



# Allocation limits advice for the 3.6 GHz spectrum allocation

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## 1. Introduction

On 8 March 2018, the Minister for Communications and the Arts (the Minister) requested the ACCC's advice regarding the appropriate allocation limits for the proposed auction of 125 MHz of available spectrum in the 3.6 GHz band in metropolitan and regional areas of Australia in October 2018. The Minister noted in his request that spectrum allocations will have consequences for competition and asked the ACCC to include detailed reasoning for its recommendations.

In response, the ACCC conducted targeted consultation in April 2018 and received submissions from Telstra Corporation Limited (Telstra), Singtel Optus Limited (Optus), Vodafone Hutchison Australia (VHA), TPG Telecom (TPG), NBN Co, the Competitive Carriers' Coalition (CCC)<sup>1</sup> and Roy Wittert, representing Cambium Networks and the Wireless Internet Service Provider Association of Australia (WISPAU). The ACCC also sought technical advice and assistance from the Australian Communications and Media Authority (ACMA).

The ACCC provided its advice to the Minister on 4 May 2018, recommending that the following allocation limits be imposed on the 3.6 GHz band auction. That:

- in metropolitan areas of Sydney and Melbourne:
  - No person, or specified group of persons, is allowed to purchase an amount of spectrum in the upcoming 3.6 GHz spectrum auction which would cause its aggregate holdings across the 3.4–3.7 GHz band to exceed 45 MHz.
- in other metropolitan and regional areas:
  - No person, or specified group of persons, is allowed to purchase an amount of spectrum in the upcoming 3.6 GHz spectrum auction which would cause its aggregate holdings across the 3.4–3.7 GHz band to exceed 60 MHz.

The allocation limits advice provided to the Minister refers extensively to information provided by the stakeholders in their confidential submissions, which, if published, may inadvertently reveal bidding strategies at the auction. For this reason, the ACCC has prepared this document outlining its assessment approach and key reasons for recommending the above allocation limits. As the independent, economy-wide competition regulator, the ACCC considers it important to provide transparency to industry on the ACCC's approach to, and reasons for, providing advice on competition matters.

## 2. Promotion of competition and allocation limits

In making our assessment as to what allocation limits, if any, should apply, the ACCC identified the promotion of competition in relevant downstream markets as the most relevant factor to consider.

Radiofrequency spectrum is a scarce and finite resource which is an essential input to the provision of wireless services in downstream markets. The general approach to allocating spectrum in circumstances where demand for the spectrum is likely to be greater than the amount of spectrum available, is to use a price-based allocation method such as an auction.

The ACCC recognises that allowing the market to determine the price of spectrum through an auction process can, in theory, ensure that the spectrum is put to its highest value use. However, this may not happen in practice because the value a bidder places on the spectrum may not only include the value that it can derive from the use of the spectrum, but

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<sup>1</sup> The Competitive Carriers' Coalition is now known as Commpete.

also the value of keeping the spectrum away from its competitors through undermining competition in downstream markets.

For this reason, the imposition of allocation limits in an auction will help to promote competition and allocative efficiency in markets which rely on spectrum. It does so by ensuring that spectrum can be allocated on the basis of the use to be made of the acquired spectrum and by giving all operators an opportunity to acquire sufficient spectrum to effectively compete in those markets. This will lead to competitive outcomes in those markets to the long-term benefit of consumers.

### 3. The relevant downstream markets

The ACMA is planning to auction 125 MHz of spectrum within the 3.6 GHz band (3575–3700 MHz) in metropolitan and regional Australia. This band falls within the broader 3.3–3.8 GHz band (3300–3800 MHz) that has been identified internationally as the pioneer 5G band.

In Australia, the relevant band is the 3.4–3.7 GHz band (3400–3700 MHz) and some operators have existing holdings in the 3.4 GHz band (3400–3575 MHz), which is a close substitute to the 3.6 GHz band to be auctioned. For this reason, the ACCC has taken into account existing holdings in the 3.4 GHz band in assessing the appropriate allocation limits and any recommended allocation limit would be in the form of a multi-band limit across the 3.4–3.7 GHz band.

While submissions naturally focused on the use of the 3.4–3.7 GHz band to provide early 5G services, the ACCC has not identified a ‘5G market’ as a relevant market.

