



Regional mobile infrastructure inquiry

Final report

July 2023



Acknowledgment of country

The ACCC acknowledges the traditional owners and custodians of Country throughout Australia and recognises their continuing connection to the land, sea and community. We pay our respects to them and their cultures; and to their Elders past, present and future.

Australian Competition and Consumer Commission
Ngunnawal
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Executive summary

In March 2022, the ACCC was directed to conduct an inquiry into access to towers and other infrastructure used in the supply of mobile telecommunications and other radiocommunications services in regional areas, and into the feasibility of providing mobile roaming during natural disasters or other emergencies (the Inquiry).

Consumers of these services have told us that they expect mobile coverage in their homes, where they work and where they travel. These expectations are largely met in cities and more populous areas of Australia. However, many consumers in regional, rural and remote areas of Australia continue to report experiences of poor coverage, congestion and, in many locations, a limited choice of retail service providers.

Further, there are still many First Nations people living in communities in remote parts of Australia with extremely limited access to mobile network coverage and substantially poorer mobile connectivity compared with urban Australia.

The Inquiry has looked at many factors which could ultimately affect the incentives of mobile network operators to invest in providing greater and improved mobile coverage. A key question is how these incentives could be increased by reducing the cost of providing greater coverage and removing obstacles for them to do so.

Providing greater mobile coverage relies primarily on increasing the number of sites used by a mobile network operator. The 2 most common ways are for mobile network operators to build a new tower or co-locate on a tower owned by someone else.

The cost of building a new tower is typically more expensive than co-locating. It appears that the mobile network operators no longer build their own towers, except when subsidised by government co-contribution programs, with the majority of towers now owned by mobile network infrastructure providers. Nevertheless, the costs incurred by the mobile network infrastructure providers in building towers will ultimately be passed on to the mobile network operators in access fees.

There may be ways to reduce the cost of building new towers or making it a faster and easier process. Many stakeholders expressed support for the concept of reforms to streamline existing state, territory and local government rules and better facilitate infrastructure deployment.

In terms of co-locating, a regulatory regime that removes obstacles for access to towers and relevant facilities and that reduces the costs for mobile network operators to do so is required. This will enable mobile network operators and other providers of radiocommunications services to co-locate on others' towers more easily.

To this end, there is a need to review the current Facilities Access Regimes under *Telecommunications Act 1997* (Cth) (Telecommunications Act). In the short-term, the ACCC can review the existing Facilities Access Code and consider whether to make a code under Part 34B of the Telecommunications Act. However, a broader concern is that the Facilities Access Regimes do not cover the field. Whether a tower owner is required to give access depends on whether the owner has a carrier licence or is part of a corporate group in which at least one company has a carrier licence. The divestment or transfer of mobile towers by mobile network operators to large mobile network infrastructure providers means that there is uneven application of the Facilities Access Regimes: Amplitel and Indara are subject to the Part 34B Telecommunications Act facilities access regime but not the current Facilities Access Code (which is under Part 5 of Schedule 1 of the Telecommunications Act). Waveconn is not subject to any facilities access regime.

Government should consider whether it is necessary that a mobile network infrastructure provider be subject to a facilities access regime and a Facilities Access Code. Submissions to this Inquiry have argued that mobile network infrastructure providers have incentives to maximise tenancy, which is different from the incentives of the mobile network operators to provide co-location prior to divestment. However, we have not seen evidence indicating that the market for the provision of tower access has become more competitive or that the prices for access to towers are lower since divestment.

A competitive market for access to towers could potentially result in more active sharing or neutral host arrangements in areas otherwise considered uneconomical to one mobile network operator.¹ Arguably, this would likely further reduce the cost of providing mobile coverage compared to seeking co-location, as they involve the sharing of not just passive but also active infrastructure. If active sharing or neutral host models were limited to deployment in areas where there is otherwise no commercial incentive to provide services, we consider this would be a positive development. It could lead to more infrastructure sharing and competition in regional, rural and remote areas, depending on the type of arrangement. Given demand for mobile coverage in regional areas, if this model does not emerge in the near future, it is likely being constrained by the commercial incentives of mobile network operators, mobile network infrastructure providers, or both.

Ultimately, a mobile network operator will consider whether the cost of providing greater or improved mobile coverage is outweighed by the benefit in doing so. The state of competition in the retail mobiles market heavily influences whether benefits outweigh costs. The desire to differentiate on network coverage has historically driven investment in regional areas, particularly by Telstra and Optus. However, Telstra's enduring competitive advantage in regional areas has the potential to undermine other mobile network operator's incentives to continually invest in improving their regional coverage.

Importantly, we were required to report on the feasibility of temporary mobile roaming during natural disasters and other such emergencies.

Consumers have highlighted to us the importance of mobile connectivity during natural disasters to remain up to date with emergency news and to stay in touch with family and friends. Many have described the stress and isolation that a lack of mobile services causes during natural disasters. Stakeholders also emphasised the importance of mobile network resiliency during times of natural disasters.

We have found that temporary mobile roaming during natural disasters is technically feasible, while acknowledging that there are issues that mobile network operators and government will need to consider to implement this capability. Implementation of temporary mobile roaming requires changes to the mobile network operators' business processes and network and operational systems and there are costs to them in establishing and maintaining a temporary mobile roaming capability. Government agencies and industry would also need to develop frameworks and protocols with the mobile network operators for initiating and deactivating temporary mobile roaming.

1 Active sharing arrangements involve the sharing of active infrastructure in the radio access network such as antennas, transmission and spectrum. Neutral host refers to network infrastructure owned and maintained by a third party that rents or leases its infrastructure to any network operators looking to scale up their network capacities.

1. About the Inquiry and report

On 31 March 2022, the Australian Government directed the ACCC (the Direction) to conduct an inquiry in relation to:

- a. access to towers and associated passive and active infrastructure provided by telecommunications and other infrastructure providers in regional, rural, remote and peri-urban areas within Australia, that can be used in the supply of mobile telecommunications and other radiocommunications services; and
- b. the feasibility of temporary mobile roaming services to be provided during natural disasters and other such emergencies.²

Access to towers has been a renewed area of focus for government in light of the increasing importance of mobile telecommunications, the rising cost of living and the recent divestments of tower assets and the, as yet indetermined, potential impact of tower access on regional, rural and remote consumers.

The 2021 Regional Telecommunications Review recommended undertaking a feasibility study into temporary mobile roaming services. Other recommendations concerned mobile coverage, capacity and competition issues.³

The ACCC has had regard to the matters specified in the Direction. The Inquiry has considered the costs of building telecommunications towers and associated infrastructure, including land access, and their relationship to access seeker fees. The Inquiry also examines the determinants of industry investment into towers and expanded mobile coverage. The Inquiry also examines the feasibility of temporary mobile roaming during natural disasters and emergencies.

The Inquiry is intended to provide an evidence base to the Australian Government to support future policy decisions on these matters and we have considered the issues through this lens.

A glossary of terms and definitions used in this report can be found at Appendix A. The Direction from the Australian Government can be found at Appendix B.

1.1 The Inquiry has conducted consultation and information gathering

On 1 July 2022 the ACCC published a consultation paper and sought submissions.⁴ We received 59 submissions from stakeholders.

On 20 September 2022 the ACCC published an online consumer survey via its Consultation Hub, which sought responses to the following questions:

- How are businesses and consumers impacted by a lack of mobile coverage?
- Do you support the provision of mobile roaming during emergencies?
- Where can mobile coverage be improved?

2 The Hon Paul Fletcher MP, then Minister for Communications, urban Infrastructure, Cities and the Arts, [Telecommunications \(ACCC Inquiry into Access to Regional Towers and Associated Infrastructure\) Direction 2022](#), 25 March 2022, accessed 23 June 2023.

3 Regional Telecommunications Independent Review Committee (RTIRC), [2021 Regional Telecommunications Review – A step change in demand](#), 14 February 2022, accessed 23 June 2023.

4 ACCC, [Regional mobile infrastructure inquiry consultation paper](#), 1 July 2022, accessed 27 June 2023.

The consumer survey closed on 31 March 2023. The Inquiry received 1,483 responses to the survey and these responses are reflected in this report. We received responses from consumers, businesses and also some government entities such as local councils.

In 2023, the ACCC hosted 3 stakeholder forums for:

- consumers and consumer organisations (22 February, via Microsoft Teams)
- emergency services organisations and related bodies (2 March, via Microsoft Teams)
- industry stakeholders (16 March, in Sydney).

The Inquiry also engaged:

- remote First Nations communities and local businesses in the Northern Territory Nauiyu/Daly River region, alongside the ACCC's First Nations Outreach team
- rural and regional consumers at the [Wimmera Machinery Field Day](#) in Longerenong, Victoria
- a number of other State, Local and Federal government, industry and consumer group stakeholders throughout the Inquiry.

The Inquiry team also visited mobile tower sites, at the invitation of Amplitel and Indara.

We have received confidential material as part of the Inquiry. We have included some of this material in this report with the consent of the information providers.

All analysis and findings in this report have had regard to and are based on information and evidence obtained throughout the Inquiry, and other publicly available information.

We thank all stakeholders for their engagement with the Inquiry.

1.2 Release of report on preliminary findings

We released a report on our preliminary findings on 18 April 2023 and sought stakeholder feedback on those findings. We received 9 submissions to the report, which are available on our [website](#). We have considered the issues stakeholders raised in drafting this final report and its findings.

2. Regional mobile consumer experiences and perspectives

The ACCC consulted with members of the community who may be interested in improvements in mobile coverage and/or temporary mobile roaming services to be provided during natural disasters and other such emergencies.

While the findings from this Inquiry are consistent with findings from previous research and other inquiries, we raise the concerns we have heard from regional, rural, remote and peri-urban Australians.

2.1 Regional, rural and remote consumers report lower quality of mobile services than urban consumers

We consulted widely with consumers living in, working in, and visiting regional, rural, remote, and peri-urban areas. We heard a range of views from consumers about their needs and expectations, because consumers access and use mobile services in a variety of ways.

Overall, we heard a consistent message that mobile network operators are continuing to fail to meet consumer demand for mobile services in regional, rural, remote, and peri-urban areas, particularly in relation to coverage and capacity.

Many consumers told the Inquiry that they desire the same level of services as those living in urban areas.⁵ The 2021 Australian Digital Inclusion Index survey found that approximately 2.8 million Australians experienced digital exclusion, and that exclusion is more pronounced in regional areas compared to urban areas.⁶ Additionally, our consumer survey showed that around 78% of respondents considered that mobile coverage in their area was poor, very poor, or none (see below).

Consumers living and working in regional, rural and remote areas told us that they are concerned that their service levels will fall further behind as demand for mobile services, especially for data services, continues to grow. The ACCC also heard similar concerns from consumers living and working in peri-urban areas about their mobile phone services.⁷

Consumers and consumer representative groups continued to report issues around the accuracy and comparability of mobile coverage maps, which is consistent with concerns we heard in the

5 For example, ACCC, [Consumer Stakeholder Forum for the Regional Mobile Infrastructure Inquiry](#), 22 February 2023, accessed 27 June 2023; Macdonald Valley Association, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 1 August 2022, p 1, accessed 27 June 2023; B Hore, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 29 July 2022 p 2, accessed 27 June 2023; National Farmers' Federation, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 16 August 2022, p 4, accessed 27 June 2023.

6 The 2021 Australian Digital Inclusion Index results show that 11% of Australians experience a high level of digital exclusion, which is around 2.8 million people in 2021. See, J Thomas et al, [Measuring Australia's Digital Divide: Australian Digital Inclusion Index: 2021](#), RMIT, Swinburne University of Technology, and Telstra, 2021, p 5, accessed 23 June 2023.

7 A peri-urban area is characterised as the transition from an urban to a rural area. Peri-urban areas can also have geographic terrain which makes it more difficult to supply mobile networks such as dense foliage or mountains. See appendix A for further information on the definitions used in the Inquiry.

ACCC's Regional Mobiles Issues Forum 2018.⁸ For example, the Murraylands and Riverlands Local Government Association noted in its submission that coverage maps do not reflect the experience on the ground and that there were no clear standards for good or acceptable mobile service.⁹ Stakeholders told us that mobile network operators should also include performance standard metrics such as congestion.¹⁰

In areas where coverage is sparse, some consumers devise 'work-arounds' by purchasing repeaters¹¹, services with multiple providers to maximise the coverage area by using dual Subscriber Identity Module (SIM) phones or carrying multiple devices.¹²

Consumers noted that while there are technical options to improve coverage, these options have some limitations and can be prohibitive in cost.¹³ For example, the increased coverage that cellular repeaters can provide is dependent on the strength of the existing mobile network. Some consumers also commented that repeaters sold by the mobile network operators only worked on the operator's network, which is more likely to lock a consumer into that network.¹⁴

Comments from our consumer survey

- 'We have to have a mobile booster to get service but it is slow. We get no service where we work and even satellite is unreliable.'
- '[The respondent's mobile] only works at station homestead with help of booster towers and can be hard for people to hear us.'
- 'Coverage and reliability has deteriorated in recent years... We need to use [name] booster and [name] antenna in all the houses in order to have coverage inside.'

Network congestion issues are also a key concern for regional consumers.¹⁵ The joint effect of the influx of people moving to regional areas and increasing demand for data appear to be contributing to congestion.¹⁶ This is consistent with the feedback to our consumer survey (see below). Respondents told us they are increasingly reliant on their mobile phones to access a range of services including

8 For example, Australian Communications Consumer Action Network, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 4 August 2022, p 3, accessed 27 June 2023; B Hore, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 29 July 2022, p 3, accessed 27 June 2023; Regional Development Australia Grampians, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 August 2022, p 2, accessed 27 June 2023; ACCC, [Consumer Stakeholder Forum for the Regional Mobile Infrastructure Inquiry](#), 22 February 2023, accessed 27 June 2023.

9 Murraylands and Riverlands Local Government Association, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 3 April 2023, p 1, accessed 27 June 2023.

10 ACCC, [Consumer Stakeholder Forum for the Regional Mobile Infrastructure Inquiry](#), 22 February 2023, accessed 27 June 2023.

11 Cellular mobile repeaters extend the coverage of mobile phone service by boosting the strength of the received radio signals and re-radiating the signal in the area where the coverage is poor. The use of repeaters in Australia is regulated by the Australian Communications and Media Authority in order to prevent increases in signal interference and noise.

12 ACCC, [Consumer Stakeholder Forum for the Regional Mobile Infrastructure Inquiry](#), 22 February 2023, accessed 27 June 2023. The ACCC also received multiple stakeholder comments to this effect in our Inquiry survey.

13 For example, W Kurz and B Kurz, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 1 August 2022, pp 1–2, accessed 27 June 2023; B Lingard, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 28 January 2023, p 1, accessed 27 June 2023; Roper Gulf Regional Council, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 2, accessed 27 June 2023.

14 For example, ACCC, [Consumer Stakeholder Forum for the Regional Mobile Infrastructure Inquiry](#), 22 February 2023, accessed 27 June 2023; ACCC interviews at the 2023 Wimmera Field Days, 7 – 9 March 2023.

15 For example, P Penfold, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 1 August 2022, p 1, accessed 27 June 2023; Regional Development Australia – Yorke and Mid North, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 31 March 2023, pp 8–12, accessed 27 June 2023.

16 For example, ACCC, [Consumer Stakeholder Forum for the Regional Mobile Infrastructure Inquiry](#), 22 February 2023, accessed 27 June 2023. The Light Regional Council describe the expected growth of 10,000 persons over the next 10–15 years in their [Public submission to the Regional Mobile Infrastructure Inquiry](#), 9 March 2023, p 1, accessed 27 June 2023. Destination Gippsland Ltd explain how mobile services are used by businesses and consumers for data services in its [Public submission to the Regional Mobile Infrastructure Inquiry](#), 9 March 2023, pp 1–2, accessed 27 June 2023.

banking, social services and to perform business related activities. Over half of our survey respondents had a least 3 mobile devices in their household.

Seasonal influxes of tourists and the staging of events, where the networks are unable to deal with a sudden surge in demand, can also cause regional congestion.¹⁷ For example, the Alpine Shire Council submission described how the overnight and day visitor markets during peak holiday periods and an increasing reliance on telecommunications technology ‘has led to a service that is grossly inadequate to support our escalating needs.’ Its submission also highlighted the pressures of regional population growth after COVID-19.¹⁸

Congestion on a mobile network under normal usage indicates underinvestment by the mobile network operator in the capacity of their network. Given the high cost of investing in mobile infrastructure in regional and remote areas, there are areas where the population density is too low for a business case for the mobile network operators to invest in their networks to address these coverage and congestion issues on a commercial basis.

Comments from our consumer survey

- ‘Congestion on the network is [an] issue on a normal day let alone during [an] emergency event.’
- ‘Not only does the coverage need to improve, so does the bandwidth. [There is] severe congestion, and poor-quality connectivity.’
- ‘We have a tower within 10 kms but the tower is congested... and no upgrade planned in the foreseeable future.’
- ‘...My family has taken risk minimisation approach and we have split our mobile phones between different carriers to maximise our chances of one service...’
- ‘This is not safe and for business is unproductive and causes me to either stop or make calls later which just leads me to work longer hours or miss business opportunities.’

► Finding 1

Mobile services are vitally important to consumers in regional, rural and remote Australia but these consumers are concerned about coverage and congestion issues.

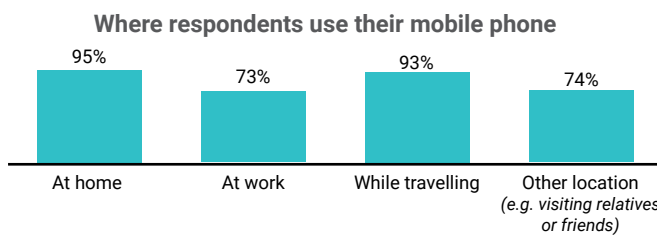
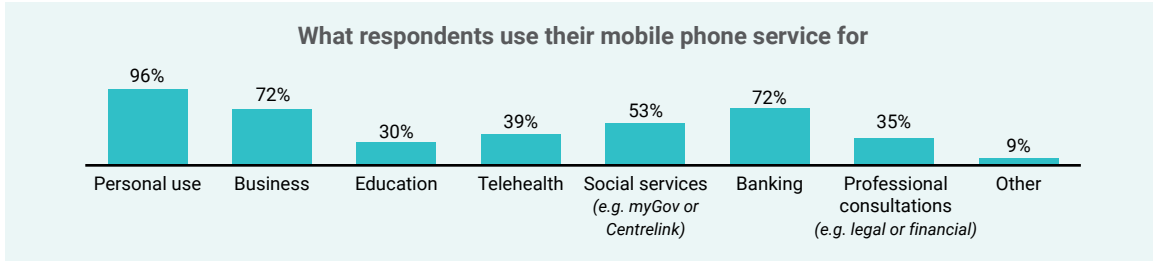
17 For example Dr Helen Haines MP, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 1 March 2023, p 1, accessed 27 June 2023; Destination Gippsland Ltd, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 9 March 2023, p 2, accessed 27 June 2023.

18 Alpine Shire Council, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 3 August 2022, p 1, accessed 27 June 2023.

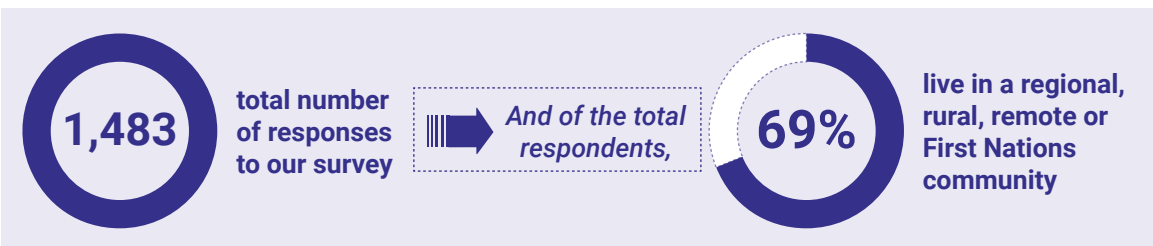
Highlights from our survey – how respondents use their mobile phones



Most of the respondents to our survey use their mobile primarily for personal use (96%). A high proportion also use their phone for business use (72%) and for banking (72%).



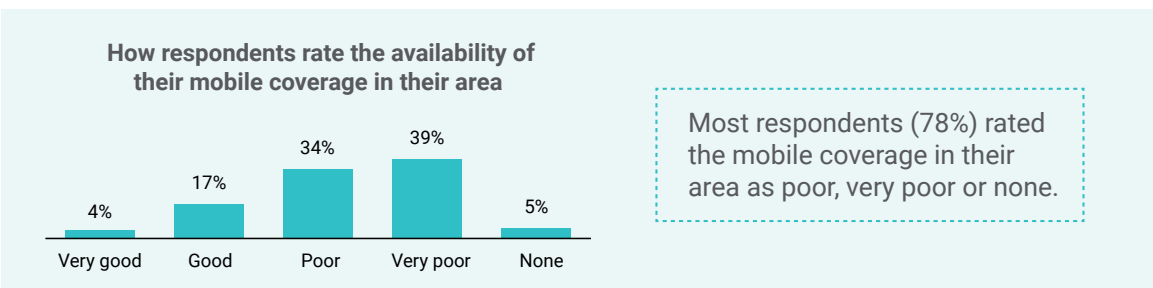
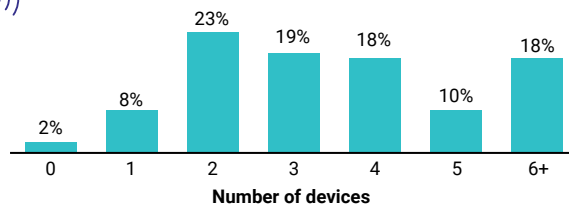
Respondents mostly use their mobile phones while at home or while travelling. A large majority also use their mobile phone at work. Some responses to the survey were from businesses.



Over half of respondents had three or more mobile network devices in their household. Some respondents noted that while they may have mobile-capable devices, there may not be mobile coverage at home. Some respondents noted a lack of mobile connectivity as a reason for not having any mobile devices.



How many devices respondents have in their household connecting to mobile networks



Note: responses to each question of the survey were optional. Percentages of responses in the charts above are shown as a proportion of total responses rather than responses to that question, meaning that totals may not add to 100%.

2.2 Consumers need access to reliable and resilient communications services during natural disasters

Many stakeholders have emphasised the importance of remaining connected during emergencies and natural disasters.¹⁹ Mobile services are particularly important because they provide consumers and emergency services organisations with real-time information, access to emergency services, ability to contact loved ones, and resources for post-disaster recovery.²⁰ The Local Government Association of Queensland adds that ‘community members who are not at direct risk could help to coordinate rescue, access support, and be in contact with family members.’²¹ Further, as the National Farmers’ Federation stated in its submission, in emergency situations, ‘this impact is felt not just during the events, but in many cases for an extended period following.’²²

Consumers also told us about significant safety concerns with gaps in mobile coverage, particularly along main transport corridors between regional and remote towns.²³ For example, consumers told us that having to drive to an area of coverage to call for help after traffic accidents or other emergencies is common.²⁴ This was consistent with the results from our consumer survey (see below). Three quarters of respondents who had experienced a natural disaster told us their mobile coverage was below their usual level of service, with almost half finding it very difficult or were unable to connect at all.

19 For example, Primary Producers SA, [Public submission to the Regional Mobile Infrastructure Inquiry, 23 August 2022](#), 23 August 2022, p 3, accessed 27 June 2023; Isolated Children’s Parents’ Association of Australia, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 26 August 2022, p 2, accessed 27 June 2023; Light Regional Council, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 9 March 2023, p 1, accessed 27 June 2023; NSW Small Business Commissioner, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 27 July 2022, p1, accessed 27 June 2023; The Hon D Littleproud MP, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 31 March 2023, p 2, accessed 27 June 2023.

20 For example, Australian Local Government Association, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, pp 1–4, accessed 27 June 2023; National Farmers’ Federation, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 16 August 2022, p 7, accessed 27 June 2023; Moree Plains Shire Council, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 8 February 2023, p 1, accessed 27 June 2023.

21 Local Government Association of Queensland, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 11 October 2022, p 6, accessed 27 June 2023.

22 National Farmers’ Federation, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 16 August 2022, pp 6–7, accessed 27 June 2023.

23 ACCC, [Consumer Stakeholder Forum for the Regional Mobile Infrastructure Inquiry](#), 22 February 2023, accessed 27 June 2023; see also for example, M Devine, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 2 August 2022, p 1, accessed 27 June 2023; K Hawkins, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 10 March 2023, p 1, accessed 27 June 2023.

24 For example, Australian Communications Consumer Action Network, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 4 August 2022, p 4, accessed 27 June 2023; ACCC interviews at the 2023 Wimmera Field Days, 7–9 March 2023, accessed 27 June 2023; Primary Producers SA, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 23 August 2022, p 3, accessed 27 June 2023.

We have heard broad support for temporary roaming capability for natural disasters, due to these concerns.²⁵ However, stakeholders stressed the importance of network resilience in establishing any temporary roaming capability, and noted potential challenges, including power outages and congestion.²⁶

This topic is discussed further in chapter 9 of this report.

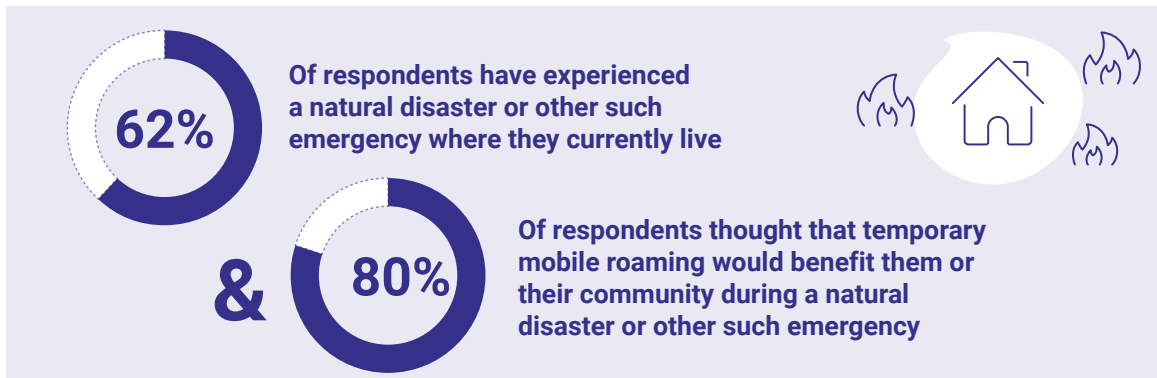
► Finding 2

Consumers need reliable and resilient mobile services. They have a heightened need for access to these services during emergency situations such as natural disasters.

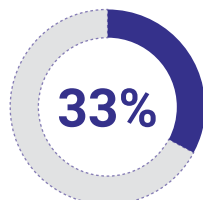
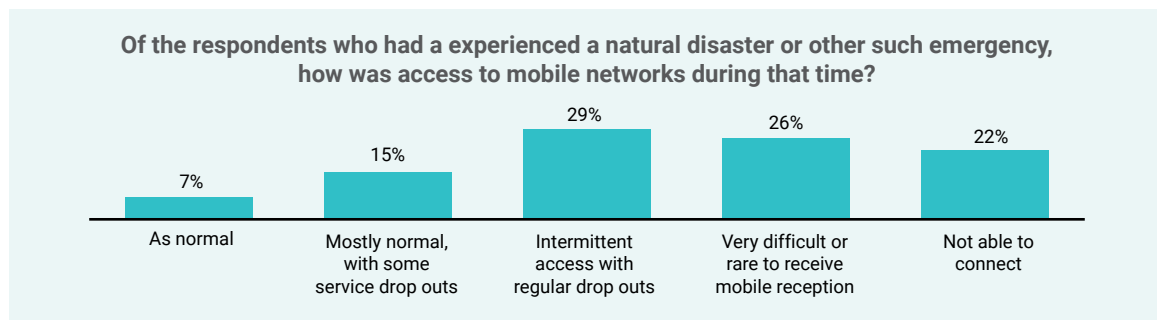
25 For example, Isolated Children's Parents' Association of Australia, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 26 August 2022, p 2, accessed 27 June 2023; Australian Communications Consumer Action Network, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 4 August 2022, p 7, accessed 27 June 2023.

26 For example, Isolated Children's Parents' Association of Australia, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 26 August 2022, p 3, accessed 27 June 2023; Kalang Progress Association, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 January 2023, p 1, accessed 27 June 2023.

Highlights from our survey – respondent experiences during natural disasters



➔ Many of the respondents who had experienced a natural disaster event had issues with mobile phone connectivity during the event. Around 76% of respondents rated their mobile phone connectivity as being below mostly normal during natural disasters.

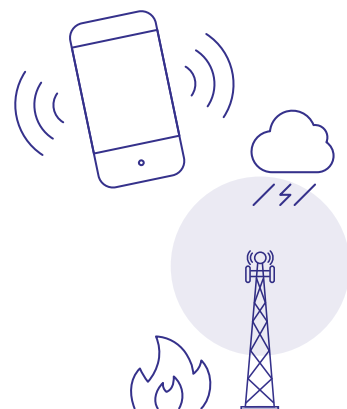


Of respondents were involved with the emergency services response to the natural disaster in their area

Note: responses to each question of the survey were optional. Percentages of responses in the charts above are shown as a proportion of total responses rather than responses to that question, meaning that totals may not add to 100%.

Consumer Comments

- *'Voice and data are crucial during a natural disaster... it should be in place until normal services are operational.'*
- *'Service is often worse during and after major rain events... It is usually at the start of a crisis where telecommunications are needed most.'*
- *'Telstra is the only operator in the greater region. Optus have service in Nhulunbuy but it is co-located on the same tower as the Telstra services. If the tower gets damaged in a natural disaster - both services will be ineffective.'*
- *'Any communication in a disaster or emergency is a must.'*



2.3 Customers want wider mobile data services coverage with more capacity

The way consumers use their mobile phones is changing, with data becoming increasingly important. Patchy coverage affects the ability of consumers to undertake online tasks related to their businesses, health, or education, as well as consumers' ability to adopt new technologies. The National Farmers' Federation has stated this issue is prevalent across and between farms.²⁷

To illustrate how mobile data is used in rural areas, Australian farmers have adopted internet-enabled digital technologies such as farm machinery and ground sensors that require a reliable mobile service to communicate back to a central database or device.²⁸ Such technologies increase productivity, improve sustainability, create efficiencies, and provide some resilience to labour shortages.²⁹ In its submission to the ACCC, Australian Grape and Wine described the 'costs to business revenue, decreased well-being and worker safety, and lost opportunities to improve sustainable resource use and reduce carbon emissions' as a result of poor coverage.³⁰ In its submission to the Inquiry's preliminary findings, Connected Farms noted the importance of on-farm connectivity and reliable internet access to help deliver increased farm gate values for the sector by 2030.³¹

► Finding 3

Reliable access to the internet is an increasing issue in the agriculture industry. Mobile connectivity can impact the efficiency and competitiveness of farms.

Consumers are concerned about the closure of the 3G network in 2024

Stakeholders raised concerns in public submissions and at our Consumer forum about the upcoming closure of 3G in 2024 and full transition to 4G and 5G.³² Stakeholders fear that some users will lose mobile coverage for their mobile voice, Internet of Things, and broadband data, or that there will be insufficient capacity in the network.

Over the past few years, several technical enhancements have been made to 4G and 5G which enable them to support better voice, Internet of Things and data coverage and capacity than 3G. However, we note that these improvements depend on the mobile network operators replacing all or the majority of the closed 3G sites with 4G or 5G using a similar frequency band as that used for 3G. Detailed roadmaps, including timelines, may provide regional and rural consumers with assurance

27 National Farmers' Federation, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 16 August 2022, p 4, accessed 27 June 2023.

28 For example, ACCC interviews at the 2023 Wimmera Field Days, 7 – 9 March 2023; Primary Producers SA, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 23 August 2022, p 2, accessed 27 June 2023; Australian Grape and Wine, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 22 March 2023, p 2, accessed 27 June 2023; I Lewis, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 4 August 2022, p 1, accessed 27 June 2023.

29 For example, Primary Producers SA, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 23 August 2022, p 1, accessed 27 June 2023; Rock Ridge Farming, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 2 August 2022, p 2, accessed 27 June 2023; Moree Plains Shire Council, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 8 February 2023, p 1, accessed 27 June 2023.

30 Australian Grape & Wine, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 22 March 2023, p 2, accessed 27 June 2023.

31 Connected Farms, [Public submission in response to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), 16 May 2023, p 1, accessed 27 June 2023. This target was also noted in Primary Producers SA, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 23 August, 2022, p 1, accessed 27 June 2023.

32 ACCC, [Consumer Stakeholder Forum for the Regional Mobile Infrastructure Inquiry](#), 22 February 2023, accessed 27 June 2023.

that they will have at least a minimum level of coverage equivalence when the 3G network is shut down.³³ Our analysis on provided maps indicates there are a number of areas in regional, rural and remote areas currently with 3G coverage where there is no 4G coverage.

We do note that a small number of consumers with 3G-only mobile phones will need to replace their phones with handsets that are 4G capable. The replacement of 3G Internet of Things devices such as farm-based Internet of Things devices and EFTPOS terminals is a larger issue.³⁴ These devices generally have a longer lifespan than a mobile phone, with the expense amortised over a number of years.³⁵

Comments from submissions

- The removal of 3G will affect the use of 3G equipment and sensors used by the agricultural and horticultural sectors. Stakeholders want a guaranteed replacement service before the 3G network is switched off. (Murraylands and Riverlands Local Government Association).³⁶

► Finding 4

There are areas where there is 3G network coverage but currently no 4G or 5G coverage. Consumers are concerned that 4G and 5G coverage will not be equivalent to 3G coverage before the 3G shutdown in 2024.

33 For example, Small Business and Family Ombudsmen, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 August 2022, p 1, accessed 27 June 2023.

34 For example, B Hore, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 29 July, p 3, accessed 27 June 2023.

35 Ingenu, [Without Device Longevity, the Internet of Things Will Never Be](#), 20 January 2016, accessed 23 June 2023.

36 Murraylands and Riverlands Local Government Association, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 3 April 2023, p 2, accessed 27 June 2023.

2.4 Remote First Nations communities face poorer mobile service

Access to mobile network infrastructure has improved for most consumers in regional, rural and remote Australia.³⁷ However, First Nations peoples living in small, dispersed, and very remote communities, homelands, or outstations still face significant limitations in accessing reliable mobile telecommunications services.³⁸ Two key factors contribute to this challenge:

- Gaps in mobile network coverage in areas of sparse population.³⁹
- Many First Nations people living in remote communities prefer using mobile devices to access the internet, rather than fixed broadband services that generally have more capacity for household internet consumption.⁴⁰ Mobile phones provide portability and the ability to top up with pre-paid access.

Central Australian Youth Link Up Service's submission noted that 'remote Aboriginal communities have been the last to benefit from improvements in communications technologies' and that 'the market model for communications infrastructure and communications is not fit for purpose in remote regions.'⁴¹ These issues were also noted during the 2021 Regional Telecommunications Review.⁴²

There are gaps in mobile network coverage in remote First Nations communities

Remote First Nations communities are less likely to have access to mobile infrastructure, resulting in network coverage gaps. The network coverage gaps in these communities arise from limited market-based efficiencies in building mobile infrastructure in very remote areas.⁴³ This is due to the high costs associated with building mobile infrastructure, and the low revenue opportunities that sparsely populated areas offer to commercial operators.⁴⁴

Co-investment programs have had limited success in expanding mobile coverage to very remote communities, because the government share in these programs is not sufficient to incentivise mobile network operators to invest in costly mobile infrastructure in areas with little commercial value.⁴⁵ Remote First Nations communities with larger populations, those with tourist economies or

37 Australian Communications Consumer Action Network, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 4 August 2022, pp.1–2, accessed 27 June 2023.

