



Allocation limits advice for the 850/900 MHz spectrum allocation

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Executive summary

Radiofrequency spectrum is a scarce and finite resource that is an essential input for the provision of wireless services, such as mobile services and satellite communications, in downstream markets. The ACCC is interested in ensuring that the allocation of radiofrequency spectrum licences promotes competition in relevant downstream markets for the benefit of consumers.

The Minister for Communications, Urban Infrastructure, Cities and the Arts (the Minister) has asked the ACCC for advice on competition issues associated with the planned allocation of spectrum licences in the 850 MHz expansion band and the 900 MHz band (850/900 MHz allocation). Specifically, the Minister sought the ACCC's views on:

- whether allocation limits should be imposed on the 850/900 MHz allocation and, if so, what those limits should be,
- the merits of applying allocation limits that take into account carriers' existing holdings in all sub-1 GHz bands, and
- whether there are grounds to guarantee Telstra 2x5 MHz of spectrum in the allocation, given that the Minister believes there are grounds to guarantee 2x5 MHz in the 900 MHz band for Singtel Optus (Optus) and TPG Telecom (TPG), to support the continuity of services.

In response to the Minister's questions above, the ACCC advises that:

- an allocation limit should be imposed for the 850/900 MHz allocation, such that no person or specified group of persons could hold more than 40 per cent, or 80 MHz, of all sub-1 GHz band spectrum available for use as a result of the 850/900 MHz allocation,
- there are no grounds to guarantee spectrum for Telstra in the 850/900 MHz allocation for the purpose of supporting continuity of services, and the recommended allocation limit would provide a reasonable opportunity for Optus and TPG to acquire spectrum in the 900 MHz band in the absence of any spectrum guarantee.

In reaching these views, the ACCC has conducted a competition assessment on the likely effect of the 850/900 MHz allocation on relevant downstream markets. The ACCC considers that the most relevant market for the purpose of this allocation is the national mobile services market. In this market, the mobile network operators (MNOs) compete with each other for customers in the provision of mobile services through, among other things, continued network improvements. In the near term, the focus of competition among the MNOs is likely to be on the continued roll out of 4G and 5G technology, including in regional Australia.

The 850 MHz expansion band and the 900 MHz band are valuable sub-1 GHz spectrum enabling MNOs to provide mobile coverage in both metropolitan and regional Australia in a cost efficient manner. As such, disparity in sub-1 GHz band spectrum holdings could give rise to competition concerns if they constrain an MNO's ability to compete with others in the mobile services market.

The ACCC considers that the key competition issue arising from this allocation is Optus' lack of sub-1 GHz spectrum compared to the other MNOs. Optus' ability to compete effectively in the mobile services market will likely be constrained if it does not acquire more sub-1 GHz band spectrum in the 850/900 MHz allocation. In particular, there is a risk that Optus may not be able to roll out 5G technology widely and efficiently in Australia in the absence of more sub-1 GHz spectrum. This would adversely affect competition in the mobile services market, particularly in regional areas by limiting the deployment of competitive 5G networks

by all MNOs across Australia, to the detriment of consumers. The ACCC has not found that Telstra or TPG face similar spectrum constraints.

The ACCC considers a cross-band limit is warranted, as the sub-1 GHz bands are substitutable with each other and have similar propagation characteristics. Taking into account existing sub-1 GHz band holdings would mean that differences in the MNOs' ability to compete is accounted for in determining the amount of additional sub-1 GHz spectrum they can potentially acquire in the 850/900 MHz allocation.

The ACCC considers that the recommended limit will provide a reasonable opportunity for Optus to acquire the spectrum it needs to compete effectively in the mobile services market in the medium to long term, but does not prevent Telstra and TPG from participating in a potential price-based allocation. In doing so, the recommended allocation limit will promote competition and investment in the mobile services market, including in regional Australia and support the deployment of 4G and 5G technologies to the benefit of consumers.

The ACCC does not consider there are grounds to guarantee any spectrum for Telstra for the purpose of continuity of services, as Telstra has limited 4G deployment in the 900 MHz band and relies on the 700 MHz band for its 4G services.

However, TPG and Optus are currently relying on the 900 MHz band for their 3G services, and Optus also uses the 900 MHz band for 4G services on some of its sites. Consequently, continuity of service is a relevant consideration in determining whether any spectrum should be guaranteed for these MNOs in this allocation. That said, the ACCC considers that service continuity is essentially a competition issue in the present case. This is because there are likely strong incentives on Optus and TPG to ensure their customers do not experience service disruptions due to the reallocation of the 900 MHz band, as any disruption in the process would likely result in their customers switching to an alternative provider. The ACCC considers that the recommended limit would provide a reasonable opportunity for Optus and TPG to acquire 900 MHz spectrum to enable them to continue to operate their existing services.

The ACCC recognises that spectrum guarantees or set asides are useful tools that have been commonly used in other jurisdictions to achieve certain policy objectives, such as to promote new entry. In the present case, the ACCC considers the recommended allocation limit is likely to promote the policy objective of supporting continuity of service, even in the absence of the proposed spectrum guarantees. Without the spectrum guarantees, a potential price-based allocation would determine the value that TPG and Optus place on the continued provision of existing services in the 900 MHz band, which is likely to lead to a more efficient allocation of the spectrum.

1. Background

1.1. Request for advice and ACCC consultation

On 27 October 2020, the Minister for Communications, Urban Infrastructure, Cities and the Arts (the Minister) on advice from the Australian Communications and Media Authority (ACMA) made the reallocation declaration to allocate spectrum licences in the 850 megahertz (MHz) expansion band and the 900 MHz band.¹

The ACMA is planning to allocate 2x10 MHz in the 850 MHz expansion band and 2x25 MHz in the 900 MHz band across Australia in late 2021 (850/900 MHz allocation).

