

The logo for Optus, consisting of the word "OPTUS" in a bold, teal, sans-serif font.

Submission in response to
ACCC Consultation Paper

**Allocation limits advice for
3.4 GHz and 3.7 GHz
bands spectrum licence
allocation**

Public Version

May 2022

EXECUTIVE SUMMARY

1. Optus welcomes the opportunity to provide a submission in response to the ACCC's consultation paper on the allocation limits advice for 3.4 GHz and 3.7 GHz bands spectrum licence allocation (the ACCC Consultation Paper).
2. The Government's Digital Economy Strategy 2030 has identified digital infrastructure, including 5G deployment, as a key enabler to realising Australia's future as a leading digital economy by 2030. The proposed re-allocation presents an opportunity to set a sound precedent and finalise terms of reallocation that promote the long-term public interest derived from the use of the 3.4 GHz and 3.7 GHz spectrum and otherwise fulfill the objectives of the *Radiocommunications Act 1992* (the Act).¹
3. Competition drives innovation and investment in new technology – including pushing 5G networks out to the regions. Without competition, 5G deployment is likely to be delayed and uneven, with consumers facing a lack of choice, lower quality and higher prices. Together, these impacts will greatly reduce the potential benefits of 5G.
4. Additional upper mid-band spectrum will be crucial to ensuring ongoing quality of service in metropolitan areas as increases in demand for high-capacity services accelerate. To achieve this, "upper mid band spectrum" such as 3.3 GHz to 4.2 GHz should be configured to achieve 100 MHz (contiguous) channels per MNO.
5. Any advice on allocation limits should also take into account deployable channels and not the amount of spectrum held that cannot be deployed. Unfortunately, due to legacy allocations, there remains a material amount of highly fragmented, inefficiently allocated mid-band spectrum that cannot be effectively utilised.
6. Mid-band spectrum holdings are not equal, and at present, Telstra holds a material advantage, especially in key regional areas. The recent announcement of Telstra to acquire TPG's regional spectrum, and for TPG to decommission its regional network, is likely to entrench Telstra's dominance further. In essence, Telstra is being paid to face less competition and will get access to valuable spectrum that could give it an unassailable advantage in regional areas.² Optus urges the ACCC to adopt allocation limits that consider this recent market development. Optus has previously identified that having a monopolistic market for 5G could result in an economic value loss of \$55 billion across the decade to 2030; representing 42% of the potential economic gains from 5G services.³ It is thus crucial that the allocation of key mid band spectrum supports a competitive industry structure.

¹ The Modernisation Act changes provide that the object of the Act is to "promote the long-term public interest derived from the use of the spectrum by providing for the management of the spectrum in a manner that facilitates efficient planning, allocation and use of the spectrum...supports the communications policy objectives of the Commonwealth Government"

² Andrew Sheridan, Optus vice-president regulatory and public affairs, CommsDay, 4 May 2022

³ Optus submission in response to ACCC Consultation Paper, Allocation limits advice for 850 MHz expansion band and 900 MHz band spectrum allocation, December 2020

