



Allocation limits advice for the 26 GHz spectrum allocation

Consultation Paper

February 2020

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1. Introduction

- 1.1. On 25 October 2019, the Hon Paul Fletcher MP, Minister for Communications, Cyber Safety and the Arts (the Minister), on advice from the Australian Communications and Media Authority (ACMA), announced the allocation of spectrum licences in the 26 GHz band by auction. The auction is scheduled to take place in early 2021.
- 1.2. The ACMA plans to allocate a total of 2400 MHz of spectrum in the 26 GHz band across 29 defined areas. A list of these defined areas is provided at **Appendix A**.
- 1.3. Under the *Radiocommunications Act 1992*, the Minister may direct the ACMA to develop procedures to impose allocation limits (also known as competition limits) on the sale of spectrum licences.
- 1.4. Limits may be imposed on the amount of spectrum that participants can purchase and apply to specified bands of spectrum. In making such a direction, the Minister may seek the Australian Competition and Consumer Commission's (ACCC) advice on the allocation limits that should apply.
- 1.5. The Minister has written to the ACCC requesting advice on whether allocation limits should be imposed in the 26 GHz spectrum auction. The Minister has requested the ACCC's advice by 15 May 2020.
- 1.6. The Minister has also asked that the ACCC consider whether there are any potential competition issues associated with the apparatus licensing regime across the entire 26 GHz and 28 GHz bands.

2. Consultation process

- 2.1. This consultation paper seeks information to assist the ACCC's preparation of advice to the Minister about appropriate allocation limits to apply to the allocation of 26 GHz spectrum licences.
- 2.2. A number of issues for comment are included throughout this paper and a consolidated list is provided at **Appendix B**.
- 2.3. The ACCC will accept submissions from interested parties until **5pm, Friday 27 March 2020**. Submissions received after this time may not be given due consideration.
- 2.4. Submissions should be sent to:
 - **Tara Morice**, Director, Infrastructure Regulation Division, ACCC (tara.morice@acc.gov.au), and
 - **Elyse Shelley**, Assistant Director (a/g), Infrastructure Regulation Division, ACCC (elyse.shelley@acc.gov.au).
- 2.5. The ACCC will consider all submissions as public submissions and will post them on the ACCC's website. If you wish to submit commercial-in-confidence material, please submit both a public and commercial-in-confidence version of your submission. The confidential version should clearly identify commercial-in-confidence material and the public version should clearly identify where commercial-in-confidence material has been removed.

- 2.6. The ACCC has published a guideline setting out the process parties should follow when submitting confidential information to the ACCC. The *ACCC Information Policy June 2014* sets out the general policy of the ACCC on the collection, use and disclosure of information. A copy of the guideline and policy are available on the ACCC [website](#).

3. The ACCC's approach to this advice

- 3.1. The ACCC intends to conduct its assessment based on the following criteria:
- Promotion of competition in downstream markets for the long-term interests of end-users and to encourage investment in infrastructure and innovation.
 - Supporting deployment of 5G technologies, including opportunities to acquire 5G spectrum in the future and technical requirements for deploying 5G services.
 - Promoting the economically efficient allocation and use of spectrum, to maximise the public value from spectrum, including mitigating the risk of spectrum monopolisation, under-utilisation and very asymmetric spectrum holdings.
- 3.2. These criteria draw on the [Communications Policy Objectives](#) for the allocation of the 26 GHz band, which the Minister requested the ACCC have regard to in providing its advice.
- 3.3. The ACCC's assessment against each of these criteria will be set out in our final advice to the Minister.

