and co-marketing
- Coworking Spaces / Tech Networks: Cross-promotion for remote-work tourists

## Summary

The Connect NE Vic badge campaign helps: - Showcase the region's digital connectivity - Guide visitor decisions - Drive operator investment in quality internet by making broadband speeds visible and relatable, this initiative positions Northeast Victoria as a premier connected tourism destination.

# Connected Alpine Awareness Campaign

**Campaign Goal:** To increase public awareness and engagement around improving digital connectivity in Bright, Myrtleford, Mount Beauty and other Alpine towns — including mobile performance, free public Wi-Fi, and better guest internet experiences.

## Campaign Objectives

| Objective                                            | Outcome                                                             |
|------------------------------------------------------|---------------------------------------------------------------------|
| Raise awareness of poor digital access issues        | Build support and urgency among residents, businesses, and tourists |
| Educate visitors about available Wi-Fi               | Reduce mobile tower congestion                                      |
| Encourage caravan parks & venues to upgrade networks | Improve guest satisfaction                                          |
| Show council is acting on connectivity               | Increase trust and support for funding applications                 |

## Key Messages

- “We’re connecting Alpine.”
- “Fast, reliable Wi-Fi should be everywhere — even in the mountains.”
- “Bright, Myrtleford and Mount Beauty deserve 21st-century connectivity.”
- “Free public Wi-Fi is coming to our towns.”
- “Let’s fix caravan park internet, together.”

Optional: Frame around themes like **digital tourism**, **smart region**, **inclusive access**, **emergency resilience**, and **visitor experience**.

## Target Audiences

| Group                                          | Message Focus                                          |
|------------------------------------------------|--------------------------------------------------------|
| <b>Local residents</b>                         | Better mobile/Wi-Fi means safer, smarter towns         |
| <b>Visitors</b>                                | Know where and how to access free public Wi-Fi         |
| <b>Accommodation providers / caravan parks</b> | Encourage investment in Wi-Fi networks; show benefits  |
| <b>Council &amp; State stakeholders</b>        | Build visible community backing for funding and grants |
| <b>Local business owners</b>                   | Digital access drives dwell time, spending, reviews    |

## Campaign Channels & Tactics

- **Online & Digital**
  - Dedicated "Connected Alpine" webpage with maps of Wi-Fi zones and updates
  - Targeted Facebook/Instagram posts & boosted ads
  - Google Maps/Wi-Fi signage listings for "Free Public Wi-Fi"
  - Blog articles or email newsletters from council or VICs
  - Community survey to collect Wi-Fi feedback
- **On the Ground**
  - Posters and postcards at visitor centres, libraries, parks, caravan parks
  - Free Wi-Fi "badge" stickers for businesses that offer it
  - QR codes at public spaces linking to maps and Wi-Fi login pages
  - Community workshops: "Improve your park's Wi-Fi in 4 steps"
  - School and youth engagement: "How fast is your Wi-Fi?" campaign
- **Media & Advocacy**
  - Press release: "Alpine launches smart towns Wi-Fi project"
  - Radio interview with Mayor or tourism manager
  - Partner with Visit Victoria / High Country tourism bodies for regional amplification
  - Local influencers / photographers promoting online access during hikes, events

## Campaign Tools & Collateral

- Map of Wi-Fi zones (Bright, Myrtleford, Mount Beauty)
- Badges for caravan parks & accommodations (Bronze to Ultra)
- Posters: "Fast. Free. Friendly. Wi-Fi here."
- Brochure: "Connected Alpine — a better experience for everyone"
- Stakeholder toolkit (email templates, graphics, copy-and-paste social posts)

## Campaign Timeline (Example)

| Month     | Action                                                   |
|-----------|----------------------------------------------------------|
| Month 1   | Finalise messaging, build landing page, create materials |
| Month 2   | Launch campaign + pilot Wi-Fi map in Bright              |
| Month 3–6 | Expand signage, caravan park engagement, media push      |
| Month 6+  | Feedback survey + report impact + regional expansion     |

## Measurement & KPIs

| Metric                                                    | Target                           |
|-----------------------------------------------------------|----------------------------------|
| Web visits to Wi-Fi info page                             | 1,000+ in first 3 months         |
| Public Wi-Fi logins                                       | 5,000+ unique devices per season |
| Social media reach                                        | 20,000+ impressions in 3 months  |
| Stakeholder participation (e.g., caravan parks upgrading) | 10+ by end of campaign           |
| Community sentiment (via survey)                          | 80% positive feedback            |

# Caravan Park WiFi Standards

## Recommended Design Principles

### 1. Capacity Planning – Devices Per Access Point

- Aim for  $\leq 25\text{--}30$  active devices per AP (some APs can handle more, but performance degrades past 50+).
- Account for multiple devices per guest (avg: 2.5–3 devices per person).
- Example: For 100 guests → Plan for 250–300 devices → You'd need ~10–12 business-grade APs.