38 Dr D Featherstone, [Remote Indigenous Communications Review: Telecommunications Programs and Current Needs for Remote Indigenous Communities](#), October 2020, accessed 23 June 2023.

39 For example, Central Land Council, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 15 March 2023, p 2, accessed 27 June 2023.

40 For example, First Nations Media Australia, [Indigenous Community Perspectives and Experiences of Digital Inclusion](#), February 2021, accessed 23 June 2023; ACCC, [Consumer Stakeholder Forum for the Regional Mobile Infrastructure Inquiry](#), 22 February 2023, accessed 27 June 2023.

41 Central Australian Youth Link Up Service, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 23 January 2023, pp 1, 3, accessed 27 June 2023.

42 For example, Australian Communications Consumer Action Network, [Submission to the Regional Telecommunications Review 2021](#), 30 September 2021, accessed 23 June 2023.

43 For example, Central Australian Youth Link-Up Service, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 23 January 2023, accessed 27 June 2023.

44 For example, Local Government Association of Queensland, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 11 October 2022, pp 6–7, accessed 27 June 2023; Australian Communications Consumer Action Network, [Submission to the National Indigenous Australians Agency Indigenous Digital Inclusion Plan](#), 5 November 2021, accessed 23 June 2023.

45 Co-investment programs are government funded programs, where the government will contribute to the capital costs to build infrastructure in areas where it would normally not be commercially viable for a mobile network operator or mobile network infrastructure provider to build a tower. Examples of co-investment programs include the Mobile Black Spots Program and Regional Connectivity Program.

communities located near major regional cities or major roads appear more likely to have access to mobile services than remoter communities, where there is often no coverage.

Misalignment between use and purpose of infrastructure used for internet consumption

Stakeholders at our consumer stakeholder forum commented that remote-based First Nations peoples may prefer to use relatively inexpensive mobile services to access voice, SMS, and internet services. We heard this is because mobile services are perceived to be more flexible and affordable than other communications services because consumers can purchase pre-paid plans which can then be topped up.⁴⁶

Smartphone devices offer highly portable access to voice and data services, which is especially important for remote-based First Nations peoples, who can be highly mobile and often travel for cultural reasons between communities and homelands. We also heard at our stakeholder forum that mobile phones are preferred and that they can be shared within the household.⁴⁷

However, the existing mobile infrastructure does not have sufficient backhaul capability to carry the increasing levels of household internet consumption, resulting in severe congestion or unavailability of the mobile network for consumers.⁴⁸ Stakeholders told us of the importance of reliable mobile phone coverage to purchase goods and access government services.⁴⁹

We also heard at our consumer forum that pre-paid plans are considered more affordable in the short-term if a consumer has a low or unreliable income. Consumers perceive it is a more effective budgetary control to 'top up' a pre-paid plan than purchase an ongoing post-paid service which falls due at specific times, is often paid via direct debit and non-payment can lead to disconnection and a poor credit rating. Stakeholders at our consumer forum also commented that pre-paid plans are currently not available for NBN fixed wireless services as an alternative service in the home. Mobile devices provide more flexibility as they provide access in the home and while travelling for cultural or business reasons.

We also heard from stakeholders about the unreliability of landline phones and the lack of maintenance of telecommunications infrastructure in remote communities.⁵⁰ The Central Australian Youth Link-Up Service noted that pre-paid plans are the most manageable way for First Nations peoples to access communications but also the most expensive.⁵¹

► Finding 5

First Nations peoples living in remote communities often have unreliable communications services.

46 Central Australian Youth Link-Up Service, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 23 January 2023, pp 3–4, accessed 27 June 2023; ACCC, [Consumer Stakeholder Forum for the Regional Mobile Infrastructure Inquiry](#), 22 February 2023, accessed 27 June 2023.

47 ACCC, [Consumer Stakeholder Forum for the Regional Mobile Infrastructure Inquiry](#), 22 February 2023, accessed 27 June 2023.

48 First Nations Media Australia, [Indigenous Community Perspectives and Experiences of Digital Inclusion](#), February 2021, accessed 23 June 2023, accessed 27 June 2023.

49 ACCC, [Consumer Stakeholder Forum for the Regional Mobile Infrastructure Inquiry](#), 22 February 2023, accessed 27 June 2023.

50 ACCC, [Consumer Stakeholder Forum for the Regional Mobile Infrastructure Inquiry](#), 22 February 2023, accessed 27 June 2023.

51 Central Australian Youth Link-Up Service, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 23 January 2023, p 4, accessed 27 June 2023.

Mobile services in Nauiyu

In November 2022, ACCC officers visited the remote Malak Malak community of Nauiyu to hear from consumers living in remote areas about their mobile phone services. Nauiyu is located in the Katherine Region of the Northern Territory, approximately 224km southwest of Darwin, and has a population of approximately 350 people.⁵² The community features a strong tourist economy based on its proximity to the Daly River, in addition to fine art and farming businesses.⁵³

During the visit to Nauiyu, local residents told us that the mobile network services in the area were limited despite demand for both voice and data services from both the local population and frequent visitors supporting the tourist economy. We heard that the 4G network coverage was reasonable near the mobile tower, which was located behind the local council office. However, the mobile network coverage deteriorated and eventually dropped out as residents travelled further away from the tower to attend school and conduct business. Community stakeholders also reported poor penetration of mobile network coverage into dwellings near the tower.

Figure 1: Map of Nauiyu



Image 1: Mobile tower in Nauiyu



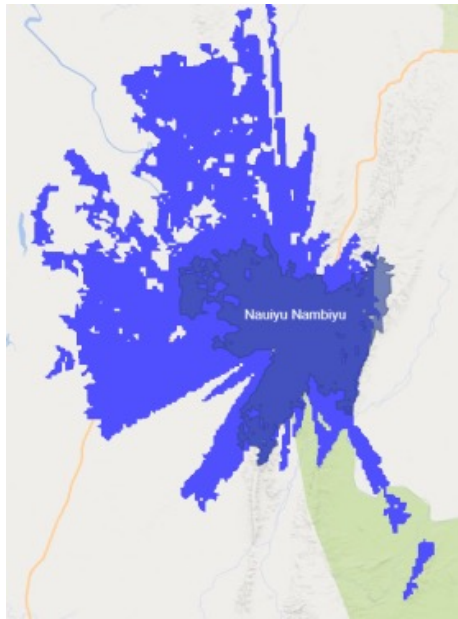
Above: Mobile tower in Nauiyu.⁵⁴
Source: Photo taken by ACCC staff.

52 Australian Bureau of Statistics, [Nauiyu: 2021 Census All persons QuickStats](#), accessed 23 June 2023.

53 Tourism NT, [Burrundi Fishing Charters](#), accessed 23 June 2023.

54 Australian Mobile Telecommunications Association, [Radio Frequency National Site Archive ID 0822007](#), accessed 23 June 2023. This tower is a 31m steel guyed mast.

Figure 2: Mobile coverage in Nauiyu



Source: Data collected by the ACCC's Infrastructure Record Keeping Rules and published on data.gov.au. Imagery provided by Bing and Precisely. Mobile coverage is as at 31 January 2022. See ACCC, [Mobile infrastructure Report](#) – data release, 12 September 2022.

Note: Nauiyu's mobile tower transmits 3G (lighter blue shading) with some 4G mobile services available closer to the tower.

Consistent with the feedback from organisations at our consumer stakeholder forum, most dwellings in Nauiyu do not have a landline or fixed wireless internet. Residents reported that they need to go outdoors to access mobile services due to poor in-building signal penetration, even in dwellings near the mobile tower.

Nauiyu residents shared the impact of unreliable telecommunications services in their community, including:

- **Diminished educational outcomes:** we heard from teachers about the challenges in accessing online learning content and educational resources. They told ACCC staff that poor digital connectivity can be isolating and leads to understaffing and younger members leaving the community.
- **Diminished healthcare outcomes:** clinic staff flying into nearby Woodycupildiya reported no mobile coverage, making it difficult for residents to access emergency services.
- **Public safety:** community members stressed the importance of mobile network connectivity for community safety in remote areas, especially on isolated roads with minimal traffic and in the field where there is a risk of venomous snake bites. Nauiyu also experiences regular flooding which can impact telecommunications infrastructure in the area, including the EFTPOS terminal connection failures.
- **Technician unavailability:** due to the lack of community-based technicians, infrastructure is not serviced within a timely manner, which becomes more pronounced during flooding events.
- **Purchasing repeaters to extend coverage:** mobile phone repeaters are considered unaffordable by households.
- **Unreliable satellite services:** some community members reported using satellite internet services but those who did described the service as slow and unavailable during the wet season.

3. Industry context and regulatory framework

Telecommunications is an industry characterised by significant economies of scale and high barriers to entry and expansion.

Mobile networks require significant up-front capital investments in physical infrastructure, active equipment and spectrum licences to establish a network, and ongoing investment to continue to expand and densify that network. Mobile network operators are also required to upgrade their networks periodically to include newer generations of mobile technology, such as 5G.

Providing mobile services has high fixed costs, but relatively low variable costs. This cost structure results in declining unit costs as more services are provided – up to a point.

In the short run, mobile networks have some level of available capacity to carry traffic. Large upgrades to the network, such as additional sites, more spectrum or newer technology, can increase the capacity of the network in the area in which they are deployed by a step-change amount, allowing the operator to carry more traffic and serve more customers.

Mobile network operators also invest to grow the coverage footprint of their network, in order to serve customers who live or work or travel to these areas. Australia's overall population density is low but distributed in such a way that makes it one of the most urbanised nations in the world. Outside cities and regional centres, it becomes less economic to provide incremental areas of coverage.

Ultimately, the degree of investment incurred by a mobile network operator will be determined by whether the business case for investing in additional coverage or increased capacity outweighs the costs.

Passive infrastructure, such as towers, represents a significant cost in investing in additional coverage or increased capacity. Until relatively recently, towers were largely owned and operated by mobile network operators in Australia.

Internationally, mobile operators have been selling off their tower assets to specialist companies or to large infrastructure investors for a number of years.

Recent divestment or transfer of their tower assets by Australian mobile network operators has changed the structure of the industry here. This chapter provides information on the tower industry, including ownership and corporate structure. It also provides background on the legislative and regulatory regime that applies to the provision of telecommunications infrastructure.

3.1 Industry context

The Australian telecommunications industry has undergone restructuring of its tower assets and subsidiaries. Historically, mobile network operators built and operated telecommunications tower infrastructure. Over the last 20 years, mobile network operators have established various joint ventures and asset sharing arrangements in relation to mobile tower infrastructure to expand their networks and increase coverage. The Australian telecommunications industry has also been characterised by several large tower asset sell-offs and restructures, which have generated additional liquidity for the sector and resulted in new corporate entities, such as Indara, being formed.

During 2021 and 2022, the mobile network operators sold most of their tower infrastructure to new tower entities, referred to as 'mobile network infrastructure providers'. A summary of these transactions is provided below:

- In 2021, Telstra transferred over 8,000 of its physical towers, mast, large pole and antenna mount structures to Amplitel. Telstra retains 51% ownership of Amplitel.⁵⁵ Telstra sold a 49% non-controlling interest in Amplitel to a consortium of investors comprising of the Future Fund, Commonwealth Superannuation Corporation and Sunsuper, and managed by Morrison & Co.⁵⁶
- Singapore Telecommunications Limited (Singtel), parent company of Optus, formed the business Australia Tower Network (ATN) to hold its telecommunications infrastructure.⁵⁷ Singtel then sold 70% of ATN to AustralianSuper in late 2021, with Singtel retaining access to the sites through long-term leasing arrangements.⁵⁸ In May 2022, AustralianSuper and Singtel purchased Axicom, which increased the AustralianSuper investment in ATN to 82% and reduced Singtel's investment to 18%.⁵⁹ The combined portfolio is more than 4,300 tower and rooftop sites and is now known as Indara Digital Infrastructure (Indara).⁶⁰
- Axicom, formerly Crown Castle Australia, originally became a tower asset owner in 2000 when it acquired 712 mobile tower sites from Optus Group.⁶¹ The following year, Crown Castle acquired 669 of Vodafone Hutchison Australia's towers. In 2007 and 2008, Crown Castle acquired a further 190 mobile tower sites from Vodafone Hutchison Australia.⁶²
- In May 2022, TPG Telecom sold its mobile towers to Canadian public pension fund OMERS related entity, Waveconn.⁶³

Figure 3 below is a visual summary of tower divestments and transfers in Australia since 2001.

55 Riley, B 2021, [Introducing Amplitel, the largest mobile infrastructure provider in Australia](#), Media Release, 1 September 2021, accessed 23 June 2023.

56 Telstra, [Telstra finalises \\$2.8 billion InfraCo Towers sale](#), Media Release, 1 September 2021, accessed 23 June 2023.

57 Singtel Telecommunications Limited, [Announcement pursuant to rule 706A of the SGX Listing Manual](#), Media Release, 31 August 2020, accessed 23 June 2023.

58 Sovereign Wealth Fund Institute, [Singapore Telecom to Sell 70% Stake in Australian Tower Network to AustralianSuper](#), 10 January 2021, accessed 23 June 2023.

59 ATN, [AustralianSuper, Singtel and Australia Tower Network to acquire Axicom](#), Media Release, 1 April 2022, accessed 23 June 2023.

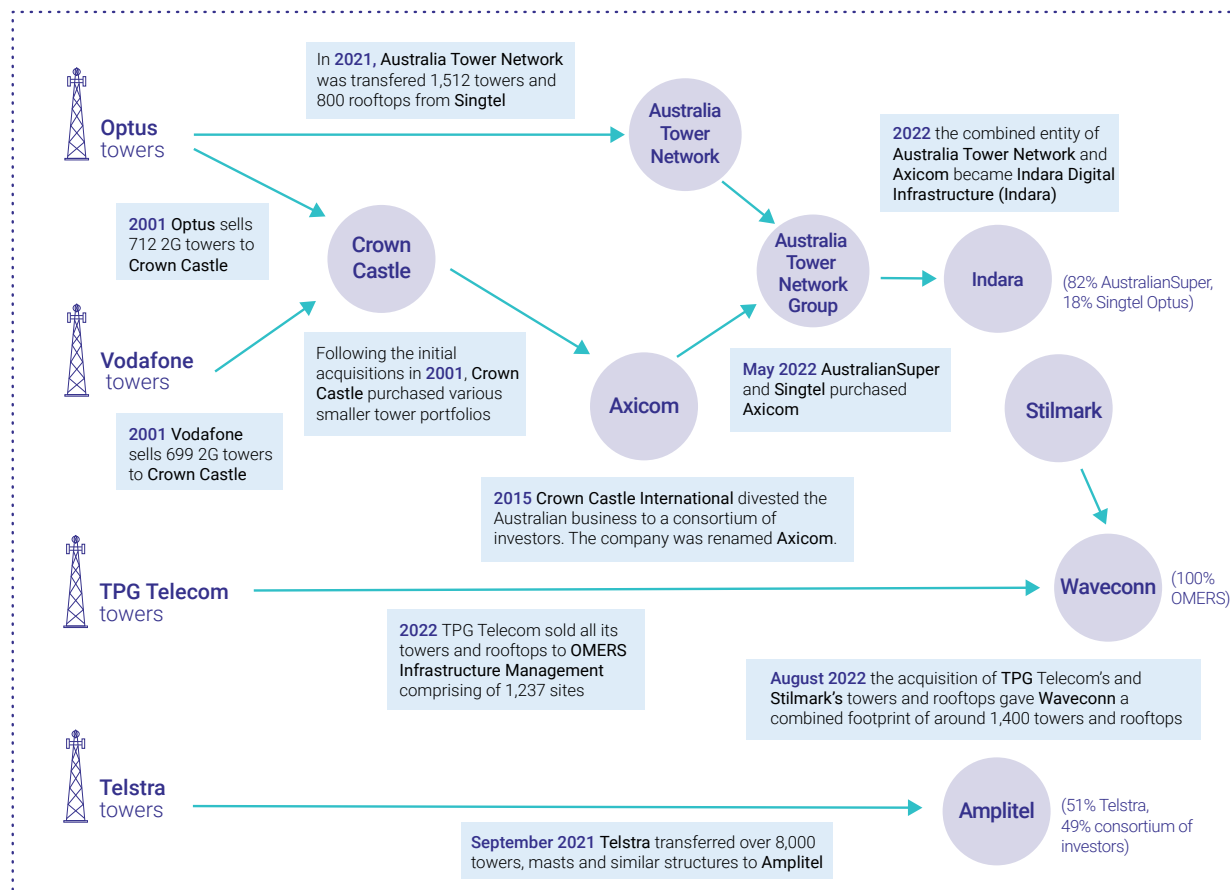
60 Indara, [Australia Tower Network and Axicom Rebrands as Indara](#), Media Release, 11 October 2022, accessed 23 June 2023.

61 Indara, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 4, accessed 27 June 2023.

62 Indara, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 4, accessed 27 June 2023.

63 OMERS Infrastructure, [OMERS Infrastructure Announces Agreement to Acquire its First Asia-Pacific Digital Infrastructure Asset](#), OMERS website, 9 May 2022, accessed 6 October 2022, accessed 27 June 2023.

Figure 3: Summary of key tower transfers and divestments in Australia since 2001



3.2 Changed industry landscape due to tower divestments

The divestments that have occurred in Australia are part of an international trend of mobile network operators selling their passive mobile telecommunications infrastructure to specialist mobile network infrastructure providers.

Amplitel holds the largest number of towers in Australia

Amplitel and Indara are the 2 largest mobile network infrastructure providers in Australia, but Amplitel operates the most sites by a significant margin. Amplitel operates over 8,000 sites,⁶⁴ Indara owns over 4,300 sites⁶⁵ and Waveconn operates around 1,400 sites.⁶⁶ Cumulatively they own or operate around 13,700 sites, which is a substantial majority of the approximately 16,600 active mobile infrastructure sites being used by Optus, Telstra and TPG Telecom as of 31 January 2022.⁶⁷

64 Amplitel, [Public Submission to Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 8, accessed 27 June 2023.

65 Indara, [Empowering our Digital Future](#), accessed 11 April 2023, accessed 27 June 2023.

66 Waveconn, [Public submission to Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 1, accessed 27 June 2023.

67 ACCC, [Mobile Infrastructure Report 2022](#), September 2022, Table 4.6 on p 16, accessed 27 June 2023.

In contrast, BAI Communications owns around 400 towers, not all of which are used for mobile equipment.⁶⁸ NBN Co submitted that it has access to approximately 2,400 sites across Australia for its fixed wireless access network, around 30% of which are owned by other mobile network infrastructure providers and subject to co-location arrangements.⁶⁹ These sites are primarily built for fixed wireless purposes, with co-location for mobile equipment being a secondary purpose.⁷⁰ Being placed to maximise their fixed wireless coverage, NBN Co sites may not be in locations of interest to mobile network operators.⁷¹

The distribution of tower and rooftop structures owned and operated by entities is shown Table 1 below. Table 1 demonstrates Amplitel's clear dominance in outer regional, remote and very remote Australia. In total, Amplitel operates 43% of all tower and rooftop structures, Indara owns or operates 23% and Waveconn owns or operates 7%.⁷² These proportions suggest a relatively concentrated market overall. As remoteness increases, Amplitel's market share increases to 45% (outer regional), 67% (remote) and 72% (very remote), which shows Amplitel's increasing dominance in these geographic areas.⁷³ The presence of other operators such as Waveconn, BAI Communications and NBN Co are a source of competition, however their impact decreases with remoteness.

Notably in Table 1, Telstra retains some tower and rooftop structures rather than passing these onto Amplitel. Telstra explained that it has retained ownership of several mainly smaller and typically non-shareable structures, which it continues to use to supply mobile services and/or universal service obligation services over its customer access radio network.⁷⁴

Table 1: Number of towers and rooftop structures owned or operated by each entity as at December 2022⁷⁵

Geographic Area	Amplitel	BAI Communications	Indara	NBN Co	Optus	Telstra	TPG	Waveconn	Total
Very Remote Australia	1,688	115	31	5	3	474	-	0	2,316
Remote Australia	1,033	79	159	51	11	191	-	11	1,535
Outer Regional Australia	1,915	211	839	579	76	598	-	78	4,296
Inner Regional Australia	1,668	120	1,141	880	58	529	-	136	4,532
Major Cities of Australia	1,788	79	2,064	117	36	670	-	1,108	5,862
Total	8,092	604	4,234	1,632	184	2,462	0	1,333	18,541

Notes: At the time these counts were provided, there were a number of Telstra's towers which had been purchased by Amplitel but had not yet transferred. There is likely some double counting between Amplitel and Telstra's site counts. Telstra's site count also includes rooftop sites on the top of Telstra exchange building and structures used to install small cells. Small cells are generally not capable of being upgraded to support multiple carriers.
Not all towers or rooftops will have mobile network operator active equipment mounted on them.

68 BAI Communications, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 16 August 2022, p 5, accessed 27 June 2023.

69 NBN Co, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 8 August 2022, p 3, accessed 27 June 2023.

70 NBN Co, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 8 August 2022, p 3, accessed 27 June 2023.

71 NBN Co, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 8 August 2022, p 5, accessed 27 June 2023.

72 ACCC calculations based on information provided by stakeholders.

73 ACCC calculations based on information provided by stakeholders.

74 Information provided by stakeholder.

75 Information provided by stakeholders.

In outer regional, remote and very remote Australia, Amplitel, Indara, Waveconn, BAI Communications and NBN Co own or operate a substantial number of towers and rooftops, a cumulative total of 6,794 towers and rooftops.⁷⁶ Amplitel operates over 65% of these structures.⁷⁷ In very remote Australia, Amplitel operates over 90% of the cumulative total of towers and rooftops owned or operated by Amplitel, Indara, Waveconn, BAI Communications and NBN Co.⁷⁸ Thus, most towers and rooftops in regional and remote areas are still operated by one company.

Table 2 below provides a count of the number of structures used by mobile network operators to provide mobile services, as a comparison to the number of structures owned by mobile network infrastructure provider.

Table 2: Number of tower and rooftop structures used by the mobile network operators to provide mobile telecommunications services as at December 2022⁷⁹

Region of Australia	Telstra	Optus	TPG Telecom
Very Remote Australia	927	162	8
Remote Australia	710	246	62
Outer Regional Australia	1,945	1,175	469
Inner Regional Australia	2,261	1,769	859
Major Cities of Australia	5,497	4,794	4,412
Total	11,340	8,146	5,810

Notes: Telstra operates 2,491 more sites in inner regional, outer regional, remote and very remote Australia than its nearest competitor. Figures for Telstra represent the number of unique Telstra mobile sites and include repeater sites. Many of the structures on which Telstra's mobile site equipment is located are now operated by Amplitel, or are owned or operated by third parties.⁸⁰

TPG Telecom lodges information to the ACCC concerning mobile sites in accordance with the Audit of Telecommunications Infrastructure Assets – Record Keeping Rules (RKR). There may be variations between TPG Telecom's RKR lodgement with the information provided as part of this Inquiry by TPG Telecom. This difference is due to: (a) 'repeater sites' being included in the information provided as part of the Inquiry, but not for the purposes of the RKR, (b) changes in the count of active and temporary sites between providing information as part of this Inquiry and its RKR submission.

Unsurprisingly, the structure of the mobile network infrastructure provider market follows a similar trend to that of the mobile network operator market, in that Telstra/Amplitel have a significantly larger number of structures than the next nearest competitor Optus/Indara.

Table 3 below highlights how the rate of co-location on active sites used by mobile network operators in 2022 decreases significantly by remoteness.

⁷⁶ ACCC calculations based on information provided by stakeholders.

⁷⁷ ACCC calculations based on information provided by stakeholders.

⁷⁸ ACCC calculations based on information provided by stakeholders.

⁷⁹ Information provided by stakeholders.

⁸⁰ Information provided by stakeholder.

Table 3: Total number of active sites used by mobile network operators by co-location and by remoteness area, as at January 2022

Region	Type of site	2020	2021	2022	Rate of colocation in 2022
Major Cities of Australia	Co-located sites	4,270	4,335	4,379	51%
	Single mobile network operator sites	3,806	4,106	4,169	
Inner Regional Australia	Co-located sites	1,062	1,086	1,110	33%
	Single mobile network operator sites	2,070	2,160	2,240	
Outer Regional Australia	Co-located sites	635	645	654	24%
	Single mobile network operator sites	1,983	2,047	2,100	
Remote Australia	Co-located sites	98	101	105	12%
	Single mobile network operator sites	745	766	788	
Very Remote Australia	Co-located sites	40	40	45	4%
	Single mobile network operator sites	876	933	972	

Source: [Mobile Infrastructure Report 2022](#), output tables, 9 September 2022.

3.3 Regulatory arrangements

The ACCC is required to have regard to the effectiveness of current regulatory arrangements in enabling third party telecommunications providers and other likely users to access towers and associated infrastructure.

The Telecommunications Act, the *Telecommunications (Consumer Protection and Service Standards) Act 1999* (Cth), and Part XIB and Part XIC of the *Competition and Consumer Act 2010* (Cth) (CCA) are central aspects of the regulatory framework for the telecommunications industry.

The main object of the Telecommunications Act, when read together with Parts XIB and XIC of the CCA, is to provide a regulatory framework that promotes:

- the long-term interests of end-users of carriage services or of services provided by means of carriage service
- the efficiency and international competitiveness of the Australian telecommunications industry
- the availability of accessible and affordable carriage services that enhance the welfare of Australians.⁸¹

The Telecommunications Act identifies ‘carriers’ and ‘carriage service providers’ as the main participants regulated in the telecommunications industry.

We outline the key aspects of the regulation that applies in the context of access to towers and associated infrastructure below.

⁸¹ Telecommunications Act s 3.

Regulation applies to carriers and companies that are part of a group that has a carrier company

The legislative definitions behind the concept of a 'carrier' in the Telecommunications Act are complex, but essentially a 'carrier' means the holder of a 'carrier licence'.⁸² A carrier licence is required before physical telecommunications infrastructure owned by a person can be used to supply a 'carriage service' to the public.⁸³ A mobile network operator owns the type of infrastructure that is used to supply a retail mobile service to the public, including base stations, and therefore requires a carrier licence to operate.

A person who supplies to the public a service for carrying communications by means of guided and unguided electromagnetic energy using infrastructure owned by a carrier is a 'carriage service provider'.⁸⁴ A carrier can be both a carrier and carriage service provider. A carriage service provider includes mobile network virtual operators, which do not themselves own mobile network infrastructure but instead use wholesale services provided by mobile network operators to provide a retail mobile service to the public.

Currently, the Telecommunications Act and the CCA do not include any specific regulation of mobile network infrastructure providers that do not hold a carrier licence, or are not part of a company group that includes at least one company with a carrier licence. The operations of mobile network infrastructure providers are subject to general law, such as competition law under the CCA.

Regulation that is relevant to building telecommunications infrastructure and accessing such infrastructure is outlined below.

Carriers' powers and immunities

The Telecommunications Act provides certain powers and immunities for licensed carriers to access and use land which is owned by third parties.⁸⁵ Under the Telecommunications Act, activities carried out by carriers are not generally exempt from State and Territory laws.⁸⁶ However, authorised activities may be engaged in despite the law of a State or Territory.⁸⁷ There are 3 general types of authorised activities:

1. entering on and inspecting land for the purpose of determining whether the land is suitable for certain purposes⁸⁸
2. for purposes connected with the supply of a carriage service, installing a:
 - a. 'low impact facility'⁸⁹
 - b. facility for which a carrier has an installation permit⁹⁰
 - c. temporary facility for use by, or on behalf of, a defence organisation for defence purposes⁹¹
3. maintaining a facility which has already been installed.⁹²

82 Telecommunications Act s 7. A carrier licence is granted under s 56 of the Telecommunications Act.

83 Telecommunications Act ss 7, 42.

84 Telecommunications Act ss 7, 16, 87.

85 Telecommunications Act s 484, Sch 3.

86 Telecommunications Act, Sch 3 cl 36.

87 Telecommunications Act, Sch 3 cl 37.

88 Telecommunications Act, Sch 3 cl 5.

89 Telecommunications Act, Sch 3 cl 6(1)(b).

90 Telecommunications Act, Sch 3 cl 6(1)(a).

91 Telecommunications Act, Sch 3 cl 6(1)(c).

92 Telecommunications Act, Sch 3 cl 7.

The Minister may, by written instrument, determine that a specified facility is a low-impact facility.⁹³ However, the Minister must not determine the following facilities to be low-impact facilities:

- designated overhead lines⁹⁴
- submarine cables⁹⁵
- freestanding towers⁹⁶
- towers attached to buildings which, excluding any antenna, are more than 5 metres high⁹⁷
- extensions to towers, unless the extension does not exceed 5 metres and there have been no previous extensions to the tower.⁹⁸

Carriers can install 'low-impact facilities' on land despite certain state or territory laws, such as those in relation to town planning, the use of land or the assessment of environment effects.⁹⁹ In doing so, carriers must comply with the *Telecommunications Code of Practice 2021*.¹⁰⁰

Facilities that are low-impact are generally phone and internet network structures that are less conspicuous.¹⁰¹ Low-impact facilities can include small antennas or dishes, equipment in buildings, and equipment on structures that already exist such as buildings, poles or towers (with some height restrictions).¹⁰² This will predominantly apply to rooftops and since rooftops are more prevalent in major cities, the carrier's powers and immunities are less relevant in regional, rural and remote areas. Generally, any tower structure does not fall within the concept of a low-impact facility.

These provisions in relation to carrier powers and immunities apply only to carriers and not to companies that are part of a group that include a carrier company. Some mobile network infrastructure providers own or operate rooftops and install such rooftops. However, if the mobile network infrastructure provider entity does not itself have a carrier licence, it is not able to directly rely on these powers and immunities.

A carrier's powers under the Telecommunications Act may be exercised by an employee of the carrier, a person acting for the carrier under a contract, or an employee of a person acting for the carrier under a contract.¹⁰³

93 Telecommunications Act, Sch 3 cl 6(3).

94 Telecommunications Act, Sch 3 cl 6(4).

95 Telecommunications Act, Sch 3 cl 4A.

96 Telecommunications Act, Sch 3 cl 6(5).

97 Telecommunications Act, Sch 3 cl 6(5), 6(6).

98 Telecommunications Act, Sch 3 cl 6(7).

99 Telecommunications Act s 484, Sch 3 cl 37.

100 [Telecommunications Code of Practice 2021](#), made pursuant to subclause 15(1) of Schedule 3 to the Telecommunications Act, accessed 27 June 2023.

101 Australian Communications and Media Authority (ACMA), [Local councils and network facilities](#), accessed 23 June 2023.

102 Australian Communications and Media Authority (ACMA), [Local councils and network facilities](#), accessed 23 June 2023.

103 Telecommunications Act, Sch 3 cl 43.

The Facilities Access Regimes

Carrier-to-carrier regime

Part 3 of Schedule 1 to the Telecommunications Act requires carriers to provide other carriers with access to facilities it owns or operates. A 'facility' means any part of the infrastructure of a telecommunications network; or any line, equipment, apparatus, tower, mast, antenna, tunnel, duct, hole, pit, pole or other structure or thing used, or for use, in or in connection with a telecommunications network.¹⁰⁴

Part 5 of Schedule 1 to the Telecommunications Act requires carriers to provide other carriers with access to telecommunications transmission towers, the sites of telecommunications transmission towers and eligible underground facilities. A telecommunications transmission tower and eligible underground facility each fall within the definition of 'facility' in s 7 of the Telecommunications Act.

The ACCC developed *A Code of Access to Telecommunications Transmission Towers, Sites of Towers and Underground Facilities* (the Facilities Access Code) under Part 5 in 1999.¹⁰⁵ Compliance with the Facilities Access Code is a standard carrier licence condition.¹⁰⁶ The Facilities Access Code only applies to carriers, meaning that it does not apply to Amplitel, Indara and Waveconn.

The Facilities Access Code includes provisions about confidentiality, queuing policies, dispute resolution and non-discriminatory access. Under the Facilities Access Code, carriers are required to develop a 'queuing policy'.¹⁰⁷ This policy must include the infrastructure owner's applications and orders, meaning for example where a mobile network operator is the owner of infrastructure, it can reserve itself space on a tower. Other access seekers can also reserve their own space on towers. The existence of the Facilities Access Code is designed to alleviate barriers to co-location, such as the introduction of a 'use it or lose it' system for capacity reservations on towers.¹⁰⁸

Clause 18 of Part 3 and Clause 36 of Part 5 of Schedule 1 of the Telecommunications Act require that the terms and conditions of access to facilities are to be agreed by carriers or, failing agreement, are to be determined by an agreed arbitrator or the ACCC if the parties fail to agree on the appointment of an arbitrator. We note that there can be difficulties resolving disputes through this mechanism, particularly where a party is against the proposed resolution.

104 Telecommunications Act s 7 (definition of 'telecommunications network').

105 [A Code of Access to Telecommunications Transmission Towers, Sites of Towers and Underground Facilities](#), 1 January 2023, accessed 27 June 2023.

106 Section 61 of the Telecommunications Act provides that a carrier licence is subject to the conditions specified in Schedule 1, and subclause 37(2) of Schedule 1 to the Telecommunications Act provides a carrier must comply with the Code.

107 Facilities Access Code, subclause 2.3 (1).

108 See Facilities Access Code, subclause 2.3 (3).

Eligible company-to-carrier regime

Part 34B is a new addition to the Telecommunications Act that commenced on 14 December 2021.¹⁰⁹ The new Part 34B largely mirrors the carrier-to-carrier Facilities Access Regime contained in Parts 3 and 5 of Schedule 1 to the Telecommunications Act.¹¹⁰ Part 34B applies to telecommunications transmission towers and supplementary facilities owned by a body corporate that does not have a carrier licence but is part of a 'carrier company group'. Part 34B requires an 'eligible company' to give a carrier access to facilities owned or operated by the eligible company.

An eligible company means a body corporate that is in a 'carrier company group' and is not a carrier.¹¹¹ A 'carrier company group' means 2 or more related companies, of which at least one is a carrier. The question of whether companies are related is to be determined in accordance with section 50 of the *Corporations Act 2001*, which provides that a holding company of another body corporate, a subsidiary of another body corporate, or 2 subsidiaries of the same holding company will be related bodies corporate.¹¹² However for the purposes of Part 34B of the Telecommunications Act a company will be a subsidiary of a second company if the second company can cast, or control the casting of, more than 15% of the votes that might be cast at a general meeting, or where the second company holds more than 15% of the issued share capital (referred to as the 'control threshold').¹¹³ This modifies s 46 of the *Corporations Act 2001*, which provides for a 50% control threshold.

A similar negotiate-arbitrate provision is also provided for in Part 34B, where the ACCC is the arbitrator of last resort.¹¹⁴ Part 34B also provides that the ACCC can make a code relating to Part 34B which would apply to 'eligible companies'.¹¹⁵

109 Part 34B commenced on 14 December 2021, see [Telstra Corporation and Other Legislation Amendment Act 2021](#) s 2, accessed 27 June 2023. However, the ACCC's review of the corporate control percentage (under s 581ZH(1) of the Telecommunications Act) meant that this Part 34B was not operational until 6 months later.

110 [Explanatory Memorandum](#) to the Telstra Corporation and Other Legislation Amendment Bill 2021, p 58, accessed 27 June 2023.

111 Telecommunications Act s 581X.

112 Telecommunications Act, subsection 581W(2).

113 Telecommunications Act subsection 581W(4).

114 Telecommunications Act s 581Z.

115 Telecommunications Act s 581ZF.

4. Costs of providing towers and associated infrastructure

The Direction requires the ACCC to have regard to the costs of providing towers and associated passive and active infrastructure that can be used by third party telecommunications providers and others to supply mobile telecommunications and other radiocommunications services.

This chapter does so by examining the options available for providing mobile coverage, the costs involved and the factors that mobile network operators consider when deciding which option to use.