Market definition is a purposive exercise. In this case, the ACCC has identified the relevant markets in which competition is likely to be promoted. The 3.6 GHz spectrum is likely to be used in providing fixed wireless and mobile broadband services. In using 5G services, like 4G/LTE services, consumers are purchasing broadband services. Services using new technologies do not constitute a separate market, but represent an aspect of the quality of the service.

Based on the intended use of the 3.4–3.7 GHz band in Australia, the ACCC has identified two relevant downstream markets: the fixed wireless market and the national mobile services market.

#### 3.1. Key competition issue in the fixed wireless market

NBN Co already has significant holdings in the 3.4 GHz band which it uses to provide 4G fixed wireless services within its fixed wireless footprint. Allowing NBN Co to acquire additional spectrum in the 3.6 GHz auction would not significantly alter competition between retail service providers that currently provide services over the NBN’s fixed wireless network.

On the other hand, spectrum in the 3.4–3.7 GHz band would enable the mobile network operators (MNOs) to provide 5G fixed wireless services, which could potentially compete with broadband services provided over the NBN, including those provided over the NBN fixed line networks. The enhanced ability of the MNOs to compete with service providers on the NBN has competition implications for NBN Co, as NBN Co may have an incentive to prevent the MNOs from acquiring sufficient spectrum in the 3.6 GHz auction. Given this incentive and the fact that NBN Co already holds significant holdings to provide its fixed wireless service, the ACCC does not consider that allowing NBN Co to acquire additional spectrum in the 3.6 GHz auction would promote competition in the fixed wireless services market. The ACCC has taken this into account in assessing the need for, and the level of any, allocation limits.

### 3.2. Key competition issue in the mobile services market

The ACCC considers that spectrum allocation should create an environment where the competitive process can develop, and rely on that process to deliver better outcomes for consumers (lower prices, better quality services, more product differentiation, and more investment).

The mobile services market is currently dominated by the three incumbent MNOs: Telstra, Optus and VHA. However, the market is undergoing a significant structural change with the imminent entry of a fourth MNO, TPG.

There are significant barriers to a new MNO entering the mobile services market. A new entrant will need sufficient spectrum holdings and mobile network infrastructure across a large geographic area in order to enter, and compete in the market. In particular, acquiring sufficient spectrum holdings can be a challenge for new entrants as spectrum is a scarce and finite resource and there are infrequent opportunities to purchase large blocks suitable for mobile services. In addition, when faced with the threat of new entry, incumbents may have incentives to prevent new entrants from securing sufficient amount of spectrum needed to deploy a competitive mobile network.

For these reasons, the ACCC considers that the appropriate allocation limits should ensure that the new entrant has an opportunity to acquire sufficient amount of spectrum to launch a meaningful entry and compete effectively with the incumbents. Such an outcome would promote competition in the mobile services market to the benefit of consumers.

On the other hand, the ACCC recognises the benefit of promoting early 5G deployment in Australia. As such, we consider that the appropriate allocation limits should also ensure that all MNOs have an opportunity to access sufficient spectrum in the 3.4–3.7 GHz band to deploy early 5G services and that no operator or operators have a first mover advantage in doing so.

## 4. Recommended allocation limits

The ACCC recommends the following allocation limits be applied to the 3.6 GHz spectrum auction, as they would best achieve the objective of promoting competition in the relevant markets as discussed above:

- In metropolitan areas of Sydney and Melbourne:
  - No person, or specified group of persons, is allowed to purchase an amount of spectrum in the upcoming 3.6 GHz spectrum auction which would cause its aggregate holdings across the 3.4–3.7 GHz band to exceed 45 MHz.
- In other metropolitan and regional areas:
  - No person, or specified group of persons, is allowed to purchase an amount of spectrum in the upcoming 3.6 GHz spectrum auction which would cause its aggregate holdings across the 3.4–3.7 GHz band to exceed 60 MHz.

In considering the appropriate level of allocation limits to apply, the ACCC has taken into account the following considerations:

- *Technical requirements for deploying 5G services*

Based on the information and advice provided to the ACCC, we understand that a minimum of 40 MHz is required to realise the benefit of early 5G services over 4G services. We also understand that optimal allocation at this stage is 60 MHz.

- *Existing spectrum holdings*

There are significant differences between spectrum holdings amongst the MNOs. The two large operators Telstra and Optus have considerably larger holdings across a variety of bands. Optus has significant metropolitan holdings of close substitute 3.5 GHz spectrum. Telstra has 3.4 GHz holdings in some metropolitan and regional centres. Importantly, Telstra does not have any close substitute spectrum in Sydney and Melbourne. VHA has comparatively smaller overall holdings. The new entrant, TPG, has very limited holdings compared to the incumbents and its ability to acquire more spectrum in the near future materially impacts its ability to compete with the incumbents.