### 2. Coverage Planning – AP Placement

- Use heat mapping tools to plan AP placement based on:
  - Line of sight
  - Obstructions (trees, metal caravans)
  - Building materials
- Install APs:
  - Indoors for cabins/rooms
  - Weatherproof outdoor APs for shared areas and powered sites
  - Ensure at least -65 dBm signal strength everywhere guests will use WiFi

### 3. Backhaul Network Design

- Use wired Ethernet where possible (CAT6 or fibre between nodes).
- Where cabling isn't feasible, use point-to-point or multipoint-to-point wireless bridges to link APs.
- Do NOT rely solely on mesh networking — mesh halves your bandwidth for each wireless hop.

## Infrastructure Requirements

The complexities building a robust caravan park network today rivals that of any corporate network and it is strongly recommended that commercial or enterprise grade equipment is used to allow the functionality that Visitors would normally experience when they're home, just replicated on a much larger scale.

| Component           | Cause                                                                                                                                                                                                                                                                                |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Access Points       | Access to WiFi 6 standard minimum, with the ability to offer multiple networks to separate guest and office networks. The ability to restrict speed per device to ensure one device doesn't consume the entire available bandwidth                                                   |
| Controller          | Ability to manage access points centrally and manage guest movement and rebalancing across access points (managed handoff, VLANs, speed profiles etc)                                                                                                                                |
| Router/Firewall     | The ability to separate both office and guest networks at the virtual LAN (VLAN) level for security and to offer family friendly filtering.                                                                                                                                          |
| Switching           | Managed switches that support the use of VLANs to separate networks and POE (POE.AE/AT) to power access points.                                                                                                                                                                      |
| Internet Connection | Minimum <b>100 Mbps down / 20 Mbps up</b> per 50 guests. Fibre preferred. LTE (mobile) backup recommended for the Office network.<br>A Business Plan is recommended to ensure any faults to the internet connection have a rapid Service Level Agreement (SLA) to resolve the fault. |

## Guest Network Best Practices

A well configured guest network significantly decreases the number of complaints and enhances the overall view of the caravan park's services, improving customer feedback and ratings.

| Metric/Standard          | Recommendation                                                                                                                                                          |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SSID                     | Separate SSID for guests, with bandwidth limits (e.g. 5 Mbps/user)                                                                                                      |
| Authentication           | Simple captive portal or voucher system, that ensures terms and conditions of the service are agreed to (legal disclaimer for the park).                                |
| Security                 | WPA2-PreSharedKey Password Protected or Open with captive portal. Ensure client isolation to minimise the opportunity for misuse of the network to attack other devices |
| VLANs                    | Use VLANs to isolate guest traffic from office traffic                                                                                                                  |
| Quality of Service (QoS) | Prioritise office and real time guest traffic (Facetime, Mobile of WiFi, Facebook Messenger etc), apply rate limits for guests on a per device level                    |
| Monitoring               | Real-time usage monitoring and client tracking, with automated alerts for detecting issues and failures.                                                                |

The use of a captive portal to enforce guests to “sign in” and agree to preset terms and conditions is becoming less common within caravan parks due to a more complex and varied list of devices that Visitors bring and expect to connect to the park WiFi which may not be able to use an interactive portal. There is a trade-off between the risks associated with misuse of the network by a visitor versus the number of complaints or issues requiring intervention experienced by guests trying to connect to the network.

## Office Network Best Practices

Often overlooked in network design is the importance of having the office network being able to always connect to the Internet. Caravan parks are much more dependent on Internet based services such as booking engines, payment services, Voice over IP (VoIP) telephony or other real time services that are significantly impacted when there is no bandwidth available.

| Metric/Standard | Recommendation                                                                                                                     |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------|
| Security        | Create a dedicated VLAN and SSID for office and operational devices.                                                               |
| QoS             | Enable QoS to prioritise the office network and business critical services, e.g. POS terminals, EFTPOS, booking systems, VoIP, etc |
| Media           | Always hard-wire critical systems — avoid relying on WiFi for office PCs or printers if possible.                                  |

## Design Checklist

| Design Element     | Recommendation                                                                                   |
|--------------------|--------------------------------------------------------------------------------------------------|
| Devices per AP     | ≤ 50 active connections                                                                          |
| Signal Strength    | ≥ -65 dBm everywhere guests roam (outdoors)                                                      |
| Internet bandwidth | Average of 2 Mbps/user minimum, 100+ Mbps recommended.                                           |
| Internet SLA       | Business plan or better                                                                          |
| Backhaul method    | Fibre, CAT6+ Ethernet or wireless bridges (avoid WiFi Mesh)                                      |
| Security           | Separate VLANs and WiFi networks for Visitors and office                                         |
| Guest Wi-Fi        | Captive portal, Family friendly filter, rate limits, user analytics                              |
| Hardware class     | Commercial grade, not residential gear, with advanced network functions, monitoring and alerting |

<sup>i</sup> <https://datareportal.com/reports/digital-2025-australia>

<sup>ii</sup> <https://www.nbnco.com.au/corporate-information/media-centre/media-statements/average-nbn-network-downloads-to-double-by-2029>

<sup>iii</sup> <https://www.premier.vic.gov.au/more-free-wifi-regional-victorians>

<sup>iv</sup> <https://www.ararat.vic.gov.au/news/free-council-wifi-now-available-public-hotspots-across-ararat-township>