



Australian
Communications
and Media Authority

ACMA Submission

Inquiry into the Deployment, Adoption and Application of 5G in Australia

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Contents

Executive summary	1
Introduction	2
Key characteristics of 5G networks	2
Spectrum Management	5
Planning new frequency bands for 5G services	5
Optimising existing mobile broadband frequency bands for 5G	6
International cooperation and harmonisation efforts	8
Regulating Electromagnetic energy (EME) from facilities and devices	9
Enforcing industry compliance with the Mobile Base Station Deployment Code	12
Low-impact facilities and 5G	12
Mobile phone base station deployments	12
Community consultation for 5G and small cell mobile infrastructure	13
Small-cell deployment and EME compliance priority	14
Consumer information and advice	15
Consumer information on 5G and small cells	15
Consumer safeguards	15
Appendix A	16

Executive summary

The Australian Communications and Media Authority (ACMA) welcomes the opportunity to contribute to the House of Representatives Standing Committee on Communications and the Arts' inquiry into the deployment, adoption and application of 5G in Australia.

As the communications regulator, the ACMA is aware of the heightened industry and community interest in the rollout of 5G networks – particularly with the productivity benefits these networks offer to sectors across the Australian economy.

The ACMA has three roles of relevance to the Inquiry's terms of reference:

1. Spectrum management

The ACMA plans and manages Australia's radiofrequency spectrum in accordance with the *Radiocommunications Act 1992*. 5G has emerged as one of the major drivers of change to spectrum demand and existing spectrum arrangements. The ACMA is committed to planning and managing spectrum to ensure that Australia is well placed to maximise the benefits of 5G. Our planning activity is focused on the development of technical and licensing frameworks that will support the use of 5G in 'new' frequency bands (bands previously unused for wireless broadband), as well as optimising existing spectrum bands for 5G uses.

2. Regulating Electromagnetic energy (EME) from facilities and devices

The ACMA is responsible for regulating radiofrequency electromagnetic energy (EME) for consumer devices such as mobile phones and telecommunications facilities such as mobile phone towers. To make sure EME exposure is kept low, the ACMA applies the exposure limits set by Australia's authority on radiation protection, the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA).

3. Enforcing industry compliance with the Mobile Base Station Deployment Code

The Code ensures that mobile carriers inform, consult and engage with local communities, councils, and interested and affected parties when a mobile phone base station is being proposed or built in their local area. We are closely monitoring how carriers are rolling out small cells to support the 5G.

More recently, we have an increased focus on consumer information about the rollout of 5G and small cells in coordination with industry and government agencies. We are cognisant of community concerns about the potential impacts of 5G and EME and will continue to work with stakeholders to distribute information within the community.

Introduction

5G refers to the fifth generation of mobile technology, in line with the International Mobile Telecommunications-2020 (IMT-2020) Standard of the International Telecommunications Union and the associated releases of the 3rd Generation Partnership Project (3GPP). 5G wireless broadband includes both fixed and mobile broadband services.

Key characteristics of 5G networks

Key characteristics of 5G that distinguish it from previous developments include:

- > **Peak data rates**—peak data rates of 1–10 Gbit/s (and in some cases up to 20 Gbit/s), which is a step change for mobile networks and is expected to facilitate a high quality and a more seamless user experience. By comparison, 4G networks in Australia provide advertised data rates of between 2–100 Mbit/s.¹
- > **Ultra low latency**—reduce latency to a one millisecond end-to-end round trip delay. This is also a step change for mobile networks. By comparison, 4G networks can theoretically achieve a minimum latency of 10 milliseconds.²
- > **Bandwidth**—provide 1000 times more bandwidth per unit area than available on existing mobile networks. This will support faster data rates and increase network capacity to support data intensive applications in both the uplink and downlink.
- > **Connections**—support the growth of between 10 to 100 times more connected devices than is now supported by existing networks. This is also theoretically possible on evolving 4G networks and mass connectivity is identified as a key enabler for the Internet of Things (IoT).
- > **Always on**—be available everywhere (100 per cent coverage) at all times (99.999 per cent of the time). This requirement is also theoretically achievable using evolving 4G technologies. It is necessary for high mobility applications and coverage indoors and outdoors as well as high reliability requirements for services where network outage could have catastrophic consequences.
- > **Energy usage**—reduce network energy usage by 90 per cent.
- > **Battery life**—facilitate up to 10 years battery life for low power, machine-type devices. Both the energy usage and battery life requirements are theoretically achievable using evolving 4G technologies and are aimed at ensuring future networks are cost effective for network operators.³

