



# **Inquiry into 5G in Australia**

House of Representatives - Standing Committee  
on Communications and the Arts

## Introduction and context

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The Internet of Things Alliance Australia understands the importance of state-of-the-art infrastructure to support citizens and business. The rapid and priority introduction of 5G is critical to the future of the Australian economy, our cities as well as rural and regional Australia.

5G technology will also be a vital element within a suite of future telecommunications services including nbn, satellites and other wireless and fixed infrastructure that will underpin Australia's connectivity fabric. Moreover, 5G is unique in that it provides not only high-speed wireless connectivity, but also the ability to federate access types and provide service continuity and sharing across, for example mobile, fixed and Wi-Fi, if carriers choose to implement these capabilities.

The high speed, low latency attributes of 5G are highly attractive for many services including those involving wireless control of robotics, vehicle communications, real-time remote medical services and more. These 5G enabled wireless services will be essential to maintain and raise Australia's comparative global technological readiness, and consequently our competitiveness.

We are aware, through our sectoral work-streams that many industries and communities around Australia are already seeing tangible benefits from the introduction of IoT, improving the economics of operation, provision of customer services and social benefits through improved amenity. 5G is predicted to further boost IoT service innovation and business improvement and can be a major enabler for regional community growth, through the provision of remote medical and health solutions and the ability for small and medium businesses to operate in region for broader markets, for example.

While anticipating the benefits 5G will bring, there are new challenges to overcome in realising the network deployment needed for good 5G coverage. This includes the need for a far greater number of base station sites for adequate network coverage and concomitant high-speed back haul connectivity to support promised 5G speeds and amenity. When coupled with other radiocommunications networks such as LPWAN networks, Fixed Wireless Access networks and other dedicated private or government radiocommunications networks, there is the potential for a substantial increase in the number of radiocommunications transmitters appearing in community streetscapes.

It is through this lens that we make the following recommendations to the House of Representatives Standing Committee on Communications and the Arts' 5G Inquiry.

IoTAA sees at least three key areas where opportunity exists for deeper consideration and action for Australia to achieve maximum benefit from the advent of 5G:

1. A greater level of involvement and collaboration will be required between network operators with fellow network operators and land managers; including federal, state and local jurisdictions – especially in congested urban environments. This is required to underpin practical, well understood, repeatable, guidelines and processes for 5G base-station deployment.
2. Prioritisation and planning and possible financial support for rural and regional radiocommunications network deployment, with attendant broadband back-haul capacity.
3. Consideration and future planning for 5G as a federating and complementary infrastructure; i.e. not just for implemented high speed 5G wireless connectivity but one that leverages and adds to installed nbnCo, Wi-Fi, satellite etc infrastructure.

Without this, we threaten the rapid deployment of 5G our nation requires, risk higher cost and effort than should be necessary; and may fail to realise the full potential of integrated 5G network connectivity.

### Greater involvement and collaboration

As cities (local councils, businesses, state government, citizens etc in a place) invest in digital assets and as planning tools evolve to include digital analytics and simulations, we anticipate an increasing demand on our telecommunications infrastructure. This will include the mobile network, IoT networks as other Fixed Wireless Access (FWA) networks. While the development of a city “digital twin” (in reality likely to be a network of digital twins over time) is in its early days and benefits yet to be realised we see increasing real-time simulation and the ability to demonstrate planning options through advanced augmented reality while on site anywhere in the cities will be one of many drivers of the city's ongoing need for 5G.

An important player in cities, local councils particularly in urban areas (and their citizens) are advising IoTAA of their concerns regarding apparent lack of visibility, understanding, transparency and collaboration in the deployment of 5G base-stations. As mentioned above, when coupled with other radiocommunications network operators also deploying similar small form-factor equipment, the aggregate of all these networks poses an even bigger challenge for councils and cities to manage.

With the increased number of base stations needed (anecdotally from carriers 5,000 additional base station across Australia, each), coupled with IoT Networks, FWA, and other private/government radiocommunications networks, the requirements of frequent and potentially overlapping site visits will increase. This points to the need for better forward planning advice to councils as well as approvals and potential workforce involvement, while balancing between speed of deployment, cost and resources.

Exacerbating the deployment challenge, beyond the additional numbers of base stations is:

- The 5G millimetre wave radio spectrum is less tolerant of physical encumbrances, compared with lower frequency bands and will as a result require greater “line-of-sight” placement of base stations and will be more affected by local environment changes e.g. signage, trees and changes in building landscape for example.
- The aesthetic and physical impacts of a potentially large volume of physical infrastructure, potentially every 100 metres are important considerations in addition to high speed connectivity. Cities may not necessarily be willing to sacrifice trees in favour of undefined city benefits.

Addressing the above issues will require consistency, communication and collaboration.