To provide greater mobile coverage in regional, rural and remote Australia, mobile network operators will primarily rely on increasing the number of sites that form part of their mobile networks. There are currently 2 options usually utilised by mobile network operators to add sites to their network:

1. The mobile network operator can locate on a newly built tower (a greenfields site). This could be built by the mobile network operator itself or may be built by a mobile network infrastructure provider.
2. The mobile network operator can co-locate on an existing tower (a brownfields site). This could be a tower owned by another mobile network operator, a mobile network infrastructure provider or another third party (such as electricity infrastructure).¹¹⁶ This is known as passive infrastructure sharing.

There is also a third option of active infrastructure sharing, such as neutral host models, however this is not currently commonplace in Australia.

Aside from adding new sites to its mobile network, a mobile network operator can also upgrade the active equipment on its existing sites or deploy more spectrum to expand the coverage or capacity provided by the site.

4.1 Towers are a fundamental part of mobile networks

Towers provide the building blocks of mobile coverage. They provide the height required for mobile antennas to optimise signal strength and propagation.¹¹⁷ Towers also provide the structural support required to support multiple mobile antennas and equipment to meet consumer demand. Thus, towers play a critical role in being able to provide sufficient coverage and network capacity in a mobile network.

Mobile network antennas are mounted onto towers and communicate with consumer devices, via radio frequency signal in allotted radio spectrum, to connect them to a mobile network operator's core network through transmission links (also known as backhaul). Towers are positioned to maximise coverage and to minimise blocking or weakening the signal to and from consumer devices by obstacles such as buildings, terrain or vegetation.¹¹⁸

116 See for example, Energy Queensland, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 August 2022, accessed 27 June 2023.

117 See Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, pp 11–12, accessed 27 June 2023; Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 25, accessed 27 June 2023.

118 Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, pp 11–12, accessed 27 June 2023.

The mobile infrastructure mounted on and around a tower is known as the base station. A base station provides mobile coverage to an immediate geographic area called a cell. Importantly, in a mobile network, mobile devices will maintain connectivity with the network as the end-user (or device) moves between cells (inter-cell handover).

The base station forms part of the radio access network.¹¹⁹ The radio access network is connected to the rest of the mobile network through backhaul. These links are commonly fibre in the major cities, with significant use of microwave and satellite transmission particularly in regional, rural and remote areas.¹²⁰ The core network connects the different parts of the access network, connects to other networks (including the internet) and undertakes billing and user management.

There are 3 main types of infrastructure that can be used for mobile base stations:

- Macro tower sites. These can be lattice towers, monopoles, masts or similar structures which are generally above 20m in height. Macro tower sites are larger sites with taller masts and more powerful transmitter and aim to cover large areas.
- Rooftops and high vantage points (for example, on top of multi-story buildings, water towers or any high vantage point).
- Small structures such as power and light poles.

In addition, mobile network operators also deploy in-building-solutions such as the distributed antenna systems to extend indoor coverage within large buildings, such as shopping centres.

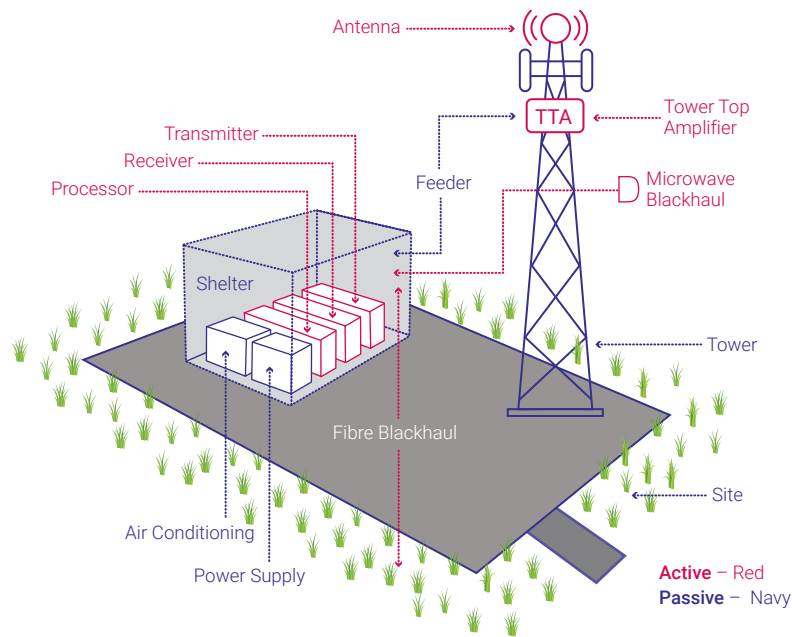
In this chapter, references to towers refer to macro tower sites.

Different components that make up a tower site are commonly described as 'active' and 'passive' infrastructure. Active infrastructure is generally the equipment that requires power to operate and is involved in data transmission and reception, such as the antennas, radio units (processor, receiver, transmitter) and the transmission equipment (backhaul). Passive infrastructure is primarily the tower structure, provisioning of power, fencing and access tracks. This is shown in Figure 4 below.

119 See for example Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 10, accessed 27 June 2023.

120 See for example Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 155, accessed 27 June 2023; Telstra, [Public submission in response to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), 16 May 2023, p 5, accessed 27 June 2023.

Figure 4: Active and passive components on a mobile tower site



The active infrastructure components are usually the responsibility of the mobile network operator to deploy and manage. Passive components are usually managed by the mobile network infrastructure provider.

4.2 A mobile network operator has options when adding sites to its network

Deploying terrestrial mobile networks is highly capital intensive. It involves the construction of tower structures, base stations and installation of associated infrastructure. Various models of infrastructure sharing have developed to share these costs between mobile network operators and mobile network infrastructure providers.

The commonality between co-location and new tower construction is that mobile network operators will need to invest in the active equipment. The costs of equipment can vary based on the technology being deployed (e.g. 4G or 5G), the required capacity and coverage, and associated radio access network technology vendor fees.

For active sharing, both the passive and active infrastructure is shared between mobile network operators. This option allows mobile network operators to utilise the same infrastructure.

The decision on what option a mobile network operator will take will depend on various factors such as cost, time for deployment, planning permits and regulatory requirements, suitability of existing infrastructure and commercial arrangements. These are outlined in detail below.

New towers

Building a new tower incurs various costs associated with land acquisition or leasing, planning permits and application fees, tower design and construction, site preparation and installation.¹²¹ The overall costs of a new tower build can vary depending on the height, type of tower, materials used for the tower, as well as the labour costs for construction. As deployment of new towers is capital and time intensive, generally new towers are only built in response to demand from mobile network operators for a new tower in a particular location.¹²²

Building a new tower will generally incur overall higher upfront costs, have longer deployment timelines and additional regulatory requirements in terms of planning approvals compared with co-location on existing infrastructure. While co-locating on existing infrastructure may be more cost effective and quicker, there are several reasons why a mobile network operator may prefer to deploy a new tower:

- There is no existing infrastructure in the area where the mobile network operator is seeking to expand its network.¹²³
- Existing infrastructure is not in a suitable location where the mobile network operator is seeking to expand its network.¹²⁴ Existing infrastructure may have been designed or positioned for different purposes (for example, electricity infrastructure) or for different network needs.¹²⁵
- The existing infrastructure may not be suitable for the use intended by the mobile network operator and the cost of upgrading it may not be considered cost-effective.¹²⁶
- Network differentiation from competitors. In some strategic locations, a mobile network operator may prefer to have greater control with the build of a new tower, to optimise its network and tailor the tower to its needs.
- Flexibility for future expansion. Certain areas may be seen as future high growth areas, and thus having control over tower locations and access to backhaul can benefit mobile network operators' future network plans. It may be valuable to a mobile network operator to scale their infrastructure for forecast rollouts rather than relying on existing infrastructure co-location opportunities.

There is a cost differential between self-provisioning new towers or outsourcing to mobile network infrastructure providers

Once a mobile network operator has decided on a new tower, it can either build its own tower (self-provision) or outsource the build to a mobile network infrastructure provider. Which option a mobile network operator will choose will depend primarily on whether the terms of agreement it can reach with a mobile network infrastructure provider are favourable to self-provisioning.

Self-provisioning a new tower involves significant capital expenditure which the mobile network operator will bear. There are also ongoing costs associated with maintaining the tower, including rent paid to landowners, management of co-location requests as required by the Telecommunications Act and maintenance of the tower as well as the active infrastructure on it.

121 See for example, Australia Tower Network, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 8, accessed 27 June 2023.

122 Australia Tower Network, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 12, accessed 27 June 2023; Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, pp 11–12, accessed 27 June 2023.

123 Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 25, accessed 27 June 2023.

124 Waveconn, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 5, accessed 27 June 2023.

125 Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 25, accessed 27 June 2023.

126 Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 25, accessed 27 June 2023.

Having a mobile network infrastructure provider build the tower can transfer some of the upfront expenditure from the mobile network operator to the mobile network infrastructure provider. The mobile network infrastructure provider will usually bear the costs of ongoing operating expenditure associated with land lease arrangements, inspections, repairs and maintenance of the tower structure itself.¹²⁷ However, the mobile network operator can still be responsible for some of the costs, including backhaul connectivity and costs of active equipment.¹²⁸ The mobile network operator will also incur operating expenditure for the access fees paid to the mobile network infrastructure provider for access to the tower.

Mobile network operators typically have arrangements with mobile network infrastructure providers, known as 'build-to-suit' agreements where the infrastructure provider will build a new tower for the network operator based on its requirements.¹²⁹ Accompanying built-to-suit arrangements can be 'take-or-pay' obligations where a mobile network operator may receive a volume discount for leasing a minimum number of new sites from a mobile network infrastructure provider.¹³⁰ Our understanding is that such arrangements guarantee revenue for infrastructure providers and forward cost certainty for network operators, and because of this, may be more cost effective than self-provisioning a new tower.

The divestment of towers indicates a preference for the cost of ownership of that infrastructure to reside with mobile network infrastructure providers, meaning that it is more likely a new tower build will be outsourced to a mobile network infrastructure provider.

Costs for a new tower build

Throughout the Inquiry, mobile network infrastructure providers highlighted that there is no 'typical' cost for a tower.¹³¹ This is because there is significant variation in build costs depending on the site choice and tower design (height, capacity and type of tower).¹³² There are also trade-offs in tower design, for example a cheaper tower could be built but this may require more maintenance or earlier replacement, compared to a more expensive tower that requires less maintenance and lasts longer.¹³³

Table 4 below outlines the typical categories of costs incurred by both mobile network infrastructure providers and mobile network operators in the build of new towers.

127 See for example, Australia Tower Network, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 9, accessed 27 June 2023.

128 Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 10, accessed 27 June 2023.

129 Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 18, accessed 27 June 2023; Indara, [Build to Suit](#), 2023, accessed 23 June 2023.

130 Australia Tower Network, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 5, accessed 27 June 2023.

131 See for example Australia Tower Network, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 8, accessed 27 June 2023.

132 Australia Tower Network, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 8, accessed 27 June 2023; Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, pp 11–12, accessed 27 June 2023.

133 Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 17, accessed 27 June 2023.

Table 4: Typical costs incurred in the build of new towers

Cost category	About this cost category
Tower site selection and planning approvals, including environment and design	Tower site selection and planning approval costs are highly site specific. The type of landowner involved, the complexity of town planning approvals or other approval processes will impact tower design and planning. ¹³⁴ Community opposition can also significantly increase these costs by requiring more consultation. Higher costs also occur where additional speciality consultants (e.g. environmental, ecological, hydrological, heritage) or appeals against adverse planning decisions are required. ¹³⁵
Tower site construction, including civil construction, tower fabrication/delivery, site preparation and foundations	This cost category includes the tower structure itself and material supply costs for it, and fabrication and delivery of the tower. ¹³⁶ It also includes the excavation and foundations required for the site, as well as the costs of mobilising personnel to build and install the tower. ¹³⁷ The type of tower built and foundation requirements will depend on current and future customer requirements, local environment (wind, corrosion, whether it is susceptible to flooding or other natural disasters), as well as geotechnical conditions (rock and unstable soils). ¹³⁸
Access tracks to a tower site	Construction access limitations, which can require access track modifications or upgrades, can significantly impact build costs. ¹³⁹ There can be a high variability in these costs depending on the location. ¹⁴⁰ Generally, remoter sites will tend to be further away from public roads and require a longer access track to be built, or a more significant upgrade, than sites in major cities.
Connection to power	New tower builds may require a power extension to connect to the local power grid. ¹⁴¹ This may also require an upgrade or replacement to the existing power infrastructure to cope with the additional power consumption load.
Connection to backhaul	This is the cost of connecting a tower site to an existing transmission link, known as backhaul. ¹⁴² It can be owned by the mobile network operator or can be transmission capacity acquired by the access seeker from another party and is often referred to as the 'last mile'. OneWifi submitted that depending on the remoteness of the site and proximity to power and backhaul infrastructure, the power and backhaul could account for up to 50% of the total build cost. ¹⁴³
Associated infrastructure, including active equipment	Associated infrastructure includes antennas and feeders, batteries, active equipment and the shelters to house on-ground equipment. It is usual practice for each mobile network operator to have its own shelter that will house the on-ground equipment and feeder cables connecting the active equipment on the tower to the shelter. The active equipment on a tower can make up between 10% to 30% of the total tower build cost. ¹⁴⁴

134 Australia Tower Network, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 8, accessed 27 June 2023.

135 Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 18, accessed 27 June 2023.

136 Australia Tower Network, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 8, accessed 27 June 2023.

137 Australia Tower Network, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 8, accessed 27 June 2023.

138 Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 22, accessed 27 June 2023.

139 Field Solutions Group, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 10 August 2022, pp 3–4, accessed 27 June 2023.

140 Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 27, accessed 27 June 2023.

141 Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 26, accessed 27 June 2023.

142 Waveconn, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 3, accessed 27 June 2023.

143 OneWifi and Infrastructure, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 4 August 2022, p 2, accessed 27 June 2023.

144 ACCC, [Industry Stakeholder Forum for the Regional Mobile Infrastructure Inquiry](#), 16 March 2023, accessed 27 June 2023; OneWifi and Infrastructure, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 4 August 2022, p 2, accessed 27 June 2023.

Connection to backhaul

From the mobile network operator perspective, the largest cost can be the connection to backhaul, depending on the location of the tower.¹⁴⁵ Backhaul refers to the network infrastructure (fibre, microwave or satellite) that connects the radio access network to the core network. The transmission technologies used for mobile backhaul are no different from that used for any other transmission service.

Backhaul connects new tower builds to the mobile network operator’s wider network. There are the following backhaul options:

- point-to-point microwave connection using apparatus licences (for spectrum)
- satellite connections
- fibre optic connection to sites
- fibre optic line rental from a third party.

Which options are available will depend on the location of the tower and its proximity to existing backhaul infrastructure. In major cities, the costs to connect to backhaul are generally limited where distances are short and there is existing fibre backhaul available. In regional, rural and remote areas the cost for connecting to existing backhaul will be higher where there is a greater distance to existing backhaul.¹⁴⁶

The GSM Association recently published a study comparing the costs of deploying a mobile base station in an urban environment compared with a remote region in the United Kingdom.¹⁴⁷

Table 5 below summarises the results and shows that backhaul is the cost most impacted by remoteness.

Table 5: Cost differential for total cost of ownership of a rural base station compared to one in an urban area

	Share of cost envelope (urban environment)	Cost premium in a remote region compared to urban
Tower and civil works	48%	+27%
Active network costs	12%	0%
Power	30%	+37%
Backhaul	10%	+110%
Total	100%	+35%

Source: GSMA Intelligence and GSMA Connected Society (2019 figures)

While Table 5 shows the costs in the United Kingdom, it does highlight how backhaul costs can significantly impact the financial viability of network expansion by way of new tower builds. Building a new tower will require provisioning and establishing a dedicated backhaul link, which will involve upfront costs for build the backhaul connection.¹⁴⁸

145 See for example Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 11, accessed 27 June 2023.

146 See for example, Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 45, accessed 27 June 2023.

147 GSM Association, [Connectivity from the sky: Reinventing the final frontier](#), 2021, p 17, accessed 27 June 2023.

148 See also the discussion at the industry stakeholder forum, [Industry stakeholder forum](#), 16 March 2023, p 2, accessed 27 June 2023.

Remoter sites will tend towards having microwave or satellite backhaul due to larger distances between sites making fibre transmission very expensive.¹⁴⁹ The use of point-to-point microwave is generally less expensive than installing a new optical fibre.¹⁵⁰ This has performance implications and may also require additional microwave-only site(s) to span long transmission distances.¹⁵¹ Microwave backhaul can be over multiple 'radio hops' before reaching a tower that has a wired backhaul connection. A radio hop is a link between a microwave transmitter on a tower and a receiver, that connects into wired backhaul. A single radio hop usually covers a distance between 5 to 30km, depending on radio frequency used (unlike fibre where a link can be couple of 100 km or more). To cover larger distances, multiple transmitters and receivers are used in daisy chain with each link of the chain known as hop. The availability of spectrum does impact the capacity of these systems.

As the cost of backhaul can significantly impact the financial viability of a new tower build, it may be a reason why a mobile network operator will prefer to co-locate on existing infrastructure rather than on a new tower build.

Connection to power

Mobile network infrastructure providers highlighted that often the largest delay in tower builds is connection to power.¹⁵² Waveconn and another mobile network infrastructure provider submitted that connecting a tower site to power is a significant challenge for regional deployment, with timelines for the local utility providing a response to a power application frequently being more than 6 months and many exceeding 12 months.¹⁵³ Waveconn submitted that securing easements for power supply can also result in delays, with some easements taking approximately 3 years to secure.¹⁵⁴ It outlined that connection to power creates the most uncertainty for deployment timelines and overall costs, and can frequently make otherwise viable sites commercially infeasible.¹⁵⁵

Waveconn submitted that implementing minimum service-level agreements for power utilities would assist when mobile network infrastructure providers deal with power utilities.¹⁵⁶

Location impacts a new tower build

Overall, rural, regional and remote tower sites are typically more expensive to establish.¹⁵⁷ The costs to enable access to the site, tower build, connection to power and to backhaul typically increase with remoteness.¹⁵⁸ The costs for associated infrastructure such as radio equipment, antennas/feeders, and costs for site selection and planning approvals do not typically change due to remoteness.

As outlined, connection to backhaul is a cost that can be significant and will increase due to a lack of existing infrastructure and the need to connect backhaul over longer distances.¹⁵⁹ In remoter areas, typically taller structures are built to cover wider areas, resulting in increased build costs (more expensive towers, bigger foundations that require more complex excavation, more land area

149 See for example Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 11, accessed 27 June 2023.

150 Waveconn, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 3, accessed 27 June 2023.

151 Waveconn, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 3, accessed 27 June 2023.

152 Information provided by stakeholder.

153 Waveconn, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 2, accessed 27 June 2023.

154 Waveconn, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 2, accessed 27 June 2023.

155 Waveconn, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 3, accessed 27 June 2023.

156 Waveconn, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 2, accessed 27 June 2023.

157 See for example, Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 45, accessed 27 June 2023.

158 Australia Tower Network, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 14, accessed 27 June 2023; TPG Telecom, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 August 2022, p 10, accessed 27 June 2023.

159 See also the discussion at the industry stakeholder forum, [Industry stakeholder forum](#), 16 March 2023, p 7, accessed 27 June 2023.

for guy wires if used).¹⁶⁰ Access tracks may be further from public roads, requiring a new access track or upgrades to support the delivery of infrastructure. Similarly, connection to power can be a distance away requiring additional electricity infrastructure to be build, or upgrades to the electricity infrastructure to support the additional load of the tower. There are also higher mobilisation costs for personnel and transport for all phases of a tower build and construction of the tower site.¹⁶¹

► Finding 6

The cost of building a new tower site typically increases with remoteness. In particular, the cost of backhaul can be especially high in regional and remote areas compared to urban areas.

As mobile network operators generally bear the cost of connecting sites to backhaul, high costs to do so can be a key reason for preferring to co-locate on existing infrastructure, where it exists in the desired areas.

Sample of tower build costs

To provide context to how variable build costs for new towers can be, Table 6 and Table 7 provide a sample of cost information the ACCC received in relation to tower builds. The cost information is for one site and is provided from either a mobile network infrastructure provider or a mobile network operator perspective. This information is a sample of costs only and should not be taken as representative of build costs or of land lease costs.

Table 6: Sample build costs for monopoles (25 – 45m) by region¹⁶²

	Major cities	Inner regional	Outer regional	Remote	Very remote
State/Territory	South Australia	Queensland	New South Wales	South Australia	Queensland
Structure type	Steel monopole	Steel monopole	Concrete monopole	Concrete monopole	Monopole
Tower site selection and planning approvals	\$69,885	\$369,563	\$102,627	\$65,197	\$132,058
Tower site construction	\$159,271	\$278,038	\$411,534	\$472,874	\$480,984
Access to tower site (if an upgrade is required)	\$0	\$0	\$0	\$10,325	\$0
Connection to power	\$0	\$30,199	\$57,822	\$111,680	\$0
Connection to backhaul	\$57,008	\$43,551	Not known	Not known	\$9,646
Associated infrastructure	\$266,277	\$144,895	Not known	Not known	\$207,117
Indicative total build cost	\$552,441	\$866,246	\$571,983	\$660,076	\$829,805
Payment to landowner in 2021–22	\$9,050	\$9,425	\$16,637	\$6,310	\$34,965

160 See for example, Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 22, accessed 27 June 2023.

161 See the discussion at the industry stakeholder forum, [Industry stakeholder forum](#), 16 March 2023, p 2, accessed 27 June 2023.

162 Information provided by stakeholders.

Table 7: Sample build costs for lattice towers (30–60m) by region¹⁶³

	Major cities	Inner regional	Outer regional	Remote
State/Territory	New South Wales	New South Wales	South Australia	Northern Territory
Structure type	Lattice	Lattice	Lattice	Lattice
Tower site selection and planning approvals	\$111,260	\$104,967	\$151,052	\$35,958
Tower site construction	\$287,866	\$318,456	\$305,942	\$841,515
Access to tower site (if an upgrade is required)	\$120,387	\$23,638	\$1,422	\$30,183
Connection to power	\$235,486	\$113,795	\$227,614	\$0
Connection to backhaul	Not known	Not known	Not known	\$25,483
Associated infrastructure	\$85,270 ¹⁶⁴	\$65,113 ¹⁶⁵	\$67,670 ¹⁶⁶	\$248,431
Indicative total build cost	\$840,269	\$625,968	\$753,700	\$1,181,570
Payment to landowner in 2021–22	\$14,901	-	-	-

As illustrated in tables 6 and 7, there is high variability in tower build costs. While overall build costs tend to increase with remoteness, the tables illustrate that it is difficult to provide general estimates for new tower builds because costs depend on site specific features, such as height, structure type and distance from the power grid, access track and backhaul connection.

Co-location on existing infrastructure

Mobile network operators may prefer to co-locate on existing infrastructure in some circumstances. Co-location is a form of passive infrastructure sharing where a mobile network operator deploys its active equipment on the same passive infrastructure as another mobile network operator. Image 2 shows an example of a tower with 3 mobile network operators co-located on the tower by stacking their active equipment. Passive sharing is very common and regularly used by the 3 mobile network operators.

A decision or preference to co-locate is driven by several factors, including potential cost savings, time efficiency, regulatory and planning approval considerations. These factors are outlined below.

Co-location can be a more cost-effective option than deploying a new tower. Building new towers involves significant capital investment, including land acquisition, tower fabrication and construction, associated equipment installation. In comparison, co-locating on existing infrastructure allows mobile network operators to share the costs associated with the passive tower build and maintenance.¹⁶⁷ This reduces capital expenditure and operational costs, making co-location more financially attractive.

¹⁶³ Information provided by stakeholders.

¹⁶⁴ This figure does not include active equipment.

¹⁶⁵ This figure does not include active equipment.

¹⁶⁶ This figure does not include active equipment.

¹⁶⁷ See for example, TPG Telecom, [Public submission to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), May 2023, p 2, accessed 27 June 2023.

Image 2: Example of a monopole tower with the 3 mobile network operators co-located on the tower.



Source: Photo taken by ACCC staff.

Co-locating on existing infrastructure can provide immediate access to established backhaul connections. If the infrastructure already has sufficient backhaul capacity to support the co-locating mobile network operator's network traffic, this can reduce the need for backhaul upgrades.

There are also time savings with co-location. Constructing a new tower has a significant lead time and requires obtaining leases or land rights, permits, conducting site surveys and construction. Co-locating on existing infrastructure reduces the time for these processes significantly, although there is often a need to go through planning approvals and consultation processes to co-locate onto a tower.

However, co-location is not always feasible or practical. Whether a mobile network operator seeks to co-locate on existing infrastructure will depend on factors such as:

- The availability of suitable infrastructure in the desired location.
- Space limitations or structural limitations on existing infrastructure.¹⁶⁸ Co-location may require some site modifications or upgrades to accommodate the additional equipment. These costs will depend on the specific site conditions and the capacity of the existing tower infrastructure. The cost of co-location, such as upgrades to power, backhaul or structural upgrades can make the business case for co-locating unviable.¹⁶⁹
- Whether the network outcome (for example, coverage in a desired area or direction) is acceptable to the mobile network operator.¹⁷⁰ As co-locating tenants have not chosen the location of the site, it can mean that the tower location or the position available on the tower may provide sub-optimal network outcomes.¹⁷¹
- Whether the mobile network operator considers there are favourable terms of access and ease of co-locating onto the tower.¹⁷² Mobile network infrastructure providers submitted that their

168 See for example, Amplitel, [Public Submission to Regional Mobile Infrastructure Inquiry](#), 2 September 2022, p 11, accessed 27 June 2023.

169 Waveconn, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 5, accessed 27 June 2023.

170 Waveconn, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 5, accessed 27 June 2023; Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 25, accessed 27 June 2023.

171 Waveconn, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 5, accessed 27 June 2023.

172 Waveconn, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 5, accessed 27 June 2023.

access processes are more streamlined and enable fast, easy co-location to maximise new co-locations.¹⁷³ However, TPG Telecom submitted that the fees required by mobile network infrastructure providers are one of the ongoing barriers to increased co-location.¹⁷⁴

- The revenue potential from the site. Regional locations generally have lower customer revenue, which results in lower co-location demand.¹⁷⁵
- Mobile network infrastructure providers may offer incentives to co-location, such as co-location discounts. These agreements allow mobile network operators to access existing infrastructure on terms that may result in reduced costs overall.

Costs for co-locating

With most tower assets now held by mobile network infrastructure providers (Amplitel, Indara and Waveconn), the costs of co-locating will largely depend on the agreements mobile network operators reach with these entities. As shown in Table 1, the carriers no longer own or operate many tower and rooftop assets themselves. TPG Telecom does not own or operate any towers or rooftops itself and Optus retains a very small number at 184.¹⁷⁶ At a site visit with Amplitel, it noted that generally the towers capable of co-location had passed to Amplitel and Telstra retained 'one-tenant structures'.¹⁷⁷ This means that the carrier-to-carrier co-location arrangements are no longer relevant post-divestment and co-location arrangements will be between a carrier and a third party such as a mobile network infrastructure provider.

The costs of co-location are also significantly impacted by the need for any upgrades, as the mobile network operator will generally bear the cost of the upgrade. The typical costs incurred by both mobile network infrastructure providers and mobile network operators when co-locating are shown in Table 8 below.

173 Waveconn, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 5, accessed 27 June 2023.

174 TPG Telecom, [Public submission in response to report on preliminary findings](#), May 2023 p 3, accessed 27 June 2023.

175 Waveconn, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 5, accessed 27 June 2023.

176 Information provided by stakeholders.

177 Information obtained in ACCC site visit to Amplitel.

Table 8: Typical costs incurred when co-locating

Cost category	About this cost category
Tower site selection and planning approvals, including community consultation	There is often a need to go through relevant town planning and approval processes. This also requires engineering design work and Electromagnetic Emission (EME) analysis to support approval applications.
Upgrade to tower (structural only)	An assessment of the tower may be required to ascertain co-location feasibility.
Land lease obligations (if required)	There may be an increase in ground rent payable to the landlord that owns the land where the tower is located, or amendments to lease. ¹⁷⁸
Upgrade to power	Any cost incurred for power upgrades will be site specific and will depend on the equipment the mobile network operator proposes to use. The power requirements of 4G and 5G technologies are higher than 3G.
Connection to backhaul	When co-locating, there will already be a backhaul connection in place. The co-locating mobile network operator may choose to access existing backhaul and pay an access fee to the third party which owns it.
Costs paid to mobile network infrastructure provider	For the mobile network operator, a large cost consideration is the access fees paid to the mobile network infrastructure provider.
Associated equipment	This includes the installation of the mobile network operator's active equipment on the tower and any associated fees to equipment vendors. There can also be a need to build an additional equipment shelter, as mobile network operators may prefer to have separate shelters on a tower site.

Table 8 shows that the typical costs incurred to establish a co-location are similar categories to initial build costs, as there can be a need for planning approvals and construction to upgrade the tower. To our understanding, the largest incremental cost mobile network infrastructure providers would face with an additional co-location may be an increase in ground rent payable to the landlord that owns the land where the tower is located.¹⁷⁹ Other operating costs, such as utilities and maintenance costs, are likely to increase by a small degree with additional tenants.

From a mobile network operator's perspective, the 2 main costs influencing the business case for a co-location are the costs of any upgrades, and the fees payable to a mobile network infrastructure provider for access to the tower.

The 3 major mobile network infrastructure providers (Amplitel, Indara and Waveconn) highlighted that they will generally seek to build a new site that can support at least 2 but, if possible, 3 tenants.¹⁸⁰ Where this is the case, there will be limited need for upgrades when a second or third carrier seeks to co-locate. However, mobile network infrastructure providers need a strong enough business case to build a multi-tenant capable tower (e.g. there is demand from multiple mobile network operators for a tower in that location), otherwise they are incentivised to only build a single tenant tower at a lower cost.¹⁸¹

178 See for example, Waveconn, [Public Submission to Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 5, accessed 27 June 2023.

179 See for example, Waveconn, [Public Submission to Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 5, accessed 27 June 2023.

180 Amplitel, [Public Submission to Regional Mobile Infrastructure Inquiry](#), 2 September 2022, p 20, accessed 27 June 2023; Australia Tower Network (now Indara), [Public Submission to Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 17, accessed 27 June 2023; Waveconn, [Public Submission to Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 5, accessed 27 June 2023.

181 See for example, Waveconn, [Public Submission to Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 4, accessed 27 June 2023.

Waveconn submitted that frequently existing towers require an upgrade to accommodate additional tenants.¹⁸² The cost of a structural upgrade to a tower could be relatively low, but this depends on the tower. However, for some towers, a structural upgrade could mean that the total cost of co-location is similar to the cost of building a new tower.

Amplitel submitted that many of its existing sites are of an insufficient size to accommodate additional tenants.¹⁸³ Additional compound space may be required to accommodate a tenant, which will require negotiations with the landlord.¹⁸⁴ Amplitel holds the largest portfolio of towers and has the largest percentage of towers in outer regional, remote and very remote Australia. Consequently, our understanding is that mobile network operators seeking to co-locate in these areas will likely need to negotiate with Amplitel for co-location, and will likely face costs associated with upgrading the site to accommodate additional equipment.

A key consideration for mobile network operators in deciding whether to co-locate is the ongoing access costs paid to the mobile network infrastructure provider.¹⁸⁵ A driver of the divestments was the ability for the mobile network operator to move expenditure away from inflexible large capital investments to more manageable and flexible operating cost expenses.¹⁸⁶ One mobile network operator noted that there is a trade-off for fees between higher scale of the assets and longer tenure (which typically enables lower fees) and ensuring flexibility and future options (which typically results in higher fees).¹⁸⁷

We expect that in areas with infrastructure competition, mobile network infrastructure providers will respond to demand and tower access fees would be set accordingly. Co-location rates decrease with remoteness, driven by lower demand from mobile network operators to establish sites where there is a more marginal case for investment due to lower population. In a competitive market, we would expect that lower demand would result in lower access fees if mobile network infrastructure providers were wanting to attract tenants to these areas. This is consistent with the mobile network infrastructure providers submitting that they have an incentive to increase co-locations. Where a mobile network infrastructure provider is subject to limited competition, we would expect higher fees to be charged due to the incentive for rent-seeking behaviour, although this may be balanced by other factors.

The fees that mobile network infrastructure providers charge for co-location are highly dependent on the commercial arrangements in place and can vary substantially. Some stakeholders have submitted that access fees are now higher post-divestment.¹⁸⁸

How the ongoing access fees payable to mobile network infrastructure providers are impacted by region varies considerably by the commercial agreement. It is unclear what exactly drives the differences in these access fees, i.e. whether they are impacted by demand, cost or the ability of a mobile network infrastructure provider to extract price premium in certain areas or particular circumstances. We have found from our review of some commercial arrangements that ongoing access pricing can vary based on location and market conditions and can also depend on tower height and the amount of the mobile network operator's equipment to be located on the tower.¹⁸⁹ While some mobile network infrastructure provider's pricing decreases with remoteness as we would expect, we have observed that some access fees are lowest in regional Australia but will increase

182 Waveconn, [Public Submission to Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 5, accessed 27 June 2023.

183 Information provided by stakeholder.

184 Information provided by stakeholder.

185 TPG Telecom, [Public submission in response to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), May 2023, p 3, accessed 27 June 2023.

186 Information provided by stakeholder.

187 Information provided by stakeholder.

188 ACCC, [Industry stakeholder forum](#), 16 March 2023, p 1, accessed 27 June 2023.

189 Information provided by stakeholder.

in remote Australia. Some agreements had lower pricing in rural areas, or in some cases flat pricing across all Australia.¹⁹⁰

For one mobile network infrastructure provider, its co-location ratios decline with geographic remoteness and it has lower site pricing declining with remoteness.¹⁹¹ The mobile network infrastructure provider notes that this is a function of lower demand due to the inferior customer economics of serving marginal population areas, i.e. lower demand has translated into lower prices.¹⁹²

However, a mobile network infrastructure provider may have different pricing trends based on region. This could be that regional areas have the lowest fees, with fees increasing in remote areas and then generally being highest in major cities.¹⁹³ This suggests that despite the divestments, commercial arrangements between mobile network operators and the mobile network infrastructure provider have not improved competition in the provision of tower access in remote areas. This is likely because there is limited infrastructure competition in remote areas of Australia.¹⁹⁴

It is difficult to provide a like-for-like cost comparison between building a new tower and co-location due to the high variability of factors involved, particularly due to commercial arrangements. Generally co-locating on existing infrastructure is more cost-effective than building new towers, particularly where no significant upgrade to the tower is required. However, where significant upgrade to the tower is required, co-location could, in some cases, be prohibitively expensive.¹⁹⁵

To determine a cost-comparison for deployment in a particular area, a mobile network operator would assess the characteristics of the area sought to be deployed into. This includes location, capacity of existing infrastructure, whether requirements in terms of network coverage and capacity could be met by existing infrastructure, and the commercial arrangements in place with the relevant mobile network infrastructure provider.¹⁹⁶

► Finding 7

Co-location on existing infrastructure is generally more cost effective than building new towers. However, where co-location requires significant upgrade to the tower infrastructure, co-location can in some cases be prohibitively expensive.

Mobile network infrastructure providers can influence the business case for co-location by mobile network operators in 2 main ways:

1. By the decision to build a single or multi-tenant capable tower, noting that the business case for the initial build may not support a multi-tenant tower if the tower provider does not anticipate demand from multiple tenants.
2. By the access fees they set, noting that high access fees will discourage co-location.

¹⁹⁰ Information provided by stakeholder.

¹⁹¹ Information provided by stakeholder.

¹⁹² Information provided by stakeholder.

¹⁹³ Information provided by stakeholder.

¹⁹⁴ See also the discussion at the industry stakeholder forum, [Industry stakeholder forum](#), 16 March 2023, p 1, accessed 27 June 2023.