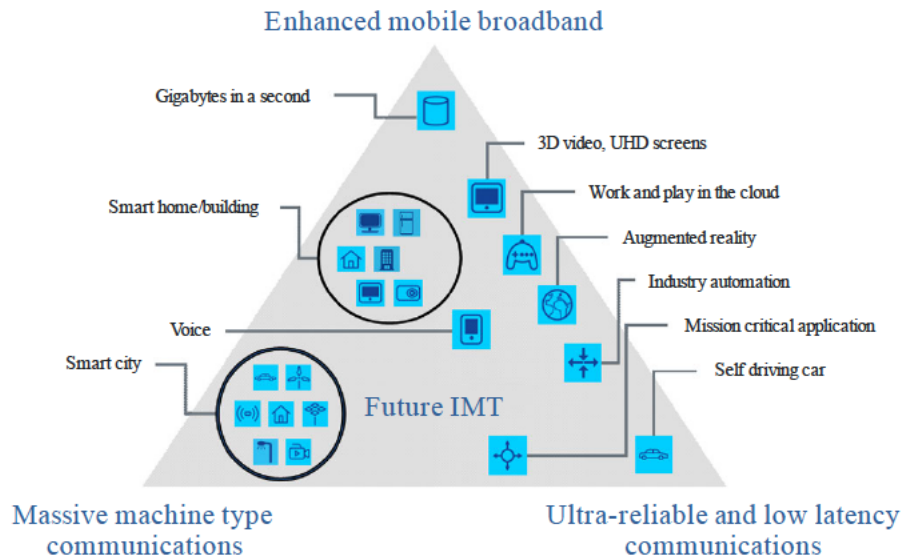
5G usage scenarios could include enhanced mobile broadband, ultra-reliable low latency communications and massive machine type communications (see Figure 1 below).

¹ Australian mobile network operator websites.

² GSMA Intelligence, [Understanding 5G: perspectives on future technological advancements in mobile](#), December 2014, page 13.

³ [5G and mobile network developments—Emerging issues](#), ACMA February 2016

Figure 1: Usage scenarios of International Mobile Telecommunications (IMT) for 2020 and beyond. Source: Recommendation ITU-R M.2083-0 (09/2015)

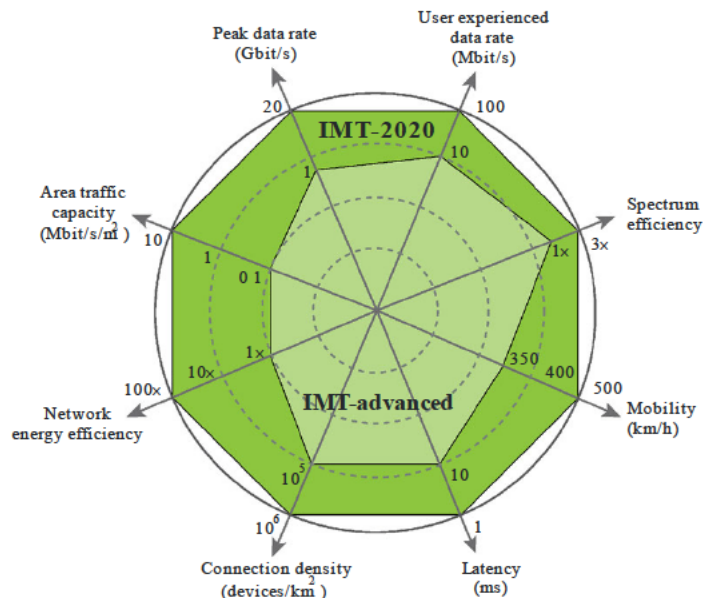


M 2083-02

5G is intended to improve on every network performance metric compared to 4G (see Figure 2 below). Essentially this translates to much higher:

- > capacity broadband for consumers and business
- > reliability to support automated vehicles and public safety communications
- > numbers of interconnections such as for very large numbers of low bandwidth devices under the IoT.