**Consistency** in planning rules and guidelines will benefit all radiocommunications network operators by minimising the overhead arising from having to follow unique requirements as they move from town to town. Consistency ensures operators know who to talk to and when, and what type of approval is required for each class of infrastructure. Consistency also benefits local councils and shires, especially when applied across all radiocommunications network operators, as they will have confidence that all infrastructure, regardless of the network operator, will meet community and council expectations for amenity and aesthetics.

**Communication** and **Collaboration** is also required to identify innovative new approaches to deploying and sharing infrastructure. Communities around Australia anticipate the social and economic benefits IoT and 5G can bring to their communities and would not want to unnecessarily delay their arrival. At the same time, it is important to protect the amenity and aesthetics of the township and streetscape. Through communication and collaboration, innovative approaches to shared funding, development of common infrastructure and other sharing approaches can be explored that will result in the timely introduction of new capabilities while simultaneously meeting community expectations for appropriate deployment.

To address the above, in addition to the Telecommunications (Low-impact Facilities) Determination 2018 made under subclause 6(3) of Schedule 3 to the Telecommunications Act 1997 details low impact deployments which form the basis of the carriers' obligations for deploying mobile base stations and antennas.

In addition to the LIFD, IoTAA propose the development of agreed (between radiocommunications network operators and Council, State and Federal levels of government) practical, well understood, repeatable, guidelines and processes for 5G (and other radio-technology) base-station deployment, through a code or other mechanism to be determined.

This should include, as a minimum:

1. Provision of precinct based rather than single cell based forward planning to councils of base-station deployments, from all radiocommunications network operators (including Mobile, IoT, FWA or other private/government owned). This would ensure the cumulative effect of deployments are considered – especially multiple physical works.
2. Consideration of colocation and/or base-station sharing with weighting towards shared facilities – to avoid, if possible, clusters of base stations every 100 meters, or a base station every 33 meters or so to accommodate all carriers.
3. Prioritise base station design and deployments that blend into the environment to lower their visual impact on the community and the urban, suburban and even rural landscapes.
4. A mutually agreed approach to conflict management.

The above reflects the greater role land managers will need to play in approvals of location and installation and lifecycle management of radiocommunications infrastructure.

### Rural and regional network development

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As it will be in urban environments, 5G and IoT networks will be critical for the future technological and connectivity capacity for regional and rural Australia. Given Australia's widely dispersed non-urban community, it is likely that financial support will be needed to help accelerate regional and rural deployments – knowing that this is even a challenge today for 4G cellular, for example. Further, greater broadband back-haul capacity will be required to be deployed to underpin radiocommunications network deployments. Ideally this should be competitively provided.

To address rural and regional 5G and other radiocommunications network deployments we would recommend:

- Identification of priority industry and regions for deployment
  - o E.g, food processing, supply chain hubs, areas where robotic crop picking is viable, hospital and remote medical centres
- Review of competitive back haul capacity and needs to meet future 5G and other radiocommunications network priority areas

### 5G as a federating and complementary connectivity Infrastructure

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We understand that over time, one of the features of the 5G standards will be to enable the carriers to seamlessly manage telecommunications services across both the fixed and mobile networks, including multiple wireless technology types both low bandwidth and high bandwidth. This capability can facilitate a new generation of services to citizens and businesses that take advantage of both fixed network assets and mobile network assets. For example, this could/should enable broadband and

other service continuity (e.g., IoT) across 5G cellular, nbnCo, Satellite and Wi-Fi enabling more consumer options and choice.

To ensure that the complementary and federating capability of 5G is employed for Australia's benefit, the Australian government should investigate technical and commercial models for future 5G network evolution, and actions needed to achieve this.

## ABOUT IoT Alliance Australia (IoTAA)

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IoTAA is the peak industry body representing IoT in Australia. Over 500 participating organisations and 1000 individual participants are working to accelerate the adoption of IoT across the Australian economy and society.

IoTAA's purpose is creating and developing sectoral IoT advancement and alignment with key sectors, including through Government Industry Growth Centre activities, Infrastructure Australia, state governments and key sectoral bodies with an initial focus on water and energy resource management, food and agribusiness, transport and smart cities.

### IoTAA's Terms of Reference

- Providing an IoT strategy and policy recommendations with focus sectors to align with government and industry priority areas.
- Engage and collaborate with key stakeholders including major sector aligned growth centres, industry associations, major government influencers
- Align IoT solutions to meet the needs of industry and consumers
- Create more IoT awareness, engagement and education for consumers, markets and governments.
- Apply the learnings of global best practice sector initiatives such as the US Smart Cities IoT initiative.

IoTAA's work-program spans 12 work-streams which focus on industry vertical sectors and key IoT enablers. They are:

### Sectoral Focus

1. Smart Cities
2. Food and Agribusiness
3. Water
4. Energy
5. Transport
6. Manufacturing
7. Health

### IoT Enablers

1. Collaboration
2. Data Use, Availability and Privacy
3. Cyber security and Network Resilience
4. Platforms and Interoperability
5. IoT Start-ups

<http://www.iot.org.au/>