4. Why competition is important for spectrum allocations

- 4.1. Spectrum is a scarce resource and it is a critical input into the supply of many services in various downstream markets, including communications services. Access to spectrum is a significant barrier to entry in many of these markets.
- 4.2. Allocations of spectrum via spectrum licensing tend to be less frequent and represent a critical investment point for existing operators and/or new entrants looking to offer services in downstream markets that rely on spectrum. Competition in the allocation helps ensure the spectrum is allocated at an efficient price to those who value it the most.
- 4.3. It is also important to have regard to the promotion of competition in downstream markets that rely on spectrum during the allocation process.
- 4.4. In downstream markets such as the mobiles market, an operator's spectrum portfolio is a significant determinant of its ability to compete effectively. Spectrum enables entry into new markets and can influence the network capacity and quality of service, as well as the geographic areas in which an operator can offer services.
- 4.5. Without sufficient spectrum, operators may fail to compete effectively in downstream markets and consumers may suffer the consequences of an uncompetitive market, including high prices, poor service quality and lack of choice.

- 4.6. In order to promote competition during and after the allocation, the ACCC considers a number of issues including:
- the likelihood and consequence of monopolisation of spectrum as a result of the allocation,
 - the likelihood and potential impact of asymmetric spectrum holdings as a result of an allocation,
 - the potential for under-utilisation of spectrum, and
 - how the allocation might encourage investment in downstream markets for the long-term benefit of consumers.

5. Potential competition issues arising from this allocation

- 5.1. The 26 GHz band is the first high-band spectrum earmarked internationally for 5G deployment to be allocated in Australia.
- 5.2. As discussed above, a potential competition issue that could arise is the creation of significant concentration in the ownership of high-band spectrum holdings as a result of this allocation.
- 5.3. Asymmetric spectrum holdings could weaken competition if, for example, it impacts the types of services an operator is able to provide, the quality of their services, and/or if it restricts entry to a new market that requires a particular amount and type of spectrum.
- 5.4. There is also a risk, in any allocation process, of efforts towards spectrum monopolisation as well as strategic bidding to block competitors from acquiring spectrum. This could lead to competitive disadvantage in downstream markets and could lock operators out of new markets. This could also result in under-utilised spectrum assets, which does not represent a maximisation of the public benefit of spectrum.
- 5.5. We would be concerned if, for example, as a result of this allocation it was possible for one operator to obtain the majority of spectrum available, or if an operator was precluded by the allocation of spectrum, from being able to offer its desired services and compete effectively in the short or long term.
- 5.6. We are also considering the potential impact on investment as a result of this allocation. This includes how competition can best support and drive ongoing investment, particularly for the deployment of 5G, for the long-term benefit of consumers and the broader Australian economy.
- 5.7. We welcome stakeholder views on any potential competition issues that could arise as a result of the allocation of spectrum licences in the 26 GHz band.

Issues for comment:

1. Do you have any competition concerns about the allocation of spectrum licences in the 26 GHz band? If so, how do you think these concerns should be addressed?
2. Does this allocation impact your ability to compete effectively in relevant markets in the short and/or long-term? If so, please provide examples.

6. Allocation of apparatus licences in 26 GHz and 28 GHz

- 6.1. In addition to advice on allocation limits for the 26 GHz spectrum licences, the Minister has asked the ACCC for advice on any potential competition issues associated with the allocation of apparatus licences in the 26 GHz and 28 GHz bands. The 26 GHz spectrum licences for allocation are adjacent to apparatus licences in the 26 GHz and 28 GHz bands, as shown in Figure 1 below.
- 6.2. The timing of the allocation of apparatus licences is a matter for the ACMA. The ACMA advises that it plans to allocate apparatus licences in the 26 GHz and 28 GHz bands as soon as practicable, subject to suitable technical, licensing and other arrangements being settled, and subject to consideration of relative timing of the allocation of the apparatus and spectrum licences in the band. More detail on the spectral and geographic location of apparatus licences in the 26 GHz and 28 GHz bands can be found in the ACMA's [26 GHz decision paper](#) and [28 GHz decision paper](#).
- 6.3. It is important that the allocation of apparatus licences does not come at the cost of important public policy outcomes, including competition in downstream markets for the long-term interests of end-users, and that it minimises the risk of spectrum concentration.
- 6.4. We welcome stakeholder views on the potential for competition issues that could arise as a result of the apparatus licence regime in the 26 GHz and 28 GHz bands.