SUFFICIENT SPECTRUM REQUIRED TO DELIVER 5G COMPETITION IN METRO AND REGIONAL

7. Competition drives innovation and investment in new technology – including pushing new 5G networks out to the regions. Without competition, 5G deployment is likely to be delayed and uneven, with consumers facing a lack of choice, lower quality and higher prices. Together, these impacts will greatly reduce the potential benefits of 5G.
8. The Ministerial Policy Statement (MPS) for the allocation of the 3.4 GHz and 3.7 GHz bands includes the policy objective of “supporting the deployment of new and innovative technology, including 5G” and notes that “the largest number of 5G networks worldwide are being deployed in this range, supported by many devices being introduced into the global market”.⁴ The spectrum falls within the broader 3.3 GHz to 4.2 GHz band that has been internationally harmonised for use by 4G and 5G wireless technologies.
9. Access to spectrum within 3.4 GHz to 4.0 GHz band is crucial to facilitate additional rollout and use cases within the 5G mid-band spectrum frequency ranges. It is also vital to ensuring competition in 5G services in both metropolitan and regional areas. The ACMA’s proposed re-allocation of the 3.4 GHz and 3.7 GHz bands is part of a broader program of work in mid-band spectrum, with a focus on the 3.4 GHz to 4.0 GHz band, that includes development proposals for the allocation of:
 - (a) 600 MHz in remote areas for apparatus licensing between 3400-4000 MHz frequency range;
 - (b) 200 MHz for wider apparatus licensing in metropolitan and regional areas between 3800-4000 MHz frequency range;
 - (c) 100 MHz for spectrum licensing in metropolitan and regional areas between 3700-3800 MHz frequency range (though Optus supports spectrum licensing in all locations across the entire 3400 MHz to 3800 MHz);
 - (d) 75 MHz for spectrum licensing in the 3.4 GHz urban excise areas where NBN Co has indicated it will surrender its current licences; and
 - (e) Between 35 MHz to 62.5 MHz of spectrum available in the 3.4 GHz band for apparatus licensing in regional areas.
10. Optus acknowledges that while there may be considerable interest in this mid-band spectrum due to its potential use in providing wireless broadband services leveraging a mix of 4G, 5G and other proprietary technologies – it remains crucial that any allocation takes into account the interference that may be caused by a large mix of different users and use cases co-existing within similar and adjacent frequencies.
11. An overarching objective for the band to be configured to achieve 100 MHz (contiguous) channels per MNO should be encouraged. In addition, a dedicated sub-frequency range in all geographic areas comprising of at least 300 MHz bandwidth should facilitate 5G

⁴ *Radiocommunications (Ministerial Policy Statement – 3.4-4.0 GHz) instrument 2022*

deployments and beyond, using contiguous spectrum bandwidths of at least 100 MHz for each of the current national MNOs.

12. For non-5G deployments, other users and use cases should be limited to AWLs in the upper 200 MHz of the band (noting that NBN occupy spectrum licenced spectrum at the bottom of the 3.4 GHz band and currently operate a 4G network). This will ensure that any proprietary technologies may continue to be deployed, while ensuring that any interference impact on national 5G networks are minimised. Optus considers that the success of any outcome of the reallocation declaration and its implementation can be tested against this simple band construct, to be applied across all spectrum licence areas, shown in figure 1 below.



Figure 1 3400 – 4000 High Level Band Configuration

13. Separate parts of the band should be effectively partitioned according to their use, with current 4G at the bottom band operating with a suitable guard band between it and 5G services. Currently the three MNOs and NBN Co are operating on the same frame structure which is based on 4G standards. The same frame structure allows operators to successfully manage interference without the need for large guard bands. As the operator's networks are now inexorably linked, it will not be possible for 5G frame structures to be deployed if one or more 5G operators is forced to synchronise with a 4G frame structure.
14. Above the 4G guard band should be the spectrum licenced 5G band of operation, extending in a contiguous block, in all geographies, to the lower limit of the AWL band which will operate with a restricted use band.
15. Given substitutability of spectrum within the 3.4 GHz and 3.7 GHz bands, any decision on allocation limits will have implications for other parts of the band. On this basis, the need to impose and set appropriate limits may vary for different geographic areas within the overall band and may include additional constraints within specified sub-frequency ranges or introduction of restricted use (guard) bands.
16. Any advice on allocation limits should take into account deployable channels and not the amount of spectrum held that cannot be deployed. Unfortunately, due to legacy allocations, there remains material amount of highly fragmented, inefficiently allocated mid-band spectrum that cannot be effectively utilised. Optus notes that misalignments in geographic boundaries does complicate the calculation and implementation of allocation limits but recommends that the ACCC be guided by the need to ensure a minimum of 100 MHz contiguous channels across the 3.4 GHz to 4.0 GHz for all MNOs.
17. Optus considers that alignment with existing 3.6 GHz spectrum boundaries has the greatest potential to facilitate trading across the band by removing geographic scope as a key point of difference between spectrum lots, particularly in spectrum licence boundary fringe areas. Optus also submits that boundary alignment would simplify the calculation and implementation of any allocation limits for the bands.

18. NBN Co should be excluded from the allocation process as was the case in the 3.6 GHz auction. NBN Co has significant existing 3.4 GHz holdings (greater than 100 MHz), particularly in regional areas, and has an incentive to acquire spectrum with a view to limiting competition with its fixed wireless services from MNOs. NBN Co should not be allowed to acquire more than 100 MHz of spectrum until other market operators have had the ability to acquire at least 100 MHz of contiguous spectrum.