The Minister has sought the ACCC's advice on whether allocation limits are needed for the 850/900 MHz allocation and, if so, what those limits should be. The Minister has asked for the ACCC's views, if relevant, on the merits of applying a limit that takes account of existing sub-1 GHz bands holdings.

The Minister particularly noted the policy objective of supporting continuity of services. The Minister believes there are grounds to guarantee Optus and TPG 2x5 MHz in the 900 MHz band to support the continued operation of their existing services in this band. The Minister sought the ACCC's views on whether there are grounds to also guarantee 2x5 MHz for Telstra.

On 18 November 2020, the ACCC released a consultation paper seeking stakeholders' views on a range of issues relevant to its consideration of the advice to the Minister.² Submissions closed on 18 December 2020.

The ACCC received submissions from Telstra, Optus, TPG, NBN Co, Pivotel and Connected Farms.³ The ACCC has had regard to all relevant submissions and information put to us during consultation in preparing this advice.

1.2. Rationale for intervention

Radiofrequency spectrum is a scarce and finite resource that is an essential input for the provision of wireless services, such as mobile services and satellite communications, in downstream markets.

Where spectrum demand is likely to be greater than supply, the common approach is to allow the market to determine the allocation through 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 means that spectrum is acquired by the highest value bidders, with the expectation that this ensures that spectrum is put to its highest value use, thus promoting allocative efficiency. Spectrum licences are also more likely to promote dynamic efficiency than other types of licences because licence holders can put the spectrum to a higher value use that emerges over time.

¹ *Radiocommunications (Spectrum Re-allocation – 850/900 MHz band) Declaration 2020*, available at: <https://www.legislation.gov.au/Details/F2020L01407>.

² See ACCC, *Allocation limits advice for the 850 MHz expansion band and 900 MHz band spectrum allocation – Consultation paper*, November 2020, at: <https://www.accc.gov.au/regulated-infrastructure/communications/mobile-services/spectrum-competition-limits/request-for-advice-850-900-mhz-spectrum>.

³ Public submissions are available on the ACCC's website at: <https://www.accc.gov.au/regulated-infrastructure/communications/mobile-services/spectrum-competition-limits/request-for-advice-850-900-mhz-spectrum>.

However, allocating spectrum in an auction to the highest bidder can potentially weaken competition in downstream markets. This is because companies with a strong existing market position will value spectrum, and the amount they will bid, based on both the spectrum's technical and commercial value, that is, its value in providing cost-effective services to customers and the value to be gained by keeping it from competitors. This can detrimentally affect competition and the quality and price of services for mobile services customers.

Given this, auction settings such as allocation limits can help promote competition and economic efficiency in markets that rely on spectrum by giving all operators an opportunity to acquire sufficient spectrum to compete effectively in the downstream markets. When the operators can compete effectively, this promotes good outcomes for consumers, in terms of choice, price and quality of services available.

1.3. ACCC approach to advice

The ACCC has used the following criteria to assess whether allocation limits are required for the 850/900 MHz allocation, and if so, what those limits should be:

- promotion of competition in downstream markets for the long-term interests of end users (LTIE) and to encourage investment in infrastructure and innovation, including in regional Australia;
- supporting deployment of 4G and 5G technologies; and
- supporting continuity of services.

These criteria draw on the Communications Policy Objectives⁴ for the allocation of the 850 MHz expansion band and the 900 MHz band, in relation to which the Minister requested the ACCC have regard in providing this advice.

1.4. About this advice

This advice sets out the ACCC's recommendation to the Minister on the allocation limits that should apply to the 850/900 MHz auction and includes the ACCC's reasons and analysis in support of the recommendation. The advice is structured in the following way:

- Section 2: overview of the allocation
- Section 3: competition assessment
- Section 4: recommendation on allocation limits
- Section 5: the ACCC's view on spectrum guarantees or 'set asides'.

⁴ See the Department of Infrastructure, Transport, Regional Development and Communications website at: <https://www.communications.gov.au/documents/communications-policy-objectives-allocation-850-and-900-mhz-bands>.

2. Overview of allocation

On recommendation from the ACMA, the Minister made the *Radiocommunications (Spectrum Re-allocation – 850/900 MHz) Declaration 2020* under subsection 153B(1) of the *Radiocommunications Act 1992*.

The declaration makes 2x10 MHz in the 850 MHz expansion band⁵ and 2x25 MHz in the 900 MHz band available for spectrum licensing Australia-wide. The new spectrum licences are expected to commence after 30 June 2024. The ACMA is currently planning to allocate the spectrum in late 2021. While the ACMA has yet to determine the final allocation format, the ACCC expects that an auction is highly likely given that demand for the spectrum is likely to exceed supply.

Both the 850 MHz expansion band and the 900 MHz band are suitable for the deployment of 3G, 4G and 5G wireless broadband services. Similar to other sub-1 GHz bands, the 850 MHz expansion band and the 900 MHz band have propagation characteristics that make them particularly suitable to providing wide area coverage and indoor coverage.

Currently, the 900 MHz band is held by the three MNOs under apparatus licences. Optus and TPG use the 900 MHz band to provide 3G services, with Optus also using it for 4G services on some of its sites. Telstra has limited 4G deployments in the 900 MHz band. Band clearance and reallocation of the 900 MHz band means that the MNOs will lose their 900 MHz holdings and will have to re-acquire them at the allocation if they wish to continue to use the band for existing services.

The figure below shows the current and planned configurations for the 850 MHz and 900 MHz band.