Figure 1: Licensing arrangements for the 26 GHz and 28 GHz bands.

24.25 GHz	24.7 GHz	25.1 GHz	27.0 GHz	27.5 GHz	28.1 GHz	30 GHz
Australia-wide	Australia-wide	Defined areas	Defined areas*	Defined areas**	Australia-wide***	
	Australia-wide	Outside defined areas	Outside defined areas*	Outside defined areas***		

*additional conditions to protect Fixed Satellite Services (FSS)

** Primary = Fixed Wireless Access (FWA)/FSS gateway; Secondary = ubiquitous FSS

***Primary = All FSS; Secondary = FWA

Class licences
Apparatus licences
Spectrum licences

Issues for comment:

- Do you have any competition concerns about the relationship between spectrum and apparatus licences in the 26 GHz and 28 GHz bands? If so, how do you think these concerns should be addressed?
- Do you view the apparatus licences as complements or substitutes for the 26 GHz spectrum licences?

7. Potential use cases and demand for 26 GHz and 28 GHz

- 7.1. The frequency range 24.25–27.5 GHz has been identified internationally and by the ACMA for delivery of 5G wireless broadband services.
- 7.2. The propagation characteristics and large bandwidths of high-band spectrum, such as 26 GHz and 28 GHz, favour densely concentrated, small cell deployment models that support high-capacity broadband services. However, some network operators may adopt less dense deployment models with larger coverage areas per cell, especially for fixed broadband networks. Thus, there is likely to be a wide variety of business cases, deployment models, spectrum demand scenarios and service types offered by high-band licensees.
- 7.3. We welcome stakeholder views on the likely intended use cases and demand for 26 GHz and 28 GHz spectrum.

Issues for comment:

- 5. What are the likely intended uses of 26 GHz and/or 28 GHz spectrum in Australia? Do you expect these intended uses to change over the term of the licence/s?**
- 6. What do you consider is the optimal allocation of 26 GHz and/or 28 GHz spectrum to support your likely intended uses? What is the minimum allocation necessary?**
- 7. How does this spectrum support the technical requirements for the deployment of 5G services?**
- 8. Does your demand for spectrum differ across geographic areas, such as metropolitan and regional areas? If so, please provide examples.**
- 9. What, if any, additional investment is required to deploy this spectrum for your likely intended uses? Please provide examples.**

8. Relevant downstream markets

- 8.1. In providing advice on appropriate allocation limits for spectrum licences, the ACCC considers the impact that allocation limits may have on competition in relevant downstream markets.
- 8.2. We will also consider the impact on competition and investment from the allocation of apparatus licences in the 26 GHz and 28 GHz bands.
- 8.3. The ACCC is of the preliminary view that the relevant markets are likely to be:
 - the national retail mobile services market
 - the fixed broadband market and
 - the enterprise market.
- 8.4. In the section below we have outlined our preliminary views on each relevant market, and seek feedback from interested parties on the relevance of these markets and

whether there are any additional relevant markets the ACCC should include in its assessment.

The national retail mobile services market

- 8.5. The ACCC has considered the retail mobile services market to be a national market in Australia due to the provision of national mobile coverage by operators and the existence of nationally consistent service offerings.
- 8.6. This market encompasses services that are supplied to a mobile device, such as a mobile phone handset, or a tablet.
- 8.7. There are currently three national mobile network operators (MNOs) that provide retail services and wholesale end-to-end mobile services to mobile virtual network operators (MVNOs). MNOs and MVNOs compete against each other in the retail market for mobile services.
- 8.8. Relevant to this market, there may also be wholesale-only service providers who provide services to MNOs such as in-building roaming.