THE POTENTIAL FOR GREATER COMPETITION IN REGIONAL MOBILE MARKETS IS UNDER THREAT

19. The ACCC has stated that it will conduct its assessment of whether allocation limits are required for the 3.4 GHz - 4.0 GHz band based on (i) promoting competition in downstream markets for the long-term interests of end-users and encouraging investment in infrastructure including regional Australia; (ii) supporting the deployment of new and innovative technology, including 5G.⁵
20. In regional areas, this allocation provides an opportunity for Optus to improve the quality of its regional networks by acquiring more mid-band spectrum in regional areas where in some cases we have none, or only a maximum of 30-35 MHz (3.6 GHz). This contrasts with Telstra, which has between 50 to 80 MHz of its own regional spectrum in the 3.6 GHz band and will, as part of the proposed merger arrangement, gain access to TPG's mid-band holdings, further augmented by access to TPG's low band spectrum.
21. Telstra's substantial market power in mobile markets is built around its first mover advantage and the advantages that have accrued over time due to its legacy networks and incumbency. Telstra's 5G market lead is now greater than the advantage it held for 4G, where it only held a one year first mover advantage and a two-year regional coverage advantage. On current trajectory, Telstra's 5G coverage advantage is expected to be maintained with Telstra planning to achieve 96% 5G population coverage in FY24; **[CiC begins] [CiC ends]**
22. The recent announcement of Telstra to acquire TPG's regional spectrum, and for TPG to decommission its regional network, is likely to entrench Telstra's dominance further. Based on the information available, TPG will withdraw from infrastructure-based competition in non-metro areas, while paying Telstra to re-sell its 4G and 5G Radio Access Network (RAN) (at least 6 months after Telstra commences supply of 5G).
23. In essence, Telstra is being paid to face less competition and will get access to valuable spectrum that could give it an unassailable advantage in regional areas.⁶ Optus urges the ACCC to block this transaction to ensure nascent competition in 5G services in regional Australia is allowed to flourish.
24. Optus has previously identified that having a monopolistic market for 5G could result in an economic value loss \$55 billion across the decade to 2030; representing 42% of the

⁵ ACCC Consultation Paper, p.4

⁶ Andrew Sheridan, Optus vice-president regulatory and public affairs, CommsDay, 4 May 2022

potential economic gains from 5G services.⁷ It is thus crucial that the allocation of key mid band spectrum supports a competitive industry structure.

POTENTIAL USE OF, AND DEMAND FOR, 3.4 GHz AND 3.7 GHz BANDS SPECTRUM

1. What are the likely intended uses of spectrum in the 3.4 GHz and 3.7 GHz bands in metro and regional areas?

25. As the ACCC notes, spectrum in the band is technically suited to supporting a wide range of use cases using 4G and 5G wireless technologies. These use cases include wide area wireless broadband (WA WBB), local area wireless broadband (LA WBB) and private wireless enterprise deployments.⁸
26. Optus supports spectrum licensing for 3.4 GHz to 3.8 GHz. The intended uses for spectrum licences holders will be WA WBB services to enable 5G mobile services and fixed wireless access (FWA).
27. In non-spectrum licensed frequency, either above or below the spectrum licensed range, there may be a mix of use cases in metro and regional areas including Fixed Satellite Services (FSS), wireless internet service providers (WISPs) amateur services and other point to point (P2P) or point to multi-point (PMP) operators, as well as LA WBB services. These services are likely to be facilitated by way of Area Wide Apparatus Licences (AWLs) and other apparatus licence arrangements.