Figure 1 Current and planned band configurations for 850 MHz and 900 MHz bands



Note 1: The current spectrum licensed holdings shown in the 850 MHz band relate to regional area holdings. Both Telstra and TPG have 2 x 10 MHz in metropolitan areas (Sydney, Melbourne, Brisbane, Perth and Adelaide).

Note 2: As illustrated, the Government has indicated it will reserve spectrum for a future public safety mobile broadband (PSMB) capability in the lowest 2 x 5 MHz of the 850 MHz expansion band.

⁵ For completeness, there is an additional 2x1 MHz in the 850 MHz band included for allocation under this declaration, which is intended to facilitate a future downshift of the 850 MHz band.

In his request, the Minister indicated he believes there are grounds to guarantee Optus and TPG 2x5 MHz in the 900 MHz band to support the continuity of services. The Minister also indicated his intention to set aside one of the four upper lots in the 900 MHz band (lots 4–7 in Figure 1) for each of Optus and TPG, with the lot location to be determined through the ACMA's allocation method. The Minister sought the ACCC's views on whether there are grounds to also guarantee Telstra 2x5 MHz of spectrum.

3. Competition assessment

Our competition assessment involves the following steps:

- identifying the relevant downstream markets having regard to the intended use of and demand for the spectrum,
- assessing the state of competition in the relevant downstream markets, and
- analysing any relevant existing holdings that should be taken into account and how the allocation would likely impact the ability of the operators to compete in the relevant market.

These are discussed in detail below.

3.1. Identifying the relevant downstream markets

Defining the relevant downstream markets where 850/900 MHz band spectrum will be used establishes the field of inquiry in which to assess the outcomes of the spectrum allocation and determine whether intervention is required to promote competition.

The mobile services market is the most relevant downstream market

Submissions from the MNOs indicate that the most likely use of the spectrum offered in the 850/900 MHz allocation (850/900 MHz spectrum) is for the provision of mobile services. The spectrum is suitable for any current generation of mobile technology and all MNOs agree that the national mobile services market is a relevant downstream market.⁶

Other stakeholders indicated other possible use cases specifically in regional and remote areas, such as fixed wireless services, private wireless networks for industry uses and public safety and emergency networks.⁷ While this demand indicates the possible existence of other markets that could be potentially impacted by the allocation, they do not raise issues that are amenable to competition assessment or otherwise could be resolved by the imposition of allocation limits. This is discussed further in Section 3.4.

For these reasons, the ACCC considers that the key relevant downstream market for the purpose of our competition assessment is the national mobile services market. The wholesale mobile services market where the MNOs supply wholesale services to the mobile virtual network operators (MVNOs) may also be an intermediate relevant market. However, ultimately the impact of the allocation on the ability of the MNOs to attract MVNOs is likely to flow through to affect competition in the retail mobile services market.

3.2. State of competition in relevant downstream markets

The ACCC uses the LTIE test to consider whether the potential outcomes of a spectrum allocation will promote competition for the benefit of end-users. As part of this test, we consider the current state of competition in the relevant markets and how the allocation

⁶ Telstra, *Allocation limits advice for 850 MHz expansion band and 900 MHz band spectrum allocation*, 23 December 2020, pp. 9–10 (Telstra submission); Optus, *Submission in response to ACCC consultation paper: Allocation limits advice for 850 MHz expansion band and 900 MHz band spectrum allocation*, December 2020, p. 10 (Optus submission); TPG, *Allocation limits advice for 850 MHz expansion and 900 MHz band spectrum allocation: Submission to the Australian Competition and Consumer Commission*, December 2020, p. 5 (TPG submission).

⁷ See NBN Co, *Submission on allocation limits advice for 850 MHz expansion band and 900 MHz band spectrum allocation*, 16 December 2020, pp. 2–3 (NBN Co submission); Pivotal, *Allocation limits advice for 850 MHz expansion band and 900 MHz band spectrum allocation: Response to ACCC Consultation Paper*, 18 December 2020, pp. 2–3 (Pivotal submission); Connected Farms, *Connected Farms response to ACCC on allocation limits for 850 and 900 MHz spectrum*, 17 December 2020, pp. 2–3 (Connected Farms submission).

might impact the future state of competition to determine if any measures are required to safeguard competition.

A key question the ACCC considers in its allocation limits advice is how the allocation of spectrum will impact the ability of operators to compete in relevant markets for the benefit of consumers; in particular, whether any operator's ability to compete would be constrained if they do not acquire spectrum in the allocation.

Focus of competition will be on the roll out of 5G technology, including in regional areas

The national mobile services market is a market for similar but differentiated services, with mobile service providers competing over a range of price and non-price related factors. The MNOs dominate the market with 85 per cent of collective market share in the mobile phone services market as at June 2020.⁸ The balance of the market is served by the MVNOs, who usually compete on plan features and customer service but have limited ability to compete on network quality-related factors. This means that the continued improvement of mobile networks for the benefit of end-users, through things such as the expansion of network capacity and coverage as well as the roll out of new mobile technology, is dependent on there being effective competition between the MNOs.

Submissions from the MNOs indicate a clear intention to invest in 5G technology and expand 5G coverage in order to compete with each other. Telstra expects that the MNOs will almost entirely focus on 5G services competition from 2024, with 3G services having a markedly lower importance.⁹ Optus emphasised the economic benefit that widespread adoption of 5G technology could bring, particularly in regional Australia, and argued that this benefit could not be realised without competition in 5G deployment.¹⁰ In addition, TPG noted that the regional and enterprise segments of the mobile services market are dominated by Telstra, and that an historical imbalance in sub-1 GHz spectrum holdings is one of the major contributors to Telstra's competitive advantage in regional Australia.