- *Opportunities to acquire 5G spectrum in the future*

The 3.4–3.7 GHz band is the first band made available in Australia for 5G services. Over time, other frequency bands will be harmonised for 5G use and gradually made available to the operators. This means that the ability of the operators to deploy high speed and high capacity 5G network in the longer term will not be adversely affected by the imposition of allocation limits in this auction. In particular, the incumbents (particularly Telstra and Optus) are in a stronger position to refarm existing holdings for 5G use over time, due to their existing holdings. Comparatively, TPG is unlikely to have the ability to refarm its existing holdings and will have to rely on new spectrum being made available through new allocation processes.

- *Incumbents' incentives and financial capability*

As discussed earlier, the ACCC considers that the incumbents have an incentive to prevent the new entrant from acquiring sufficient spectrum in the auction. The larger incumbents would also have the financial capability to acquire up to the limits in the auction. This has implications on the amount of spectrum that would be conceivably available for the smaller MNOs, i.e. VHA and TPG, despite their ability to bid up to the limits themselves.

Having regard to the existing holdings in the 3.4 GHz holdings, the ACCC envisages that the recommended allocation limits would, at a high level (and depending on geographic lot configurations), have the following effects on the potential bidders' capacities to acquire spectrum in the 3.6 GHz auction:

- NBN Co would be prevented from acquiring additional 3.6 GHz spectrum in all areas, apart from regional WA.
- Optus would be prevented from acquiring additional 3.6 GHz spectrum in all metropolitan areas and in regional WA, and would be able to acquire up to 60 MHz in any other regional area.
- Telstra would be able to acquire up to 45 MHz of 3.6 GHz spectrum in Sydney and Melbourne, and between 25 and 30 MHz in any other metropolitan area and between 25 and 60 MHz in any regional area.
- TPG and VHA would be able to acquire up to 45 MHz of 3.6 GHz spectrum in Sydney and Melbourne, and up to 60 MHz in any other geographic area.

#### 4.1. Recommended allocation limits would promote competition

The ACCC considers that the outcomes that are likely to result from the recommended allocation limits would best promote competition in the relevant markets, which would be in the long term interests of end-users.

## **Fixed wireless services market**

As NBN Co is the wholesale provider of fixed wireless services in the nbn fixed wireless footprint, any additional spectrum it acquired is unlikely to promote competition in the downstream retail market. Although the ACCC is unable to express an opinion on whether NBN Co would require additional spectrum to address any capacity issues, we note that there are other options to provide further capacity.

In addition, if NBN Co is allowed to acquire additional 3.6 GHz spectrum in the auction, particularly in metropolitan areas, it will have an incentive to acquire spectrum for the purpose of preventing MNOs from acquiring sufficient spectrum which could be used to provide 5G fixed wireless services in competition with broadband services provided over NBN Co's network.

As such, the ACCC considers that the promotion of competition in the retail fixed wireless services market would be best achieved by imposing the same limits on NBN Co and thus restrict it from acquiring additional spectrum in the 3.6 GHz spectrum allocation.

## **Mobile services market**

In the mobile services market, the ACCC considers that competition would be best promoted by ensuring that all MNOs have an opportunity to acquire spectrum in the 3.4–3.7 GHz band to deploy early 5G services, and in ensuring that the new entrant TPG has the ability to acquire sufficient spectrum to launch a strong entry and compete effectively with the incumbents in the short and long term.

The ACCC considers that, for most areas, a limit of 60 MHz achieves a balance between allowing some MNOs to deploy early 5G networks of a sufficient quality and ensuring that all MNOs have the opportunity to acquire a sufficient amount of spectrum. However, in Sydney and Melbourne, the ACCC considers that a lower cross band limit should apply.

In Sydney and Melbourne metropolitan areas, the ACCC has recommended a lower cross band limit of 45 MHz to apply to all bidders. Taking into account existing spectrum holdings, this limit would have the effect of preventing NBN Co and Optus from bidding. The expected bidders, Telstra, TPG and VHA could bid up to a maximum of 45 MHz each.