Figure 2: Enhancement of key capabilities from IMT-Advanced (4G/LTE) represented by the light green area to IMT-2020 (5G) represented by the dark green area. Source: Recommendation ITU-R M.2083-0 (09/2015)



M.2083-03

Benefits and use cases in the Australian economy

A range of 5G uses cases are emerging in Australia. To date, Australian telecommunication carriers are focused on mobile and fixed broadband with satellite operators also developing 5G uses cases.

The particular characteristics of 5G provide flexibility and options for new use cases meaning that it has the potential to be adopted by non-traditional users and uses such as private 5G networks supporting healthcare, manufacturing and transportation.

The Australian Government is actively supported 5G deployment through measures such as the release of Australia's first 5G strategy in October 2017 and the establishment of the 5G Working Group.

The establishment of the working group recognises the transformative potential of 5G across disparate parts of the Australian economy. The group brings together representatives from across Government and industry to foster an ongoing discussion on 5G issues. It is particularly focused on how 5G can best be used in in agriculture, health and transport and provides a mechanism to identify and remove sectoral barriers to 5G's successful and timely rollout.

The ACMA is working closely with industry to maximise the social and economic benefits of 5G while minimising the impact on existing services and customers. This includes through the [IoT Alliance Australia](#).

Spectrum Management

The ACMA is committed to ensuring that Australia is well placed to maximise the benefits of 5G and spectrum use. The ACMA continues to implement arrangements to support the rollout of 5G services in Australia, across a number of bands. 5G will utilise spectrum across an unprecedentedly wide range of frequency bands. This will include:

- > 'low-band' spectrum below 1 GHz, much of which is already used for mobile broadband networks
- > 'mid-band' spectrum between 1 and 6 GHz, some of which is already used for wireless broadband
- > 'high-band' spectrum, above 6 GHz, specifically the mmWave bands, until recently unused for widespread wireless broadband purposes.

Each of the broad bands identified for 5G (sub 1 GHz, 1–6 GHz, above 6 GHz) requires a specific approach by the ACMA. This is because different considerations apply, such as intrinsic features of the band—for example, propagation characteristics, as well as international harmonisation and standardisation, domestic policy, legacy planning and allocation arrangements, and other incumbency factors.

The ACMA is facilitating 5G applications in Australia by

- > planning new frequency bands for 5G services
- > optimising bands currently available for wireless broadband
- > working internationally to identify new bands capable of supporting its use.

Planning new frequency bands for 5G services

Mid-band spectrum

The mid-band between 1 and 6 GHz is currently the focus of near-term 5G deployments.

In December 2018, the ACMA successfully allocated 125 MHz of spectrum in the 3.6 GHz band (3575–3700 MHz), in metropolitan and regional areas. All 350 lots available in the auction were sold, realising total revenue of approximately \$853 million. Further information about the results of this auction is available at:

<https://www.acma.gov.au/theACMA/3-6-ghz-band-spectrum-auction-results>.⁴

Spectrum in the 3700–4200 MHz band has been the subject of considerable interest internationally as well as domestically from large mobile network operators and Fixed Wireless Access (FWA) operators (such as Wireless Internet Service Providers), with several processes underway considering arrangements in the band. The ACMA is paying close attention to the global environment in this band and has released a discussion paper to commence a broad review of arrangements in the 3700–4200 MHz band.⁵

⁴ <https://www.acma.gov.au/theACMA/australias-5g-auction-concludes>

⁵ <https://www.acma.gov.au/theACMA/planning-of-the-3700-4200-mhz-band>

The ACMA is alert to the needs of existing fixed satellite and point-to-point uses of this band, as well as the potential for both wide area and site based—for example, FWA, wireless broadband. Considering the whole band simultaneously will maximise the opportunity for balanced approaches that take appropriate account of all interests.

High-band spectrum

The ACMA's consideration of high-band spectrum for wireless broadband is focused on the mmWave in the bands above 24 GHz.

We have completed planning decisions for the 26 and 28 GHz and are now preparing allocation arrangements. The ACMA released two consultation papers in September 2018, which considered planning options for 5G in the 26 GHz band (24.25–27.5 GHz) and discussed the suitability of the 28 GHz band (27.5–29.5 GHz) for a broad range of users and service types, including 5G. A decision paper on the 26 GHz band was released in April 2019,⁶ and a decision paper for the 28 GHz band was released in September.⁷ On 25 October 2019, the Minister for Communications, Cyber Safety and the Arts announced that he had made a spectrum re-allocation declaration for the 26 GHz band.⁸ As a result, the ACMA is proceeding to allocate 2.4 GHz of spectrum in the 26 GHz band in defined cities and regional centres through spectrum licences.