The ACCC considers that the focus of competition among the MNOs going forward will be the roll out of 5G technology, including for the benefit of consumers in regional areas of Australia. The MNOs' sub-1 GHz spectrum holdings have a critical impact on their ability to roll out 5G technology widely, quickly and efficiently.

Sub-1 GHz spectrum is critical to the MNOs' ability to compete

As noted above, sub-1 GHz bands, which include the 850 MHz expansion band and the 900 MHz band, have propagation characteristics which make them particularly suited to providing wide area coverage and indoor coverage. This means they are important for the provision of mobile services in both metropolitan and regional areas.

Submissions generally agree that the sub-1 GHz bands are substitutes for each other as they share similar propagation characteristics and cell coverage. In addition, all sub-1 GHz bands can be used for all mobile technologies and there will likely be continued device support for all bands.¹¹ Mid-band spectrum is unlikely to provide an effective substitute to sub-1 GHz spectrum as its propagation characteristics are markedly different. This means that significantly more site deployments are needed to achieve the same level of coverage with mid-band compared to low-band. To illustrate, Optus advised that [c-i-c] [REDACTED]

⁸ ACCC, *Communications market report 2019–20*, p. 31.

⁹ Telstra submission, p. 10.

¹⁰ Optus submission, pp. 5–7.

¹¹ See TPG submission, p. 6; Optus submission, p. 9; Pivotal submission, p. 5.

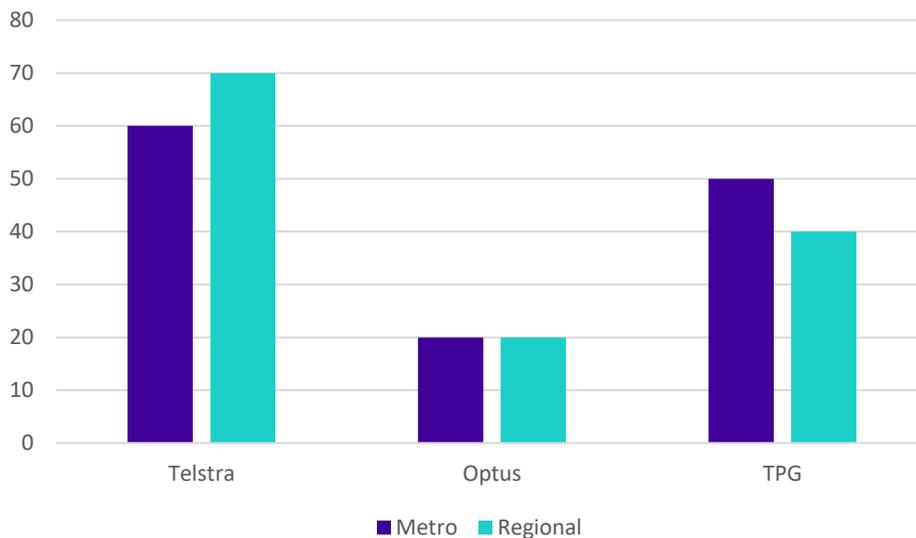
[c-i-c].¹² This means that operators without sufficient sub-1 GHz band spectrum would face significantly higher deployment costs, which could undermine the commercial case for wider roll out of networks, particularly in regional Australia. If there is significant disparity in sub-1 GHz band holdings among the operators, it is likely that operators with more sub-1 GHz holdings would hold a competitive advantage compared to others due to their ability to deploy mobile networks more quickly and cost efficiently.

For these reasons, the ACCC has had regard to existing sub-1 GHz spectrum holdings when assessing the need for allocation limits in the 850/900 MHz allocation.

There is significant asymmetry in sub-1 GHz holdings

The figure below shows the current sub-1 GHz holdings of the MNOs, after the 900 MHz band has been cleared.

Figure 2 Optus has lower sub-1 GHz band holdings than other MNOs (unpaired MHz)



The disparity in existing sub-1 GHz band spectrum holdings between the MNOs is apparent, with Optus holding significantly less spectrum than Telstra and TPG in both metropolitan and regional areas. Overall, Telstra holds 46 per cent of all sub-1 GHz spectrum currently available for mobile use in metropolitan areas and 54 per cent in regional areas. TPG holds 38 per cent in metropolitan areas and 31 per cent in regional areas. In comparison, Optus only has 15 per cent in both metropolitan and regional areas.

Asymmetry of spectrum holdings is not in itself a problem and, in assessing the need for and nature of allocation limits, our objective is not to equalise spectrum holdings. However, asymmetry of spectrum holdings could raise competition issues if it constrains the ability of specific operators to compete in the relevant market.

The table below shows the sub-1 GHz band spectrum that the MNOs could use for deploying each of the mobile technologies in use, after the 900 MHz band has been cleared.

¹² [c-i-c] [c-i-c]

Table 1 Sub-1 GHz band spectrum that MNOs could use for each mobile technology

	Telstra	Optus	TPG
3G	850 MHz band (20 MHz metro/30 MHz regional)	<i>None after 900 MHz band clearance</i>	<i>None after 900 MHz band clearance</i>
4G	700 MHz band (40 MHz nationwide)	700 MHz band (20 MHz nationwide)	850 MHz band (20 MHz metro/10 MHz regional) 700 MHz band (30 MHz nationwide) potentially for 4G/5G sharing
5G	850 MHz band progressively refarmed and fully available for 5G by June 2024	<i>None for wider 5G deployment</i>	700 MHz band (30 MHz nationwide) potentially for 4G/5G sharing

The breakdown of the sub-1 GHz bands that could be used by the MNOs to deploy each generation of mobile technology shows how the asymmetry in sub-1 GHz holdings affects each MNO's ability to deploy mobile services.