2. If you intend to acquire the spectrum to deploy wireless services:

- a. In which geographic areas do you intend to use the spectrum?
 - b. What do you consider is the optimal allocation of 3.4–4.0 GHz spectrum to support your likely intended uses? What is the minimum allocation necessary?
28. While the MPS includes a policy objective that the 3.4 GHz - 4.0 GHz band allocation support a range of use cases, Optus notes that WA WBB 5G services will only be optimised over larger contiguous spectrum holdings of at least 100 MHz. The need for access to 100 MHz contiguous channels for 5G deployments is further supported by current technology standards – notably, 4G and 5G deployments rely on the technical frameworks set out in the 3GPP standards.
 29. MNOs need to have contiguous spectrum holdings across the frequency band and contiguous frequencies across geographical areas to deliver both high 5G speeds and 5G coverage. In our submission to the ACMA, Optus highlighted its view that defragmentation is critical to the utility of the 3400 – 4000 MHz band. The lack of

⁷ Optus submission in response to ACCC Consultation Paper, Allocation limits advice for 850 MHz expansion band and 900 MHz band spectrum allocation, December 2020

⁸ ACCC Consultation Paper, p.5

consistency in the frequency allocations across the 3.4 GHz to 3.7 GHz band is highlighted in the spectrum chart that Optus has included at **Attachment A**.

30. This complexity is further compounded by the fact that there are different geographical areas covered by spectrum licences in the 3.4 GHz (3475 MHz to 3575 MHz) and the 3.6 GHz bands (i.e. above 3575 MHz). While Optus holds assets across several of the available mid-band TDD spectrum, these are not contiguous holdings and do not uniformly traverse large geographic areas (i.e. in most cases, the metro areas assigned in the 3.4 GHz band have been smaller than the metro areas assigned during the 3.6 GHz band allocations).
31. Prior to the 2019 Optus/NBN Co defragmentation in the 3.4 GHz band, Optus' metro holdings had been limited to 60 MHz channel deployments, while regional holdings are limited to 30 MHz channel deployments in the vast majority of regional markets. After the NBN defragmentation exercise, Optus has 100 MHz contiguous spectrum in Sydney and Melbourne though the status quo remains for other metropolitan areas.
32. Further defragmentation across the whole band is required to maximise the spectrum utility and deliver its highest use. A key factor to ensuring defragmentation will be alignment of geographic areas that may be covered by individual spectrum licences in the 3.4 GHz to 3.8 GHz band. To this end, Optus submits that the existing boundaries for each of the three tranches of spectrum between 3.4 GHz and 3.8 GHz need to be rationalized and harmonised before any effective de-fragmentation in the frequency domain can be completed.
33. Optus prefers a varied version of the ACMA's Option 3, namely with spectrum licensing across the whole 3.4 GHz to 3.8 GHz band in metro and regional areas, and geographic alignment with the 3.6 GHz boundary areas. This will help facilitate a "complete defragmentation of spectrum licence holdings in the band".⁹ Optus calls upon the ACMA to seek to align the geographic boundaries as a matter of priority and has noted its view that alignment with the 3.6 GHz band boundaries is preferred for any 20-year spectrum licence term.
34. Optus has also requested that the ACMA delay allocation of the 3400-3475 MHz spectrum ('urban excise') with the exception of Canberra, due to the different geographic boundaries of these spectrum lots. Optus also urges the ACMA and/or the ACCC to review NBN Co's use of spectrum below 3575 MHz with a view to restacking and returning spectrum that is underutilised.
35. It is important that any recommendation by the ACCC on allocation limits takes into account the practical realities of deploying services over these spectrum assets.

3. How is the spectrum licensing arrangement and the intended use of price-based allocation likely to impact your demand for spectrum at this allocation?

36. Optus welcomes the proposed use of price-based allocation (2 stage generic lot auction format) and considers that this will help promote price discovery. Optus supports the

⁹ ACMA Consultation Paper, p.21; referred to at page 8 of the ACCC Consultation Paper

ACMA using an Enhanced Simultaneous Multi Round Auction ('ESMRA') as per the 3.6 GHz auction held in 2018.

37. Where spectrum is to be assigned through price-based allocations, such as spectrum auctions, the case for setting allocation limits will always be stronger. Under an auction setting, the use of allocation limits should prevent the monopolisation of this important mid-band spectrum while enabling the MNOs to compete on a level playing field.
38. As a general principle, Optus also supports the use of spectrum licensing as it provides the certainty of tenure and protection from interference necessary for the significant investment demanded of mobile networks. However, Optus notes that, in its view, certain aspects of the proposed 3.4 GHz and 3.7 GHz reallocation, such as the 5-year reallocation period and the short licence period, may undermine demand for the spectrum.