¹⁹⁵ See also the discussion at the industry stakeholder forum, [Industry stakeholder forum](#), 16 March 2023, p 2, accessed 27 June 2023.

¹⁹⁶ See for example, Waveconn, [Public Submission to Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 5, accessed 27 June 2023.

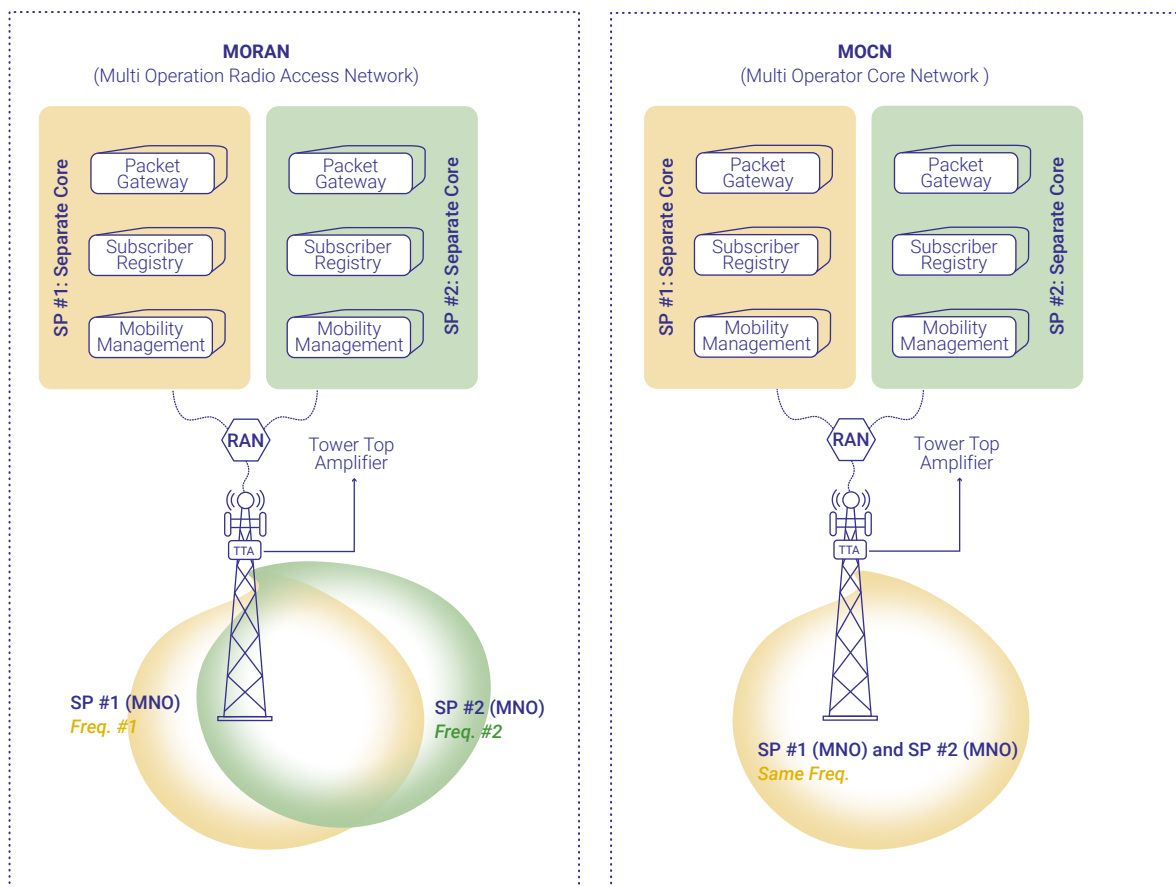
Active sharing arrangements and the neutral host model

Infrastructure sharing arrangements can be both passive (sharing passive infrastructure such as towers only) or active (sharing both passive infrastructure and active infrastructure such as the radio access network). Sharing arrangements allow mobile network operators to avoid the duplication of physical infrastructure, by sharing capital costs and operational expenditure.

The decision to pursue sharing arrangements will depend on regulatory and commercial arrangements, potential cost savings and the willingness of mobile network operators to share infrastructure in this way.

Figure 5 below shows 2 ways in which active sharing arrangements may occur.

Figure 5: Comparison of Mobile Operator Core Network and Mobile Operator Radio Access Network active sharing arrangements



Note: SP (service provider).

In a Mobile Operator Core Network arrangement, the whole of radio access network (the antenna, transmitters, receivers, baseband signal processors etc) are shared, as well as the spectrum which is deployed. The carriers connect their own separate core network to this common radio access network. In a Mobile Operator Core Network arrangement, the carriers in the arrangement will have same coverage and capacity (to share).

In a Mobile Operator Radio Access Network arrangement, the whole of the radio access network is shared as in a Mobile Operator Core Network arrangement, except the spectrum deployed is different for different carriers. In Mobile Operator Radio Access Network, the carriers in the arrangement can

have different coverage and capacity. Optus and Vodafone entered this type of sharing arrangement in 2004, to share more than 2,000 base stations nationally.¹⁹⁷

There is also the neutral host model, where active and passive infrastructure is provided by a third party who is not usually providing retail telecommunications services themselves. The passive and active infrastructure capacity is leased out to mobile network operators. Neutral host models can use a Mobile Operator Core Network, Mobile Operator Radio Access Network or a roaming arrangement.¹⁹⁸

For active sharing models such as the neutral host model, Field Solutions Group submitted there are additional costs beyond those associated with greenfield or brownfield sites.¹⁹⁹ Field Solutions Group submits that the mobile network infrastructure provider takes responsibility for:

- the purchase and deployment of the active equipment on the tower structure
- spectrum value.²⁰⁰

These additional costs would then impact the commercial fee arrangements between mobile network operators and mobile network infrastructure providers.²⁰¹

Active sharing arrangements have the potential for considerable cost reductions compared with new tower builds, given both passive and active infrastructure can be shared between mobile network operators. These types of sharing arrangements may also result in greater cost savings than co-location.²⁰² However, active sharing (particularly in neutral host models) may require new vendor integration, integration of operational systems or loss of independence in making capacity and coverage upgrade decisions, and may result in additional costs. These types of active sharing arrangements are not as common in Australia as co-location arrangements.

At the industry stakeholder forum, some stakeholders noted that there is now greater competition with tower infrastructure.²⁰³ If the divestment of tower assets has led to a more competitive market for tower provision, we would expect to see that the mobile network infrastructure providers competing fiercely for the business of mobile network operators in order to maintain or gain market share. We would also likely see the development of a market for the provision of neutral host services where demand for it exists. On the other hand, active sharing (in the form of Mobile Operator Core Network or Mobile Operator Radio Access Network to the exclusion of any neutral host provider) between mobile network operators would in fact reduce demand for tower access. While this is an effective way to reduce the cost of network deployment for mobile network operators, it is contrary to the interest of mobile network infrastructure providers in maximising tenancy in cases where they otherwise have capacity to host more tenants.

Active sharing arrangements could potentially give rise to competition concerns due to the risk of collusion, reduced competition on network quality and distorted incentives for network investment in shared infrastructure. However, as recognised by the Australian Competition Tribunal, the commercial and economic benefits of network infrastructure sharing are readily apparent and particularly

197 Optus, [Optus and Vodafone Australia finalise agreement to roll out shared 3G network](#), 19 November 2004, accessed 27 June 2023.

198 Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 22, accessed 27 June 2023.

199 Field Solutions Group, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 10 August 2022, p 10, accessed 27 June 2023.

200 Field Solutions Group, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 10 August 2022, p 10, accessed 27 June 2023.

201 Field Solutions Group, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 10 August 2022, p 10, accessed 27 June 2023.

202 Pivotal, [Public submission in response to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), 16 May 2023 p 4, accessed 27 June 2023.

203 ACCC, [Industry stakeholder forum](#), 16 March 2023, accessed 27 June 2023.

pronounced in regional areas.²⁰⁴ The ACCC considers if active infrastructure sharing is focussed on deployments in areas where there is otherwise no commercial incentive to provide services or limited prospect of meaningful infrastructure competition, there is likely public benefit associated with such sharing arrangements. The ACCC authorisation framework considers any proposed active sharing arrangements on a case-by-case basis to determine whether they would likely lead a substantial lessening of competition, and if so, whether the likely public benefit outweighs the likely public detriment.

► Finding 8

Active sharing arrangements, including neutral host models, can further reduce the cost of providing mobile coverage compared to co-location, particularly in areas where there is otherwise no commercial incentive to invest in new infrastructure.

Market dynamics and commercial arrangements after the divestment or transfer of towers from mobile network operators to mobile network infrastructure providers can influence whether a broader market for neutral host provision may develop over time.

4.3 Ongoing costs

Once a mobile network is deployed, there are ongoing operational and maintenance expenses for both mobile network operators and mobile network infrastructure providers. These costs can include regular inspections, upgrades or maintenance.²⁰⁵ OneWifi estimates that the direct cost to maintain a tower is between 5% to 7% of the capital cost per annum.²⁰⁶

Maintenance costs are linked to the type of tower structure, as lattice towers and masts tend to have higher maintenance costs than most rooftop structures or monopoles.²⁰⁷ Costs include maintenance of site ground, fence, access road, tower structure, headframe, fall arrest systems, tower corrosion, bird protection, and lightning protectors. There are also costs to mobilise personnel to regional, rural and remote areas. Consequently, maintenance costs tend to increase with remoteness.

Table 9 below outlines the typical costs incurred for the ongoing provision of access to towers.

204 Australian Competition Tribunal, [Applications by Telstra Corporation Limited and TPG Telecom Limited for review of Australian Competition and Consumer Commission Merger Authorisation Determination MA1000021](#), Summary of Reasons for Determination, [20], accessed 27 June 2023.

205 Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 12, accessed 27 June 2023; Amplitel, [Public Submission to Regional Mobile Infrastructure Inquiry](#), 2 September 2022, p 17, accessed 27 June 2023; Australia Tower Network (now Indara), [Public Submission to Regional Mobile Infrastructure Inquiry](#), 6 September 2022, pp 8–9, accessed 27 June 2023; Waveconn, [Public Submission to Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 4, accessed 27 June 2023.

206 OneWifi, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 4 August 2022, p 2, accessed 27 June 2023.

207 Waveconn, [Public Submission to Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 4, accessed 27 June 2023.

Table 9: Typical ongoing costs incurred by a mobile network infrastructure provider

Cost category	About this cost category
Maintenance, including track, tower, general cleaning and site security	<p>The costs of maintenance are site specific, and are also dependent on the type of climate that a tower is located in. For example, a tower located on a coastline will require different maintenance to manage higher corrosion compared with an inland tower.</p> <p>The cost of maintenance will generally have a fixed component (for example for planning and submitting a report) and a variable component (travel to the tower, inspection depending on type of structure/location, type of repair or replacement).²⁰⁸</p> <p>It is more expensive to deploy personnel to undertake maintenance in rural areas due to higher transport costs and the need for accommodation.</p>
Inspections	<p>Inspections can be conducted via drones of visual inspection from riggers who climb the tower, or inspect the tower via cranes.²⁰⁹ The frequency of inspections and repairs is not consistent and depends on the type of tower, age, and the weather conditions where it is located.</p>
Upgrades and refurbishments	<p>The costs of upgrades and refurbishments are site specific and dependent on the requirements for a particular tower site. Towers in more hostile environments (such as coastal or in cyclone areas) are more likely to require upgrades or refurbishments. Whether the mobile network infrastructure provider or the mobile network operator bears the cost of upgrades will depend on the type of upgrade required and the terms of their commercial agreement.</p>
Property costs such as land leases	<p>There is high variability in land access costs and this is not necessarily driven by remoteness. Land rent costs can vary significantly depending on the site and landlord characteristics. Land lease costs will vary depending on the business model of mobile network infrastructure provider. For example, some mobile network infrastructure providers will tend to own some land rather than lease it.²¹⁰ The cost of property leases is generally the largest cost on a per-tower basis.</p>
Utilities such as electricity	<p>This cost is usually negligible as mobile network operators tend to not pay ongoing electricity costs.</p>
Business overheads for company operations	<p>These costs are not incurred specifically to certain towers or regions, and often relate to a dedicate team and systems to manage the portfolio of infrastructure. Field Solutions Group submitted that over a ten-year period, the cost of software packages that assist with the establishment and operation of tower access can easily exceed \$700,000.²¹¹</p>

Generally, ongoing costs are not strongly impacted by remoteness but can vary depending on the particular site. The cost to mobilise labour to a site will increase with remoteness.

Options for capacity upgrades are more limited in remoter areas

In addition to adding new sites to mobile networks, the active equipment on existing sites can be upgraded to expand the coverage or capacity provided by the site. However, there are more limited options to upgrades in towers in remoter areas. This is largely because the number of users captured by a tower is lower in regional, rural and remote areas than in major cities. The lower population density and wider geographic spread of mobile network users mean that the types of upgrades that may be suited to major cities are not well suited to regional, rural and remote areas.

²⁰⁸ Information provided by stakeholder.

²⁰⁹ Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 28, accessed 27 June 2023.

²¹⁰ Information provided by stakeholder.

²¹¹ Field Solutions Group, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 10 August 2022, p 5, accessed 27 June 2023.

Typically, mobile network operators will use low-band spectrum in remoter areas as it is able to reach longer distances, and thereby provide a wider coverage area around a base station. However, the available bandwidth for low-band spectrum is small, usually around 10–20 MHz, which limits the capacity of the base station and the user’s data rate. Techniques to improve capacity such as multiple input multiple output (MIMO) are difficult to implement using low-band spectrum, as the antennas required to use low-band spectrum are large and may require upgrades to towers to support additional equipment.

Other ways to upgrade capacity on sites utilising low-band spectrum include:

- Sectorisation: This is where the area around a site is split into 2 or more sectors, using separate antenna and radio equipment for each. However, existing towers may require upgrades to support the additional equipment required for sectorisation. This form of capacity upgrade is more effective if users are spread around the site in different directions and not concentrated within a narrow angle around the site.
- Densification: This is where coverage is split into smaller areas and separate base stations are deployed for each. Finding suitable sites for densification can be challenging, particularly if terrain is difficult.
- Use of small cells with satellite backhaul can target small areas of users. Traditional satellite connectivity will have higher latency than terrestrial technologies, however the emergence of low-Earth orbit satellites provide a lower latency solution than satellites in geosynchronous orbit.
- Use of satellites for backhaul, or direct-to-handset satellite connectivity.

Another limitation relevant to capacity upgrades is the type of backhaul used. Remoter areas may not use fibre, and may instead use multi-hop microwave backhaul or satellite backhaul. These have lower bandwidth capacity than fibre, and thereby limit the maximum capacity that could be achieved at a base station.

With the demand for data use on mobile networks continually growing, there is an increasing amount of small-cell infrastructure being built in more densely populated areas. In remoter areas, the tendency is to consider upgrades to antennas on existing structures, which can lead to structural upgrade costs.

► Finding 9

Options for capacity upgrades to meet consumer demand for mobile services are more limited in regional, rural and remote areas compared with urban areas. This is due to higher costs to increase capacity (particularly backhaul transmission upgrade costs) to meet increasing demand for data.

5. Land access

The Direction requires the ACCC to have regard to the costs of accessing land to provide towers and associated infrastructure.

The location of land is critical for mobile coverage, including to provide new coverage and fill coverage gaps often referred to as 'black spots'. We received a significant number of submissions on these issues, reflecting their importance to mobile network infrastructure providers and mobile networks operators.

Stakeholders indicated that access to land can be complicated by the need to operate across different government planning jurisdictions. This adds complexity to processes, which can be time consuming and costly to resolve. Stakeholders advocated for several reforms to planning rules to better facilitate infrastructure deployment.

5.1 Land access arrangements

Infrastructure providers and mobile network operators engage with private, commercial and government landlords to access the following kinds of land:

- Freehold land – land that is privately-owned, including by First Nations landowners. Access to private land may be preferred due to council regulations being among the only restrictions to land access.
- Leasehold – land that is privately leased by an individual or commercial entity to infrastructure providers and mobile network operators.
- Non-freehold land – public land, held by federal, state, territory or local government. This includes reserves, National and State parks and forests, as well as native title interests.²¹²

The Inquiry has found that government and private landlords set rents in fundamentally different ways. Private landlords tend to negotiate fees themselves, or through an intermediary, whereas government entities set prices for land access through rental determinations. In Queensland, for example, this is set by the Queensland Valuer General.²¹³

Observations of land access agreements

During the inquiry the ACCC collected data from a range of stakeholders, including a large sample of industry land access agreements. General observations from these agreements include:

- We observed land access agreements which varied in length ranging from 6 months to 30 years, with the most common tenures observed between 10 and 20 years.²¹⁴ Longer agreements may be preferred to ensure security of access to infrastructure.
- Land access agreements may include provisions for annual rental reviews and periodic market rental reviews. We observed that land access rents are typically indexed at a fixed percentage annually or by the consumer price index (CPI). We observed reviews of leasing costs generally occurred at least every 5 years, although we note that not all rents are raised annually.²¹⁵

212 Infrastructure providers can include the major mobile network infrastructure providers (such as Amplitel, Indara and Waveconn) and other infrastructure providers such as BAI Communications and NBN Co.

213 Queensland Government, [About land valuations in Queensland](#), accessed 27 March 2023.

214 Information provided by stakeholders but is not representative of all responses.

215 Information provided by stakeholders but is not representative of all responses.

- We note that inflation, which is commonly used across industries for indexation, has significantly increased recently in Australia, with CPI rising 7% for the 12 months to the March 2023 quarter.²¹⁶
- An industry stakeholder commented that many tenants prefer to avoid market rent reviews, as cost uncertainties and resource constraints can make them difficult to manage and cause commercial risks. They noted that tenants typically offer fixed escalation, compounding, which reflects current market conditions. This stakeholder also highlighted that some government landlords have adopted CPI-based rent escalations. However, this has risks given inflation and dynamic markets can impact budget forecasting.²¹⁷

State and Territory regulations

Mobile network operators and mobile network infrastructure providers operate across different jurisdictions, with varying land access laws and planning requirements.

The proportion of different types of land and related regulations differ markedly between states and territories. For example, approximately 55% of Victoria is freehold agricultural land and around 38% is public land.²¹⁸ Victorian reserves are managed by a diverse range of land managers, including local government, statutory bodies or government agencies. Conversely, most of the land in South Australia is privately owned or held under a Crown lease or other arrangement.²¹⁹ Crown land in South Australia is subject to different types of tenure, including licenced, dedicated land, term lease, or perpetual lease.

In addition to other laws, native title is another relevant and important consideration across Australia. For example, approximately 48% of the Northern Territory's land mass and 80% of its coastline is held under native title.²²⁰ The *Native Title Act 1993* allows governments, companies and native title holders to negotiate agreements, including Indigenous Land Use Agreements (ILUAs), about future developments on the land, waters, and sea.²²¹

There is a further discussion regarding planning rules in section 5.4.

Accessing land in more remote areas

The Inquiry heard that mobile network infrastructure providers are not currently incentivised to acquire land in areas where there is low potential for multi-carrier tenancy, or where there is no commitment from a mobile network operator to locate in that area.

This is particularly the case in rural and remote areas, where commercial incentives are poor due to the low customer base. Further, as discussed below, accessing land in rural and remote areas can lead to a range of challenges and higher costs for deployment.

216 Australian Bureau of Statistics, [Consumer Price Index, Australia](#), accessed 23 June 2023.

217 Information provided by stakeholder.

218 Agriculture Victoria, [Land Use](#), accessed 27 March 2023.

219 Government of South Australia Department of Environment and Natural Resources, [What is Crown Land](#), accessed 23 June 2023.

220 Northern Territory Government, [Northern Territory Aboriginal Land and Sea Action Plan 2022–2024](#), p 6, accessed 27 June 2023.

221 Northern Land Council, [Our governing laws](#), accessed 23 June 2023.

Special arrangements for some types of telecommunications infrastructure, including non-discrimination of carriers

Schedule 3 to the Telecommunications Act provides ‘carriers’ with certain powers and immunities.²²² In certain circumstances, certain activities undertaken by carriers may be exempt from some state, territory, or local government planning approval, or landowner consent in relation to inspecting, installing and maintaining ‘low-impact facilities’. This is discussed further in Chapter 6.

Schedule 3 also sets out provisions regarding non-discrimination. Those provisions include cl 44(1) of Schedule 3, which provides that state and territory laws have no effect to the extent that the law discriminates, or would have the effect (directly or indirectly) of discriminating, against a particular carrier, particular class of carriers, or carriers in general.

Clause 44(1) of Schedule 3 to the Telecommunications Act is directed at state and territory laws that discriminate against carriers. The effect is that unless specified in a written instrument made by the Minister, a State or Territory law is of no effect to the extent that it discriminates against carriers.²²³

Optus and the Australian Mobile Telecommunications Association refer to Clause 44 of Schedule 3 to the Telecommunications Act in the context of setting prices for leasing government land.²²⁴ Both submitted that State and Territory governments should audit/review the basis for setting government land lease rates.²²⁵ Optus submits that the *Telstra v Queensland* [2016] FCA 1213 case means that ‘[t]he use of benchmarking of private market rates for communication leases to set rents for Crown land is not permissible.’²²⁶

However, relevantly the issue in this case was whether the *Land Regulation 2009* (Qld) impermissibly discriminated, or had the effect of discriminating, against carriers by imposing higher rents for State leases held by carriers than for leases held by other businesses in the disputed areas. We understand this means that benchmarking private market rates may not of itself be discriminatory, but could be if it, for example, resulted in a carrier, a particular class of carriers, or carriers generally being adversely treated in a way that is differential by reference to an appropriate standard of comparison.²²⁷ We understand from that case that it is the existence and extent of any differential treatment of carriers compared with other users of land which is relevant.²²⁸

Optus submits that State/Territory bodies should justify how their processes and charges are consistent with the Telecommunications Act.²²⁹ Such a review has occurred in some jurisdictions.²³⁰ We consider that greater transparency on how Crown land lease rate are set would be beneficial. It can be difficult to ascertain how leases for Crown land is set based solely on publicly available information.

222 Section 7 of the *Telecommunications Act 1997* defines a carrier as the holder of a carrier licence.

223 Telecommunications Act, Sch 3 cl 44.

224 Optus, [Submission to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), May 2023, p 5, accessed 27 June 2023; Australian Mobile Telecommunications Association, [Submission to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), 16 May 2023, p 5, accessed 27 June 2023.

225 Optus, [Submission to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), May 2023, p 6, accessed 27 June 2023; Australian Mobile Telecommunications Association, [Submission to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), p 5, accessed 27 June 2023.

226 Optus, [Submission to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), May 2023, p 6, accessed 27 June 2023.

227 [Bayside City Council v Telstra Corporation Ltd \[2004\] HCA 19](#), 44, accessed 27 June 2023.

228 For completeness, we note there was also a secondary issue in the case as to whether the *Land Regulation 2009* (Qld) discriminated against carriers by denying them a right to appeal against rents for their leases.

229 Optus, [Submission to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), May 2023, p 6, accessed 27 June 2023.

230 For example, IPART, [Review of rental arrangements for communication towers on Crown land](#), November 2019, p 5, accessed 27 June 2023.

5.2 Land access costs vary significantly

Land access costs vary by site size, landlord, tenure type, market conditions, state or territory, and geographic region.²³¹ The costs are highly site specific and can include initial costs such as site selection, commercial negotiation, state and territory planning, authorisation costs, and ongoing rental costs. Further, tenure costs and risk vary by landlord – the short-term nature of commercial leaseholds can increase long-term risks for access costs.

In response to our consultation paper, stakeholders emphasised the importance of both the location of suitable land and the potential for the commercial development of that land.²³² This is because costs can depend on how the surrounding land is ‘zoned’ (residential, commercial or rural) and even the local community’s views. For example, Amplitel submitted that its towers are often located at high points in sometimes ‘sensitive’ areas, as they occasionally coincide with local landmarks, national parks, or areas of significance for First Nations landowners.²³³

We observed a large sample of land access agreements provided confidentially to the ACCC. We observed agreements for both private and government landlords with nominal rental amounts, across a range of ABS areas of remoteness.²³⁴

We also observed that land rental costs can vary immensely. One stakeholder considered that current land access prices may be in the order of 40% to 80% above true market rates. They argued that rental prices have been significantly impacted by high fixed annual rent increases, overly anxious lessees, unwilling landlords, ratchet clauses which prevent true market reviews and the previous Independent Pricing and Regulatory Tribunal Schedules of 2005 and 2013.²³⁵

One stakeholder noted that the market continues to suffer from the hasty rollout and expansion of tower leases, which began 30 years ago when mobile phones became widely available in Australia. They assert that these ‘legacy’ agreements are based on uncommercial and outdated terms, which have no association with current market rates. The stakeholder notes that all major carriers are now attempting to renegotiate these agreements to bring them closer to current market rents.²³⁶

Additional costs

There are a number of additional costs specified in some of the confidential land access agreements. Many agreements stipulated that the lessee is responsible for utilities (such as electricity), land taxes and, in a more limited number of cases, council rates.²³⁷ Other costs found in some agreements include:

- legal costs and stamp duty
- vermin mitigation
- bushfire abatement and/or mitigation.²³⁸

231 Amplitel, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 32, accessed 27 June 2023; and BAI Communications, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 16 August 2022, p 6, accessed 27 June 2023.

232 Amplitel, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, pp 18–19, accessed 27 June 2023; and Telstra, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 14, accessed 27 June 2023.

233 Amplitel, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 19, accessed 27 June 2023.

234 Information provided by stakeholders but is not representative of all responses.

235 Information provided by stakeholder.

236 Information provided by stakeholder.

237 Information provided by stakeholders but is not representative of all responses.

238 Information provided by stakeholders but is not representative of all responses.

Co-user fees

As noted below, some landlords are imposing additional co-user fees. One stakeholder observed that private landlords are seeking more control over tenants and are increasingly negotiating clauses to capture additional value from increased tower utilisation. Further, they note that some government or commercial landlords may charge additional fees depending on how many tenants are on the site.²³⁹

The same stakeholder also observed that private landlords are seeking to increase controls such as requiring consent for additional tenants or undertaking routine maintenance. They argued that this consequently increases the administrative burden and increases the timeframes for co-location.²⁴⁰

5.3 Costs of accessing Crown land

Commercial data

The data we gathered through land access agreements shows that leasing costs for government land varies significantly, and in some cases is less expensive than private landlords.²⁴¹ It is important to note that this data was drawn from a sample of land access agreements spanning several years and may not reflect current market values or current pricing by government landlords.²⁴²

One stakeholder reported that ongoing lease costs for Crown Land in regional and remote areas is between 100% to 300% higher than for private land.²⁴³ Another stakeholder reported local government landlords are now seeking to negotiate significantly higher rents based on third party valuations.²⁴⁴

Industry submissions

The Inquiry heard that access to government land is significantly more expensive than access to private land.²⁴⁵ NBN Co submitted that access costs are typically higher for public land based on the need to engage with multiple agency approval processes and the lengthy periods for obtaining approvals.²⁴⁶ The Australian Mobile Telecommunications Association also noted that rents for private land are not comparable to Crown rents.²⁴⁷ NBN Co and other stakeholders also raised the additional imposition of co-user fees by government landlords, even where the primary tenant is paying the rent and the co-user makes no further encumbrance on the land.²⁴⁸

The Department of Regional NSW's submission outlined the annual fees the NSW National Parks and Wildlife Service charges for all telecommunications facilities located on reserved land. Currently, for primary users, the fees are approximately \$18,000 for sites in remote areas and \$32,000 for sites

239 Information provided by stakeholders but is not representative of all responses.

240 Information provided by stakeholder.

241 Information provided by stakeholders but is not representative of all responses.

242 Information provided by stakeholders but is not representative of all responses.

243 Information provided by stakeholder.

244 Information provided by stakeholder.

245 Australian Mobile Telecommunications Association (AMTA), [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 1 September 2022, p 5, accessed 27 June 2023; NBN Co, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 8 August 2022, p 9, accessed 27 June 2023; Telstra, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 14, accessed 27 June 2023; Waveconn, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 4, accessed 27 June 2023.

246 NBN Co, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 8 August 2022, p 9, accessed 27 June 2023.

247 Australian Mobile Telecommunications Association (AMTA), [Public Submission to the Regional Mobile Infrastructure Inquiry – Report on Preliminary Findings](#), 16 May 2023, p 5, accessed 27 June 2023.

248 Amplitel, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, pp 35, 45, accessed 27 June 2023; NBN Co, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 8 August 2022, p 11, accessed 27 June 2023.

in regional areas. The fees for co-users are between approximately \$9,000 for remote areas and \$16,000 for regional areas. Fees are reviewed every 5 years and adjusted based on the rental market for communications facilities. They can vary depending on location and can be increased annually based on the Australia CPI.²⁴⁹

Many industry stakeholders supported the recommendations made by the 2019 NSW Independent Pricing and Regulatory Tribunal (IPART) Review of Rental Arrangements for Communications Towers on Crown Land, which recommended significantly reduced rents. The Independent Pricing and Regulatory Tribunal's review recommended annual rents for locations in NSW ranging from \$508 for very remote areas to \$16,900 for metropolitan areas. TPG Telecom submitted that the Independent Pricing and Regulatory Tribunal's recommendations should be applied more broadly across the country. However, as Australian Mobile Telecommunication Association noted, the Independent Pricing and Regulatory Tribunal recommendations have not been adopted anywhere, and some state and territory governments have not reviewed pricing structures for several years.²⁵⁰

Amplitel submitted that government landowners are in a unique position to reduce the cost of infrastructure deployment in regional Australia by reducing rents on government lands. Amplitel advocated for the adoption of a consistent whole-of-government approach.²⁵¹ Telstra also argued that land access reform could lead to significant cost savings and would enhance the economics of extending mobile coverage to regional and peri-urban locations.²⁵² Similarly, Waveconn considered that more favourable public land access arrangements would support increased investment.²⁵³ The Australian Mobile Telecommunication Association also submitted that land access costs should be considered and addressed by the Australian government to improve regional mobile coverage.²⁵⁴

The Australian Mobile Telecommunications Association argued that the ACCC's Preliminary Report findings 10 and 11 around the varying costs of land access indicated a need for state and territory governments to review the rent setting for access to Crown land. It considers that the rentals charged for other users of Crown land and the value of that land is the appropriate basis for setting Crown rents for mobile network operators. It argued that to charge otherwise would be discriminatory and inconsistent with Schedule 3 of the Telecommunications Act.²⁵⁵

Optus submitted that a key cost impediment to infrastructure deployment and greater mobile coverage is the discriminatory treatment of land access fees and approvals for telecommunications assets. Optus asserts that it is often treated inconsistently compared with other utilities such as gas, water and electricity. Optus further argued that the ACCC should make findings that governments should audit the extent to which land access fees and approvals are consistent with the non-discrimination laws under the Telecommunications Act.²⁵⁶

249 Department of Regional NSW, [Public submission to the Regional Mobile Infrastructure Inquiry](#), August 2022, pp 3–4, accessed 27 June 2023.

250 Australian Mobile Telecommunications Association (AMTA), [Public Submission to the Regional Mobile Infrastructure Inquiry – Report on Preliminary Findings](#), 16 May 2023, p 5, accessed 27 June 2023.

251 Amplitel, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, pp 47–48, accessed 27 June 2023.

252 Telstra, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 14, 17, accessed 27 June 2023; TPG Telecom, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 5 August 2022, p 6, accessed 27 June 2023.

253 Waveconn, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 3, accessed 27 June 2023.

254 Australian Mobile Telecommunications Association (AMTA), [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 1 September 2022, p 4, accessed 27 June 2023.

255 Australian Mobile Telecommunications Association (AMTA), [Public Submission to the Regional Mobile Infrastructure Inquiry – Report on Preliminary Findings](#), 16 May 2023, p 5, accessed 27 June 2023.

256 Optus, [Public Submission to the Regional Mobile Infrastructure Inquiry – Report on Preliminary Findings](#), May 2023, pp 2, 4–6, accessed 27 June 2023.

► Finding 10

Land access costs are highly site specific, with considerable variance in costs across states and territories, areas of remoteness and private and government landlords. Stakeholders submitted that access to government land is significantly more expensive than private land in terms of ongoing lease payments. However, we have found significant variance in land leases including between private and public land and that public land is not always more expensive.

5.4 Planning rules vary across states, territories and different levels of government

Stakeholders consistently reported that the deployment of telecommunications infrastructure is affected by a range of factors including:

- negotiations with landlords about developments
- development applications
- inconsistent state and territory government planning approval requirements
- delays resulting from adverse planning outcomes (and, in some, cases lengthy court disputes)
- local community opposition
- scarcity of local government sites zoned for commercial or industrial use
- council elections, resulting in new local governments during the planning process
- the rights to traverse neighbouring land
- national park access rules
- heritage laws
- native title laws
- access to power networks
- construction/maintenance of access roads.

The Inquiry heard from the Department of Regional NSW regarding a range of planning costs for NSW Crown lands. The Department noted that assessing new planning applications can involve substantial time and resources including environmental impact assessments, heritage and First Nations cultural impact assessments, and assessing bushfire mitigation measures.²⁵⁷

During a 2023 Standing Committee on Communications and the Arts session, Telstra stated that one of the biggest challenges is local government inconsistency for planning and approval processes. It noted that planning issues were handled by the state governments in Victoria and Tasmania, while in Queensland they tended to be managed by the local government.²⁵⁸

Similarly, during the Inquiry's industry stakeholder forum, some stakeholders expressed frustration that a national issue such as telecommunications infrastructure is impacted by varying levels

257 Department of Regional NSW, [Public submission to the Regional Mobile Infrastructure Inquiry](#), August 2022, p 4, accessed 27 June 2023.

258 Telstra, [Committee Hansard House of Representatives Standing Committee on Communications and the Arts Co-investment in multi-carrier regional mobile infrastructure](#), 22 March 2023, accessed 23 June 2023.

of government. Stakeholders also agreed that land access varies significantly between levels governments and noted that some States and Territories were easier to work with than others.²⁵⁹

Further, also at the industry stakeholder forum, some industry stakeholders reported inconsistent application of planning rules by local government bodies. Several stakeholders gave examples of issues they'd experienced with access to land:

- In an example from Western Australia, the land access arrangements had been taken to court several times.
- There were examples of councils taking many years to review land access agreements.
- Some councils require ex gratia payments and stakeholders consider that this may be done to delay or stop the approval process.
- In an example from Queensland, a council required \$35,000 just to apply for a development application.
- Sometimes one councillor can hold up a whole process.
- There were also reports of inconsistent application of planning rules by some local government bodies.²⁶⁰

Planning costs and timeframes

During the Inquiry the ACCC observed the following site selection, acquisition, engineering design and planning approval costs, which are referred to generally here as planning costs.

- **Planning and approval costs:** the ACCC observed variations in planning and approval costs, with the average cost approximately \$74,000 per site, however one stakeholder noted that some sites may cost up to \$300,000 per site.²⁶¹ Another stakeholder reported that the cost of council permits between regional and metropolitan regions can vary significantly, and be up to approximately \$23,000 more expensive in regional areas.²⁶²
- **Appeal costs:** one stakeholder reported that the costs of appealing an adverse planning decision and resolving issues in conferences can range between \$60,000 and \$120,000 and the costs of an appeal can be a further \$150,000 and \$300,000 for a planning/environmental court hearing (including legal fees, expert opinions and junior barrister).²⁶³
- **Community consultation costs:** one stakeholder reported significant variation in consultation costs, especially for heritage sites or requirements to access First Nations land. They noted that costs can range from \$20,000 to \$40,000 per site, with some sites exceeding \$100,000.²⁶⁴
- **Timeframes:** Based on one stakeholder's submission, it could take up to 3 years to secure a site, depending on whether there are objections or the need for negotiation or appeals.²⁶⁵

259 ACCC, [Industry Stakeholder Forum](#), 16 March 2023, accessed 27 June 2023.

260 ACCC, [Industry Stakeholder Forum](#), 16 March 2023, accessed 27 June 2023.

261 Information provided by stakeholder.

262 Information provided by stakeholder.

263 Information provided by stakeholder.

264 Information provided by stakeholder.

265 Information provided by stakeholder.

5.5 Stakeholders advocated for planning reforms

In submissions to the consultation paper and the report on preliminary findings, industry stakeholders expressed support for reforms to streamline existing rules and better facilitate infrastructure deployment.