In the short term, Optus and TPG may need additional sub-1 GHz band spectrum if they wish to continue to operate their 3G networks. However in the medium to longer term, Optus is the only MNO that does not currently have any sub-1 GHz band spectrum that it could feasibly use to deploy 5G services.

Optus also has less sub-1 GHz band spectrum for deploying 4G services, compared to the other MNOs. After the band clearance of the 900 MHz band, Optus is also likely to experience reduced capacity on those sites that currently deploy the band for 4G services. Optus indicated that it would require additional sub-1 GHz spectrum to expand 4G network capacity.¹³

The ACCC considers that the asymmetry of sub-1 GHz spectrum holdings between the MNOs is likely to have a significant effect on Optus' ability to compete with the other MNOs in the mobiles services market.

Optus' ability to compete is constrained by comparative lack of sub-1 GHz spectrum

The ACCC considers that Optus' ability to compete in the medium to longer term is likely to be constrained if it does not acquire more sub-1 GHz spectrum in the 850/900 MHz allocation. This is because Optus' ability to accommodate data growth on its 4G network and roll out 5G more broadly, including in regional areas, is limited in the absence of more sub-1 GHz band spectrum. The ACCC does not consider there is evidence that either Telstra or TPG faces similar constraints.

The ACCC considers that Optus' and TPG's spectrum requirements for the continued operation of their 3G networks is relevant in the short term. Optus and TPG will likely have strong incentives to refarm any spectrum acquired at the 850/900 MHz allocation for 5G use, even if it is intended for 3G use in the first instance. The Minister's proposal to guarantee spectrum for Optus and TPG to support the continuity of services is discussed in Section 5.

¹³ Optus submission, p. 14.

The ACCC considers that some characteristics of this regional demand are worth noting. First, the demand for spectrum in discrete geographic locations means that interest from these regional operators in accessing the spectrum in a price-based allocation would, at the very least, depend on there being very granular geographic configurations. Second, deployment of solutions by these regional operators, particularly for private or industrial uses, would appear to depend on there being sufficient demand to justify a commercial case. As noted by Pivotel, this suggests that apparatus rather than spectrum licensing, is the more appropriate framework to address this demand.¹⁸ Third, it appears that Pivotel and Connected Farms are mainly interested in spectrum in areas outside the mobile coverage areas of the national MNOs. This suggests that there is little overlap with the MNOs' uses of the spectrum both in terms of the relevant downstream market and geographic areas.

The ACCC has concluded that the regional demand issues raised in submissions cannot be resolved using allocation limits. Allocation limits are best used to resolve competing demand from competitors that operate in the same downstream market. In this case, the regional demand issues raised can only be addressed by the allocation's licensing framework and geographic areas, which are already established parameters within which any allocation limit will operate. The ACCC also does not consider this issue can be addressed by recommending a specific regional allocation limit, as it would require us to make an assessment of the highest value use of the spectrum in different geographic areas.

¹⁸ Pivotel submission, p. 4.

4. Allocation limits

In the previous section, the ACCC considered that:

- the most relevant downstream market for this allocation is the national mobile services market. In this market, the focus of competition is and will increasingly be on the roll out of 5G networks across Australia, and
- sub-1 GHz band spectrum is critical to the MNOs' ability to deploy mobile networks widely, quickly and cost efficiently. Currently, Optus holds significantly less sub-1 GHz band spectrum compared to Telstra and TPG. This means that Optus' ability to compete with its rivals in the mobile services market in the medium to longer term, including by rolling out 5G technology in regional Australia, is likely to be constrained if Optus does not acquire more sub-1 GHz band spectrum in the 850/900 MHz allocation. Telstra and TPG do not face similar constraints.

This section presents the ACCC's views on whether allocation limits are required for the 850/900 MHz allocation and, if so, what those limits should be.

An allocation limit that takes into account existing sub-1 GHz holdings is needed

The ACCC considers that in the 850/900 MHz allocation, Optus needs to have a reasonable opportunity to acquire spectrum in order to compete with its rivals in the mobile services market, particularly in the medium to long term. This would help support the ongoing deployment of 4G and 5G technologies by all MNOs, encourage investments in infrastructure and innovation including in regional Australia, and promote competition in the mobile service market, all of which will benefit consumers.

To achieve this, the ACCC considers there is a need for allocation limits in the 850/900 MHz allocation, and that an allocation limit that takes into account existing sub-1 GHz band holdings is warranted.

Optus and TPG both support a cross-band limit that applies to all sub-1 GHz band holdings.

Optus advocated for an allocation limit of 70 MHz to apply across all sub-1 GHz band holdings, arguing that it best balances the need to ensure spectral efficiency and ultra-high throughput with the need to deliver competition in important downstream markets.¹⁹

TPG advocated for an allocation limit equivalent to 40 per cent of all sub-1 GHz spectrum available for use immediately after the 850/900 MHz allocation. This is equivalent to 80 MHz, given there will be 200 MHz of sub-1 GHz band spectrum available for use after the 850/900 MHz allocation. TPG argued that this limit would promote competition in downstream markets while ensuring sufficient excess demand in the proposed 850/900 MHz allocation to encourage an economically efficient allocation of spectrum. TPG noted that this limit is also resilient to the different approaches the Minister could take to setting aside 2x5 MHz in the 900 MHz band to support continuity of services.²⁰

However, Telstra considers that, even without allocation limits, there is potential for each of the MNOs to acquire spectrum in the 850/900 MHz allocation. In the event that allocation limits are imposed, Telstra supports a limit no tighter than 2x15 MHz to apply to spectrum acquired at the 850/900 MHz allocation without regard to existing holdings. Telstra does not

¹⁹ Optus submission, pp. 16–17.