4. How is the term of the spectrum licences likely to impact your demand for spectrum at this allocation?

39. Optus is concerned about the potential 7-year licence period, particularly when coupled with a proposed 5-year reallocation period. To illustrate the point, if it is assumed that the reallocation declaration commences in mid-2022 as currently proposed and the spectrum is then allocated in mid-2023 with the spectrum licences commencing immediately, then, in the best-case scenario, a licensee will have approximately 7 ½ years access to the spectrum by the time the licence expires on 13 December 2030 (to align with existing spectrum licences in the band).
40. However, the ACMA has indicated a preference for a 5-year reallocation period, principally to facilitate the relocation of incumbents out of the 3475 MHz - 3542.5 MHz spectrum in areas that are currently subject to apparatus licensing. This would effectively leave just over 3 years between the end of the reallocation period (mid 2027) until licence expiry by which time a renewal payment would be required.
41. The ACMA has indicated a preference for licences to commence immediately after any auction, however the use of such licences would include a condition to protect incumbent apparatus licences during the re-allocation period. In the event that licences are issued after the re-allocation deadline, early access should be possible, however no "clear" access can be guaranteed until after the re-allocation deadline. Optus also notes that it cannot be assumed that spectrum licences will be renewed and if so, at what price and conditions.
42. **[CiC begins]**
43. **[CiC ends]**
44. Ultimately Optus favours a 20-year spectrum licence term and a maximum 2-year reallocation period across the band. However, Optus does note that its support for a 20-year licence period is confined to lots that are configured to be consistent with the geographic boundaries in the 3.6 GHz spectrum licences. Otherwise, Optus will agree to a licence term until 13 December 2030 to align with existing spectrum licence expiry dates.

45. Optus refers the ACCC to its submission to the ACMA consultation paper for detail on Optus' preferred approach to the terms of the proposed spectrum reallocation.

5. How is the differing utility of the urban excise spectrum likely to impact your demand for spectrum at this allocation?

46. Optus does not support the allocation of the 75 MHz (3400 MHz to 3475 MHz) "urban excise" spectrum at this time, other than in the Canberra urban excise area, where the boundaries align with the existing 3.6 GHz geographic areas.

47. Allocating the urban excise has the potential to further complicate the geographic alignment issues that will prevent effective defragmentation of the band. If the spectrum is to be allocated, then Optus suggests that the ACMA do so as part of a separate process and ensure that geographic boundaries are aligned with the 3.6 GHz boundaries. Similarly, any allocation of this spectrum should be by way of spectrum licences rather than apparatus licences.

RELEVANT DOWNSTREAM MARKETS

6. What are the relevant downstream markets for the purpose of assessing the impact of the 3.4 GHz and 3.7 GHz bands allocation on competition?

48. Optus agrees that the retail mobile services market and the fixed broadband market are the most relevant markets for the purposes of assessing the impact of the allocation of the 3.4 GHz and 3.7 GHz bands on competition. Optus also agrees that the retail mobile services market is a national market.

49. The ACCC observes that "the roll out of 5G networks to date has largely been in metropolitan areas with limited coverage in regional areas".¹⁰ Optus considers that this observation requires further context around the importance of spectrum availability and efficient allocations – specifically the availability of sufficient low band spectrum to promote the efficient and competitive roll out of 5G in regional areas.

50. The ACCC has recognised that low commercial returns for MNOs discourage building network infrastructure in areas with lower population densities, exacerbating the "digital divide".¹¹ It is true that most of Optus' site deployments have been in metropolitan areas, and this is largely due to the obvious fact that these areas have larger markets and are more economical to serve. It also reflects the uneven allocation of low band spectrum.

51. Nevertheless, Optus' commitment to deploying new radiocommunications sites is clear and has been recognised by the ACCC, stating that "*Between 2020 and 2021, the MNOs collectively added a total of 1,005 new sites across their three networks. A majority of these new sites were deployed in Major Cities, where Optus deployed the*

¹⁰ ACCC Consultation Paper, p.11

¹¹ ACCC Mobile Infrastructure Report, page 8

greatest number of new sites (238 new sites), closely followed by TPG (236 new sites). Telstra added the lowest number of new sites in Major Cities (174 new sites).¹²