Overall, the ACMA's recent decisions on the 26 GHz and 28 GHz bands have established new planning arrangements for over 5 GHz of mmWave spectrum of great interest for both terrestrial and satellite broadband services.

Satellite services are also expected to contribute to the 5G ecosystem. The ACMA continues to ensure that appropriate spectrum is available for satellite services including in the 28 GHz and 11 GHz bands.

Higher in the spectrum, the ACMA has recently consulted⁹ on changes to class-licensing arrangements to support additional spectrum in the 60 GHz range for wireless data communications systems (including those supporting 5G). An update to [Radiocommunications \(Low Interference Potential Devices\) Class Licence 2015](#) (the LIPD class licence) was recently released which varied and expanded existing 60 GHz arrangements.

Further re-planning for 5G wireless broadband services

In addition to the planning and allocation activities currently underway, the ACMA continues to monitor several other bands for possible replanning for 5G wireless broadband services, including the 1.5 GHz band (1427–1518 MHz). These bands are generally less mature in terms of harmonisation, standardisation and international implementation of 5G. Some stakeholders have indicated interest in planning for private LTE networks in mid-band spectrum, such as 1.5 GHz.

Spectrum between 37–43.5 GHz is of significant interest for both terrestrial 5G and satellite broadband services. The United States (US), for example, has established arrangements supporting both services. The ACMA will consider global trends and local circumstances, including domestic and international take-up of mmWave 5G services, in determining whether replanning for possible 5G in the 37–43.5 GHz band

⁶ <https://www.acma.gov.au/theACMA/options-for-wireless-broadband-in-the-26-ghz-band>

⁷ <https://www.acma.gov.au/theACMA/planning-options-for-the-28-ghz-band>

⁸ <https://www.minister.communications.gov.au/minister/paul-fletcher/news/opening-more-5g-spectrum>

⁹ <https://www.acma.gov.au/theACMA/class-licensing-updates-supporting-5g-and-other-technology-innovations>

is appropriate. The ACMA notes that the case for replanning of part of this band for satellite services may be appropriate regardless.

Optimising existing mobile broadband frequency bands for 5G

Achieving more efficient configuration and use of bands that are already licensed for wireless broadband is a vital adjunct to the clearance and reallocation of new bands to address rising demand for wireless broadband. In part, this work falls on existing licensees, as well as the regulator, to use market mechanisms to reconfigure existing holdings to maximise the overall utility of bands.

In addition, there are continuing opportunities for spectrum users to enter into commercial arrangements to share infrastructure or spectrum in a way that will realise more efficient spectrum use.

Low-band spectrum

In the bands below 1 GHz, the ACMA has two primary short-to-medium-term objectives:

- > working with industry to optimise the efficient configuration of the existing 850 MHz (825–845 MHz and 870–890 MHz) and 900 MHz (890–915 MHz and 935–960 MHz) band allocations, already licensed for mobile broadband purposes, including by securing a 1 MHz downshift of the 850 MHz spectrum licences
- > implementing the existing planning decision to make additional spectrum available for mobile broadband in the 850 MHz expansion band (809–824 MHz and 854–869 MHz).

Mid-band spectrum

The ACMA recognises that optimising spectrum and apparatus licence arrangements in the 3400–3575 MHz bands, adjacent to the 3.6 GHz band auctioned in 2018, is an important priority. This is expected to result in more efficient use of spectrum and a reduction in deployment costs, supporting the implementation of 5G services in Australia.

Reviewing the arrangements in bands that are already licensed for wireless broadband is important to ensure existing allocations are efficient and can cater for new technology developments such as 5G. For example, the ACMA is considering updating the technical framework for the 2.3 GHz band.

The combination of planning decisions across the low, mid and high band spectrum will position Australia well for wireless broadband services (for mobile and fixed wireless), including use for 5G services.

International cooperation and harmonisation efforts

As 5G is an emerging technology with global reach, it is important that the ACMA's activities in spectrum management and equipment regulation are consistent with international developments. International harmonisation allows Australian networks and equipment suppliers the benefits of internationally recognised standards and supply chains, and gives Australian consumers the benefit of global economies of scale in the development and manufacture of devices, and helps roaming capabilities for Australian devices overseas.