The Australian Mobile Telecommunications Association noted that there is a patchwork of rules and processes across 8 state and territory governments, as well as 537 councils in Australia. These rules and processes may be costly and resource intensive to navigate.²⁶⁶ Optus considered that the government should assist in streamlining land access across Australia, as operating across multiple planning jurisdictions is one of the major impediments to deployment of regional infrastructure.²⁶⁷ Amplitel and Telstra submitted that planning reform is required to increase efficiency and reduce the cost of securing land.²⁶⁸

At the Inquiry's industry stakeholder forum, stakeholders suggested the NSW State Environmental Planning Policy was an effective planning approvals and exemptions model and recommended that it be adopted more broadly.²⁶⁹ They noted that the NSW Policy streamlines planning approvals and contains exemptions for certain telecommunications infrastructure deployment and upgrades.

During a 2023 Standing Committee on Communications and the Arts session, Telstra noted that no jurisdiction could be considered 'gold standard' for planning processes. It suggested that some of the local government area processes could be transferred to State governments to better promote commonality and reform. At that same session, Telstra also noted it inflates its stated costs in Federal telecommunications funding programs to account for costs associated with planning processes. It suggested that a harmonised approach would reduce costs and provide better value for public money.²⁷⁰

The Australian Mobile Telecommunications Association noted recommendations in its 5G State and Territory Readiness Assessment relating to Development Approval are grounded in the principles and guidance found in the 'Leading Practice Model for Development Assessment in Australia' produced by the Development Assessment Forum. It highlights the benefits of the Development Assessment Forum model and the inclusion of planning controls like those successfully used in the NSW State Environmental Planning Policy.²⁷¹ Telstra also supported the reforms outlined in the Australian Mobile Telecommunications Association's State and Territory 5G Infrastructure Readiness Assessment Report regarding access to crown land.²⁷²

266 Australian Mobile Telecommunications Association (AMTA), [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 1 September 2022, p 6, accessed 27 June 2023.

267 Optus, [Public submission to the ACCC's Report on Preliminary Findings](#), May 2023, p 2, accessed 27 June 2023.

268 Amplitel, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 4, accessed 27 June 2023; Telstra, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, pp 14,18, accessed 27 June 2023.

269 ACCC, [Industry Stakeholder Forum](#), 16 March 2023, accessed 27 June 2023.

270 Telstra, [Committee Hansard House of Representatives Standing Committee on Communications and the Arts Co-investment in multi-carrier regional mobile infrastructure](#), 22 March 2023, pp 5–6, accessed 23 June 2023.

271 Australian Mobile Telecommunications Association (AMTA), [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 1 September 2022, p 6, accessed 27 June 2023.

272 Telstra, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 18, accessed 27 June 2023; Australian Mobile Telecommunications Association (AMTA), [5G Infrastructure Readiness Assessment](#), March 2021, accessed 27 June 2023.

In addition to these proposed consistency measures, stakeholders advocated for a range of other reforms, namely:

- Amplitel submitted that non-carrier mobile network infrastructure providers should be exempt from planning and development approvals for towers, particularly those built via co-funding programs and below specified heights.²⁷³
- Amplitel also noted that minimum required lot sizes for telecommunications towers creates unnecessary costs by mandating the purchase of more land than required and supported a reconsideration.²⁷⁴
- The Australian Mobile Telecommunications Association and Telstra called for an update to the Communications Alliance Mobile Base Station Deployment Code. They considered that it currently creates unnecessary costs when notifying Interested and Affected Parties.²⁷⁵

► Finding 11

Accessing land across different government planning jurisdictions can be complex, lengthy, and costly. Many industry stakeholders advocate for a range of reforms to improve consistency of regulations and to better facilitate infrastructure deployment.

5.6 The impact of land aggregators

Land aggregators are emerging entities in the Australian telecommunications sector. Indara noted that it could be considered a land aggregator, given that it aggregates land to service the telecommunications industry through the consolidated management of telecommunications infrastructure.²⁷⁶

Land aggregators may engage in tower lease buyout schemes by acquiring long-term rental contracts from property owners in exchange for the right to receive ongoing rent from telecommunications providers.²⁷⁷ The Australian Mobile Telecommunications Association and Telstra submitted that aggregators such as AP Wireless and Landmark Dividend procure land in this way.²⁷⁸ Both the Australian Mobile Telecommunications Association and Telstra also submitted that many land aggregators are 'well supported' and that some are backed by major pension funds.²⁷⁹

Stakeholders highlighted the potential impact that land aggregators may have on regional infrastructure deployment. The Australian Mobile Telecommunications Association and Telstra asserted that the impact of land aggregators may be more pronounced in regional areas, where

273 Amplitel, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, pp 4, 18, accessed 27 June 2023.

274 Amplitel, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, pp 18, 20, accessed 27 June 2023.

275 Australian Mobile Telecommunications Association (AMTA), [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 1 September 2022, p 4, accessed 27 June 2023; Telstra, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, pp 14–15, accessed 27 June 2023.

276 Indara, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 11, accessed 27 June 2023.

277 Telstra, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 16, accessed 27 June 2023.

278 Australian Mobile Telecommunications Association (AMTA), [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 1 September 2022, p 6, accessed 27 June 2023; and Telstra, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 16, accessed 27 June 2023.

279 Australian Mobile Telecommunications Association (AMTA), [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 1 September 2022, p 6, accessed 27 June 2023; Telstra, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 16, accessed 27 June 2023.

landholdings are larger and the choice of alternative sites is much smaller.²⁸⁰ Several stakeholders submitted that land aggregators that procure rental contracts and speculate on land (ahead of towers being built) may potentially increase rental costs.²⁸¹ Field Solutions Group asserts that this behaviour ties up land and has the potential to lessen service levels, with providers having to select less-than-optimal tower locations where multiple parcels of land are targeted.²⁸²

Another stakeholder observed that land aggregators increase the overall cost of providing telecommunications infrastructure by arbitraging the high cost to relocate through rent increases. They highlighted that once installed, there are significant barriers to moving equipment for costs reasons as well as maintaining optimised network performance. Tower companies have limited ability to push back on price increases because of the sunk costs (locations having been originally determined by the required cellular network radio frequency footprint).²⁸³

At the Inquiry's industry stakeholder forum, we heard that the full effect of land aggregators in the market is yet to be seen.²⁸⁴ A stakeholder noted that land aggregators currently hold a small percentage of the private land lease market and further increases in ownership may lead to rent seeking.²⁸⁵

280 Australian Mobile Telecommunications Association (AMTA), [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 1 September 2022, p 6, accessed 27 June 2023; Telstra, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 1, accessed 27 June 2023.

281 Australian Mobile Telecommunications Association (AMTA), [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 1 September 2022, p 6, accessed 27 June 2023; Field Solutions Group, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), August 2022, p 7, accessed 27 June 2023; Telstra, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 16, accessed 27 June 2023; TPG Telecom, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 5 August 2022, p 8, accessed 27 June 2023.

282 Field Solutions Group, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), August 2022, p 7, accessed 27 June 2023.

283 Information provided by stakeholder.

284 ACCC, [Industry Stakeholder Forum](#), 16 March 2023, accessed 27 June 2023.

285 ACCC, [Industry Stakeholder Forum](#), 16 March 2023, accessed 27 June 2023.

6. Effectiveness of tower access arrangements

The Direction requires the ACCC to have regard to the existing commercial arrangements and other fee arrangements under which third party telecommunications provider and other likely users can access towers and associated infrastructure, as well as their effectiveness. We are also required to have regard to the effectiveness of current commercial and regulatory arrangements in enabling third party telecommunications providers and other likely users to access towers and associated infrastructure.

6.1 Commercial arrangements for access to towers may be limiting coverage expansion

As outlined in chapter 2, Part 3 of Schedule 1 to the Telecommunications Act requires carriers who own or operate existing facilities to provide other carriers with access. Part 34B of the Telecommunications Act has a similar requirement in relation to companies in a carrier company group.

As such, mobile network operators and mobile network infrastructure providers have developed processes and agreed on commercial arrangements to facilitate access to telecommunications infrastructure, such as towers.

Arrangements between mobile network operators and mobile network infrastructure providers are governed by commercially negotiated access arrangements within the framework established by the Telecommunications Act. Access to towers can be through a master services agreement, which is generally used for larger site volumes, or an individual site agreement or other ad hoc arrangement, which are generally used for smaller site volumes.²⁸⁶

Commercial arrangements involve various fees and long-term contracts

Commercial arrangements for access to towers involve multiple types of fees, including application fees, assessment fees, recurring annual fees and additional fees for the ground lease.²⁸⁷ There may also be volume or co-location discounts on these fees.²⁸⁸ Other costs associated with tower access are generally managed on a site-by-site basis, such as costs for upgrades or strengthening a tower.²⁸⁹

Costs for providing towers may increase by remoteness but the appetite or ability for multiple tenancies decreases by remoteness. This means there are complex incentives for mobile network infrastructure providers in establishing their fee arrangements with mobile network operators. As noted in Chapter 4, how remoteness impacts the access fees set by the mobile network infrastructure

286 NBN Co, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 8 August 2022, p 9, accessed 27 June 2023.

287 Field Solutions Group, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 10 August 2022, p 6, accessed 27 June 2023.

288 Field Solutions Group, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 10 August 2022, p 6, accessed 27 June 2023.

289 NBN Co, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 8 August 2022, p 9, accessed 27 June 2023.

providers vary across commercial agreements and it is unclear exactly what drives these differences. Historically, fees were usually based on a cost-per-equipment basis.²⁹⁰

More recently some mobile network infrastructure providers have moved to an 'effective sail area' pricing model.²⁹¹ This pricing model can be used to determine the structural impact of an equipment configuration on a structure.²⁹² The effective sail area model allows for greater flexibility as the access seeker can deploy equipment up to the top of the agreed effective sail area (in metres squared (m²)) without incurring additional costs.²⁹³

We have heard that several factors influence the overall fees that a tenant, such as a mobile network operator, pays to a mobile network infrastructure provider. Indara submitted that there are no 'typical' commercial arrangements.²⁹⁴ Different mobile network infrastructure providers consider different factors when setting fees, but can include factors such as initial asset sale prices, pricing approach (e.g. portfolio-wide or geographically based), contributions requests to tower upgrades, take-or-pay obligations, and volume and co-location discounts.²⁹⁵

Amplitel and Indara both submitted that tower provision costs determine fees for access, however there were differing views about how tower purchase costs affect fee calculations.²⁹⁶ Amplitel submitted that securing a return on investment for the cost of purchasing tower assets is not a factor that it considers in establishing access costs, while Indara submitted that tower infrastructure is managed based on recovering costs over the long term in return for an upfront capital outlay.²⁹⁷

During the industry forum, some attendees noted that the divestment gives better visibility and understanding of how costs are allocated and how capital is allocated.²⁹⁸ Attendees also noted that investment decisions are being made more holistically, rather than based on a mobile network operator's access to capital.²⁹⁹

We understand that each of the mobile network operators have a long-term agreement in place with a mobile network infrastructure provider, which they have negotiated from a significant bargaining position (the sale of their assets to the mobile network infrastructure provider). The mobile network operators can also enter into contracts with other mobile network infrastructure providers and build their own sites if needed (although there can be restrictions or financial implications of doing so in existing commercial arrangements).

290 NBN Co, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 8 August 2022, p 9, accessed 27 June 2023.

291 NBN Co, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 8 August 2022, p 9, accessed 27 June 2023.

292 NBN Co, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 8 August 2022, p 9, accessed 27 June 2023.

293 NBN Co, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 8 August 2022, p 9, accessed 27 June 2023.

294 Australia Tower Network (now Indara), [Public submission to the Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 10, accessed 27 June 2023.

295 Australia Tower Network (now Indara), [Public submission to the Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 5, accessed 27 June 2023; Field Solutions Group, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 10 August 2022, p 6, accessed 27 June 2023.

296 Amplitel, [Submission to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), 16 May 2023, p 4, accessed 27 June 2023; Australia Tower Network (now Indara), [Public submission to the Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 12, accessed 27 June 2023.

297 Amplitel, [Submission to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), 16 May 2023, p 4, accessed 27 June 2023; Australia Tower Network (now Indara), [Public submission to the Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 1, accessed 27 June 2023.

298 ACCC, [Industry Stakeholder Forum](#), 16 March 2023, accessed 27 June 2023.

299 ACCC, [Industry Stakeholder Forum](#), 16 March 2023, accessed 27 June 2023.

Some stakeholders think commercial arrangements are effective in facilitating access to towers

Telstra and Amplitel both submitted that the current commercial arrangements are fit for purpose and effective in facilitating tower access.³⁰⁰ Indara considers its agreements with its customers are effective, in that they enable ‘sufficiently comfortable’ transactions with mobile network operators to achieve increased co-location.³⁰¹ Further, most stakeholders noted during the industry stakeholder forum that they had not experienced issues accessing towers in the new industry structure.³⁰²

Amplitel submitted that there are new commercial arrangements in the process of being negotiated, and this will take time to be implemented and will involve negotiation tension, which it considers would be expected for substantial commercial arrangements.³⁰³

Other stakeholders raised concerns about high access fees

However, the divestment transactions appear to impact some mobile network infrastructure provider’s access costs, in that access fees can take into consideration the value of the divestment transactions.³⁰⁴ Tower access fees can reflect both the operation of, and investment in, the mobile network infrastructure provider’s tower network, and recovering the capital outlay in purchasing the towers. There are concerns among stakeholders that access fees may be too high to promote access via co-location.

NBN Co submitted that mobile network infrastructure providers have tower revenue as their core business and this contributed to ‘generally high-cost commercial arrangements’ arrangements with mobile network operators.³⁰⁵ TPG Telecom submitted that access fees required by mobile network infrastructure providers are an ongoing barrier to increased co-location and that reducing the cost of accessing existing infrastructure would result in improved competitiveness in downstream markets.³⁰⁶ TPG Telecom noted that there are immediate opportunities to co-locate in inner and outer regional areas, specifically in the 2,853 Telstra-only and 1,249 Optus-only sites.³⁰⁷ TPG Telecom also stated that the basis for annual access fees for co-location were unclear and raised the question of what ‘legitimate’ costs mobile network infrastructure providers were recouping from second or third mobile network operators co-locating on towers.³⁰⁸

During the industry stakeholder forum, one stakeholder noted that when attempting to access towers in remote areas, they considered the price for access was excessively high.³⁰⁹ However, another stakeholder noted that they considered the pricing impact of the tower divestments had been relatively neutral.³¹⁰

The varying views among industry stakeholders suggests the current commercial arrangements are working more effectively for some players in the industry than others.

300 Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 24, accessed 27 June 2023; Amplitel, [Submission to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), 16 May 2023, p 5, accessed 27 June 2023.

301 Australian Mobile Telecommunications Association (AMTA), [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 1 September 2022, p 12, accessed 27 June 2023.

302 ACCC, [Industry Stakeholder Forum](#), 16 March 2023, accessed 27 June 2023.

303 Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 40, accessed 27 June 2023.

304 Australia Tower Network (now Indara), [Public submission to the Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 12, accessed 27 June 2023.

305 NBN Co, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 8 August 2022, p 9, accessed 27 June 2023.

306 TPG Telecom, [Public Submission to the Report on Preliminary Findings](#), 16 May 2023, pp 2–3, accessed 27 June 2023.

307 TPG Telecom, [Public Submission to the Report on Preliminary Findings](#), 16 May 2023, p 3, accessed 27 June 2023.

308 TPG Telecom, [Public Submission to the Report on Preliminary Findings](#), 16 May 2023, pp 3-4, accessed 27 June 2023.

309 ACCC, [Industry Stakeholder Forum](#), 16 March 2023, accessed 27 June 2023.

310 ACCC, [Industry Stakeholder Forum](#), 16 March 2023, accessed 27 June 2023.

6.2 Tower divestment has altered terms of access

The Direction requires the ACCC to have regard to the implications (if any) for the provision of access to towers and associated infrastructure of mobile carriers divesting their tower and associated infrastructure.

The divestments that have occurred in Australia are part of a trend internationally of mobile network operators selling their passive mobile telecommunications infrastructure to specialist mobile network infrastructure providers.

There are varying views on pre-divestment terms of access and several historical concerns raised by stakeholders

Waveconn submitted that prior to divestment, the vertical integration of the mobile network operators (in terms of owning mobile tower infrastructure and providing retail mobile services) meant that they had incentive to frustrate access and to ensure that they had the best access to the infrastructure they owned.³¹¹ TPG Telecom submitted a similar point, stating that Telstra engaged in practices that increased barriers to co-locate, including reserving tower space on a site.³¹²

TPG Telecom submitted that Telstra's conduct resulted in higher costs for the second operator to co-locate, given they had to strengthen the site to account for Telstra's future capacity requirements as well as the second mobile network operators' equipment. TPG Telecom submitted that the additional costs to strengthen a site can be prohibitive.³¹³ Waveconn also submitted that a mobile network operator's revenue cross-subsidised infrastructure costs, further reducing its incentive to maximise access by increasing tenants.³¹⁴

TPG Telecom also submitted that historically, the second mobile network operator locating on a tower was given an artificially lower position on the tower, which led to inferior signal propagation compared to that which is available to the mobile network operator that owned the tower.³¹⁵

In response, Telstra submitted that the protections in the Facilities Access Code, introduced in 2020, prevent the ability to engage in the frustration of access raised by Waveconn and TPG.³¹⁶ It also argued that the separation between operator equipment on towers is industry best practice for technical and health and safety reasons, including to manage interference.³¹⁷

311 Waveconn, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 8, accessed 27 June 2023.

312 TPG Telecom, [Public Submission to Regional Mobile Infrastructure Inquiry](#), 5 August 2022, p 7, accessed 27 June 2023.

313 TPG Telecom, [Public Submission to Regional Mobile Infrastructure Inquiry](#), 5 August 2022, p 7, accessed 27 June 2023.

314 Waveconn, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 8, accessed 27 June 2023.

315 TPG Telecom, [Public Submission to Regional Mobile Infrastructure Inquiry](#), 5 August 2022, p 7, accessed 27 June 2023.

316 Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), 16 May 2023, p 15, accessed 27 June 2023.

317 Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), 16 May 2023, p 16, accessed 27 June 2023.

Stakeholder concerns about incentives remain post-divestment, albeit they have changed focus

Varying views persist among stakeholders about post-divestment terms of access and incentives.

We have heard that the investors behind recent tower divestments are focused on reliable, long-term income streams from stable asset classes.³¹⁸ The mobile network infrastructure providers have the financial incentive to maximise utilisation on their infrastructure through co-locations.³¹⁹

Amplitel noted that one of its strategic objectives is to 'increase utilisation of its infrastructure by providing better access' as well as widening its existing customer base.³²⁰ Waveconn noted that mobile network infrastructure providers have a greater commercial incentive to provide more efficient access to infrastructure than when the infrastructure was vertically integrated with mobile network operators – tenants are now customers, rather than direct competitors.³²¹ This assertion appears to be supported by the rate of co-location on some towers.³²² We have also observed within master services agreements that there can be a co-location discount provided, which varies with the number of tenants on the tower. These discounts can be significant.³²³

Field Solutions Group considered that one of the impacts of divestment, given that new tower owners are looking to maximise their returns, is a 'freeing up' of space on towers of what would otherwise be reserved space.³²⁴

TPG Telecom submitted that the structural change in the mobile network infrastructure market may solve some of the legacy access issues within the industry, however it may also amplify other issues such as increasing the incentives for rent-seeking behaviour by tower companies.³²⁵

Industry dynamics post-divestment

Ideally, the divestment of tower and associate infrastructure by the mobile network operators and the formation of vertically separated mobile network infrastructure providers should mean that the market for the provision of tower access is more competitive. This is because the mobile network infrastructure providers should have the incentive to maximise tenancy on and revenue derived from their infrastructure. In such a market, the mobile network infrastructure providers are fully independent and compete with each other for the business of all mobile network operators. One key question to consider is whether the divestment of tower assets by mobile network operators means it has become easier, and potentially less costly, for them to seek co-location in providing greater mobile coverage.

However, while it is still early days, we have heard concerns from mobile network operators that they have not seen increased competition for the provision of tower access post-divestment. During the industry stakeholder forum, we heard some views that there was not consistent competition across

318 Australia Tower Network (now Indara), [Public submission to the Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 15, accessed 27 June 2023.

319 Australia Tower Network (now Indara), [Public submission to the Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 15, accessed 27 June 2023.

320 Amplitel, [Public Submission to Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 8, accessed 27 June 2023.

321 Waveconn, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 1, accessed 27 June 2023.

322 For example, Indara outlines that it is aiming for tenancy ratios that exceed 2.5x across its portfolio, with existing tenancy ratios being around 1.5x or above by region. Australia Tower Network (now Indara), [Public submission to the Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 6, accessed 27 June 2023.

323 Information provided by stakeholders.

324 Field Solutions Group, [Public Submission to Regional Mobile Infrastructure Inquiry](#), 10 August 2022, p 8, accessed 27 June 2023.

325 TPG Telecom, [Public Submission to Regional Mobile Infrastructure Inquiry](#), 5 August 2022, p 7, accessed 27 June 2023.

tower sites.³²⁶ Some industry stakeholders noted that competition for the provision of access to existing sites only increases in relation to sites where there is a substitutable site nearby, however this is not often the case.³²⁷

In reality, the ACCC considers that the divestment of tower assets to mobile network infrastructure providers has created anchor tenants for infrastructure providers, which are their associated mobile network operator (i.e. the operator that owned the towers prior to divestment).

Anchor tenants can be beneficial for infrastructure provision generally, as they provide certainty to the infrastructure provider of investment returns that enables it to build and maintain the infrastructure. On the other hand, where a mobile network infrastructure provider has a long-term access agreement with a mobile network operator of this kind, it may not be incentivised to attract additional tenants to its towers. This is particularly true if the mobile network infrastructure provider is already profit maximising off a single tenant.

The anchor tenant relationship may also create restrictions for the mobile network operators. For the anchor tenant mobile network operator, there are costs involved in switching to another mobile network infrastructure provider and there may not be suitable existing infrastructure nearby. There may also be legacy issues for a co-locating mobile network operator, where the original mobile network operator has not optimally positioned its equipment within a particular space or 'aperture' now used by the mobile network infrastructure provider to separate co-located equipment.

This means that while the divestments made commercial sense for the mobile network operators, the extent to which the new industry structure could lead to better access to towers, compared to pre-divestment structure, is unclear.

In addition, the mutually dependent nature of the anchor tenant relationship means that the mobile network operator and their mobile network infrastructure provider could seek to protect each other's commercial and strategic interests in their commercial arrangements. This could have implications for other related markets.

As noted in Chapter 4, we would expect that a competitive market for the provision of tower access could lead to the development of a broader market for the provision of neutral host services. On this point, Vocus submitted that the mobile network infrastructure providers have an economic incentive to provide neutral host networks, as they benefit from multiple mobile network operators utilising their infrastructure.³²⁸ Vocus also submitted that mobile network infrastructure providers would not lose any market advantage as the same coverage would be equally available to all mobile network operators.³²⁹

The ACCC has reason to believe that the current market dynamics and commercial arrangements may not be conducive to the development of a broader market for the provision of neutral host models. We have observed that there can be restrictive provisions within a master services agreement between a mobile network infrastructure provider and a mobile network operator. The ACCC considers that restrictive provisions may, in some instances, limit or impact the activities that parties to the agreement can undertake.

326 ACCC, [Industry Stakeholder Forum](#), 16 March 2023, accessed 27 June 2023.

327 ACCC, [Industry Stakeholder Forum](#), 16 March 2023, accessed 27 June 2023.

328 Vocus, [Submission to the ACCC Regional Mobile Infrastructure Inquiry](#), 27 March 2023, p.2, accessed 27 June 2023.

329 Vocus, [Submission to the ACCC Regional Mobile Infrastructure Inquiry](#), 27 March 2023, p.2, accessed 27 June 2023.

Divestment has not solved the incentive problems some stakeholders were concerned about

Some stakeholders have raised concerns that due to the remaining vertical integration between Telstra and Amplitel, there is an ongoing incentive and opportunity for Amplitel to favour Telstra.³³⁰ Due to the risk of vertical effects, we have heard ongoing concerns around whether the divestments overall have improved accessibility to towers, particularly in regional and remote areas where most towers are operated by Amplitel.

Telstra retains a 51% majority ownership of Amplitel.³³¹ Amplitel was established as a standalone business with the sale of a non-controlling 49% interest to a consortium of superannuation funds.³³² Both Amplitel and Telstra stressed that Amplitel operates as a separate and independent business to Telstra, with Telstra having no rights to reject an Amplitel customer's order.³³³ Amplitel objected to the ACCC's concerns regarding its commercial impartiality, stating that it 'is an independent company focused on delivering returns to shareholders from its infrastructure assets.'³³⁴

Although stakeholders only raised concerns about Amplitel and Telstra's relationship, we note that there is a similar relationship between Indara and Optus, given the Singtel's (Optus's parent company) remaining ownership stake in Indara (albeit to a lesser extent). Waveconn and TPG Telecom are completely separate entities, however TPG Telecom appears linked to Waveconn in a similar manner to Telstra and Optus with Amplitel and Indara, respectively.

Divestment appears to have created opposing incentives for mobile network infrastructure providers, depending on whether they have one of these anchor tenants that are subject to restrictive agreements. Where an infrastructure provider does not have such an agreement with an anchor tenant, there is an incentive to attract as many tenants as possible to maximise earnings. However, an infrastructure provider that is already maximising its earnings from an anchor tenant with a restrictive agreement has minimal incentive to attract additional tenants, as it is likely to already be earning returns to cover investment.

► Finding 12

There are conflicting views among stakeholders about whether commercial arrangements for access to towers, particularly tower access fees, are working effectively. Some stakeholders consider that access fees may be too high to promote co-location on existing towers.

It is unclear whether divestment of towers will lead to better access compared with the situation pre-divestment, based on 2 factors. First, each of the mobile network operators have become the anchor tenant of the mobile network infrastructure provider who purchased its towers. This affects the incentives of the mobile network infrastructure provider to compete for new tenants. Second, there remains vertical integration between some industry players.

330 National Farmer's Federation, [Submission to the Regional Mobile Infrastructure Inquiry](#), 16 August 2022, p 6, accessed 27 June 2023; TPG Telecom, [Submission to the Regional Mobile Infrastructure Inquiry](#), 5 August 2022, p 8, accessed 27 June 2023.

331 Telstra, [Introducing Amplitel, the largest mobile infrastructure provider in Australia](#), 1 September 2021, accessed on 23 June 2023, accessed 27 June 2023.

332 ITNews, [Telstra sells 49 percent of towers business for \\$2.8bn](#), 30 June 2021, accessed 23 June 2023, accessed 27 June 2023.

333 Amplitel, [Public Submission to ACCC Report on Preliminary Findings](#), 16 May 2023, pp 6–7, accessed 27 June 2023, Telstra, [Public Submission to ACCC Report on Preliminary Findings](#), 16 May 2023, p 14, accessed 27 June 2023.

334 Amplitel, [Public Submission to ACCC Report on Preliminary Findings](#), 16 May 2023, pp 6–7, accessed 27 June 2023.

6.3 Regulatory arrangements for access to towers could be more effective

As detailed in Chapter 1, the current coverage of the regulatory framework and application of certain powers and immunities depend on whether a company has a carrier licence or is part of a carrier company group, where at least one company is a carrier.

Divestment of towers means regulatory arrangements do not apply evenly to entities with similar operations

We note, however, that for an access seeker that is co-located on infrastructure that has now been divested, it likely means that the access seeker will need to enter into a new agreement with the new mobile network infrastructure provider. While some of the mobile network infrastructure providers are subject to the Part 34B access regime in the Telecommunications Act, others are not.

Table 10: Application of various regulatory arrangements

Entity	Carrier status	Subject to Part 34B of the Telecommunications Act	Subject to Parts 3 and 5 of Schedule 1 of the Telecommunications Act
Amplitel	Part of carrier group	Yes	No
Telstra	Carrier	No	Yes
Indara	Part of carrier group	Yes	No
Optus	Carrier	No	Yes
Waveconn	Not part of carrier group	No	No
TPG Telecom	Carrier	No	Yes
BAI Communications	Part of carrier group	Yes	No

Where the mobile network infrastructure provider is not subject to the Part 34B regime, there is no access to the negotiate-arbitrate regime, despite previous arrangements having this as a fall back. This means that there is no 'threat' of arbitrated pricing or safety net where a commercial agreement cannot be reached. While the recent divestments have highlighted this uneven application of the regulatory regime to mobile network infrastructure providers, there have been providers operating in the market prior to divestment, such as BAI Communications. Consequently, this uneven application of regulation is not an entirely new issue caused by divestments.

Stakeholders had varying views on the effectiveness of current regulatory regimes

There are several stakeholders that consider the regulation is effective or could be reduced. Amplitel submitted that there is no enhancement required to the regulatory access regime, however the current access arrangements could be reduced.³³⁵ This is because in the absence of vertical integration, Amplitel considers that the need for access regulation has diminished.³³⁶ Amplitel submits that it has 'clear commercial incentives to provide access to its infrastructure to

335 Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), 16 May 2023, p 6, accessed 27 June 2023.

336 Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 49, accessed 27 June 2023.

customers.³³⁷ Amplitel also submits that the commercial incentives on both sides should drive appropriate access outcomes through competition.³³⁸

Field Solutions Group submitted that Part 5 of Schedule 1 to the Telecommunications Act has provided an access regime that has 'worked for the most part' given the many co-located towers in operation.³³⁹ Waveconn submitted that it did not see any issues that may arise that are not already covered by the current regulatory arrangements.³⁴⁰

There are other stakeholders who consider that changes to the regulation is needed. TPG Telecom submits that the Facilities Access Regimes in the Telecommunications Act are 'ineffective in practice in assisting access seekers to gain access to existing passive infrastructure on reasonable commercial terms.'³⁴¹ TPG cited the decreased number of co-locations with remoteness, as shown in the ACCC's Mobile Infrastructure Report 2022, to support this point.³⁴²

TPG Telecom submits that there is an opportunity to explore whether the Facilities Access Regimes should be updated to a model similar to Part XIC of the CCA, where the ACCC could set reference prices to access to passive infrastructure.³⁴³ TPG Telecom submits that the declaration-final access determination model under Part XIC is more effective to the negotiate-arbitrate model.³⁴⁴

The Australian Mobile Telecommunications Association submitted that additional support and regulatory relief for the structural upgrade of existing towers would be useful.³⁴⁵ The Australian Mobile Telecommunications Association propose that the regulations allow for additions of headframes and antennas as low-impact sites.³⁴⁶ This would, however, require changes to the list of facilities that must not be determined to be low-impact facilities.³⁴⁷

During the industry stakeholder forum, we heard views that while access to towers is regulated, this does not translate into practice because mobile network infrastructure providers could set access fees at uneconomic rates for second or third mobile network operators, eliminating competition.³⁴⁸ We also heard concerns about tower sites where ownership had changed due to divestment. With towers that were previously owned by a carrier, the tower access was subject to the Facilities Access Regimes in the Telecommunications Act. However, with a change in ownership and no carrier licence in some mobile network infrastructure provider entity groups, there is no safety net as intended by the Facilities Access Regime for future negotiations regarding these existing tower locations.

337 Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 49, accessed 27 June 2023.

338 Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 49, accessed 27 June 2023.

339 Field Solutions Group, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 10 August 2022, p 8, accessed 27 June 2023.

340 Waveconn, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 8, accessed 27 June 2023.

341 TPG Telecom, [Submission to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), May 2023, p 4, accessed 27 June 2023.

342 TPG Telecom, [Submission to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), May 2023, p 3, accessed 27 June 2023.

343 TPG Telecom, [Submission to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), May 2023, p 4, accessed 27 June 2023.

344 TPG Telecom, [Submission to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), May 2023, p 4, accessed 27 June 2023.

345 The Australian Mobile Telecommunications Association, [Submission to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), 16 May 2023, p 4, accessed 27 June 2023.

346 The Australian Mobile Telecommunications Association, [Submission to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), 16 May 2023, p 4, accessed 27 June 2023.

347 For example, see Telecommunications Act, Sch 3 cl 6(7).

348 ACCC, [Industry Stakeholder Forum](#), 16 March 2023, accessed 27 June 2023.

The Facilities Access Regime is no longer fit for purpose

The carrier negotiate-arbitrate Facilities Access Regime has been a feature of the Telecommunications Act since it was enacted. It has not substantively been reviewed since this time, despite suggestions it could be improved.³⁴⁹ As discussed above, the ACCC has observed that incentives for mobile network infrastructure providers may vary depending on relationships with mobile network operators. We also consider an uneven application of the regulatory framework warrants review.

It is difficult to know for certain how this dynamic and differing incentives may play out in the coming years. However, given the above concerns raised by stakeholders, we consider the Facilities Access Regime is no longer fit for purpose and should be reviewed to ensure there are not adverse incentives or limitations to tower access that may limit improved mobile coverage in regional areas.

► Finding 13

The Facilities Access Regimes within the Telecommunications Act are no longer fit for purpose.

The Government should consider whether it is necessary for the Facilities Access Regime to cover all mobile network infrastructure providers, regardless of whether they have a carrier licence or are part of a group that has a carrier company.

The Government should also review the Facilities Access Regime itself to ensure that it remains fit for purpose and is effective in promoting access to towers and associated infrastructure.

349 For example, Department of Broadband, Communications and the Digital Economy (2009), [National Regulatory Reform for 21st Century Broadband](#), Discussion Paper, accessed 27 June 2023.

7. Providing towers and access to towers

Under the Direction, the ACCC is required to have regard to the kinds of matters (including the impact of costs) providers of towers and associated infrastructure consider in deciding to:

- i. provide towers and associated infrastructure
- ii. provide access to towers and associated infrastructure.

In this chapter, we consider the kinds of matters that the 3 major mobile network infrastructure providers (Amplitel, Indara and Waveconn) submitted that they consider in providing towers and access to towers. We also consider submissions from other mobile infrastructure providers such as NBN Co, BAI Communications and Field Solutions Group.

For towers primarily used to provide retail mobile services, the demand for towers is derived from the demand from mobile network operators for those towers. To provide a full picture of the chain of demand, this chapter will consider the matters that influence the incentives of mobile network operators to demand tower access in extending their mobile coverage. This includes incentives to co-locate on an existing tower and incentives to locate on a new tower build (whether through a build arrangement with a mobile network infrastructure provider or otherwise).

7.1 Mobile network operator demand drives mobile network infrastructure providers' investment

The major mobile network infrastructure providers do not use the tower assets they own for their own purposes. These towers are predominately used by mobile network operators to provide retail and wholesale mobile services. A wide range of other access seekers also use these towers to a lesser extent, including smaller wireless internet service providers, governments, emergency service operators, mining and agriculture operators.³⁵⁰

Other mobile network infrastructure providers such as NBN Co and BAI Communications do use their towers to provide their own services, predominately fixed wireless access services and terrestrial television and radio respectively.³⁵¹ Consequently, co-location of mobile network operator equipment on these towers is secondary to the primary purpose of NBN Co's and BAI Communication's towers.

Demand from mobile network operators for access to infrastructure drives the incentives for mobile network infrastructure providers to build new towers and support existing towers (for example by maintaining towers and associated infrastructure to remain safe for use). Mobile infrastructure provider incentives are also influenced by whether the mobile network operators' willingness to pay for access to the infrastructure outweighs the cost.