The fixed broadband market

- 8.9. The fixed broadband market consists of both fixed line and wireless service providers, including satellite operators, who supply broadband services to a customer's premises where the receiving device is stationary (a fixed broadband service). This market includes residential and small business customers.
- 8.10. This market encompasses both fixed and wireless networks as the service supplied and used by the end customer is now more comparable in terms of price, data inclusion and speed, than in the past. From the perspective of the end-user, fixed broadband services are increasingly becoming technology-neutral.
- 8.11. We are seeking views on whether the fixed broadband market is a national market or should be considered in terms of a geographic dimension, such as metropolitan and regional markets. For example, we are aware that some operators predominately offer services in metropolitan areas and not in regional areas and vice versa.
- 8.12. There are numerous fixed broadband service providers, including some vertically-integrated service providers, such as the MNOs, fixed wireless service providers, NBN Co and non-NBN fixed network operators.

The enterprise market

- 8.13. The enterprise market is intended to encompass the wide range of new business models and opportunities that will be made possible by deployment of 5G mobile networks. Telsyte forecasts that enterprise 5G opportunities in Australia driven by application development, IT services, platforms and connectivity could reach around \$45 billion per annum by the mid-2020s.¹
- 8.14. We anticipate a diverse mix of operators competing with each other in this market, including traditional MNOs, infrastructure providers, fixed wireless operators and enterprises themselves.

¹ Telsyte, *5G set to rejuvenate Australian mobile services market*, <https://www.telsyte.com.au/announcements/2019/6/24/5g-adoption-in-australia-set-to-rejuvenate-price-driven-mobile-services-market>, published 25 June 2019.

- 8.15. The end-user may be one of many industry verticals, such as transportation, agriculture, manufacturing, government, healthcare, IT or retail. It may be a small or large organisation, with different service and application needs.
- 8.16. This market includes business-to-business and business-to-consumer use cases that require low-latency and very high bandwidths such as industrial automation, cloud gaming and smart transport systems.
- 8.17. We are seeking views on the geographic dimension of this market, and whether it is a national market or should be divided into metropolitan and regional markets for example.

Issues for comment:

10. What are the relevant downstream markets for the purpose of advice on allocation limits for spectrum licences, noting that markets may have particular geographic dimensions? Please provide reasons for your view.

11. What are the relevant downstream markets for the purpose of considering competition issues associated with apparatus licences, noting that markets may have particular geographic dimensions? Please provide reasons for your view.

12. Are there likely to be future relevant markets that have not been identified?

9. State of competition in relevant markets

- 9.1. To assess the state of competition, the ACCC generally considers a range of factors including market concentration, demand and supply substitutes, price competition and the range and quality of services on offer. We have conducted a high-level assessment of the state of competition in the relevant markets described in Section 8.

The national retail mobile services market

- 9.2. The ACCC has considered the market for retail mobile services is a national market for similar but differentiated service, consistent with the views expressed in the Final Report for the Domestic Mobile Roaming Declaration Inquiry.
- 9.3. There are three MNOs in Australia (Telstra, Optus and Vodafone Hutchison Australia (VHA)) providing retail mobile services, noting that VHA will proceed with plans to merge with TPG. The MNOs provide wholesale services to a variety of MVNOs, who supply retail services to consumers.
- 9.4. The MNOs and MVNOs compete over a number of factors, including the extent of network coverage, the quality and depth of coverage, retail support, price and service inclusions.
- 9.5. As at June 2019, Telstra held 41 per cent market share, followed by Optus with 27 per cent, VHA with 19 per cent and the remaining 13 per cent was shared amongst the MVNOs.² These market shares have remained relatively stable for the last few years.

² ACCC Communications Market Report 2018-19, p. 31.