The 2019 World Radiocommunication Conference (WRC-19) will be held from 28 October to 22 November 2019 in Sharm El-Sheikh, Egypt. WRCs are held every

three to four years, and WRC-19 will consider a large agenda concerning a range of new frequency allocation and procedural matters, including possible allocations for satellite services and identification of spectrum suitable for 5G services. The Department of Communications and the Arts (the Department) will lead the Australian delegation to this meeting, with the ACMA providing technical expertise.

Since 2016, the ACMA has engaged with stakeholders via WRC preparatory processes to develop Australian positions on WRC-19 agenda item 1.13. This agenda item focuses on spectrum harmonisation requirements for 5G mobile broadband technologies. Developments in Europe, other regions and countries (such as the US) are being monitored for possible early implementation bands for 5G.

Separately, the 4940–4990 MHz band is included in Institute of Electrical and Electronics Engineers (IEEE) standard 802.11y Public Safety Wireless Local Area Network but has also been included in 5G standards (3GPP band n79). This may enable public safety agencies in Australia to deploy their own 5G capabilities under the [Radiocommunications \(Public Safety and Emergency Response\) Class Licence 2013](#). To help foster markets for public safety-grade 5G equipment in this band, the ACMA recently led an Australian proposal to update the relevant ITU-R band plan (Recommendation ITU-R M.1826) to include provisions for 5G channel bandwidths of up to 50 MHz. This proposal was agreed at the May 2019 meeting of ITU-R Working Party 5A.

Regulating Electromagnetic energy (EME) from facilities and devices

The ACMA regulates the EME from telecommunications facilities and wireless devices, including those used in 5G networks and small cell deployments. We do this in two ways:

- > through technical performance requirements at the point of supply for radiocommunications equipment that is portable or mobile and has integral antennas (e.g. mobile phones and wi-fi devices)
- > through licence conditions on transmitters at radiocommunications installations (e.g. mobile phone towers, small cells and radio transmission towers).

The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) is the government agency which provides expert advice on exposure to electromagnetic energy. ARPANSA establishes exposure limits, which it states sit well below the level at which adverse health effects are known to occur and includes a wide safety margin to protect the public.¹⁰ This includes EME from all existing communications deployments such as small cell networks and 5G.

Equipment standards

EME from radiocommunications equipment that is portable or mobile with integral antennas is regulated through the *Radiocommunications (Compliance Labelling – Electromagnetic Radiation) Notice 2014* which places obligations on suppliers of the equipment that need to be met before the equipment can be supplied to the Australian market. These obligations include:

- > ensuring the equipment complies with the levels set in the ARPANSA document Radiation Protection Standard for Maximum Exposure Levels to Radiofrequency Fields – 3 kHz to 300 GHz (2002) (the ARPANSA Standard)
- > to label the equipment
- > to hold compliance documents including a declaration of conformity, test report stating compliance, and a description of the equipment, which the ACMA may audit.

The ACMA has recently consulted on amending the equipment arrangements to adopt the latest international and European test method standards for equipment operating on frequencies below 6 GHz. These amendments are expected to be completed by the end of 2019.

The ACMA is monitoring the development of international standards for EME of equipment that operates on frequencies above 6 GHz and is participating in the Standards Australia committee that provides Australian input into the international standards. The ACMA plans to consult on adopting international standards for testing

¹⁰ See for example, <https://www.arpansa.gov.au/news/5g-new-generation-mobile-phone-network-and-health>.

equipment that is used in close proximity to the head and body and operates on frequencies above 6 GHz when suitable standards are available.

Facilities regulation

Every mobile phone base station, including small cells and 5G base stations, must comply with the ARPANSA Standard.

The ARPANSA Standard is designed to protect people against all known adverse health effects resulting from EME exposure. It is based on scientific research that has determined the levels at which harmful effects occur and is consistent with internationally accepted guidelines endorsed by the World Health Organization and widely adopted by the European Union and various governments around the world. The ARPANSA Standard sets allowable EME exposure levels which are significantly below the levels at which potential harm may occur. In the case of radiocommunications installations, such as mobile phone towers, the Radiocommunications Licence Conditions (Apparatus Licence) Determination 2015 (the LCD) requires licensees to:

- > ensure that EME exposure from a transmitter does not exceed the levels set in the ARPANSA Standard at any location accessible by a member of the general public
- > to hold compliance documents including a declaration of conformity, details of any person who assessed the transmitter's compliance, results of assessments, and details of the transmitter, which the ACMA may audit.