We have heard from major mobile network infrastructure providers that without a commitment from a mobile network operator to be the tenant on a particular site, there is no incentive for them to build new infrastructure or maintain unattractive sites. This is because the sole purpose of the tower is

350 Amplitel, [Our Customers](#), accessed 4 April 2023; Australia Tower Networks (now Indara), [Public submission to Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 6, accessed 27 June 2023; Waveconn, [Public submission to Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 1, accessed 27 June 2023.

351 NBN Co, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 8 August 2022, p 2, accessed 27 June 2023; BAI Communications, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 16 August 2022, p 1, accessed 27 June 2023.

to generate revenue, and for the major mobile network infrastructure providers revenue is primarily generated from mobile network operators.³⁵²

Amplitel submitted that rational owners of infrastructure will build infrastructure for expected users of that infrastructure within a certain period.³⁵³ In addition, the mobile network operator's radio frequency requirements determine the quantity of equipment and the height at which that equipment is installed.³⁵⁴

Indara submitted that the business case for a new location is typically based on commitments from the anchor tenant.³⁵⁵ Field Solutions Group also submitted that mobile network infrastructure providers will only invest in providing new infrastructure where there is a commercial agreement with an access seeker.³⁵⁶ This is because the costs for acquiring land, obtaining relevant approvals and constructing the tower need to be recovered by way of licence fees across the term of the agreement with access seekers.³⁵⁷

Downstream retail demand for mobile network services ultimately determines demand for mobile network infrastructure. Value is not generated from obtaining access to the tower infrastructure in and of itself, but from the downstream retail service to consumers and businesses that access to the tower infrastructure facilitates.

Mobile network operators consider cost and the overall degree of mobile market competition in deciding to access existing towers or seek new tower builds

Waveconn submitted that mobile network operators are capital constrained for deployment of new towers, including in urban areas where commercial returns are more attractive.³⁵⁸ Given the major mobile network infrastructure providers rely on commitments from mobile network operators, the commercial returns of a mobile network operator are a key investment driver for mobile network infrastructure providers.

Telstra submitted that the cost of deploying new mobile infrastructure in regional areas is generally higher than urban areas and that the commercial returns are lower due to the smaller number of customers covered by the site.³⁵⁹ During the industry stakeholder forum, we heard that the more regional and rural areas experience exponentially diminishing returns in terms of generating revenue.³⁶⁰

However, the overall state of competition in retail mobile market has significant influence over the business case for a mobile network operator to seek a new site. Mobile network operators consider the revenues they would generate from customers that live outside the new coverage areas, but nonetheless value a mobile service that provides coverage to it. Optus submitted that competition between the mobile network operators has led to significant investment in and expansion of mobile

352 NBN Co, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 8 August 2022, p 5, accessed 27 June 2023.

353 Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 11, accessed 27 June 2023.

354 Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 12, accessed 27 June 2023.

355 Australia Tower Network (now Indara), [Public Submission to Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 7, accessed 27 June 2023.

356 Field Solutions Group (FSG), [Public submission to the Regional Mobile Infrastructure Inquiry](#), 10 August 2022, p 9, accessed 27 June 2023.

357 Field Solutions Group (FSG), [Public submission to the Regional Mobile Infrastructure Inquiry](#), 10 August 2022, pp 9–10, accessed 27 June 2023.

358 Waveconn, [Public Submission to Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 1, accessed 27 June 2023.

359 Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 11, accessed 27 June 2023.

360 ACCC, [Industry consultation exchange – synopsis of discussions](#), 22 June 2023, accessed 27 June 2023.

networks.³⁶¹ Telstra submitted that its network differentiation compared with other mobile network operators is key to driving investment in expanding or improving coverage in regional and rural areas.³⁶²

Telstra submitted that its customers place a high value on its network coverage and maintaining this competitive advantage can offset the higher costs of building and upgrading mobile infrastructure in regional and rural areas.³⁶³ Telstra is driven by capturing revenue in the national retail mobile market.³⁶⁴

Stakeholders also expressed views on whether the state of competition in the mobiles market also influences a mobile network operator's incentives to share its own infrastructure with competitors.

Vocus submitted that the coverage dominance of Telstra means that Telstra has limited, if any, incentive to share infrastructure with other mobile network operators.³⁶⁵ Telstra regarded Vocus's argument as "demonstrably incorrect" in its submission to the report on preliminary findings, citing that co-location with other mobile network operators is over a third (35%) of its sites.³⁶⁶

Telstra also submitted that its active network sharing proposal with TPG would have extended coverage in regional and urban fringe areas. However, Optus submitted that Telstra restricts the degree to which it shares its network; Telstra does not offer full network access to its wholesale partners and the recently proposed network sharing agreement with TPG Telecom only did not include access to the entire network coverage that is available in its own retail services.³⁶⁷

TPG Telecom submitted that some parties may have engaged in practices that are designed to increase the barriers for a competing mobile network operator to co-locate on a mobile site where another mobile network operator is already located. For example, some parties may have sought to hinder other mobile network operator's ability to co-locate on some mobile sites by strategically reserving tower space on the relevant site.³⁶⁸ Waveconn also submitted that mobile network operators do not have the incentive to encourage co-locations on tower infrastructure, since increased co-locations will drive increased competition for mobile network operators.³⁶⁹ Conversely, Telstra submitted that the new mandatory "use it or lose it" timeframe of 24 months for infrastructure providers to reserve capacity on towers now prevents potential anti-competitive practices.³⁷⁰

Telstra submitted that once it identifies a need to extend or improve its mobile coverage or capacity by establishing a new base station, small cell or in-building solutions, Telstra undertakes a search to assess the range of possible candidate sites and ranks them based on criteria such as: planning considerations, transmission accessibility, power accessibility, coverage delivered and the nature and location of existing network infrastructure.³⁷¹ Amplitel submitted that carriers are 'very particular' about site choice and this limits where new sites can be built.³⁷² The considerations on the mobile network infrastructure provider side include the type of land available, the local community's acceptance of mobile infrastructure and costs for access to land.³⁷³

361 Optus, [Public submission to the Regional Mobile Infrastructure Inquiry](#), September 2022, p 3, accessed 27 June 2023.

362 Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 34, accessed 27 June 2023.

363 Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 34, accessed 27 June 2023.

364 Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, pp 33–34, accessed 27 June 2023.

365 Vocus, [Public submission to the Regional Mobile Infrastructure Inquiry](#), March 2023, p 1, accessed 27 June 2023.

366 Telstra, [Public Submission to the Report on Preliminary Findings](#), 16 May 2023, p 8, accessed 27 June 2023.

367 Optus, [Public Submission to the Report on Preliminary Findings](#), 16 May 2023, p 4, accessed 27 June 2023.

368 TPG Telecom, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 August 2022, p 7, accessed 27 June 2023.

369 Waveconn, [Public Submission to Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 2, accessed 27 June 2023.

370 Telstra, [Public Submission to the Report on Preliminary Findings](#), 16 May 2023, p 9, accessed 27 June 2023.

371 Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 33, accessed 27 June 2023.

372 Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 18, accessed 27 June 2023.

373 Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 19, accessed 27 June 2023; Australia Tower Network (now Indara), [Public Submission to Regional Mobile Infrastructure Inquiry](#), 6 September 2022, pp 9–10, 12, accessed 27 June 2023.

During the industry stakeholder forum, we heard that there are differing business cases for an anchor tenant compared to a second or third mobile network operator seeking to co-locate.³⁷⁴

► Finding 14

The provision of new towers and maintenance of existing towers are commercial decisions of mobile network infrastructure providers driven by demand from mobile network operators, other service providers and government. Mobile network operators providing greater or improved mobile coverage drives demand for towers and associated infrastructure.

Governments have provided funding assistance to mobile network operators to reduce the cost of investing to improve regional coverage

Government may also influence demand for new infrastructure and services. Waveconn submitted that government funding is required to incentivise infrastructure deployment in regional areas.³⁷⁵ Waveconn also submitted that even with government funding, the commercial business case can remain marginal and a low priority for mobile network operators.³⁷⁶

State and federal governments have put in place numerous initiatives to reduce the cost and improve the viability of mobile network operators investing in improved coverage in regional, rural and remote areas.

For example, the Mobile Black Spot Program, an initiative that is supported by the Federal Government as well as co-contributions from state and local governments, mobile network operators, businesses and local communities, has generated investment of more than \$875 million to deliver more than 1,270 mobile base stations across Australia.³⁷⁷ To date, the vast majority of Mobile Black Spot Program sites have been built by Telstra.³⁷⁸ However, the extent to which the mobile network operators actually co-locate on Mobile Black Spot Program funded sites has been limited. The ACCC's analysis from the Mobile Infrastructure Reports shows that, as at January 2022, only 9% of active mobile sites funded under the Mobile Black Spot Program have more than one mobile network operators operating on them.³⁷⁹

Under Mobile Black Spot Program guidelines, funding recipients are required to offer co-location opportunities, where technically possible, to other mobile network operators on more favourable terms.³⁸⁰ Mobile network operators that build a site for their own purposes must allow carriers to access that site on a commercial basis, as governed by the Telecommunications Act and discussed further above.

374 ACCC, [Industry consultation exchange – synopsis of discussions](#), 22 June 2023, accessed 27 June 2023.

375 Waveconn, [Public Submission to Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 1, accessed 27 June 2023.

376 Waveconn, [Public Submission to Regional Mobile Infrastructure Inquiry](#), 29 September 2022, p 1, accessed 27 June 2023.

377 Department of Infrastructure, Transport, Regional Development, Communication and the Arts (DITRDCA), [Mobile Black Spot Program](#), accessed 24 March 2023.

378 Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 11; ACCC, [Mobile Infrastructure Report 2022](#), 9 September 2022, p 13, accessed 27 June 2023.

379 Data from the mobile network operators' reports in accordance with the ACCC's Infrastructure Record Keeping Rules and published in the ACCC's [Mobile Infrastructure Report 2022](#), 9 September 2022, accessed 27 June 2023.

380 Favourable terms include incremental capital cost and backhaul being provided at a discounted rate.

Other government programs put in place for similar objectives including:

- The Western Australian Government's Regional Mobile Communications Program and the Regional Telecommunications Project, both of which combined have resulted in \$125 million investment to expand mobile broadband and a 60% increase in WA's mobile coverage.³⁸¹
- The NSW Government has established co-contribution programs to extend mobile coverage to facilitate services and infrastructure co-location, such as the neutral host model and the active sharing model. The NSW Government is supporting this through its \$300 million Mobile Coverage Project of which \$30 million has been allocated to the Mobile Coverage Program's Active Sharing Partnership.
- The Victorian Government's \$300 million Connecting Victoria mobile program where the Victorian Government would partner with mobile network infrastructure providers and mobile network operators to build 309 new mobile towers, upgrade 492 towers to 5G, adapt 170 towers for multi-carrier use, etc.³⁸²

We have received submissions that the low rate of co-location on Mobile Black Spot Program towers is a result of the underlying incentives created by the program.³⁸³ Even though the Mobile Blackspot Program includes provisions for additional mobile network operators to co-locate on funded infrastructure, co-location generally occurs after funding has been awarded and this may not suit an additional mobile network operator. During the industry stakeholder forum, stakeholders raised that for sites that were historically co-funded, there is no mechanism in place for a second or third co-locator to benefit from that subsidy.³⁸⁴

In previous rounds of the Mobile Black Spot Program, sites were awarded funding for generating new coverage. This meant that there was the incentive for mobile network operators with more expansive existing coverage to extend that coverage, disincentivising those with smaller coverage footprints from participating.³⁸⁵ Conversely, Telstra submitted that 20% of sites in the Mobile Blackspot Program between 2020 and 2022 were awarded to Optus and TPG Telecom and asserted that other mobile network operators were not disincentivised from participating.³⁸⁶

TPG Telecom submitted that open access requirements that are now part of the Mobile Black Spot Program have not delivered greater benefits to regional consumers, in terms of multiple mobile network operators co-locating on government funded infrastructure.³⁸⁷ Consequently, TPG Telecom's view is that open access requirements have not provided a better return on public money spent.³⁸⁸

Some stakeholders submitted that neutral host models would lead to more infrastructure sharing and competition in regional areas, since it would allow all mobile network operators to provide services on the same site.³⁸⁹ However at the industry stakeholder forum, we heard concerns that the significant differences in coverage between the mobile network operators means there are limited locations where all 3 of the mobile network operators could benefit from the neutral host model.

381 Department of Primary Industries and Regional Development, [Digital Connectivity – Regional Telecommunications Project](#), accessed 24 March 2023.

382 Department of Jobs, Skills, Industry, and Regions, [Boosting mobile connectivity across Victoria](#), accessed 24 March 2023.

383 BAI Communications, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 16 August 2022, p 2, accessed 27 June 2023; Vocus, [Public submission to the Regional Mobile Infrastructure Inquiry](#), March 2023, p 2, accessed 27 June 2023; TPG Telecom, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 August 2022, p 2, accessed 27 June 2023.

384 ACCC, [Industry Stakeholder Forum](#), 16 March 2023, accessed 27 June 2023.

385 TPG Telecom, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 August 2022, p 3, accessed 27 June 2023.

386 Telstra, [Public Submission to the Report on Preliminary Findings](#), 16 May 2023, p 9, accessed 27 June 2023.

387 TPG Telecom, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 August 2022, p 11, accessed 27 June 2023.

388 TPG Telecom, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 August 2022, p 3, accessed 27 June 2023.

389 BAI Communications, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 16 August 2022, p 3, accessed 27 June 2023; Vocus, [Public submission to the Regional Mobile Infrastructure Inquiry](#), March 2023, pp 2–3, accessed 27 June 2023.

Vocus submitted that Telstra’s significant coverage advantage means that Telstra has little incentive to pursue infrastructure sharing opportunities such as neutral host models.³⁹⁰

Telstra does not support neutral host models, outlining in its submission that there is a risk of losing service features due to technical challenges such as network synchronisation and managing interference.³⁹¹ Telstra prefers mobile network operator-led active sharing models, such as the multi-operator core network model, because it believes it would provide superior outcomes from a technical, commercial and customer experience perspective. Telstra submitted that government funding and investment programs should be flexible and not prescribe outcomes, specific models or how bids should be formed.³⁹²

Vocus submitted that the success of neutral host trials to date have been hampered by one or more mobile network operators refusing to participate.³⁹³

We consider that submissions raised a number of practical challenges in the use of neutral host models to deliver coverage improvement and multi-carrier outcomes. These may need to be considered in the design of future government funding programs that focus on the use of neutral host models.

Some stakeholders expressed views that while past government programs have provided additional mobile coverage, they have also entrenched Telstra’s coverage advantage in regional areas.³⁹⁴ This means that many rural communities are serviced by a single provider which, in the absence of competition or further taxpayer funding, faces little incentive to improve or upgrade services.³⁹⁵ Optus submitted that some of the challenges for communities are increasingly around capacity and quality of service, as well as gaps in coverage.³⁹⁶ However, Optus submitted that government funding programs should not place an absolute primacy on achieving new coverage, but should also focus on delivering improvements and strongly incentivise multicarrier solutions.³⁹⁷

► Finding 15

Governments at both federal and state levels have made significant investments to reduce the cost to mobile network operators of investing in additional mobile network infrastructure in regional areas. In many cases, without government support, mobile network operators would not have had the incentive to invest in certain regional areas. However, government funding has had limited success in encouraging sharing of publicly subsidised infrastructure between multiple mobile network operators. Telstra has been the main beneficiary of funding from these programs.

390 Vocus, [Public submission to the Regional Mobile Infrastructure Inquiry](#), March 2023, p 2, accessed 27 June 2023.

391 Telstra, [Public Submission to the Report on Preliminary Findings](#), 16 May 2023, p 10, accessed 27 June 2023.

392 Telstra, [Proof Committee Hansard – House of Representatives stating committee on communications and the arts, Co-investment in multi-carrier regional mobile infrastructure](#), 22 March 2023, p 2, accessed 27 June 2023.

393 Vocus, [Public submission to the Regional Mobile Infrastructure Inquiry](#), March 2023, p 2, accessed 27 June 2023.

394 Optus, [Proof Committee Hansard – House of Representatives stating committee on communications and the arts, Co-investment in multi-carrier regional mobile infrastructure](#), 14 April 2023, p 5, accessed 27 June 2023; Pivotel, Submission to ACCC report on preliminary findings, pp 2–3, accessed 27 June 2023.

395 Optus, [Proof Committee Hansard – House of Representatives stating committee on communications and the arts, Co-investment in multi-carrier regional mobile infrastructure](#), 14 April 2023, p 5, accessed 27 June 2023.

396 Optus, [Proof Committee Hansard – House of Representatives stating committee on communications and the arts, Co-investment in multi-carrier regional mobile infrastructure](#), 14 April 2023, p 5, accessed 27 June 2023.

397 Optus, [Proof Committee Hansard – House of Representatives stating committee on communications and the arts, Co-investment in multi-carrier regional mobile infrastructure](#), 14 April 2023, p 5, accessed 27 June 2023.

8. The impact of mobile market competitive dynamics

Under the Direction, the ACCC is required to have regard to how the kinds of matters discussed in chapter 7 may affect the provision of greater mobile coverage.

This chapter examines how demand from mobile network operators for towers may affect the provision of greater mobile coverage. The provision of greater mobile coverage includes both the provision of new towers and new mobile coverage, as well as greater capacity or deeper coverage where there is existing coverage.³⁹⁸ This chapter examines how the competitive dynamics in the retail mobile market affects investment in regional mobile infrastructure to provide greater mobile coverage.

8.1 Gaining and retaining market share is the largest driver of providing greater mobile coverage

Numerous stakeholders submitted that providing greater mobile coverage in regional, rural and remote areas of Australia is 'uneconomical' or commercially unattractive.³⁹⁹ There are several factors that mobile network operators balance in assessing the business case for providing greater mobile coverage, such as:

- costs of accessing land
- the costs of building the infrastructure, associated quality and capacity relating to those costs, including for example connection to power and backhaul
- costs for mobile network equipment, such as antennas
- ongoing operational costs to maintain the site, including any commercial agreements such as fees to a mobile network infrastructure provider
- ease of access and maintenance
- direct revenues from the site
- whether investment will impact the mobile network operator's national retail mobile market share. This primarily factors in to whether the location of the infrastructure is in a location the mobile network operator considers is important.⁴⁰⁰

398 New mobile coverage may include coverage in areas outside of where people live (such as roads and transport corridors). Deeper coverage where there is existing coverage may include improved indoor coverage.

399 For example, Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 4, accessed 27 June 2023; TPG Telecom, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 August 2022, p 16, accessed 27 June 2023; Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 45, accessed 27 June 2023.

400 Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, pp 33–34, 45, accessed 27 June 2023; Optus, [Public submission to the Regional Mobile Infrastructure Inquiry](#), September 2022, p 3, accessed 27 June 2023.

There are multiple scenarios where these factors are considered, including providing:

- new coverage
- competing mobile coverage (where there is another mobile network operator already providing mobile coverage in the area)
- improved quality of service or deeper coverage in areas where the mobile network operator is already providing retail mobile services.

We consider that mobile network operators' drive to maintain or obtain greater market share is the most significant consideration in deciding to invest to provide greater mobile coverage. Mobile network operators have little commercial incentive to invest in regional, rural and remote areas if providing new or better coverage in these areas does not increase their market share in the national mobiles market or otherwise generate sufficient additional revenue.

We recognise that for mobile network operators, investing in regional areas is commercially challenging and this challenge becomes greater as remoteness increases. Australia has a significant land mass, and much of inland Australia is sparsely populated. In some regional areas, significant investments by a mobile network operator are justified on the basis that there is sufficient additional demand within the coverage area and there is prospect of capturing market share in the national mobile market for customers that value coverage within that area.⁴⁰¹ However, the commercial returns for investment diminish the more remote the area is and the lower the population and in many of these areas only Telstra has network presence.⁴⁰²

Telstra stated that its decisions to invest in regional, rural, and remote areas are also influenced by other factors not related to maintaining network superiority over its rival mobile network operators. Telstra stated that its investment incentives are influenced by other factors such as its "T25 Strategy", a desire to differentiate Telstra from other competitors in national mobile markets (including in metropolitan areas), expected increases in data consumption, making necessary mobile technology upgrades, and its "Responsible Business Strategy".⁴⁰³

From a mobile network infrastructure provider perspective, Amplitel submitted that it considers whether its customer(s) (such as a mobile network operator) are willing to pay a fee that will recover Amplitel's costs plus a return.⁴⁰⁴ Indara submitted that securing new locations and building towers is capital intensive, time consuming and can be sensitive for communities.⁴⁰⁵ This means that new towers are generally pursued in response to customer demand for a particular location.⁴⁰⁶ Indara submitted that it requires a stable income stream for a long period to recover the cost of outlay for a new tower build.⁴⁰⁷

Mobile network infrastructure providers' ability to make regional, rural or remote infrastructure commercially feasible is highly dependent on mobile network operators' demand for the infrastructure. Mobile network operator's demand for mobile tower infrastructure is largely dependent on its ability to profit from access to regional, rural or remote infrastructure.

401 For example, Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, pp 11, 33–34, accessed 27 June 2023.

402 For example, Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 4, accessed 27 June 2023.

403 Telstra, [Public submission to the Report on Preliminary Findings](#), 16 May 2023, page 11, accessed 27 June 2023.

404 Amplitel, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 September 2022, p 39, accessed 27 June 2023.

405 Australia Tower Network (now Indara), [Public Submission to Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 12, accessed 27 June 2023.

406 Australia Tower Network (now Indara), [Public Submission to Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 12, accessed 27 June 2023.

407 Australia Tower Network (now Indara), [Public Submission to Regional Mobile Infrastructure Inquiry](#), 6 September 2022, p 14, accessed 27 June 2023.

► Finding 16

Mobile network operators have little commercial incentive to invest in regional, rural and remote areas if providing new or better coverage in these areas does not impact their market share in the national mobiles market or otherwise generate sufficient additional revenue.

Telstra and Optus have made significant investments in regional, rural and remote areas, despite the challenges, to differentiate themselves on geographic coverage

We understand that Telstra's commercial strategy is premised on being the leading mobile network provider in Australia, particularly in terms of geographic coverage.⁴⁰⁸ Telstra's historical investments have had the objective of ensuring that Telstra maintains this network superiority over its rival network operators.⁴⁰⁹

Telstra has stated in market briefings that maintaining and extending network leadership is critical to its growth strategy and will underpin its ability to charge premium prices in the market.⁴¹⁰ Telstra submitted that despite the higher costs for building and upgrading mobile infrastructure in regional, rural and remote areas, it has invested in those areas due to customers placing a high value on geographic coverage.⁴¹¹

In urban areas, Telstra, TPG Telecom and Optus each have strong network infrastructure and they exert competitive pressure on each other to densify their networks, deploy 5G technology upgrades and invest in spectrum and fibre.⁴¹² However, in regional areas, Optus submitted that it has been Optus's competitive impact that leads to infrastructure-based competition between Optus and Telstra.⁴¹³

Optus claimed it has made significant investments in its network infrastructure since it entered the market and typically invests over \$1.5 billion in capital expenditure annually in its mobile network services.⁴¹⁴ Optus's investments in regional areas have driven Telstra to invest in response to ensure it maintains network leadership over its rivals.⁴¹⁵ Telstra has noted that it is competition in urban areas (where most customers live and work) and in particular competition for urban customers that value regional, rural and remote coverage, that is the primary driver to Telstra investing to maintain superior coverage.⁴¹⁶ Telstra claimed that irrespective of Optus's regional 5G investment, it will roll out 5G in regional areas according to its T25 strategy.

408 Telstra, [Telstra Submission to ACCC's Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 34, accessed 27 June 2023.

409 Telstra, [Telstra Submission to ACCC's Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 34, accessed 27 June 2023.

410 Telstra, [Telstra Investor Day Briefing Transcript 2021](#), 17 September 2021, p 24, accessed 27 June 2023.

411 Telstra, [Telstra Submission to ACCC's Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 34, accessed 27 June 2023.

412 ACCC, [Mobile Infrastructure Report 2022](#), September 2022, p 6, accessed 27 June 2023.

413 Optus, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 14 September 2022, p 2, accessed 27 June 2023.

414 Optus, [Public submission in response to ACCC market inquiry – Telstra and TPG application for merger authorisation for proposed spectrum sharing in regional Australia](#), June 2022, p 9 at [1.20], accessed 27 June 2023.

415 R Feasey, [Expert report of Richard Feasey, Annexure O to Telstra and TPG application for merger authorisation](#), 20 May 2022, pp 25–26, accessed 27 June 2023.

416 Telstra and TPG Telecom, [Public submission in response to ACCC Statement of Preliminary Views – Telstra Corporation Limited and TPG Telecom Limited arrangement for the sharing of active infrastructure and spectrum in regional Australia](#), 1 November 2022, p 46 at [111], accessed 27 June 2023.

Telstra has also previously noted that given its history and prominence, it faces pressure from government and other stakeholders over its commitment to regional and rural Australia.⁴¹⁷ Telstra claimed previously that responding positively to these stakeholders by continuing to invest and innovate in service delivery in regional and rural areas is an important motivator in its decision making.⁴¹⁸

► Finding 17

Although it is generally more costly to build and operate mobile network infrastructure in more remote areas, Telstra and Optus have made significant network investments in regional, rural and remote areas to gain or maintain market share in the national mobiles market.

Telstra's advantages in regional areas could raise barriers to expansion for rival mobile network operators

Expanding coverage and improving the quality of mobile services is highly capital intensive and costly. This challenge is significant in a country like Australia with a large geographical area, much of which is sparsely populated. In Australia, all mobile network operators incur large costs to increase regional, rural and remote coverage. This may result in only a small amount of gain in incremental population coverage and may make it more difficult to justify investments in regional areas.⁴¹⁹

The commercial incentives of mobile network operators will be influenced by a range of factors in deciding where to extend coverage, including the cost and benefits arising from new or improved mobile coverage.

Optus has previously claimed that challenging market dynamics and government policies have had the effect of entrenching Telstra's dominance. As a result, it has been increasingly difficult for Optus to maintain its historic levels of investment.⁴²⁰ Nonetheless, Optus noted that it has continued to invest in building a competitive mobile network infrastructure, which includes the broad rollout of 5G to urban and regional areas.⁴²¹

We consider that Telstra's competitive advantage in regional areas strongly impacts Optus and TPG Telecom's incentives to invest more significantly in regional areas. It is unlikely that any of Telstra's competitors will have the realistic ability to absolutely match Telstra's network coverage in regional areas. TPG Telecom supports this notion and noted its view that mobile coverage in significant parts of regional Australia constitute a natural monopoly.⁴²²

Telstra noted that it is "not necessary" to match Telstra's coverage in regional areas for effective competition.⁴²³ The ACCC considers that equivalence in coverage is likely not a necessary condition

417 Telstra and TPG Telecom, [Public submission in response to ACCC Statement of Preliminary Views – Telstra Corporation Limited and TPG Telecom Limited arrangement for the sharing of active infrastructure and spectrum in regional Australia](#), 1 November 2022, p 46 at [113], accessed 27 June 2023.

418 Telstra and TPG Telecom, [Public submission in response to ACCC Statement of Preliminary Views – Telstra Corporation Limited and TPG Telecom Limited arrangement for the sharing of active infrastructure and spectrum in regional Australia](#), 1 November 2022, p 46 at [113], accessed 27 June 2023.

419 For example, see Telstra, [Telstra submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 12, accessed 27 June 2023.

420 Optus, [Submission to the Report on Preliminary Findings](#), 16 May 2023, p 3, accessed 27 June 2023; Optus, [Public submission in response to ACCC market inquiry – Telstra and TPG application for merger authorisation for proposed spectrum sharing in regional Australia](#), June 2022, p 67, accessed 27 June 2023.

421 Optus, [Public submission in response to ACCC market inquiry – Telstra and TPG application for merger authorisation for proposed spectrum sharing in regional Australia](#), June 2022, p 68, accessed 27 June 2023.

422 TPG Telecom, [Submission to the Report on Preliminary Findings](#), 16 May 2023, p 5, accessed 27 June 2023.

423 ACCC, [Domestic mobile roaming declaration inquiry – Final Report](#), October 2017, page 23, accessed 27 June 2023.

for mobile network operators to compete effectively in the mobile services market. In areas where there is already infrastructure-based competition, it is likely that operators will continue to have incentives to invest and improve their networks over time. However, Telstra's enduring competitive advantage in regional areas may have the potential to negatively impact other mobile network operators' incentives to continually invest in expanding mobile coverage into regional areas where there is currently limited infrastructure-based competition.

The ACCC continues to monitor the state of competition in the mobile services market, including ongoing investments made by the mobile network operators on mobile infrastructure. We consider that the competitive dynamics in the mobile service market have shifted in recent years. The ACCC has observed that 3G and 4G network deployment generally slowed in regional and remote areas since 2019, with the mobile network operators shifting their focus to 5G rollout, first in major cities and then progressively in regional areas.⁴²⁴

Emerging alternative approaches to improving connectivity in regional areas are still nascent and unlikely to significantly reduce the barriers to expansion in regional areas, at least in the short term. Neutral host models, while having the potential to make the business case for mobile network infrastructure providers to invest in building new infrastructure easier, has so far had insignificant take-up by the mobile network operators.

Mobile network operators had contrasting views on the viability of low-Earth orbit satellites to support the provision of mobile coverage in regional Australia. Telstra stated that the versatility and reliability of the service is improving and is becoming an increasingly attractive complementary option for providing regional mobile services.⁴²⁵ TPG Telecom believes that low-Earth orbit satellites deliver a lower quality of service compared to terrestrial networks but may be able to serve as a fallback option if local mobile network coverage is not available due to natural disaster.⁴²⁶

► Finding 18

Telstra's competitive advantage in regional areas could potentially raise barriers for network expansion by its competitors. This may undermine competitors' incentives to continually invest in improving mobile coverage in regional areas.

424 ACCC, [Mobile Infrastructure Report 2022](#), September 2022, p 3, accessed 19 June 2023, accessed 27 June 2023.

425 Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2023, p 5, accessed 27 June 2023; [Submission to the Report on Preliminary Findings](#), 16 May 2023, p 3, accessed 27 June 2023.

426 TPG, Telecom [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 August 2023, p 16, accessed 27 June 2023.

8.2 Spectrum access is not currently a barrier to expansion for incumbent operators, but the cost of deploying spectrum may affect its use

Spectrum is a critical input into the supply of mobile network services. Spectrum is highly valuable and finite. Spectrum is the medium by which signals are carried between consumer devices and the mobile network operator's base station and to its wider network. Spectrum enables mobile network operators to provide coverage and capacity on their network. Without access to sufficient spectrum, operating a mobile network is highly uneconomical. Spectrum therefore influences mobile network operator's demand for mobile towers.

We consider that Telstra, Optus and TPG Telecom all currently have sufficient spectrum to supply mobile network services in rural, regional, remote and peri-urban areas. All 3 have sufficient access to low-band spectrum suitable for various mobile technology generations (e.g. 4G and 5G) that enable them to provide a wide geographic coverage. Similarly, all mobile network operators have sufficient access to mid-band and high-band spectrum which provide capacity on their network.

However, the ACCC recognises that smaller mobile network operators, such as Pivotel which focuses on providing mobile services in regional Australia, do not currently have access to the same suite of spectrum bands as the incumbent operators, and in particular low band spectrum.⁴²⁷ Pivotel claimed that the incumbent operators are under-utilising valuable spectrum. Pivotel claimed that the current approach of allocating licences for low bands on a national basis may mean that due to high valuations of such licences, only the incumbent operators have the financial resources to bid and acquire such licences.

The ACCC considers that there may well be benefits in providing operators other than Telstra, TPG Telecom and Optus with access to spectrum (including low-band spectrum), including in furthering the development of potential alternative approaches to providing mobile coverage in regional Australia. The ACCC considers that this may be particularly beneficial in cases where the spectrum may not be currently used.

While the ACCC has not been provided with more detailed information on the proposed alternative use-cases, the ACCC understands that some international jurisdictions have a 'use it or lose it' licence obligation on spectrum licences.⁴²⁸ 'Use it or lose it' provisions could potentially promote more efficient use of spectrum including by incentivising licensees to share spectrum that they do not use. However, 'use it or lose it' obligations may lead to inefficiencies where there are, for example, legitimate reasons for a company to delay rolling out services.

The ACCC also notes that the ACMA has commenced the process of considering whether to renew spectrum licences due to expire between 2028 and 2032, including the majority of spectrum licences currently held by the mobile network operators.⁴²⁹ This process provides an opportunity to consider how best to allocate the spectrum to maximise the public benefit derived from using it, including by considering whether some of this spectrum could be reallocated to smaller regional players.

We also understand that due to commercial considerations, some spectrum licensed to mobile network operators may not be utilised in the sense that no services are being provided using this spectrum. One of the reasons for this includes commercial relationships with the radio access network vendors and their licensing fees for deploying spectrum. This may mean that the cost of

427 Pivotel, [Submission to the Report on Preliminary Findings](#), 16 May 2023, p 6, accessed 27 June 2023.

428 For example, the US, Canada, Belgium, New Zealand, and the UK have a variation of 'use it or lose it' obligations.

429 See ACMA, [Proposed approach to expiring spectrum licences](#), accessed 23 June 2023.

deploying spectrum may, in some cases, influence whether the mobile network operator will use the spectrum to provide higher quality mobile coverage.⁴³⁰

► Finding 19

Telstra, Optus and TPG Telecom all currently have sufficient spectrum to supply mobile network services in rural, regional, remote Australia. However, smaller mobile network operators that have a focus on providing mobile services in regional Australia do not currently have access to the same suite of spectrum bands as the 3 largest mobile network operators, in particular low-band spectrum.

To the extent that regional-focused operators can develop alternative means of providing mobile coverage in regional Australia, there may be benefits in providing these operators with access to such spectrum, particularly where the spectrum may be not currently used.

430 Telstra and TPG Telecom, [Response to Optus' interest party submission and ors \(Tranche 2\) – Telstra Corporation Limited and TPG Telecom Limited arrangement for the sharing of active infrastructure and spectrum in regional Australia](#), 28 July 2022, pp 36–37, accessed 27 June 2023.

9. Temporary mobile roaming

The final issue considered by this Inquiry, as required by the Direction, is whether it is feasible to provide temporary mobile roaming during natural disasters and other such emergencies.

We define temporary mobile roaming as:

The ability for a consumer device to connect to a mobile network not owned or operated by their nominal mobile network provider during a specified emergency event, for a limited time and in a limited geographical area that is not determined by mobile network operators but specified by federal/state/territory governments in consultation with emergency agencies.⁴³¹

This means that mobile users could connect to and use another mobile service operator's network during a natural disaster or emergency.

9.1 Temporary mobile roaming is technically feasible

Several stakeholders submitted that mobile roaming is already feasible, with roaming agreements in place domestically and internationally. International roaming has been universally adopted for international visitors and residents travelling overseas. Domestic roaming agreements have also been used in Australia, for example with TPG Telecom using Optus's 3G network for roaming.

There is international precedent for disaster roaming

There is international precedent for temporary mobile roaming during natural disasters and other emergency type events.

In July 2022 the Canadian Government directed mobile operators to reach agreement within 60 days to provide emergency roaming, mutual assistance and a communications protocol in the event of a significant outage.⁴³² This followed a large-scale outage in the core network of one of Canada's largest telecommunications providers, with customers unable to contact emergency services.⁴³³ Thirteen Canadian mobile network operators signed a Memorandum of Understanding (MOU) to enter into bilateral emergency roaming arrangements in September 2022. The MOU includes protocols covering emergency roaming, mutual assistance and emergency network outage communications in the case of a triggering event.⁴³⁴

The Federal Communications Commission (United States of America) adopted a Mandatory Disaster Response Initiative (MDRI) in June 2022 that superseded a voluntary industry agreement. The mandatory initiative expanded beyond the scope of the earlier voluntary agreement to 'incorporate lessons learned and better support public safety' and the triggers for activation broadened to cover

431 The Direction asked the ACCC to consider the technical feasibility of temporary mobile roaming, however we note that the more common industry term is 'temporary disaster roaming'.