52. Technology is no longer a factor when deciding which spectrum range is to be deployed. Rather, it is the propagation characteristics that determine which spectrum band (low, mid or high/mmWave) is required to be deployed at a site.
53. Low frequency bands (sub-1 GHz) offer long-distance wireless signal coverage, which support widespread coverage across metropolitan and regional areas. The low band 900 MHz spectrum that Optus recently acquired is ideally suited to delivering high-capacity services over a wide area. Optus has plans to utilise its 900 MHz spectrum as soon as possible to improve network quality, expand geographic coverage and ultimately to offer consumers faster, quality mobile services with higher data allowances at lower prices. We encourage both the ACCC and the ACMA to work together to ensure low band spectrum is made available as soon as possible.
54. Mid-band 5G spectrum, such as the 3.4 GHz and 3.7 GHz bands, typically offers a good mix of coverage and capacity benefits, providing higher bandwidths over shorter distances than low band. However, the use of both low-and mid-band spectrum is highly complementary for the delivery of a national mobile network. Unencumbered mid-band spectrum is required to augment low-band holdings to ensure a competitive market structure.

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

55. It is well recognised that 5G, as the latest generation in mobile technology with faster speeds, low latency and improved capacity offers significant potential to transform business and the economy. There are a wide variety of new use cases that will be enabled by 5G, including IoT, edge computing and autonomous vehicles to name a few.
56. Many 5G use cases are industry-specific, which is different to previous generations of mobile technology where uses were more economy wide.¹³ While individual localised use cases may be met by way of a variety of different network operators, only MNOs offer the economies of scale and scope necessary to provide national networks for all Australians.
57. Optus understands that the ACCC will have regard to the MPS policy objectives in formulating its advice to the ACMA on allocation limits for the reallocation of the 3.4-4.0 GHz band. The MPS policy objectives include (i) supporting the deployment of new and innovative technology, including 5G; (ii) supporting a range of use cases and (iii) supporting digital connectivity and investment in Australia and (iv) promoting competitive markets.
58. Optus recognises that there may be a range of use cases for 3.4 GHz to 4.0 GHz spectrum, including via AWLs in the 200 MHz between 3.8 GHz and 4.0 GHz. Optus

¹² Ibid, p.11

¹³ "5G Unleashed: Realising the potential of the next generation of mobile technology"; Deloitte Access Economics report for AMTA; 2022; p.6 which identifies use cases such as greenhouse automation in agriculture, remote monitoring of stock levels in manufacturing, data analytics for patient outcomes in health care and traffic monitoring for smart cities

submits that, in seeking to balance potentially competing interests and demand for the band that the ACCC and the ACMA must give due weight to the fact that 3.4-4.0 GHz C-band is an internationally recognised pioneer band for 5G and therefore should be optimised for 5G services.

59. Mid-band spectrum is crucial to 5G deployment and ultimately to Australia reaching its Digital Economy Strategy 2030 and broader economic goals. MNOs require access to sufficient mid-band spectrum now to meet growing capacity demands and urge the ACCC and the ACMA to ensure that the 3.4 GHz and 3.7 GHz bands can be utilised in a manner that supports the long-term public benefits that will be derived from competition between MNO with access to sufficient mid-band spectrum.

STATE OF COMPETITION IN RELEVANT MARKETS

8. Do you have any comment on the state of competition in the relevant downstream markets that you consider should be taken into account? What do you think are the key competition issues arising from the 3.4 GHz and 3.7 GHz bands allocation in these downstream markets?

60. Optus agrees with the ACCC's observation that "the MNOs compete heavily on several non-price factors amongst themselves, such as geographic coverage and network quality. These non-price factors in particular play a significant role in the decision-making process consumers and businesses face when deciding on a service provider. Expanding coverage and improving network quality and performance involves building new infrastructure and upgrading existing equipment to new technologies. In recent years, the competitive focus of the MNOs has shifted to the roll out of their 5G networks."¹⁴
61. Optus also agrees with the ACCC that "the advent of 5G technology has enabled MNOs to have a stronger presence in the fixed broadband market. This is because with 5G technology, mobile networks can deliver broadband services at a comparable cost and quality to that of fixed line networks. This trend is likely to continue further as the 5G rollout progresses."¹⁵ However, we make the observation that the level of any substitution that is seen across NBN and fixed wireless services in Australia is primarily driven by inefficiencies in the NBN (high prices, low quality of service) rather than innate features of the two services.
62. Optus makes the following observations about the state of competition in relevant downstream markets:
- (a) Telstra currently has 44% market share in the retail market for mobile phone services, up from 42% a year before. Optus and TPG have 31% and 17% market share respectively, while MVNOs and other resellers make up the remainder of the retail market.¹⁶