The fixed broadband market

- 9.6. In the fixed broadband market, there is increasing competition at the network infrastructure level with both fixed and wireless service providers now competing in the consumer retail market.
- 9.7. Network improvements and technology advancements mean mobile networks are increasingly capable of delivering downstream voice and broadband services at a comparable cost and service quality to fixed networks, in terms of speed and reliability in areas where they have coverage. This is likely to continue further with the advent of 5G.
- 9.8. The fixed broadband market is currently undergoing structural change with the rollout of the NBN. The NBN is a wholesale network, owned and operated by NBN Co, and uses various technologies to deliver fixed broadband services to end-users including fibre, fixed wireless and satellite.
- 9.9. A number of retail service providers, including Telstra, Optus, TPG, VHA and Vocus Group, offer retail broadband services to end-users on the NBN. Most of these providers are horizontally integrated in the mobiles market as either MNOs or MVNOs.
- 9.10. There are also non-NBN network providers who tend to be vertically integrated and offer services in specific geographic locations. These operators may supply services over fixed wireless networks, or fibre networks.
- 9.11. As a result, the dominant fixed network operator, NBN Co, may now face competition not only from other fixed networks such as non-NBN fibre networks, but also from wireless networks (mobile networks, fixed wireless networks and satellite networks).

The enterprise market

- 9.12. The enterprise market for 5G is nascent but evolving as 5G deployments progress. At this early stage, it is difficult to assess the current state of competition in this market. However, the market is likely to be one of enormous diversity.
- 9.13. A key aspect of the enterprise market is the ability to provide connectivity to industry verticals for delivery of a range of services and applications. There is an opportunity for existing MNOs and satellite operators to play a significant role in this market, but also an opportunity for a number of new entrants, including industry verticals that deploy a private network and existing private network operators.
- 9.14. Competition in this market may be characterised by the ability of an operator to provide an all-inclusive, bespoke service that meets specific needs of an end-user, rather than a range of off-the-shelf products. In this context, we may have regard to the existence of significant barriers to entry or actions of an operator to foreclose another from entering the market.

Issues for comment:

13. Do you have any views on the state of competition in the relevant markets?

14. Do you have any concerns about future competition in the relevant markets as a result of the allocation of spectrum and/or apparatus licences?

10. Current spectrum holdings

- 10.1. The 26 GHz spectrum band has been identified as a pioneer band for 5G in the high-band spectrum range. In order to offer the wide range of services that 5G technology is capable of supporting, an MNO will require a diverse portfolio of spectrum including a mix of low, mid and high-band spectrum.
- 10.2. An operator's spectrum portfolio is a significant determinant of its ability to compete effectively in downstream markets. Spectrum enables entry into new markets and can influence the network capacity and quality of service, as well as the geographic areas that an operator can offer services.
- 10.3. As such, as part of our advice and competition assessment for this allocation we will consider the current spectrum holdings of key market participants operating in the relevant markets, including the MNOs and NBN Co (**Appendix C**) and whether there are likely to be any competition issues as a result of this allocation.
- 10.4. In the past, the ACCC has considered the existing spectrum holdings of prospective bidders when providing advice on allocation limit, including consideration of the extent of substitutability with holdings in different spectrum bands.

Issues for comment:

- 15. Do you consider that substitutable spectrum exists for the likely intended uses of the 26 and 28 GHz spectrum? To what extent are these fully effective substitutes?**

Appendix A

Geographic areas for lot configuration of 26 GHz spectrum licences

1	Adelaide	16	Melbourne/Ballarat
2	Albany	17	Mildura
3	Albury	18	Port Macquarie
4	Armidale	19	Rockhampton
5	Bendigo	20	Shepparton/Mooroopna
6	Brisbane/Lismore/Sunshine Coast/Toowoomba	21	Sydney/Bathurst
7	Bundaberg/Hervey Bay	22	Townsville
8	Cairns	23	Traralgon/Morwell
9	Canberra	24	Tuncurry/Forster
10	Coffs Harbour	25	Wagga Wagga
11	Darwin	26	Warrnambool
12	Hobart	27	Perth/Bunbury (25.1 – 27.0 GHz)
13	Launceston	28	Bunbury (27.0 – 27.5 GHz)
14	Mackay	29	Perth (27.0 – 27.5 GHz)
15	Margaret River		