It is also a requirement of the Communications Alliance Ltd Industry Code C564:2018 Mobile Phone Base Station Deployment code, which has been registered by the ACMA under Part 6 of the *Telecommunications Act 1997*, that network operators produce an EME environmental report prior to the proposed installation of a facility.

The EME environmental report contains information about the location of the site, the transmission facilities installed and maximum levels of EME based on predictive modelling. These reports are made available to the general public on the Radio Frequency National Site Archive (RFNSA) website, maintained by the Australian Mobile Telecommunications Association.

The Code also requires that network operators obtain a compliance certificate from an accredited provider stating that the facility is EME compliant post-installation.

Recent compliance activities

In response to community concerns about small cell deployments, in January 2019 the ACMA conducted a formal audit of TPG's EME compliance records for 30 of its proposed small cell deployments. The results of the audit program indicated EME levels well below the exposure limits set by the ARPANSA Standard for all 30 sites audited. There were no significant issues of non-compliance identified. The audit did identify an administrative issue relating to delays in the production of compliance documents, due to clarification being required about the nature and volume of the records required to be produced.

TPG demonstrated a high level of knowledge of its EME compliance obligations and associated record-keeping requirements. TPG also demonstrated that it has processes in place to ensure that compliance assessments accurately reflected environmental and site conditions.

2018-19 compliance priority

Given community concerns about the rollout of 5G technologies, the ACMA has made EME and small cell base stations a compliance priority for 2019-20.

The ACMA has sought details from Telstra, Optus and Vodafone about their deployments of small cells to inform our compliance program. This information will assist us to:

- > identify any systemic patterns or emerging trends
- > assess whether the carriers changed or altered their proposed small cell deployments in response to community feedback received.

We have also commenced an audit program to measure the level of compliance with their licence conditions with reference to the EME human exposure limits developed by ARPANSA. The program will be based on the previous TPG audit and will use a combination of desk-based assessments, formal compliance records audits with a number of spot measurements for reference. The ACMA will report on the results of the program in 2020.

Enforcing industry compliance with the Mobile Base Station Deployment Code

Low-impact facilities and 5G

Low-impact facilities include, among other things, mobile phone base stations used for 3G, 4G and 5G mobile technologies. These facilities are commonly installed on structures such as light and power poles, building rooftops, masts or towers.

Low-impact facilities may also be used for other 5G-related technologies such as 5G fixed-wireless access services. For example, one carrier is currently offering high-speed fixed wireless services in some metro areas using 5G technology.

Under Schedule 3 to the *Telecommunications Act 1997*, licensed telecommunications carriers have the power to enter onto someone's land to:

- > inspect the land
- > install low-impact facilities
- > maintain facilities, including low-impact facilities

without a need to obtain State or Local government planning approvals.

The Telecommunications (Low-impact Facilities) Determination 2018, made by the Minister, specifies what a low-impact facility is and defines the category of land these types of facilities can be installed on.

When entering land for the purposes specified above, carriers must also comply with the Telecommunications Code of Practice 2018, made by the Minister under Schedule 3. The code of practice sets out additional notification and objection procedures for landowners and occupiers affected by the land access process.

If a facility is not a low-impact facility, such as a free-standing telecommunications tower, the carrier must install it in accordance with the applicable local government, State or Territory planning laws.

Mobile phone base station deployments

The current version of the Communications Alliance Ltd Industry Code C564:2018 Mobile Phone Base Station Deployment (the Code) was registered by the ACMA in December 2018. The Code is designed to ensure that communities are informed and consulted about proposed mobile infrastructure deployments.

As small cell and 5G deployments are increasing, concerns are more frequently being expressed by local councils and communities. These concerns mainly focus on the perceived health effects of electromagnetic energy exposure, visual impact, and perceived deficiencies in the carriers' consultation processes.

The Code ensures that mobile carriers inform, consult and engage with local communities, councils, and interested and affected parties when a mobile phone base station is being proposed or built in their local area.