¹⁴ ACCC Consultation Paper. P.12

¹⁵ Ibid, p.13

¹⁶ ACCC Communications Market Report – 2020-21, p.28

- (b) Telstra currently prices its post-paid retail mobile services at a 20 to 25% premium to its nearest competitor (Optus).¹⁷
 - (c) As at 31 January 2021, Telstra has significantly more 5G sites compared to the other MNOs across all areas.¹⁸
 - (d) The national mobile market is characterised by high barriers to entry, including the need for suitable spectrum to deploy mobile networks and deliver new high-capacity services.
63. This has flowed through to Telstra having a material coverage advantage in 5G – primarily through upgrading its regional network sites, which still include a large number of sites originally built through Government funded CDMA programmes. The 5G network advantage Telstra has over the market is greater than the advantage it held for 4G, where it only held a one year first mover advantage and a two-year regional coverage advantage.
64. It is therefore clear that Telstra already has a dominant position in the mobile market. The recent announcement of Telstra to acquire TPG’s regional spectrum, and for TPG to decommission its regional network, is likely to entrench Telstra’s dominance further.
65. Based on the information available, TPG plans to withdraw from infrastructure-based competition in non-metro areas, while paying Telstra to re-sell its 4G and 5G RAN (though 6 months after Telstra commences supply of 5G). In essence, Telstra is being paid to face less competition and will get access to valuable spectrum that could give it an unassailable advantage in regional areas. Optus discusses its concerns in more detail in response to Question 13.
66. Given the increasing market power of Telstra in relevant downstream markets, and the potential anti-competitive effects of the proposed agreement between Telstra and TPG, it is crucial that the allocation of additional mid-band spectrum supports a competitive market structure. Optus do not consider that the allocation of 3.4 GHz to 3.7 GHz spectrum is likely to have a material impact on the private wireless enterprise market, where apparatus licensing is preferred.

9. How would the allocation of spectrum licences in the 3.4 GHz and 3.7 GHz bands in metropolitan and regional areas impact competition and investment in these markets?

67. As noted in response to question 8, Optus agrees with the ACCC that spectrum in the 3.4 GHz and 3.7 GHz bands could potentially be used by the MNOs to increase their network capacity for 4G and 5G services in metropolitan and regional areas, thus enabling them to improve the quality of their services.¹⁹
68. Optus considers that the entire 3.4 GHz -3.8 GHz band in both metro and regional areas should be spectrum licenced. Optus also considers that geographic boundaries for all spectrum licences in the band should align with those in the 3.6 GHz band. The 3800-4000 MHz frequency range should be used for AWLs as this aligns with the ACMA’s

¹⁷ ACCC Communications Market Report 2021, p.29

¹⁸ ACCC Mobile Infrastructure Report, December 2021p.10)

¹⁹ ACCC Consultation Paper, p.12

overall band plan. Further detail on Optus position is provided in our submission to the ACMA.