²⁰ TPG submission, pp. 9–12.

consider that existing sub-1 GHz holdings should be taken into account, on the basis that MNOs with larger customer bases have larger capacity requirements and existing sub-1 GHz band holdings reflect historical spectrum investment decisions by each MNO.²¹

The ACCC does not find Telstra's reasons for excluding existing sub-1 GHz holdings from consideration persuasive.

First, the ACCC does not consider that the size of an MNO's subscriber base is necessarily the best indication of capacity or spectrum requirement. In fact, information available to the ACCC shows that [c-i-c]

[c-i-c]
[c-i-c]²²

More importantly, the mobile services market is a dynamic market where operators have incentives to improve their networks over time in order to gain customers from their rivals. Determining the spectrum requirements of an operator based on its existing customer base at any given point risks entrenching existing market structure, and restricts the ability of operators to improve their services in order to gain market shares over time.

Second, the ACCC does not consider that it is necessary to consider past commercial decisions regarding spectrum acquisition in sub-1 GHz bands in assessing allocation limits for the 850/900 MHz allocation. This is because, in the current case, it has no relevance to whether and, if so, what allocation limit would promote competition and investment in the future, as well as achieve other relevant policy objectives that are relevant to the 850/900 MHz allocation.

Further, the ACCC does not consider that an allocation limit that applies only to 850/900 MHz spectrum as proposed by Telstra will promote competition and the other relevant objectives. This approach does not take into account the differences in the MNOs' ability to compete due to asymmetrical sub-1 GHz band holdings and is unlikely to be able to provide Optus with a reasonable opportunity to acquire spectrum in order to compete effectively in the market.

In contrast, a cross-band limit represents a more holistic assessment of each MNO's spectrum holdings and is more appropriate in situations where there are competition issues arising from the asymmetry of holdings. A cross-band limit that applies to all sub-1 GHz holdings, in this case, is warranted because the sub-1 GHz bands are substitutes of each other. Taking into account existing sub-1 GHz band holdings would mean that differences in the MNOs' ability to compete is accounted for in determining the amount of additional sub-1 GHz spectrum they should be allowed to acquire in the 850/900 MHz allocation. The ACCC notes that we have previously recommended a cross-band limit for the 3.6 GHz band allocation in 2018 which took into account existing holdings in the substitutable 3.4–3.5 GHz band.²³

A 40 per cent limit on all sub-1 GHz holdings will promote competition and investment for the long-term interests of end-users

The ACCC recommends that an allocation limit be imposed in the 850/900 MHz allocation such that no person or specified group of persons can hold more than 40 per cent of all sub-

²¹ Telstra submission, pp. 11–13.

²² [c-i-c]
[c-i-c]
[c-i-c]

²³ A public version of the ACCC's advice on allocation limits for the 3.6 GHz band allocation is available at: <https://www.accc.gov.au/regulated-infrastructure/communications/mobile-services/spectrum-competition-limits/request-for-advice-36-ghz-spectrum>.

1 GHz band spectrum available for use as a result of the allocation across all geographic areas. This is equivalent to 80 MHz of sub-1 GHz spectrum, as there will be in total 200 MHz available for use in the sub-1 GHz bands after the 850/900 MHz allocation.

The ACCC considers the recommended limit will address the key competition issue arising from this allocation and provide Optus with a reasonable opportunity to acquire spectrum to compete effectively in the mobile services market. As such, the recommended limit will promote competition in the mobile services market, encourage investment in infrastructure, including in regional Australia, and support 4G and 5G deployment by all MNOs for the benefit of consumers.²⁴

The recommended limit would not prevent Telstra or TPG from acquiring additional sub-1 GHz band spectrum in the 850/900 MHz allocation and does not guarantee Optus a specified amount of spectrum. As such, the recommended limit would allow a potential price-based mechanism to determine the allocation outcome, thereby promoting allocative and dynamic efficiency through the allocation mechanism.

The practical effect of this limit is that all three MNOs are able to participate in a price-based allocation, but the maximum amount of spectrum that each would be able to acquire would be different. Auction settings such as geographic lot configurations also impact the amount of spectrum each MNO will be able to acquire within the recommended limit in different areas. The ACCC understands that the ACMA has yet to determine the geographic configurations for the allocation. As such, the ACCC has considered the impact of the recommended allocation limit in two likely scenarios:

- nationwide licences for both the 900 MHz and 850 MHz expansion band, and
- nationwide licences for both the 900 MHz band and metropolitan/regional licences for the 850 MHz expansion band.

The ACCC notes that there are slight differences in the maximum amounts of spectrum that Telstra and TPG would be allowed to acquire under the two scenarios. This is because currently Telstra and TPG have different holdings in sub-1 GHz bands.²⁵ If nationwide licences are adopted for both 900 MHz band and the 850 MHz expansion band, Telstra and TPG would not be able to acquire up to the recommended limit in metropolitan and regional areas respectively, once their holdings in the other geographic area reach the recommended limit. If separate metropolitan and regional licences are adopted for the 850 MHz expansion band, Telstra and TPG could potentially differentiate their demand for metropolitan and regional spectrum in this band. In this case, there is a possibility that they would have the opportunity to acquire up to the limit in both metropolitan and regional areas. On the other hand, the maximum amount of spectrum that Optus would be allowed to acquire within the recommended limit does not differ under the two scenarios.

The figures below illustrate the effect of the recommended limit on the MNOs' ability to acquire spectrum in the 850/900 MHz allocation under the two possible geographic configurations noted above.²⁶ The ACCC notes that the maximum amount of spectrum allowed under the limit would include any spectrum that the Minister decides to guarantee for any operator in this allocation process.