Consolidated list of issues for comment

1. Do you have any competition concerns about the allocation of spectrum licences in the 26 GHz band? If so, how do you think these concerns should be addressed?
2. Does this allocation impact your ability to compete effectively in relevant markets in the short and/or long-term? If so, please provide examples.
3. Do you have any competition concerns about the relationship between spectrum and apparatus licences in the 26 GHz and 28 GHz bands? If so, how do you think these concerns should be addressed?
4. Do you view the apparatus licences as complements or substitutes for the 26 GHz spectrum licences?
5. What are the likely intended uses of 26 GHz and/or 28 GHz spectrum in Australia? Do you expect these intended uses to change over the term of the licence/s?
6. What do you consider is the optimal allocation of 26 GHz and/or 28 GHz spectrum to support your likely intended uses? What is the minimum allocation necessary?
7. How does this spectrum support the technical requirements for the deployment of 5G services?
8. Does your demand for spectrum differ across geographic areas, such as metropolitan and regional areas? If so, please provide examples.
9. What, if any, additional investment is required to deploy this spectrum for your likely intended uses? Please provide examples.
10. What are the relevant downstream markets for the purpose of advice on allocation limits for spectrum licences, noting that markets may have particular geographic dimensions? Please provide reasons for your view.
11. What are the relevant downstream markets for the purpose of considering competition issues associated with apparatus licences, noting that markets may have particular geographic dimensions? Please provide reasons for your view.
12. Are there likely to be future relevant markets that have not been identified?
13. Do you have any views on the state of competition in the relevant markets?
14. Do you have any concerns about future competition in the relevant markets as a result of the allocation of spectrum and/or apparatus licences?
15. Do you consider that substitutable spectrum exists for the likely intended uses of the 26 and 28 GHz spectrum? To what extent are these fully effective substitutes?

Current spectrum holdings of operators in Australia

This table shows the current spectrum licence holdings used for wireless broadband in Australia by major operators, noting the 900 MHz spectrum is allocated as an apparatus licence. The ranges represent different holdings in different geographic licence areas.

Spectrum band (total spectrum available)	MAJOR CITIES (Sydney, Melbourne, Adelaide, Perth, Brisbane)			REGIONAL (including Canberra, Darwin and Hobart)			
	Telstra	Optus	VHA/TPG	Telstra	Optus	VHA/TPG	NBN Co
Minimum (MHz)	264.8	309.8	236.4	374.3	291.8	126.4	93
Maximum (MHz)	329.3	354.8	256.4	517.3	367.3	231.4	198
3.6 GHz (125 MHz)	30 to 60		60	50 to 80	30 to 35	20 to 45	
3.4 GHz (100 MHz)	28 to 32.5	65 to 100		32.5	65 to 67.5		65 to 100
2.5 GHz (2 x 70 MHz)	80	40	20	80	40	20	

2.3 GHz (98 MHz)		98		35 to 98	70 to 98		28 to 98
2 GHz (2 x 60 MHz)	30 to 40	40	40 to 50	20 to 60	10 to 40	10 to 40	
1800 MHz (2 x 75 MHz)	20 to 40	30 to 40	50 to 60	70 to 80	40 to 50	20 to 70	
900 MHz (2 x 25 MHz)	16.8	16.8	16.4	16.8	16.8	16.4	
800 MHz (2 x 20 MHz)	20		20	30		10	
700 MHz (2 x 45 MHz)	40	20	30	40	20	30	

Note – NBN Co also holds 75 MHz of spectrum in the 3.4 GHz band in major cities and regional areas under its Public Telecommunications Services (PTS) apparatus licence.

Source: ACMA, Register of Radiocommunications Licences.