The Code contains several important provisions, including:

- > a requirement that mobile carriers collaborate with local councils and the community when they deploy mobile phone base stations in their community
- > ensuring that local councils and the community are informed and given the opportunity to voice any concerns about new mobile phone base stations, or an upgrade to existing mobile phone base stations
- > requiring mobile carriers to identify community sensitive locations at an early stage in planning for mobile phone base station deployments
- > making EME information about mobile phone base stations available through the RFNSA website
- > requiring mobile carriers to apply a precautionary principle¹¹ to the site selection, design and operation of mobile phone base stations.

Community consultation for 5G and small cell mobile infrastructure

The Code specifies the community consultation requirements for 5G mobile phone base station installations at new sites (section 6) and existing sites (section 7), while small cell deployments have separate and more streamlined consultation requirements (section 5.2).

5G mobile phone base station installations at new sites

In these circumstances, the carrier must consider whether the 5G mobile phone base station requires development application approval in accordance with state or local council planning laws, or whether it is a low-impact facility. In the majority of cases:

- > low-impact mobile phone base station facilities require a mobile carrier to follow the consultation requirements under section 6 of the Code
- > free-standing mobile phone base station poles or towers will require a mobile carrier to follow applicable state or local council planning laws, where it is expected that the public consultation will occur through that process.

5G mobile phone base station installations at existing sites

In accordance with section 7 of the Code, the carrier must notify the relevant local council and the local community about the proposed installation. They must also provide EME information about the 5G mobile phone base station and make an invitation for written comments on the proposed work. Before a mobile carrier commences any works, it must have regard to any comments received from the public and the local council.

Small cell deployments

A more streamlined approach to community notification requirements is available for small cell deployments under clause 5.2 of the Code. This is because they are generally smaller, require less auxiliary equipment to operate, are generally mounted on existing infrastructure (e.g. light and power poles) and have lower power output.

¹¹ The precautionary principle offers mobile carriers advice about how to act responsibly in the face of uncertainty and lack of full scientific knowledge.

Small-cell deployment and EME compliance priority

As referred to earlier in the submission, the ACMA has identified 5G and small cell deployment as a compliance priority for 2019–20. As part of this program, the ACMA will be scrutinising mobile carriers' practices in informing and consulting local communities before installing small cell base stations. This will assist the ACMA in identifying any systemic patterns and/or emerging trends in relation to small cell deployments.

This builds upon the ACMA's previous monitoring and compliance program.

- > In December 2018, the ACMA directed PIPE Networks (a subsidiary of TPG) to comply with the small cell provisions of the Code.
- > In May 2019, the ACMA formally warned Telstra for not fully consulting with interested and affected parties and for not acknowledging a complaint within the prescribed timeframe.

More information including media release, formal warning and investigation report is on the ACMA's website at <https://www.acma.gov.au/theACMA/telstra-fails-to-consult-community>.

Consumer information and advice

Australian carriers are already deploying 5G networks and some commercial services are already available to consumers. Carriers and equipment suppliers are also starting to introduce 5G devices onto the Australian market.

With the increasing rollout of networks, we are aware of concerns in some segments in the community about the potential health impacts of 5G.

Consumer information on 5G and small cells

The ACMA is working to give communities the information they need to understand the infrastructure deployment and EME requirements that apply to the rollout of small cells and 5G.

This is being undertaken through a collaborative and complementary approach to communication on 5G and EME emissions with industry, the Department and ARPANSA.

In response to increased community concern about small cells and 5G, the ACMA:

- > has developed an “EME hub” on our website including information with respect to specific devices and technologies, such as mobile phones, wifi and smart meters
- > has developed a fact sheet for consumers (**Appendix A**) that explains small cells and 5G and provides information about EME
- > will be providing authoritative information about 5G, small cells and EME to local communities.

We also plan to undertake a small-scale, social media campaign (targeting several areas where small cells are being deployed) and search engine advertising. The objective of these communications is to provide clear, relevant and independent information about small cells, EME and 5G.

While the ACMA is taking steps to be more proactive with communities, these activities are not a substitute for carrier consultation and community engagement, as per their regulatory requirements.

Consumer safeguards

The ACMA also monitors industry compliance with a range of safeguards to improve consumers' experience with their telecommunications services. Existing safeguards such as the Telecommunications (Consumer Complaints Handling) Industry Standard 2018 and Telecommunications Consumer Protections Code 2019 apply to 5G services deployed to consumers and small businesses.

Appendix A

A guide to small cells.