²⁴ The ACCC has also had regard to the policy objective of supporting the continuity of services, which is discussed in Section 5.

²⁵ This is due to different holdings in metropolitan and regional areas in the 850 MHz band.

²⁶ The ACCC understands that the party that acquires the lower lot in the 900 MHz band would also likely acquire an additional 2 x 1 MHz in the 850 MHz band for the purpose of facilitating downshift of the 850 MHz band in the future. It is not the intention of the recommended limit to restrict the ability of any party to acquire spectrum in the 850/900 MHz allocation due to the inclusion of this downshift spectrum. The ACCC considers it may be possible to round off the amount of spectrum acquired at the 850/900 MHz allocation to the nearest 5 MHz for the purpose of applying the allocation limit.

Figure 3 Under nationwide licences, Telstra and TPG may not be able to acquire up to the limit in some areas (MHz)

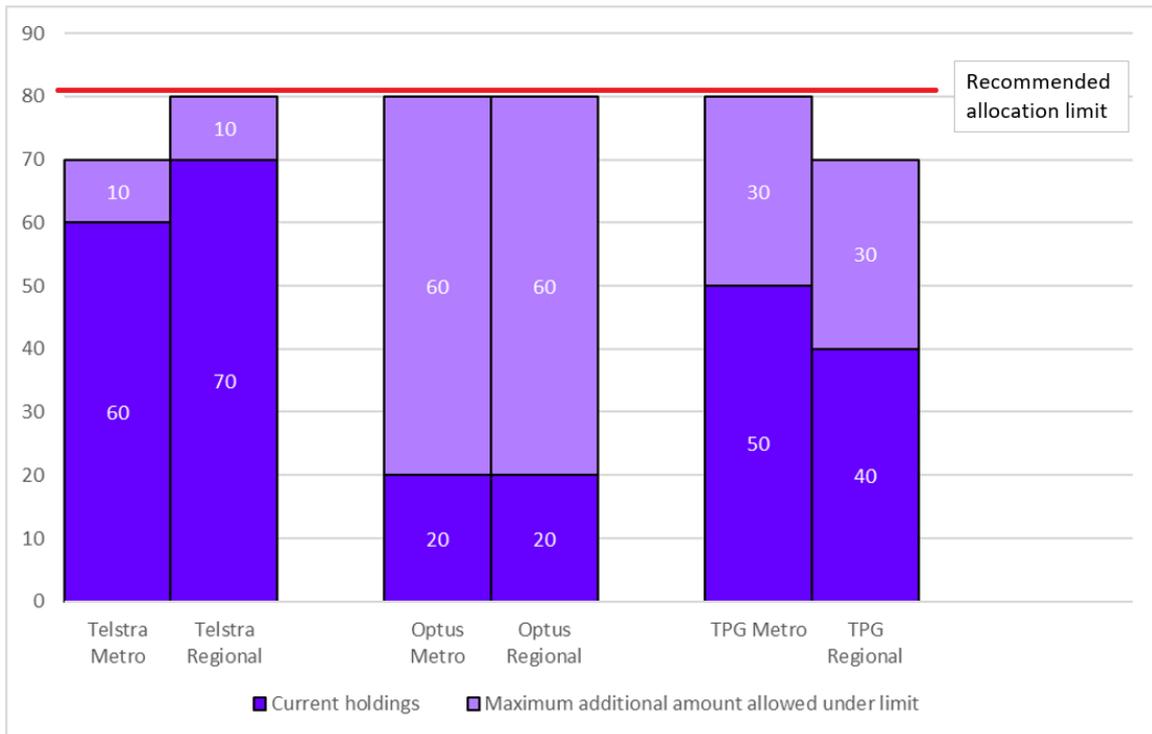
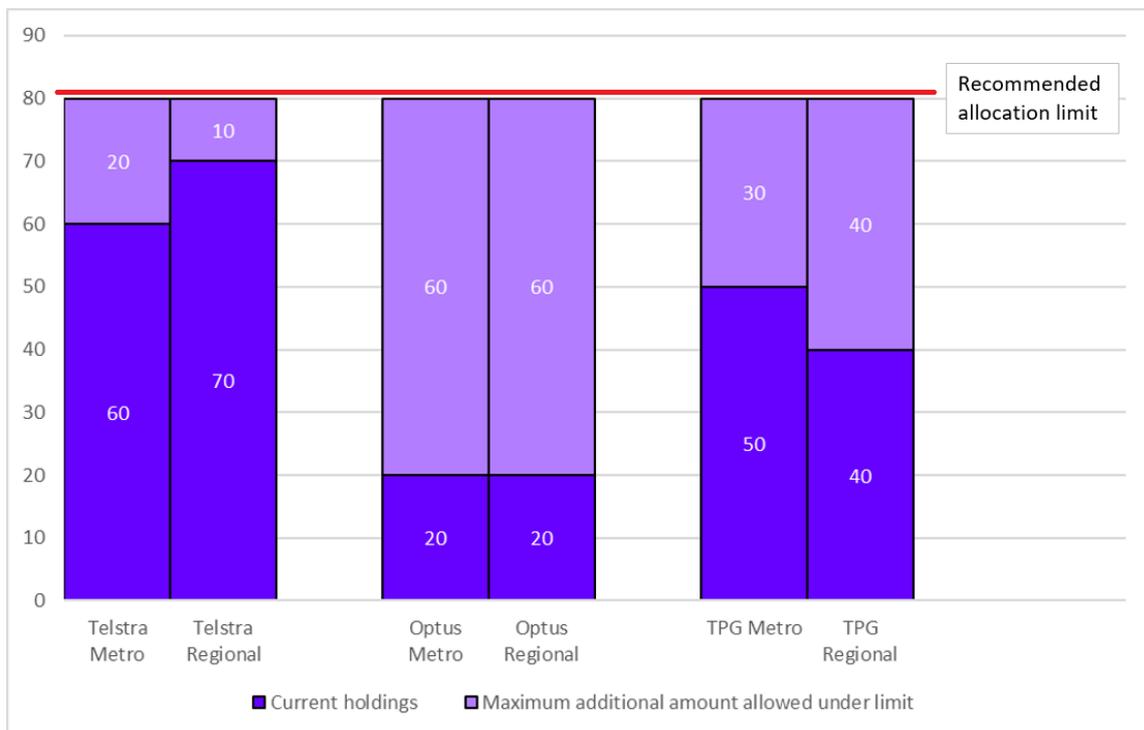