In assessing the appropriate allocation limits, the ACCC acknowledges that demand for spectrum in both Sydney and Melbourne is likely to be strong. TPG has announced its intention to build a fourth mobile network covering 80 per cent of the population. If a limit of 60 MHz was imposed, it would increase the risk that TPG would not be able to acquire sufficient spectrum to launch a strong entry into the mobile services market and to compete effectively with the incumbents over the longer term. This is because Telstra and VHA have incentives to preclude TPG from acquiring sufficient spectrum in these areas. The ACCC considers that such an outcome would not promote competition.

In regional areas, the ACCC considers that a limit of 60 MHz is appropriate as there will be at least four potential bidders.<sup>2</sup> The ACCC considers that even though not all MNOs may have the same demand for regional spectrum, all MNOs are likely to be interested to some extent in acquiring the regional lots as they are likely to contain more populated regional centres where commercial incentives to deploy mobile services are higher. The ACCC considers that ensuring there is sufficient spectrum available for all MNOs to deploy services in regional areas would promote investment in mobile infrastructure, providing more choice to regional consumers.

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<sup>2</sup> That is, Optus, Telstra, VHA, TPG. NBN Co may participate in regional WA depending on lot configurations.

Telstra currently holds some spectrum in the 3.4 GHz band in several regional centres.<sup>3</sup> These regional centres may be included in a larger regional lot for the 3.6 GHz band, but only account for a small geographic area within the larger regional lot. Ideally, the ACCC considers that there should be separate regional lots for these regional centres for the 3.6 GHz band.

However, in the event that this is not possible, the ACCC's recommended limit would take into account Telstra's existing holdings in the 3.4 GHz band in several regional centres which would restrict, to some extent, Telstra's ability to acquire additional 3.6 GHz spectrum for the larger regional lots. The ACCC considers it would not be appropriate to exclude Telstra's existing holdings in these regional centres.

Excluding Telstra's current holdings in the 3.4 GHz band would mean that Telstra could acquire up to 60 MHz in regional areas, including in regional centres, leaving only 65 MHz to share between three other MNOs. This may result in some MNOs not being able to acquire regional spectrum even though they may be interested in deploying services around regional centres. Such an outcome would not promote competition and could potentially discourage regional investment in infrastructure that would otherwise occur.

On the other hand, including Telstra's existing holdings in regional centres would mean that Telstra may end up having less spectrum in the remainder of the regional lot than it does in regional centres. However, the ACCC notes spectrum requirements in terms of bandwidth in more sparsely populated regional areas outside the regional centres are likely to be lower and smaller spectrum holdings in these areas is unlikely to adversely affect consumer experience.

The ACCC carefully considered the views of submitters that at least some operators should have access to large contiguous blocks of spectrum. However, the risk of imposing a limit higher than 60 MHz is that other operators may only be able to acquire a small amount of spectrum, or no spectrum, in the auction. This would not promote competition in wireless markets. The ACCC does not consider that the proposed allocation limits would compromise the ability of the MNOs to deploy high capacity and high speed 5G networks over the long term, as other spectrum will be made available and carrier aggregation technologies for 5G will be developed.

## 5. Conclusion

The ACCC advises that the following allocation limits for the 125 MHz of spectrum in the 3.6 GHz band would promote competition in the relevant markets:

- In metropolitan areas of Sydney and Melbourne:
  - No person, or specified group of persons, is allowed to purchase an amount of spectrum in the upcoming 3.6 GHz spectrum auction which would cause its aggregate holdings across the 3.4–3.7 GHz band to exceed 45 MHz.
- In other metropolitan and regional areas:
  - No person, or specified group of persons, is allowed to purchase an amount of spectrum in the upcoming 3.6 GHz spectrum auction which would cause its aggregate holdings across the 3.4–3.7 GHz band to exceed 60 MHz.

The ACCC considers that these allocation limits would promote competition, which is in the long term interests of end-users, by ensuring that all MNOs have an opportunity to acquire spectrum to deploy early 5G services. In particular, they would ensure that the new entrant

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<sup>3</sup> Telstra holds spectrum in the 3.4 GHz band in regional centres of Ballarat, Bendigo, Cairns, Townsville, Albury, Rockhampton, Toowoomba, Hobart and Launceston.

has the ability to acquire sufficient amount of spectrum to facilitate a strong entry into the mobile services market and to compete effectively with the incumbents in the short and longer term.

Clearly, having four effective players in the mobiles market will benefit consumers considerably both through more investment and lower prices.