432 Mobile Syrup, [13 telecom providers sign MOU to guarantee emergency calls, other assistances, during outages](#), 7 September 2022, accessed 22 May 2023.

433 Mobile Syrup, [Why the Rogers outage was so bad, and how prevent the next one](#), 13 July 2022, accessed 23 June 2023.

434 Government of Canada, [Memorandum of Understanding on Telecommunications Reliability](#), accessed 23 June 2023.

more disasters and emergencies.⁴³⁵ The new rule took effect from 31 October 2022, with mobile carriers having 6 months to show compliance.⁴³⁶

The mobile network operators in Japan also agreed to introduce temporary mobile roaming capabilities in September 2022. Japan’s second largest carrier suffered a network failure in July 2022 that resulted in over 30 million users being unable to make emergency calls for an extended period.⁴³⁷ The Japanese government formed a study group to advance the proposal, with its first report published in late 2022.⁴³⁸

Telstra provided the ACCC with an assessment of the Canadian and US arrangements, which may be useful to consider in an Australian context. Its assessment is summarised in the table below.

Table 12: Summary of the Canadian and US models

Requirement	Canada	US	Telstra’s view on whether these principles could be adopted if temporary mobile roaming was implemented in Australia
No harm to existing customers of host network	Yes	Yes	Agree in principle
Requesting network must take all reasonable steps to restore network	Yes	Yes	Agree
Provide coverage where previously no coverage	No	No (only where coverage areas overlap)	Coverage in limited circumstances (see note)
Network failure other than natural disaster	Yes (may be needed for 911 access)	Yes	Disagree

Source: Information provided by Telstra.

Note: Telstra supports temporary mobile roaming being made available in strictly limited circumstances to end users in locations outside the coverage of their network’s coverage for limited and finite periods, which goes above and beyond the scope of the US and Canadian approaches.

Optus’s view is that all customers should have equal access to a temporary mobile roaming capability irrespective of their provider.⁴³⁹ This could result in a reduction in service for all customers, including those customers of the host operator. Optus noted that this could lead to complaints to the Telecommunications Industry Ombudsman and the Australian Communications and Media Authority by customers on the surviving network who may experience a reduction in their usual quality of service if temporary mobile roaming was enabled. If this was a policy requirement, regulatory amendments would be required so the mobile network operators were not penalised if consumers experienced reduced services in an area where temporary mobile roaming was activated.⁴⁴⁰

435 Federal Communications Commission (United States of America), [Wireless Network Resiliency During Disasters](#), accessed 23 June 2023.

436 The Register, [As Hurricane Ian hits, FCC rules cell carriers must help each other in disasters](#), 30 September 2022, accessed 23 June 2023. Smaller carriers have been given an additional 3 months to comply.

437 The Japan Times, [KDDI’s network outage rekindles calls for stronger emergency systems](#), 28 July 2022, accessed 23 June 2023; The Japan Times, [Japan’s big mobile carriers say roaming needed during network outages](#), 28 September 2022, accessed 23 June 2023.

438 Ministry of Internal Affairs and Communications (Japan), [Publication of the First Report of the Study Group on Roaming Among Service Providers in a Time of Emergency and Results of Solicitation of Opinions](#), accessed 23 June 2023.

439 Information provided in confidential meetings with the ACCC.

440 Information provided in confidential meetings with the ACCC.

The Australian mobile network operators agree that a temporary mobile roaming solution in Australia should not be used to cover non-emergency related network outages with its use limited to events that are considered 'life or death' and not for example in response to a network outage or cyber-attack.⁴⁴¹ Telstra commented that 'general network quality and resilience are competitive differentiators... and that normal competitive investment incentives are not undermined by any [temporary mobile roaming arrangements].'⁴⁴²

International standards have been developed for 5G networks however more work is required to develop a viable solution for the Australian market

International standards are being developed that support a temporary mobile roaming capability. The 3rd Generation Partnership Project (3GPP) is a body which develops standards for mobile telecommunications and defines how mobile devices and networks can 'talk' to each other. The 3GPP recently ratified temporary disaster roaming standards for 5G networks that introduce capabilities to mitigate the risk to the resilience of the surviving network.⁴⁴³ The 3GPP solution for 5G disaster roaming is based on the available network broadcasting a set of network codes which handsets of any network can use to attach to the available network. The new standards are designed to reduce the signalling load that would usually be caused by many devices attempting to connect to another carrier's network. This may also include call blocking if the available network is unable to take any more calls due to capacity reasons. Telstra's suggested potential solution (for 4G, and also for 5G based on the 3GPP standard solution) is based on international roaming functionality, which means that bilateral roaming agreements will need to be established between operators willing to become a host network or wanting to enable their customers to roam onto another host network if their network is disrupted. Telstra also notes that implementing temporary mobile roaming based on the 3GPP standard solution for 5G may require changes to every participating operators' networks in both the core and radio access network.⁴⁴⁴ User devices would also need to have the relevant 3GPP standards applied.

There are currently no standards for 4G and earlier generation networks. This would therefore likely require a bespoke solution for the Australian market.⁴⁴⁵ The ACCC considers it is not feasible to implement a solution for 3G networks prior to the network being shut down by the end of 2024.

The ACCC notes that the Australian mobile network operators have formed a working group to develop a potential solution for 4G networks.⁴⁴⁶ This solution is based on broadcasting a temporary disaster Public Land Mobile Network (PLMN) Code. Normally, every operator has a unique PLMN code which is broadcast by the base stations and only the handsets which are registered with the operator can use it to attach to that network. But if a base station is broadcasting the disaster PLMN code, all handsets can attach to that network. During the disaster, the surviving network will broadcast both its unique PLMN (home PLMN) and the disaster PLMN. Its own handsets will connect via the home PLMN while other handsets will connect via the disaster PLMN. Once the failed network/s is/are up and running, or the disaster threat has passed, the surviving network stops broadcasting the disaster PLMN code.⁴⁴⁷ Telstra notes that this solution does not require changes to devices. It also does not have control mechanisms for restricting the rate of authenticating devices nor the traffic throttling control mechanisms that are in the 3GPP standards for 5G networks. Telstra

441 Information provided in confidential meetings with the ACCC.

442 Information provided by stakeholder.

443 Telstra, [Public submission to Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 5, accessed 27 June 2023.

444 Information provided by stakeholder.

445 Telstra, [Public submission to Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 6, accessed 27 June 2023.

446 Information provided in confidential meetings with the ACCC.

447 Information provided by stakeholder.

notes that these mechanisms would need to be developed and agreed between network operators as an essential pre-requisite.⁴⁴⁸

During this Inquiry, the mobile network operators submitted that while temporary mobile roaming is technically feasible, it is a complex solution to implement. Although temporary mobile roaming technically works in a similar way to other mobile roaming arrangements, Telstra noted that normal domestic roaming is not designed to be activated and deactivated on a temporary basis.⁴⁴⁹

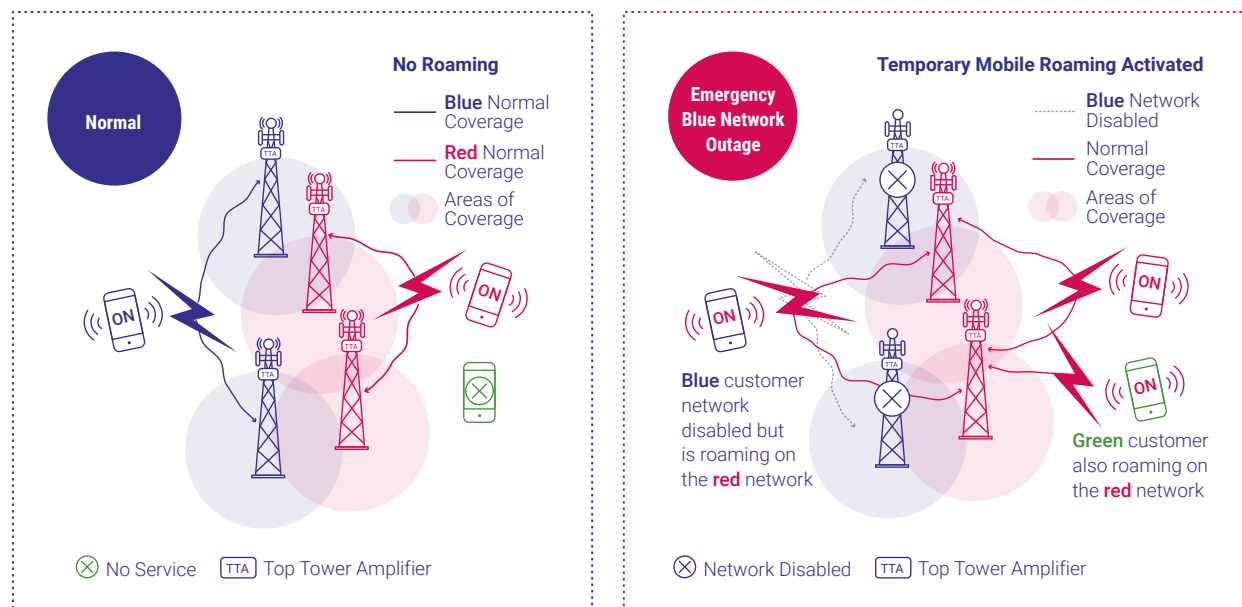
Stakeholders at our industry forum suggested that a working group with the mobile network operators and key emergency service agencies from various levels of government could be set up if temporary mobile roaming were a policy priority.⁴⁵⁰

Several stakeholders also commented that temporary mobile roaming is only practical in the following situations:

1. Where there is more than one mobile network operator operating in the area and one of those networks is still operational, and
2. Where there is only one mobile network operator operating in an area and customers of another mobile network operator can roam onto that network in a natural disaster.

These scenarios are represented in Figure 6, where the left-hand side shows the usual state and the right-hand side shows an area affected by a natural disaster with only one surviving network. In this figure, the customers on the blue network would be able to roam onto the red network (scenario 1). Secondly, temporary mobile roaming could enable mobile services to customers who don't otherwise have coverage in the affected area. The customer on the green network who would normally have not service as their mobile network operator does not have coverage in the area would also be able to roam on to the red network as well during a natural disaster (scenario 2).

Figure 6: Temporary Mobile Roaming



448 Information provided by stakeholder.

449 Telstra, [Public submission to Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 55, accessed 27 June 2023.

450 ACCC, [Industry Stakeholder Forum for the Regional Mobile Infrastructure Inquiry](#), 16 March 2023, accessed 27 June 2023.

Mobile network operators group base stations into tracking areas to reduce the signalling load on the network. These tracking areas are likely to be different for each mobile network operator and unlikely to align with a disaster area. We note that defining the area where temporary mobile roaming is to be activated requires further investigation both from technical and policy consideration perspectives.⁴⁵¹

9.2 Any solution needs to consider technical, policy and commercial factors

While we find temporary mobile roaming to be technically feasible, there are a range of factors and complexities that need to be considered in its practical implementation, including policy and commercial considerations. TPG Telecom noted that there 'are likely large variations in how temporary mobile roaming could be implemented or designed, depending on location, which will have a significant impact on practicality and usability.'⁴⁵²

As discussed above, the mobile network operators are considering how a temporary mobile roaming solution could be practically implemented in the Australian mobile market.⁴⁵³ They have defined 3 separate but related streams of work:⁴⁵⁴

- **Technical:** what are the technical solutions and complexities, and risk to be managed?
- **Policy:** who, when, where and for how long should temporary mobile roaming be enabled?
- **Commercial:** what is the cost to build and maintain a temporary mobile roaming capability?

The development of a practical solution is likely to be an iterative process. This is because policy requirements will impact the technical solution, which will in turn impact costs which may then require policy re-scoping.⁴⁵⁵

There are technical parameters that need to be considered irrespective of any policy or commercial considerations

We received feedback during the Inquiry which noted that there are a range of scenarios for implementing a temporary mobile roaming solution depending on the policy objectives. We heard from the mobile network operators that temporary mobile roaming is complex and will require the co-operation of all operators.

451 For example, TPG Telecom, [Public submission in response to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), 16 May 2023, p 6, accessed 27 June 2023.

452 TPG Telecom, [Public submission in response to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), 16 May 2023, p 5, accessed 27 June 2023.

453 Information provided in confidential meetings with the ACCC.

454 Information provided in confidential meetings with the ACCC.

455 Information provided in confidential meetings with the ACCC.

Congestion on the surviving network was identified as the main risk

The main technical risk identified in submissions was the resilience of the remaining operational network(s) if temporary mobile roaming was activated. The main concern is that this/these network(s) would become overloaded and make the network unusable for all users. The mobile network operators noted in their submissions that there are 2 ways the network can become overloaded:

1. **Access congestion:** where the volume of users trying to authenticate on the network increases dramatically.
2. **Core congestion:** once authenticated, extra users then add more load to the network that it could not accommodate without some level of traffic control or prioritisation.⁴⁵⁶

Network congestion on the surviving network(s) may result in worse outcomes for all customers for the following reasons:

- the increase in traffic levels will slow data speeds
- battery drain of consumer devices as more power is needed to search for a network and send location updates
- a potential inability to contact Triple Zero due to network congestion causing failure of the surviving network.

There was general agreement from the mobile network operators on a 'do no harm' principle and that temporary mobile roaming should be seen as a last resort.⁴⁵⁷ That is, temporary mobile roaming should not be activated or should cease where there is a risk that the surviving network will become overloaded and fail.⁴⁵⁸

Network capacity may need to be increased to support a temporary mobile roaming capability

We understand that existing network capacity (both base station and backhaul), especially for regional, rural and remote areas, is based on normal population characteristics and utilisation of the network (including some overhead to account for changes in normal user demand). It is likely that demand would be greater than was accounted for if temporary mobile roaming is implemented. For example, Optus saw the voice traffic of their customers double at the height of the 2022 Lismore floods.⁴⁵⁹

456 For example, refer to Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 50, accessed 27 June 2023; TPG Telecom, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 August 2022, p 14, accessed 27 June 2023.

457 Information provided in confidential meetings with the ACCC.

458 Information provided in confidential meetings with the ACCC.

459 Optus, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 14 September 2022, p 7, accessed 27 June 2023.

Lismore floods

Summary

- On 28 February 2022, the Wilson River, which runs through Lismore's CBD, peaked at 14.4 metres; 2 metres higher than the previous flood record of 12.11 metres observed in 1954 and 1974.⁴⁶⁰
- The 2022 NSW Flood Inquiry heard that flood damage caused widespread telecommunications outages including mobile and fixed line networks.⁴⁶¹ Mobile network operators advised this was 'largely due to loss of mains power, coupled with inability to access sites (due to flooding) to deploy backup power generators and keep them refuelled.'⁴⁶²
- The Inquiry also heard that 'similar to the 2019–20 bushfires, the loss of telecommunications services caused the most distress to communities because it affected their ability to request flood rescues, communicate with family and friends, provide warnings and access post-emergency information.'⁴⁶³
- The Inquiry recommended the facilitation of 'cross carrier roaming arrangements between carriers and the public for basic text, voice and data during the period of emergency in areas directly affected by flood.'⁴⁶⁴

Network capacity is also based on a mobile network operator's market share. A mobile network operator with a small market share could see a significant increase in traffic if it is the only operational network during an emergency. Optus stated that significant investment would be required to build additional capacity to meet any potential roaming traffic that would not otherwise be commercially justified.⁴⁶⁵ TPG Telecom submitted that adding network capacity takes time and cannot be quickly added at short notice as this requires site and network upgrades.⁴⁶⁶ TPG Telecom also noted in its response to our preliminary findings report that in areas with high population density areas 'it is unlikely that a single mobile network could handle the additional users of one or both of the 2 other networks in an emergency roaming situation', however congestion is likely to be less of an issue in regional and rural areas where population density is likely to be lower.⁴⁶⁷

The ACCC understands from our meetings with the mobile network operators that they are not proposing to expand network capacity beyond what they currently provide for their existing customer bases. Expanding network capacity would come with very material added costs as this requires upgrades to both passive and active infrastructure including power supply; may not be needed to support basic connectivity; and would be virtually impossible to target accurately for the sole purpose of supporting potential temporary mobile roaming requirements. Industry stakeholders agreed that increased capacity/hardening could be considered for high-risk areas as part of other network

460 NSW Flood Inquiry, [Summary Report of the NSW Floods Inquiry](#), 29 July 2022, p 44, accessed 23 June 2023.

461 NSW Flood Inquiry, [Full Report of the NSW Flood Inquiry](#), 29 July 2022, pp 168, accessed 23 June 2023.

462 Telstra, [Submission to the NSW Flood Inquiry](#), 6 May 202, accessed 23 June 2023.

463 NSW Flood Inquiry, [Summary Report of the NSW Floods Inquiry](#), 29 July 2022, p 24, accessed 23 June 2023.

464 Recommendation 9, NSW Flood Inquiry, [2022 Flood Inquiry: Volume Two: Full Report](#), 29 July 2022, pp 167, accessed 23 June 2023. This is similar to Recommendation 30 in the [Final Report of the NSW Bushfire Inquiry](#), 31 July 2020, pp xiii and 205, accessed 23 June 2023.

465 Optus, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 14 September 2022, p 7, accessed 27 June 2023.

466 TPG Telecom, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 5 August 2022, p 14, accessed 27 June 2023.

467 TPG Telecom, [Public submission in response to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), 16 May 2023, p 5, accessed 27 June 2023.

resilience improvement programs (such as the Strengthening Telecommunications Against Natural Disasters Program) if this was a policy priority.⁴⁶⁸

Temporary mobile roaming is likely to require additional power reserves

Increased traffic would also increase the power load on the network (including the base station and backhaul), which could require more power and accelerate the depletion of power reserves (for example, battery back-ups).⁴⁶⁹ This could lessen the duration of the network(s) that remain operational. The mobile network operators also highlighted that the likelihood that one network is not affected by a disaster or an emergency that disrupts other networks, or that the sole network survives, is likely to be very low.⁴⁷⁰

Temporary mobile roaming is designed to be limited in duration and geographic spread

The mobile network operators told the Inquiry that temporary mobile roaming should be limited to a small geographic area and for a short time period. This will mitigate the risk of the surviving network becoming unnecessarily overwhelmed. Industry stakeholders noted in their submissions that they have other measures to restore services should a network be down for an extended period, including power back-up, Cell On Wheels (COWs) and satellites.⁴⁷¹ Temporary mobile roaming is not intended to replace those solutions.

The processes for deactivating temporary mobile roaming and either returning to normal network operations or a contingency (such as back up power) also needs to be clearly defined. Mobile base stations can come back online at various times after a natural disaster, depending on the nature and severity of the disruption. Telstra notes that the 3GPP standard for temporary disaster roaming sets up 'islands' of temporary mobile roaming. Roaming customers return to their home network when temporary mobile roaming is deactivated and this needs to be managed so the recovered cells are not overwhelmed.⁴⁷²

While the scale and exact location of a natural disaster event cannot be predicted with exact certainty, stakeholders told us the importance of preparedness and putting contingencies in place prior to an event occurring. These actions can not only mitigate against the risk of an outage but potentially decrease the time to restore services. Temporary mobile roaming can only be activated once a network has been disabled. Registers are used to authenticate a user device and allow it to connect to a 'home' network. Activating temporary mobile roaming while the home network is still operational could create a 'ping-pong' effect as the user device is constantly looking for a network to connect to. This is more likely on the fringes where coverage is patchy or there is overlapping coverage.

We also note that temporary mobile roaming cannot be implemented 'on the fly'. The commercial, policy and regulation frameworks need to be developed in conjunction with the technical solution and agreed to prior to activation.

468 Information provided in confidential meetings with the ACCC.

469 Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 56, accessed 27 June 2023; Australian Mobile Telecommunications Association (AMTA), 1 September 2022, [Public submission to the Regional Mobile Infrastructure Inquiry](#), p 8, accessed 27 June 2023.

470 Telstra, [Public Submission to the ACCC's Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 53, accessed 27 June 2023; Australian Mobile Telecommunications Association, 1 September 2022, [Public submission to the Regional Mobile Infrastructure Inquiry](#), p 9, accessed 27 June 2023.

471 For example, NBN Co., [Public submission to the Regional Mobile Infrastructure Inquiry](#), 8 August 2022, pp 14–15, accessed 27 June 2023; Optus, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 14 September 2022, pp 8–9, accessed 27 June 2023.

472 Telstra, [Public submission to the ACCC's Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 55, accessed 27 June 2023.

Traffic controls could mitigate risk

Several stakeholders commented that traffic restrictions could be used to manage congestion including restricting temporary mobile roaming to users and/or traffic classes, however this may not be desirable from a policy perspective. The following policy factors need to be considered as these will influence the practical implementation:

- Whether customers on their 'home' network continue to receive their agreed level of service, or if this is reduced to increase capacity for temporary mobile roaming users during an emergency.
- Whether roaming customers are only allocated spare capacity on a network, noting that capacity upgrades require upfront changes to passive and active infrastructure.
- The services (voice, text and/or data) that are supported during a period of temporary mobile roaming.⁴⁷³
- The treatment of Internet of Things devices, including farming machinery, security sensors and EFTPOS terminals.⁴⁷⁴
- Whether temporary mobile roaming is restricted to priority users, for example emergency services personnel.⁴⁷⁵

During our stakeholder engagement, there was interest in prioritising certain users, for example emergency services personnel. For example, stakeholders at our Emergency Services Stakeholder Forum told us that emergency services require the ability to prioritise their devices on the network.⁴⁷⁶ However, traffic prioritisation mechanisms on one network cannot be maintained if that service is disrupted and those users then roam onto another carrier's network.⁴⁷⁷ One option raised at the forum was for a central government agency to maintain a central register of International Mobile Subscriber Identities (IMSI) for devices registered to emergency services organisations that could be made available to all mobile network operators in a disaster situation and prioritised. Another option raised was that emergency services personnel could be issued with dual SIM phones which would keep existing priority arrangements, assuming at least one of the networks is still operational.⁴⁷⁸

Telstra recommends that the basic functionality for temporary mobile roaming be developed first, and the costs and benefits of any possible enhancements considered later. Potential enhancements include prioritised service for roaming emergency services personnel, blocking of certain traffic types and pre-emptive activation.⁴⁷⁹

TPG Telecom commented that while customers of mobile virtual network operators could technically have access to a temporary mobile roaming capability, this would depend on government policy, regulations and commercial considerations.⁴⁸⁰

473 Most stakeholders told us that voice, SMS and data services were required. For example, refer to ACCC, [Consumer Stakeholder Forum for the Regional Mobile Infrastructure Inquiry](#), 22 February 2023, accessed 27 June 2023.

474 Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 52, accessed 27 June 2023.

475 Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, pp 52–53, accessed 27 June 2023.

476 ACCC, [Emergency Services Stakeholder Forum for the Regional Mobile Infrastructure Inquiry](#), 2 March 2023, accessed 27 June 2023.

477 Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 54, accessed 27 June 2023.

478 ACCC, [Emergency Services Stakeholder Forum for the Regional Mobile Infrastructure Inquiry](#), 2 March 2023, accessed 27 June 2023.

479 Information provided by stakeholder.

480 Information provided by stakeholder.

Temporary mobile roaming is unlikely to require changes to user devices or spectrum arrangements

We have heard that handset and spectrum limitations would also need to be considered.⁴⁸¹ However, we understand that newer handsets are able to support most of the 3GPP bands and this is unlikely to be a barrier to enabling temporary mobile roaming.

► Finding 20

Temporary mobile roaming is technically feasible although there are questions of technical complexity and risk, including congestion, which need to be managed. There are policy and commercial factors that will determine how temporary mobile roaming is practically implemented.

9.3 Support systems and business processes required

Business support systems will likely be the most difficult aspect of implementing a temporary mobile roaming solution

Temporary mobile roaming is a relatively new concept that requires integration of the network and business operational systems of the 3 mobile network operators. The mobile network operators submitted that there are changes required to establish network capabilities, overlay procedures and IT system interfaces. As discussed earlier, additional capacity requirements may also be required depending on the policy objectives, including additional signalling capacity in core networks. Optus's view is that a permanent build is needed as the required hardware and software cannot be easily or quickly deployed at short notice.⁴⁸²

Regulatory policy and frameworks are required

Submissions and feedback through the consultation process suggested that activation and deactivation of temporary mobile roaming is a decision that could be made by a government or regulatory body. This would require the cooperation of mobile network operators.

There are 2 aspects to consider. Firstly, when temporary mobile roaming should be enabled, and secondly, the processes for switching it on and off.

The ACCC consulted with key Commonwealth, State and Local government agencies and authorities involved in disaster management response and coordination. Attendees at our Emergency Services stakeholder forum suggested a working group could be established to develop the triggers and protocols for activating temporary mobile roaming. There was agreement this work should initially sit with the Commonwealth, as telecommunications are a federal matter.⁴⁸³

481 For example, Optus, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 14 September 2022, p 7, accessed 27 June 2023; Department of Regional NSW, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 19 August 2022, p 7, accessed 27 June 2023.

482 Optus, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 14 September 2022, p 7, accessed 27 June 2023.

483 As an example of current arrangements in relation to emergencies, see subsections 313(4A) and 313(4B) of the Telecommunications Act, which outline the obligations of carriers and carriage service providers to provide assistance if a national emergency is declared or a disaster or state of emergency. Section 314 of the Telecommunications Act outlines the terms and conditions on which help is to be given.

Optus noted in its submission to the Inquiry's Report on preliminary findings that the following principles should be considered:

- That temporary mobile roaming traffic is treated on a non-discriminatory basis so customers in natural disaster or other such emergency can make calls and send messages, irrespective of who their mobile service provider is.
- A non-commercial solution should be preferred with costs borne by the government.⁴⁸⁴

The underlying conditions for activating and deactivating temporary mobile roaming need to be defined

There was consensus across all stakeholder groups that the triggers that would activate and deactivate temporary mobile roaming need to be clearly defined and agreed to prior to implementation.

The following factors need to be considered when developing a policy framework for temporary mobile roaming:

- Is a temporary mobile roaming capability required nationally or in designated regions (for example, high-risk areas)?
- What are the triggers or threshold conditions that need to be met prior to activating temporary mobile roaming?
- Who is the person or body with the authority to issue a directive to activate temporary mobile roaming?
- How will the geographic boundary for temporary mobile roaming be defined?
- How will user classes and/or traffic classes be managed and prioritised?
- How will users know if temporary mobile roaming has been activated?
- What quality of services will be available?
- Will the mobile network operators have a 'veto' right to not activate temporary mobile roaming or suspend it if there is risk to the surviving network(s)?
- How long will temporary mobile roaming be enacted?
- What are the triggers for deactivating temporary mobile roaming?

Potential triggers for temporary mobile roaming include:

- Nature and severity of the event
- Availability of other telecommunications infrastructure
- Geographic location
- Number of impacted people
- Expected length of outage

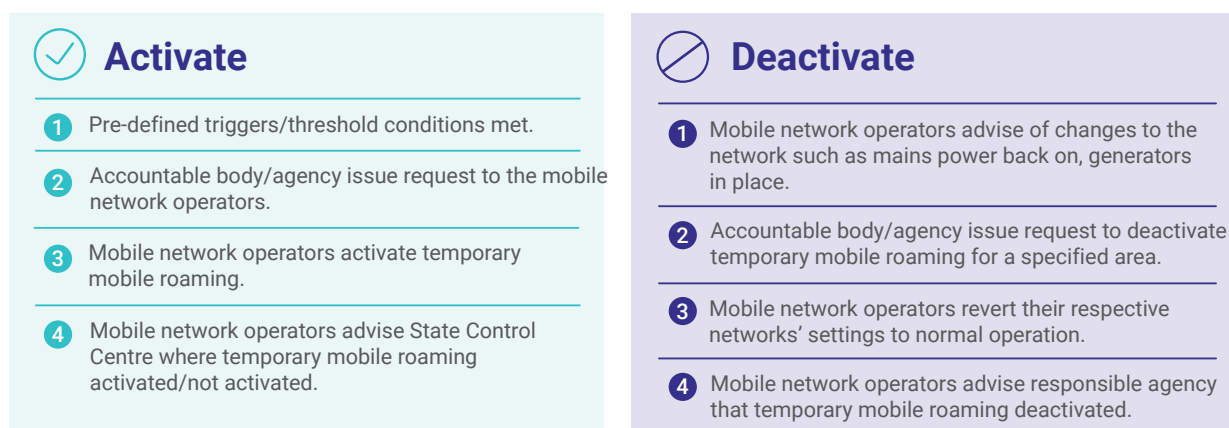
⁴⁸⁴ Optus, [Public submission in response to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), 16 May 2023, pp 6–7, accessed 27 June 2023.

Operational processes will need to be developed

Stakeholders told us that there are well-established processes in place between industry and emergencies services organisations during natural disasters and other emergency situations. All stakeholders agreed that there is additional work required to develop operational processes for both activating and deactivating temporary mobile roaming. Both Optus and Telstra submitted that the protocols in place to issue an Emergency Alert SMS or call could be a good starting point for temporary mobile roaming although any temporary mobile roaming guidelines and policy objectives will need to address other factors beyond the scope of Emergency Alert.⁴⁸⁵ Temporary mobile roaming is more complex because temporary mobile roaming is activated, left running, and then deactivated. Implementation of temporary mobile roaming is also more complex because of the greater risk it poses to the surviving network. For example, Telstra notes that messages and calls from the Emergency Alert are sent at single points in time while temporary mobile roaming is likely to be more fluid as the disaster situation is likely to evolve.⁴⁸⁶

The ACCC has outlined in Figure 7 a suggested high-level process flow for activating and deactivating temporary mobile roaming. Further consultation will be required between mobile network operators and relevant government agencies.

Figure 7: Potential process for activating/deactivating temporary mobile roaming



485 For example, Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 58, accessed 27 June 2023 and Optus, [Public submission in response to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), 16 May 2023, pp 6–7, accessed 27 June 2023.

486 Information provided by stakeholder.

The regulatory framework needs to be considered, including any potential impacts on competition

Any temporary mobile roaming solutions need to be considered in the context of other relevant codes, guidelines and legislation, including:

- The Telecommunications Act⁴⁸⁷
- State and Territory Emergency Plans and Acts⁴⁸⁸
- Industry codes and guidelines such as the Communications Alliance Industry Guidelines, including G663:2022 Telecommunications – Emergency Protocol.⁴⁸⁹

The ACCC also notes that policy agencies and regulators would need to consider the regulatory settings for users and operators as part of setting up a temporary mobile roaming service. Examples of the regulatory settings may include:

- The Competition and Consumer Act⁴⁹⁰
- The Customer Service Guarantee Standard.⁴⁹¹

A temporary roaming capability will take time to develop and deploy

The time taken to develop and implement a temporary mobile roaming solution will depend on the solution requirements. As a guide, the 3GPP standard for temporary disaster roaming for 5G networks was ratified in June 2022. Telstra submitted that it expected it would take 18–24 months to implement the functionality and then more time to be rolled out into the network.⁴⁹²

The costs to develop and deploy a temporary mobile roaming capability will depend on the solution

The ACCC requested that the mobile network operators provide timeframes and costs to develop and deploy a temporary mobile roaming capability. The mobile network operators submitted that the time and costs to develop and deploy a temporary mobile roaming capability will depend on the technical solution that is required to deliver policy objectives. They indicated that any solution will not be 'low-cost', however Telstra commented that the ongoing costs of operating temporary mobile roaming should be relatively low.⁴⁹³

487 The *Telecommunications Act 1997*, [section 313 4A and 4B](#) outlines the obligations of carriers and carriage service providers to provide assistance if a national emergency is declared or a disaster or state of emergency. [Section 314](#) outlines the terms and conditions on which help is to be given. Accessed 27 June 2023.

488 For example see Department of Regional NSW, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 19 August 2022, pp 12–16, accessed 27 June 2023.

489 Communications Alliance Ltd, [G663:2022 Telecommunications – Emergency Communications Protocol](#), accessed 23 June 2023.

490 The *Competition and Consumer Act 2010* is administered by the ACCC and covers industry regulation including telecommunications services. Schedule 2 – The Australian Consumer Law (ACL) – is enforced by the ACCC and covers the consumer protections for goods and services.

491 The [Telecommunications \(Customer Service Guarantee\) Standard 2011](#) is administered by the Australian Communications and Media Authority (ACMA). It relevantly sets minimum standards for resolving faults to landline services and the compensation payable if the carriers do not meet those timelines. It does not apply to mobile phone or internet services. Section 21 of the Standard provides that a carriage service provider is exempt from complying with a performance standard to the extent that non-compliance is a result of a 'circumstance beyond the control of the carriage service provider'. This includes natural disasters that cause mass outages and restrict connection to a specified service or rectification of a fault or service difficulty. Accessed 27 June 2023.

492 Telstra, [Public Submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 56, accessed 27 June 2023.

493 Information provided by stakeholder.

TPG Telecom notes that the mobile network operators may be impacted differently and therefore have different requirements and costs.⁴⁹⁴

Mobile network operators submitted that there will be significant costs to increase capacity in the network. These costs include increases to network capacity (both backhaul and base stations), software and vendor equipment upgrades and changes required to business processes and systems. Telstra advised that most of the costs will be incurred to develop and implement any new traffic management capabilities and processes to activate and deactivate temporary mobile roaming.⁴⁹⁵

Commercial arrangements will also need to be agreed upon. The National Farmers' Federation submitted that proper mechanisms should be investigated so that 'costs are appropriately accounted for and attributed to the right carriers/customers if roaming was to be put in place during these periods.'⁴⁹⁶

We consider further scoping work is needed to establish the costs to develop and implement a temporary mobile roaming capability in Australia. Indicative estimates may be available from other jurisdictions.

9.4 Multiple communications options are needed during a natural disaster or emergency

Several stakeholders at our stakeholder forums and in submissions stated that any temporary mobile roaming solution should be considered in the wider policy context of improving telecommunications resilience, capacity and coverage during natural disasters. They noted the importance of network hardening and resilience efforts to improve power supply, which is needed for both temporary mobile roaming and other telecommunications services.

The Australian Communications and Media Authority report into the impacts of the 2019–2020 bushfires found the majority of mobile base station outages could be attributed to power outages, with only 3% of outages caused by fire damage to telecommunications facilities.⁴⁹⁷ Optus submitted that 'the resilience of power should also be considered in any discussion about availability, resilience or role of mobile services during times of natural disaster or emergency.'⁴⁹⁸ TPG Telecom commented that addressing temporary power issues to mobile sites would likely resolve most mobile network outages in emergency situations and reduce the need for temporary mobile roaming.⁴⁹⁹ Field Solutions Group also submitted that 'maintaining network up times, including restoration of service, is key during these times.'⁵⁰⁰

Attendees at our 3 stakeholder forums also agreed that temporary mobile roaming is one possible solution, but multiple options are needed during an emergency in case one or more options fail (such use of Cells On Wheels, cell broadcast, wi-fi calling if the fixed network is intact, and satellites, including the emerging Low Earth Orbit Satellites). The Local Government Association of Queensland noted in its submission to the Report on preliminary findings that 'the introduction of [temporary

494 Information provided by stakeholder.

495 Telstra, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 30 August 2022, p 59, accessed 27 June 2023.

496 National Farmers' Federation, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 16 August 2022, p 7, accessed 27 June 2023.

497 Australian Communications and Media Authority, [Impacts of the 2019–20 bushfires on the telecommunications network](#), April 2020, pp 7–9, accessed 23 June 2022. This section of the report presents data on facilities that experienced outages of 4 hours or more.

498 Optus, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 14 September 2022, p 5, accessed 27 June 2023.

499 TPG Telecom, [Public submission to ACCC Regional Mobile Infrastructure Inquiry](#), 5 August 2022, pp 4, 15, accessed 27 June 2023.