Figure 4 Under metro/regional licences for the 850 MHz expansion, all MNOs could potentially acquire up to the limit (MHz)



The ACCC is satisfied that the recommended limit of 40 per cent applying across sub-1 GHz band is appropriate having regard to the criteria set out above, under both geographic configuration scenarios.

It is also possible that, in the event that metropolitan/regional licences are adopted for the 850 MHz expansion band, their boundaries do not conform to the boundaries used in the current 850 MHz band held by Telstra and TPG. For instance, it is possible that the metropolitan lot(s) for the 850 MHz expansion band may be larger than the metropolitan lots for the current 850 MHz band, such that the former covers areas which are included in the regional lot of the current 850 MHz band. In this case, it will be necessary to clarify the intended operation of the recommended limit in the relevant allocation instrument, such that existing holdings in the current 850 MHz regional lot do not operate to prevent an MNO from acquiring spectrum in the now bigger metropolitan lot for the 850 MHz expansion band.

Finally, the ACCC has considered the implication of NBN Co's potential interest and reached the view that [c-i-c] [REDACTED]

[REDACTED] [c-i-c]. As such, the ACCC considers that NBN Co's potential interest is unlikely to affect the efficacy of the recommended limit in addressing the key competition issue arising from this allocation.

5. Spectrum guarantees

The Minister has indicated to the ACCC that he believes there are grounds to guarantee 2x5 MHz in the 900 MHz band for each of Optus and TPG, in order to support the continuity of services. The Minister specifically sought the ACCC's views on whether there are grounds to also guarantee Telstra 2x5 MHz of spectrum.

The ACCC consulted on this issue and interested stakeholders expressed mixed views on whether spectrum should be guaranteed for any of the MNOs.

Optus and TPG support the Minister's intention to guarantee spectrum to support the continuity of services,²⁷ but Optus does not consider there are competition or policy rationales to guarantee Telstra any spectrum.²⁸ Telstra does not consider that spectrum guarantees are necessary or desirable, but argued that, should they be provided, each MNO should be offered them to maintain a level playing field.²⁹ Pivotal does not consider there are any technical or operational reasons to guarantee spectrum for Telstra.³⁰ Connected Farms does not consider any MNO should be guaranteed spectrum in the allocation.³¹

In undertaking our allocation limit assessment, the ACCC has had regard to the proposed policy objective to support continuity of service and minimise the potential negative impact to consumers. In this case, the relevant potential changes that might impact consumers are in relation to the 900 MHz band currently held by the MNOs under apparatus licences and which will be cleared and reallocated.

TPG and Optus currently rely on the 900 MHz band to provide 3G services, with Optus also using the band to provide 4G services on some of its sites. Band clearance and reallocation of the 900 MHz band could potentially affect their ability to provide existing services. On the other hand, Telstra has limited 4G deployment in the 900 MHz band and mainly relies on the 700 MHz band for 4G coverage. As such, the reallocation of the 900 MHz band is unlikely to affect Telstra's provision of existing services. On this basis, the ACCC does not consider that there is justification to guarantee any spectrum in the 900 MHz band for Telstra in order to support the continuity of services.

The ACCC considers that the continuity of service issue relating to Optus' and TPG's use of 900 MHz band in this allocation is primarily a competition issue. In the presence of alternative providers, Optus and TPG would have strong incentives to ensure that their customers do not experience service disruptions due to the reallocation of the 900 MHz band, as any disruption would likely result in them losing customers to their competitors. This can be contrasted with a hypothetical situation where the phasing out of existing services potentially affects customers in geographic areas where there is only one provider. In such a case, there may be a sound policy imperative to ensure that existing services are not disrupted and that the transition is smooth.³²

The ACCC recognises that spectrum guarantees, or set asides, are useful tools that have been commonly used in other jurisdictions to achieve certain policy objectives, such as to promote new entry. However, for the reasons discussed above, the ACCC considers that the recommended allocation limit of 40 per cent applying across all sub-1 GHz bands promotes the policy objective of supporting service continuity for this allocation, even in the absence of a spectrum set aside. This is because the recommended allocation limit provides a

²⁷ Optus submission, pp. 3, 17; TPG submission, pp. ii, 4.

²⁸ Optus submission, p. 17.

²⁹ Telstra submission, pp. 14–15, 19.

³⁰ Pivotal submission, p. 6.

³¹ Connected Farms submission, p. 6.

³² The ACCC notes that before Telstra was able to shut down its CDMA network in 2008, it had to satisfy a carrier licence condition that its new 3G network had achieved equivalence of coverage with its old CDMA network.

reasonable opportunity for Optus and TPG to acquire spectrum in the 900 MHz band that would enable them to continue to provide existing services. The limit also allows a potential price-based allocation process to determine the value that Optus and TPG place on the ability to continue to provide existing services in the band, which is likely to result in a more efficient allocation of spectrum than if a set aside was in place.