500 Field Solutions Group, [Public submission to the Regional Mobile Infrastructure Inquiry](#), 11 August 2022, p 16, accessed 27 June 2023.

mobile] roaming as part of the available tools in an emergency response is without a doubt something that should be enabled in Australia.⁵⁰¹ Several stakeholders at our consumer stakeholder forum commented that they lived in areas without coverage and would not directly benefit from temporary mobile roaming, so needed other options as well.⁵⁰²

In its submission to the Report on preliminary findings, Pivotel noted that there are other technical solutions that could be considered in addition to temporary mobile roaming.⁵⁰³ It provided an example of an open or shared access network such as a Cell On Wheels, where all mobile network operators could share temporary facilities and allow access to all mobile users irrespective of their provider. Under this model, only one Cell On Wheel would need to be deployed to an impacted area.

The mobile network operators agree that temporary mobile roaming should be activated for short durations and should not replace other well-established recovery processes already in place, such as the return of mains power, deployment of generators or Cells on Wheels. Any temporary mobile roaming capability should be assessed against other potential solutions that will deliver policy objectives.⁵⁰⁴ For example, Telstra noted that cell broadcast 'can be developed and deployed in a far shorter timeframe than [temporary mobile roaming], as the technology is mature and available now.'⁵⁰⁵

Temporary mobile roaming may complement a Public Safety Mobile Broadband capability

There was consensus from Commonwealth and State government agencies involved in disaster management and coordination that a temporary mobile capability could deliver benefits and complement existing capabilities available to emergency services personnel. There was, however, a clear preference for a Public Safety Mobile Broadband solution for emergency services personnel.

The Australian Government commissioned a separate review into a Public Safety Mobile Broadband capability after previous work by the Productivity Commission and the Department of Home Affairs was paused.⁵⁰⁶ This review recommended that the Commonwealth consider 'how any outcomes and recommendations from the Australian Competition and Consumer Commission's Regional Mobile Infrastructure Inquiry may be relevant to the PSMB program.'⁵⁰⁷

The Australian Government's response to the Public Safety Mobile Broadband Review was announced in May 2023 with the establishment of a taskforce to lead the delivery of a Public Safety Mobile Broadband capability, led by the National Emergency Management Agency.⁵⁰⁸ The ACCC notes that while not directly related, temporary mobile roaming may complement a Public Safety Mobile Broadband capability, depending on policy objectives.

501 Local Government Association of Queensland, [Public submission to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), 10 May 2023, p 2, accessed 27 June 2023.

502 ACCC, [Consumer Stakeholder Forum for the Regional Mobile Infrastructure Inquiry](#), 22 February 2023, accessed 27 June 2023.

503 Pivotel, [Public submission in response to the Regional Mobile Infrastructure Inquiry report on preliminary findings](#), 16 May 2023, p 7, accessed 27 June 2023.

504 Information provided in confidential meetings with the ACCC.

505 Information provided by stakeholder.

506 Productivity Commission, [Public Safety Mobile Broadband Research Report](#), 12 January 2016, accessed 23 June 2023; Department of Home Affairs, [Public Safety Mobile Broadband Roadmap](#), December 2018, accessed 23 June 2023.

507 Recommendation 9a, Department of Infrastructure, [Release of the Public Safety Mobile Broadband Review and the Government Response](#), 2 May 2023, p 14, accessed 23 June 2023.

508 National Emergency Management Agency, [Public Safety Mobile Broadband](#), accessed 23 June 2023.

Consolidated list of findings

Regional, rural and remote consumers report lower quality of mobile services than urban consumers

▶ Finding 1

Mobile services are vitally important to consumers in regional, rural and remote Australia but these consumers are concerned about coverage and congestion issues.

▶ Finding 2

Consumers need reliable and resilient mobile services. They have a heightened need for access to these services during emergency situations such as natural disasters.

▶ Finding 3

Reliable access to the internet is an increasing issue in the agriculture industry. Mobile connectivity can impact the efficiency and competitiveness of farms.

▶ Finding 4

There are areas where there is 3G network coverage but currently no 4G or 5G coverage. Consumers are concerned that 4G and 5G coverage will not be equivalent to 3G coverage before the 3G shutdown in 2024.

▶ Finding 5

First Nations peoples living in remote communities often have unreliable communications services.

Costs of providing towers and associated infrastructure, including infrastructure sharing arrangements

► Finding 6

The cost of building a new tower site typically increases with remoteness. In particular, the cost of backhaul can be especially high in regional and remote areas compared to urban areas.

As mobile network operators generally bear the cost of connecting sites to backhaul, high costs to do so can be a key reason for preferring to co-locate on existing infrastructure, where it exists in the desired areas.

► Finding 7

Co-location on existing infrastructure is generally more cost effective than building new towers. However, where co-location requires significant upgrade to the tower infrastructure, co-location can in some cases be prohibitively expensive.

Mobile network infrastructure providers can influence the business case for co-location by mobile network operators in 2 main ways:

1. By the decision to build a single or multi-tenant capable tower, noting that the business case for the initial build may not support multi-tenant towers if the tower provider does not anticipate demand from multiple tenants.
2. By the access fees they set, noting that high access fees will discourage co-location.

► Finding 8

Active sharing arrangements, including neutral host models, can further reduce the cost of providing mobile coverage compared to co-location, particularly in areas where there is otherwise no commercial incentive to invest in new infrastructure.

Market dynamics and commercial arrangements after the divestment or transfer of towers from mobile network operators to mobile network infrastructure providers can influence whether a broader market for neutral host provision may develop over time.

► Finding 9

Options for capacity upgrades to meet consumer demand for mobile services are more limited in regional, rural and remote areas compared with urban areas. This is due to higher costs to increase capacity (particularly backhaul transmission upgrade costs) to meet increasing demand for data.

Costs of accessing land to provide towers and associated infrastructure

► Finding 10

Land access costs are highly site specific, with considerable variance in costs across states and territories, areas of remoteness and private and government landlords. Stakeholders submitted that access to government land is significantly more expensive than private land in terms of ongoing lease payments. However, we have found significant variance in land leases including between private and public land and that public land is not always more expensive.

► Finding 11

Accessing land across different government planning jurisdictions can be complex, lengthy, and costly. Many industry stakeholders advocate for a range of reforms to improve consistency of regulations and to better facilitate infrastructure deployment.

Effectiveness of commercial and regulatory tower access arrangements

► Finding 12

There are conflicting views among stakeholders about whether commercial arrangements for access to towers, particularly tower access fees, are working effectively. Some stakeholders consider that access fees may be too high to promote co-location on existing towers.

It is unclear whether divestment of towers will lead to better access compared with the situation pre-divestment, based on 2 factors. First, each of the mobile network operators have become the anchor tenant of the mobile network infrastructure provider who purchased its towers. This affects the incentives of the mobile network infrastructure provider to compete for new tenants. Second, there remains vertical integration between some industry players.

► Finding 13

The Facilities Access Regimes within the Telecommunications Act are no longer fit for purpose.

The Government should consider whether it is necessary for the Facilities Access Regimes to cover all mobile network infrastructure providers, regardless of whether they have a carrier licence or are part of a group that has a carrier company.

The Government should also review the Facilities Access Regime itself to ensure that it remains fit for purpose and is effective in promoting access to towers and associated infrastructure.

Demand for towers is derived from the demand from mobile network operators for those towers

► Finding 14

The provision of new towers and maintenance of existing towers are commercial decisions of mobile network infrastructure providers driven by demand from mobile network operators, other service providers and government. Mobile network operators providing greater or improved mobile coverage drives demand for towers and associated infrastructure.

► Finding 15

Governments at both federal and state levels have made significant investments to reduce the cost to mobile network operators of investing in additional mobile network infrastructure in regional areas. In many cases, without government support, mobile network operators would not have had the incentive to invest in certain regional areas. However, government funding has had limited success in encouraging sharing of publicly subsidised infrastructure between multiple mobile network operators. Telstra has been the main beneficiary of funding from these programs.

The impact of mobile market competitive dynamics

► Finding 16

Mobile network operators have little commercial incentive to invest in regional, rural and remote areas if providing new or better coverage in these areas does not impact their market share in the national mobiles market or otherwise generate sufficient additional revenue.

► Finding 17

Although it is generally more costly to build and operate mobile network infrastructure in more remote areas, Telstra and Optus have made significant network investments in regional, rural and remote areas to gain or maintain market share in the national mobiles market.

► Finding 18

Telstra's competitive advantage in regional areas could potentially raise barriers for network expansion by its competitors. This may undermine competitors' incentives to continually invest in improving mobile coverage in regional areas.

► Finding 19

Telstra, Optus and TPG Telecom all currently have sufficient spectrum to supply mobile network services in rural, regional, remote Australia. However, smaller mobile network operators that have a focus on providing mobile services in regional Australia do not currently have access to the same suite of spectrum bands as the 3 largest mobile network operators, in particular low-band spectrum.

To the extent that regional-focused operators can develop alternative means of providing mobile coverage in regional Australia, there may be benefits in providing these operators with access to such spectrum, particularly where the spectrum may not be currently used.

Temporary mobile roaming

► Finding 20

Temporary mobile roaming is technically feasible although there are questions of technical complexity and risk, including congestion, which need to be managed. There are policy and commercial factors that will determine how temporary mobile roaming is practically implemented.

Appendix A: Definitions and terms used in this report

3G	The third generation in mobile technology standards prepared by the 3GPP global partnership.
3GPP	The 3rd Generation Partnership Project is an umbrella term for a consortium of mobile operators, vendors and international standards organisations that develop protocols and interfaces for mobile telecommunications, including 3G, 4G and 5G standards.
4G	The fourth generation in mobile technology standards prepared by the 3GPP global partnership.
5G	The fifth generation in mobile technology standards prepared by the 3GPP global partnership.
ACCC	Australian Competition and Consumer Commission
Active infrastructure/ equipment	Telecommunications assets and equipment with active radio and electronic components for signal transmission & reception including but not limited to, transmitters, receivers, base station electronics, antennae, feeders, backhaul connectivity and other requisite equipment and associated civil and electrical works required to provide telecommunications services.
Active sharing	Active sharing arrangements involve the sharing of active infrastructure in the radio access network such as antennas, transmission and spectrum.
Associated infrastructure	Includes: <ul style="list-style-type: none"> ▪ equipment sheds, ducts, pits, huts, shelter and feeder, foundations ▪ plant and power infrastructure such as cooling, batteries, solar panels, generators or power lines ▪ associated passive or active radio access network subsystems installed on or connected to Tower Sites ▪ other passive and active infrastructure used by telecommunications providers to provide mobile telecommunications services.
Backhaul	Mobile backhaul is the network infrastructure (fibre, microwave or satellite) which transports data from the radio access network (base stations) to an associated core network.
CCA	<i>Competition and Consumer Act 2010 (Cth)</i>
Cellular Repeater	Also known as cell phone signal booster or cell phone signal amplifier, is a type of bi-directional amplifier used to improve cell phone reception. A cellular repeater system commonly consists of a donor antenna that receives and transmits signal from nearby cell towers, coaxial cables, a signal amplifier, and an indoor rebroadcast antenna.

Co-location	A form of passive infrastructure sharing where a mobile network operator deploys its active equipment on the same passive infrastructure as another mobile network operator.
Densification	Refers to increasing network capacity by adding cell sites, for example, increasing the number of base stations.
Facilities Access Code	The Code of Access Relating to Telecommunications Transmission Towers, Sites of Telecommunications Transmission Towers and Eligible Underground Facilities, which was first made by the ACCC in 1999, under Clause 37 of Part 5 of Schedule 1 of the Telecommunications Act. It governs how access to certain telecommunications facilities owned by telecommunications carriers, including mobile towers and underground ducts, is provided to other carriers seeking to install their equipment on or in those facilities.
Facilities Access Regimes	There are 2 Facilities Access Regimes: <ul style="list-style-type: none"> ■ Parts 3 and 5 of Schedule 1 to the Telecommunications Act, which applies to carriers. ■ Part 34B of the Telecommunications Act, which applies to 'eligible companies'.
Internet of Things	The Internet of Things (IoT) describes physical objects (or groups of such objects) with sensors, processing ability, software and other technologies that connect and exchange data with other devices and systems over the Internet or other communications networks.
Mobile network infrastructure provider	A provider of telecommunications infrastructure or facilities (such as mobile towers) that support the provision of mobile telecommunications services. Examples include Amplitel, Waveconn and Indara.
Mobile network operator	A mobile network operator supplies mobile services to customers at the retail level. Examples include Telstra, Optus and TPG Telecom.
Neutral Host	A network infrastructure owned and maintained by a third party that rents or leases its infrastructure to any network operators looking to scale up their network capacities.
Passive infrastructure	Assets and equipment which are not part of the active layer of a telecommunications network (the signal path), including but not limited to sites, buildings, shelters, towers, masts, poles, ducts, trenches, electric power supply/generators and air conditioning.
Passive sharing	Passive infrastructure sharing is where mobile network operators share non-electronic infrastructure, such as a tower, land, power and other physical elements.

Peri-urban	The area around an urban area that is the interface between an urban area with more rural and bushland areas. Generally, we use the definition in the Peri-urban Mobile Program (PUMP) program ⁵⁰⁹ , which defines ‘peri-urban’ as being areas along the edges of Australia’s major cities. ⁵¹⁰
Spectrum	The radio spectrum is the part of the electromagnetic spectrum with frequencies from 3 Hz to 3,000 GHz (3 THz). Active equipment uses radiofrequency spectrum to provide connectivity to mobile devices.
Telecommunications Act	<i>The Telecommunications Act 1997 (Cth)</i>
Tenant	Mobile network operators or other access seekers that are located on a tower are referred to as tenants.
Tower	A structure on which a radio base station equipment can be installed. It includes telecommunications towers that are part of the National Broadband Network, radio and television broadcasting towers and other suitable towers or similar structures that could be used to improve mobile telecommunications coverage or can be used in the supply of mobile telecommunications and other radiocommunications services, including rooftops or utility masts.

Definitions of regional, rural, remote and peri-urban

The Inquiry is focused on regional, rural, remote and peri-urban areas of Australia. For the purposes of this report on preliminary findings, we use the Australian Bureau of Statistic’s Australian Statistical Geography Standard Volume 5 – Remoteness Structure.⁵¹¹ We use the Australian Bureau of Statistic’s Remoteness Structure as a proxy for regional, rural, remote and peri-urban Australia in the following way:

Table 11: Use of Australian Bureau of Statistic’s Remoteness Structure

Region	Australian Bureau of Statistic’s Remoteness Structure classification(s)
Remote	Remote and Very Remote Australia
Rural	Outer Regional Australia
Regional	Inner Regional Australia
Peri-urban	No direct classification relevant
Urban	Major Cities of Australia

509 Department of Infrastructure, Transport, Regional Development, Communications and the Arts, [Peri-Urban Mobile Program](#), accessed 17 April 2023.

510 See for example, Department of Infrastructure, Transport, Regional Development, Communications and the Arts, [Peri-Urban Mobile Program Grant Opportunity – GO5331](#), February 2022, accessed 17 April 2023.

511 ABS 2018, [1270.0.55.005 – Australian Statistical Geography Standard \(ASGS\): Volume 5 – Remoteness Structure](#), July 2016, accessed 23 June 2023.

Peri-urban areas have a mix of urban, regional and rural characteristics. They will often have a higher population density compared to urban areas, and can have a mix of agricultural land, commercial and industrial developments, as well as residential use. Generally, there will be more bushland in peri-urban areas than urban areas, meaning that they have a higher risk of bushfires and other natural disasters.

Appendix B: Minister's Direction



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PARLIAMENT OF AUSTRALIA • HOUSE OF REPRESENTATIVES

PAUL FLETCHER MP

Federal Member for Bradfield
Minister for Communications,
Urban Infrastructure,
Cities & the Arts

MS22-000681

Ms Gina Cass-Gottlieb
Chair
Australian Competition and Consumer Commission
GPO Box 3131
Canberra ACT 2601

By email: gina.cass-gottlieb@accg.gov.au

Dear Ms Cass-Gottlieb

I would like to congratulate you on your appointment as chair of the Australian Competition and Consumer Commission (ACCC). The ACCC is a key agency in Australian economic and consumer regulation and I appreciate the significant role you have accepted. The ACCC interacts with my portfolio in a range of important areas and I look forward to working with you productively into the future.

The Australian Government has been finalising its response to the 2021 Regional Telecommunications Review. As discussed between officers of the ACCC, the Treasury and my Department, there are a number of matters on which the Government would appreciate the ACCC's assistance.

In this context I am now writing to formally direct the ACCC under section 496 of the *Telecommunications Act 1997* to conduct a public inquiry into access to towers and associated infrastructure in regional, rural, remote and peri-urban Australia; and the feasibility of temporary mobile roaming during natural disasters and emergencies. The formal direction and its explanatory statement are attached.

The inquiry is not an inquiry into domestic mobile roaming generally, for example, of the kind previously conducted by the ACCC in 1998, 2005 and 2016. Similarly, the inquiry is not intended to be a regulatory inquiry, such as the ACCC might conduct under the facilities access in Part 5 of Schedule 1 of the *Telecommunications Act 1997* or an access inquiry under Part XIC of the *Competition and Consumer Act 2010*, nor is it intended to be a review of these regulatory mechanisms. Rather, the inquiry is intended to focus on the real world operating environment for tower access and associated facilities with a view to supporting future Government policy decisions on regional mobile telecommunications provision, including future initiatives to improve mobile coverage, capacity or competition.

While the ACCC should report on its findings, the Government is not seeking recommendations from the Commission.

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I ask that the inquiry start by no later than 1 July 2022 and be completed as soon as possible and no later than 30 June 2023.

It is preferable that the ACCC consult on a draft report before finalising the report and I would ask that the Government receive advance notice of the ACCC's final report, as well as an advance copy of the report.

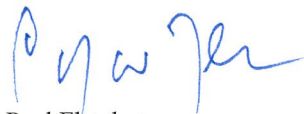
The ACCC should keep my Department informed of its progress, noting the inquiry will be relevant to the implementation of a range of other measures that form part of the Government's response to the 2021 Regional Telecommunications Review. My Department can provide the ACCC with further information on the background, context and purpose of the inquiry.

The Government will contact the ACCC about a number of further measures involving the ACCC arising from the Government response to the Review shortly.

I would also like to take this opportunity to thank the ACCC for making Mr Michael Cosgrave available to the Review prior to his retirement. He has made a valuable contribution to the Review that is greatly appreciated.

I have copied this letter to the Deputy Prime Minister, the Treasurer, the Minister for Regionalisation, Regional Communication and Regional Education, and the Minister for Agriculture, Drought and Emergency Services.

Yours sincerely



Paul Fletcher

25/3/2022

Enc.

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Telecommunications (ACCC Inquiry into Access to Regional Towers and Associated Infrastructure) Direction 2022

I, Paul Fletcher, Minister for Communications, Urban Infrastructure, Cities and the Arts, make the following direction.

Dated 25 March 2022

Paul Fletcher
Minister for Communications, Urban Infrastructure, Cities and the Arts

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1 Name

This instrument is the *Telecommunications (ACCC Inquiry into Access to Regional Towers and Associated Infrastructure) Direction 2022*.

2 Commencement

- (1) Each provision of this instrument specified in column 1 of the table commences, or is taken to have commenced, in accordance with column 2 of the table. Any other statement in column 2 has effect according to its terms.

Commencement information		
Column 1	Column 2	Column 3
Provisions	Commencement	Date/Details
1. The whole of this instrument.	The day after this instrument is registered.	

Note: This table relates only to the provisions of this instrument as originally made. It will not be amended to deal with any later amendments of this instrument.

- (2) Any information in column 3 of the table is not part of this instrument. Information may be inserted in this column, or information in it may be edited, in any published version of this instrument.

3 Authority

This instrument is made under subsection 496(1) of the *Telecommunications Act 1997*.

4 Definitions

- (1) In this instrument:

ACCC means the Australian Competition and Consumer Commission.

Act means the *Telecommunications Act 1997*.

towers includes NBN towers, radio and television broadcasting towers and other suitable towers or similar structures that could be used to improve mobile coverage.

- (2) For the purposes of this instrument, reference to ‘likely users’ in subsections 5(2) and (3) includes telecommunications carriers, telecommunications service providers, utilities, emergency service organisations, and other operators of radiocommunications equipment.

5 Direction

- (1) I direct the ACCC to hold a public inquiry under Division 3 of Part 25 of the Act, commencing no later than 1 July 2022, in relation to:
- (a) access to towers and associated passive and active infrastructure provided by telecommunications and other infrastructure providers in regional, rural, remote and peri-urban areas within Australia, that can be used in the supply of mobile telecommunications and other radiocommunications services; and
 - (b) the feasibility of temporary mobile roaming services to be provided during natural disasters and other such emergencies.

Note 1: For the purposes of paragraph (a), reference to ‘telecommunications and other infrastructure providers’ includes specialist tower operators, neutral host operators, telecommunications carriers, owners of other suitable infrastructure, utilities, and emergency service organisations.

Note 2: Under section 505 of the Act, the ACCC must prepare a report setting out its findings as a result of the inquiry and give a copy to the Minister. The ACCC is expected to provide a copy of this report to the Minister as soon as is reasonably practicable, or otherwise within 12 months from the commencement of this inquiry.

- (2) The ACCC must have regard to all of the following matters (without limitation) in connection with the conduct of the inquiry:
- (a) the costs of providing towers and associated passive and active infrastructure that can be used by third party telecommunications providers and others to supply mobile telecommunications and other radiocommunications services;
 - (b) the costs of accessing land to provide the towers and associated infrastructure referred to in paragraph (a);
 - (c) the existing commercial and other fee arrangements under which third party telecommunications providers and other likely users can access the towers and associated infrastructure referred to in paragraph (a), including the considerations that contribute to establishing such fee arrangements (such as the costs of providing such access, as distinguished from the costs of providing the towers and associated infrastructure);
 - (d) the effectiveness of current commercial and regulatory arrangements in enabling third party telecommunications providers and other likely users to access the towers and associated infrastructure referred to in paragraph (a);
 - (e) the kinds of matters (including the impact of costs) providers of the towers and associated infrastructure referred to in paragraph (a) consider in deciding to:
 - (i) provide the towers and associated infrastructure referred to in paragraph (a); and
 - (ii) provide access to such towers and infrastructure.
 - (f) how the kinds of matters described in paragraph (e) may affect the provision of greater mobile coverage;
 - (g) the implications (if any) for the provision of access to towers and associated infrastructure referred to paragraph (a) of mobile carriers divesting their tower and associated infrastructure businesses, including (without limitation):

-
- (i) the scope of access offered;
 - (ii) the terms and conditions of access;
 - (iii) the commercial and other fee arrangements for access; and
 - (iv) the kinds of considerations that contribute to establishing these commercial and other fee arrangements for access;
- (h) the feasibility of providing temporary mobile roaming services during natural disasters and other such emergencies, including (without limitation):
- (i) the technical feasibility of providing such services;
 - (ii) the support systems and business processes required; and
 - (iii) the associated time and costs expected in providing such services.
- (3) The ACCC must consult with the following persons, bodies, and agencies (as applicable, but without limitation) in respect of the matters described in subsection (2):
- (a) providers of the towers and associated infrastructure referred to in paragraph (2)(a);
 - (b) providers of other infrastructure that could similarly be used in supplying mobile telecommunications and other radiocommunications services;
 - (c) likely users of the towers and associated infrastructure referred to in paragraph (2)(a); and
 - (d) members of the community that may be interested in improvements in mobile coverage and / or temporary mobile roaming services to be provided during natural disasters and other such emergencies.

Explanatory Statement

Issued by the Authority of the Minister for Communications,
Urban Infrastructure, Cities and the Arts.

Telecommunications Act 1997

Telecommunications (ACCC Inquiry into Access to Regional Towers and Associated Infrastructure) Direction 2022

Authority

This instrument is made under subsection 496(1) of the *Telecommunications Act 1997* (the Act).

Purpose

The purpose of the *Telecommunications (ACCC Inquiry into Access to Regional Towers and Associated Infrastructure) Direction 2022* (the Direction) is to direct the Australian Competition and Consumer Commission (ACCC) to undertake a public inquiry into the matters specified in the Direction.

Background

The Australian Government has had a longstanding interest in improving mobile coverage and the competitive supply of mobile services in regional, rural, remote and peri-urban Australia. In this context, it has been considering whether access to mobile towers and associated infrastructure is supportive of such improvements, noting the Government has been investing in expanding mobile coverage through programs like the Mobile Black Spot Program and may make further such investments.

On 13 December 2022 the Regional Telecommunications Independent Review Committee (RTIRC) submitted its report on the 2021 Regional Telecommunications Review to the Government.¹ The RTIRC made a number of findings about mobile networks and services in regional, rural, remote and peri-urban Australia. It highlighted the continuing importance of mobile services, including in natural disasters. The report considered ways of improving coverage and competition, such as shared network access as well as access to necessary inputs. It recommended that the Government continue to support provision of new mobile coverage, with investments that address coverage, capacity and competition issues and consider funding vehicles which leverage private sector co-investment (recommendation 2).

The RTIRC also recommended that the Government undertake a feasibility study to consider the capability for mobile roaming to be deployed in emergency circumstances (recommendation 9). This could assist members of the public to contact emergency or rescue organisations, or each other, during natural disasters if they are in an area where their own mobile provider does not have coverage. While mobile phones in Australia can access emergency numbers (e.g. 000) via other providers' networks, where other numbers are concerned a mobile phone operating on one carrier's network cannot access another

¹ Available at www.infrastructure.gov.au/department/media/publications/2021-regional-telecommunications-review-step-change-demand.

carrier's network without technical adjustments being made by mobile carriers and agreements being in place between carriers.

This direction responds to these mobile service issues already of interest to the Government and also raised by the RTIRC.

The inquiry is not linked to any specific ACCC regulatory processes under Part XIC of the *Competition and Consumer Act 2010*, or under Part 5 of Schedule 1 to the Act. It is not a direction to commence a new inquiry into domestic mobile roaming. It is instead intended to generate information that can clarify technical and market issues and contribute to possible policy and program development to improve regional mobile coverage and competition.

It is envisaged that the ACCC will commence the inquiry by 1 July 2022 and complete it within 12 months. The ACCC is not expected to make recommendations, but instead to provide evidence-based findings that facilitate policy development. The ACCC will consult widely, including infrastructure providers and likely users.

Consultation

The RTIRC consulted widely in developing its recommendations, receiving over 650 submissions. Improvements in mobile coverage, capacity and competition are strong themes in the report of the Committee, as are access to inputs to supply services and network sharing models. The Department of Infrastructure, Transport, Regional Development and Communications consulted the ACCC on the draft Direction.

The Office of Best Practice Regulation (OBPR) considers that the inquiry does not result in additional regulatory burden under the Australian Government Regulatory Impact Analysis Framework as the inquiry is exercised through the ACCC's existing functions (OBPR reference OBPR22-01657).

The provisions of the direction are explained in [Attachment A](#).

Statement of compatibility with human rights

A statement of compatibility with human rights for the purposes of Part 3 of the *Human Rights (Parliamentary Scrutiny) Act 2011* is set out at [Attachment B](#).

Details of the *Telecommunications (ACCC Inquiry into Access to Towers and Associated Infrastructure) Direction 2022*

Section 1 – Name

This section provides that the name of the instrument is the *Telecommunications (ACCC Inquiry into Access to Regional Towers and Associated Infrastructure) Direction 2022* (the Direction).

Section 2 – Commencement

Section 2 provides that the Direction commences the day after it is registered on the Federal Register of Legislation.

Section 3 – Authority

This section provides that the Direction is made under subsection 496(1) of the *Telecommunications Act 1997* (the Act).

Section 4 – Definitions

Section 4 provides a limited number of definitions relevant to the direction. In general, terms within the instrument are not defined and therefore would have their everyday meaning.

Subsection 4(1) provides definitions of relevant terms in the Direction, including ‘ACCC’ and ‘Act’. A definition is also provided for ‘towers’ to make clear that this term includes NBN towers (i.e., towers that are part of the National Broadband Network), radio and television broadcasting towers or similar structures that could be used to improve mobile coverage.

Subsection 4(2) provides that, for the purposes of the Direction, reference to ‘likely users’ in subsections 5(2) and (3) includes telecommunications carriers, telecommunications service providers, utilities, emergency service organisations and other operators of radiocommunications equipment. The intention is to require the ACCC to consider a broad range of possible users of towers, permitting it to develop a more complete picture of tower access and use.

Section 5 – Direction

This section provides the specific directions to the ACCC. Subsection 5(1) sets out the two main issues for the inquiry:

- (a) access to towers and associated passive and active infrastructure provided by telecommunications and other infrastructure providers in regional, rural, remote and peri-urban areas within Australia, that can be used in the supply of mobile telecommunications and other radiocommunications services; and
- (b) the feasibility of temporary mobile roaming services to be provided during natural disasters and other such emergencies.

Apart from towers, passive infrastructure would include facilities such as sheds, ducts or pits. Active infrastructure could include both telecommunications infrastructure such as backhaul, cabling or radiocommunications devices, and plant and power infrastructure such as cooling, batteries, generators or power lines.

Regional area, rural area, remote area, peri-urban area, mobile telecommunications services and wireless services would have their everyday meanings. For the assistance of the reader, a ‘peri-urban area’ should be understood as the area around an urban area that is the interface of an urban area with more rural and bushland areas.

Natural disasters includes significant disasters, such as floods, cyclones or major bushfires, during which telecommunications infrastructure may experience significant damage and disruption, such that people in the areas affected by the disaster may have difficulty contacting emergency or rescue organisations, or other people, using their usual communications channels, raising the potential benefit of alternative communications means. Other such emergencies would be more short-lived emergencies, but where there may be also be damage or disruption to telecommunications networks and a similar benefit in having access to alternative mobile networks.

Two notes are provided for the benefit of the reader. Note 1 specifies that ‘telecommunications and other infrastructure providers’ includes specialist tower operators, neutral host operators, telecommunications carriers, owners of other suitable infrastructure, utilities, and emergency service organisations. This makes clear that the ACCC should consider a broad range of infrastructure providers.

Note 2 advises that, under section 505 of the Act, the ACCC must prepare a report setting out its findings as a result of the inquiry and give a copy to the Minister. It also advises that the ACCC is expected to provide a copy of the report as soon as is reasonably practicable, or otherwise within 12 months from the commencement of the inquiry.

Subsection 5(2) specifies matters to which the ACCC must have regard. The ACCC is not limited to considering only these matters. Together, the matters go to the Government better understanding how costs affect tower access fees and broader decisions to invest in towers and associated infrastructure that could improve mobile coverage, as well as the feasibility of providing mobile roaming during natural disasters and emergencies.

Paragraphs 5(2)(a)-(c) of the matters require the ACCC to have regard to the costs that underlie the provision of towers and associated infrastructure, including land access charges, and the fee arrangements that relate to obtaining access to those towers and that infrastructure. Together, these paragraphs provide that the ACCC will generate evidence-based information on the costs that are incurred in providing towers and associated infrastructure, and how these costs flow through to existing fee arrangements for accessing towers. Paragraph 5(2)(c) also makes clear that the ACCC must consider the costs of providing access (for example, relevant business practices and systems) as well as the costs of providing towers and associated infrastructure themselves.

It is expected that with this information the ACCC could then consider the relationship between the costs involved in supply and current fee arrangements.

Paragraph 5(2)(d) requires the ACCC to consider the effectiveness of current commercial and regulatory arrangements in enabling access to towers and associated infrastructure. This will require it to assess whether the existing settings are effective, however, the ACCC is not required or expected to undertake a formal technical review of the facilities access regime in Part 5 of Schedule 1 of the Act or the access regime in Part XIC of the *Competition and Consumer Act 2010*, nor implement any reviews under those provisions as a result of this direction. The focus of the inquiry is on the real world operating environment for access to towers and associated infrastructure and whether that can better support improvements in mobile coverage, capability and competition in regional, rural, remote and peri-urban Australia.

Paragraph 5(2)(e) directs the ACCC to examine the kinds of matters (including the impact of costs) infrastructure and tower providers consider in deciding to provide towers and associated infrastructure and provide access to that infrastructure. Paragraph 5(2)(f) requires the ACCC to consider how the kinds of matters described in paragraph (e) may affect the provision of greater mobile coverage. Together, the paragraphs will require the ACCC to consider how costs impact on investment decisions that underlie improvements in mobile coverage.

Paragraph 5(2)(g) requires the ACCC to have regard to the implications (if any) for the provision of access to towers and associated infrastructure of mobile carriers divesting their tower and associated infrastructure businesses. This notes that mobile carriers like Telstra, Optus and TPG have divested, or are divesting, themselves of their tower businesses and this may impact the dynamics of providing access to towers and associated infrastructure. The paragraph also identifies areas where the ACCC must consider such implications, namely the scope of access that may be offered, the terms and conditions of access, the fee arrangements and the kinds of considerations that contribute to establishing fee arrangements. Paragraph 5(2)(g) will ensure that the ACCC considers whether current actions by mobile carriers to divest their tower businesses will affect the nature of access and the terms of access.

Paragraph 5(2)(h) provides that matters the ACCC must consider in determining the feasibility of providing temporary mobile roaming services during natural disasters and emergencies include the technical feasibility of providing such services, the support systems and business processes required, and the associated time and costs expected in providing such services.

Subsection 5(3) provides that the ACCC must consult persons, bodies and agencies as applicable, and again without limitation in respect of the matters described in subsection (2). While the ACCC's inquiry will be public, four examples are provided to ensure the views of the relevant parties are sought. These are providers of towers and associated infrastructure, providers of other infrastructure that could similarly be used in supplying mobile telecommunications and other radiocommunications services, likely users of towers and associated infrastructure, and members of the community that may be interested in improvements in mobile coverage and/or temporary mobile roaming services to be provided during natural disasters and other such emergencies.

As the inquiry will be a public inquiry conducted in accordance with Division 3 of Part 25 of the Act, the ACCC must publish the fact that it is holding the inquiry and invite submissions. The ACCC may issue a discussion paper and may also hold public hearings. The ACCC must prepare a report setting out its findings of the result of the inquiry.

Statement of Compatibility with Human Rights

*Prepared in accordance with Part 3 of the
Human Rights (Parliamentary Scrutiny) Act 2011*

Telecommunications (ACCC Inquiry into Access to Regional Towers and Associated Infrastructure) Direction 2022

Overview

The purpose of the *Telecommunications (ACCC Inquiry into Access to Regional Towers and Associated Infrastructure) Direction 2022* (the Direction) is to direct the Australian Competition and Consumer Commission (ACCC) to undertake a public inquiry into the matters specified in the Direction.

Subsection 5(1) of the Direction specifies two main tasks of the inquiry:

- (a) access to towers and associated passive and active infrastructure provided by telecommunications and other infrastructure providers in regional, rural, remote and peri-urban areas within Australia, that can be used in the supply of mobile telecommunications and other radiocommunications services; and
- (b) the feasibility of temporary mobile roaming services to be provided during natural disasters and other such emergencies.

The Australian Government has had a longstanding interest in improving mobile coverage and the competitive supply of mobile services in regional, rural, remote and peri-urban Australia. The 2021 Regional Telecommunications Independent Review Committee has also made recommendations relating to industry and Government investment to improve mobile coverage, access to inputs for the supply of such services, new neutral host models and the feasibility of providing temporary mobile roaming services during natural disasters or emergencies. The direction and inquiry respond to these considerations.

The ACCC will conduct a public inquiry in response to the direction, and call for submissions. It must publish a report on its findings. The inquiry is expected to commence by 1 July 2022 and be completed within 12 months.

Human rights implications

The Direction is compatible with the rights and freedoms recognised or declared by the international instruments listed in subsection 3(1) of the *Human Rights (Parliamentary Scrutiny) Act 2011* as they apply to Australia. The Direction does not engage any of the applicable rights or freedoms. Access to telecommunications services is, however, increasingly seen as important to broader social, economic, political and cultural participation.

Conclusion

The Direction is compatible with human rights as it does not raise any human rights issues.