69. 5G competition is intensifying with all three MNOs creating significant customer expectation around potential of 5G in metro areas. The availability of deployable spectrum had been, and will continue to be, key in enabling competition. In some cases the existing allocation of spectrum has limited the ability to some MNOs to compete. It is vital that the ACCC adopts allocation limits that promote competition.
70. In particular, this allocation provides an opportunity for Optus to improve the quality of its regional networks by acquiring additional mid-band spectrum in regional areas where in some cases we have none, or only a maximum of 30-35 MHz (3.6 GHz). This contrasts with Telstra, which has between 50 to 80 MHz of its own regional spectrum in the 3.6 GHz band and will, as part of the proposed MOCN arrangement, gain access to TPG's mid-band holdings.
71. Allocation via spectrum licensing should promote competition and encourage further investment in 5G networks and services for relevant downstream markets. This stems from fact that spectrum licensees are afforded a higher degree of exclusivity and certainty making them suitable for use cases such as WA WBB where MNOs have long-term investment requirements.
72. The demand for spectrum for WA WBB will generally be commensurate with the length of the licence period and ensuring unencumbered access to the spectrum. As noted, Optus has concerns about the impact of the ACMA's stated preference for a shorter licence term of approximately 7 years coupled with a reallocation period of 5 years.
73. In the interests of providing the requisite certainty for the significant levels of financial investment required by 5G networks in metro and regional areas, Optus has suggested that the ACMA consider a 20-year licence term in all areas where geographic alignment with existing 3.6 GHz boundaries can be achieved before the reallocation date. In all other cases Optus agrees with the proposal for licences to expire on 13 December 2030 with a view to assist with defragmentation of the band.
74. Ultimately, competition and investment in regional areas will be most effectively promoted through harmonisation of conditions and boundaries as this will help facilitate spectrum trading, which will be the most efficient means of band defragmentation. However, given the complexity created by some legacy allocation processes, the ACMA will need to undertake a work program of defragmentation to deliver this outcome.
75. Australia is a leader in 5G (deploying 4000 operational 5G base stations already). In 2019-20 the Australian telecommunications industry invested 65.8% of total industry value added (approx. \$19.5 billion).²⁰ However, the extent and speed of the 5G rollout has had financial impacts for MNOs, that industry ROIC fell from 8.3% in 2016 to 2.8% in 2021.²¹
76. The industry is now at an inflection point and policies and laws that promote sustainable competition are key to ensuring future investment. In this context it is vital that the

²⁰ 5G Unleashed: Realising the potential of the next generation of mobile technology, p.12

²¹ UBS, 2022, Australian Telecom Sector, 27 April

regulatory settings for allocation strike the right balance to enable competitive deployment of 5G networks.

CURRENT SPECTRUM HOLDINGS

10. Should existing spectrum holdings in the 3.4–4.0 GHz band be considered in the ACCC’s assessment of allocation limits?

77. Optus supports the inclusion of existing spectrum licence holdings in ACCC’s assessment of allocation limits.
78. Optus agrees with the ACCC’s preliminary view that existing spectrum in the broader 3.4-4.0 GHz band should be considered substitutable and notes that this approach is consistent with that taken by the ACCC in its advice on allocations limits for the 3.6 GHz auction.
79. As noted in the ACCC’s Consultation Paper, in metropolitan areas, Optus holds the most spectrum (100 MHz each) in Melbourne and Sydney, while TPG holds the most spectrum in all other metropolitan areas. In regional areas, the majority of Optus holdings are 30-35 MHz.
80. Telstra has significant regional holdings of between 50 MHz and 80 MHz in the majority of regional areas. Telstra is also operating 100 MHz bandwidth channels across the 3.4/3.6 GHz band in Adelaide, Brisbane and Canberra and 80 MHz bandwidth channels in Sydney and Melbourne and 60 MHz bandwidth channels in Perth as a result of third-party authorisations with TPG. Telstra will also potentially have access to TPG’s regional holdings in the band if the spectrum acquisition agreement with TPG is allowed.
81. As was also the approach in the 3.6 GHz auction, Optus considers that NBN spectrum holdings should be excluded from the ACCC’s assessment on allocation limits for the auction of licences in the 3.4 GHz and 3.7 GHz bands.
82. NBN already has significant 3.4 GHz spectrum holdings particularly in regional areas where it supplies fixed wireless services (see **Attachment A**). Optus considers that NBN Co may have an incentive to prevent MNOs from acquiring sufficient spectrum in a 3.4-4.0 GHz auction. Notwithstanding recent Government announcements to expand NBN Co’s fixed wireless network, Optus does not consider that allowing NBN Co to acquire additional spectrum in the 3.4 GHz and 3.7 GHz bands would promote competition in the fixed wireless services market. The focus should be to enable proper market competition by allowing other networks access to at least 100 MHz of contiguous spectrum in the 3.4-4.0 GHz band.
83. Optus notes that a portion of its 3.4 GHz spectrum remains underutilised, particularly in urban fringe areas where spectrum licence boundaries require coordination with NBN. Optus urges the ACMA and the ACCC to investigate means of ensuring that this highly sought-after spectrum can move towards its highest value use.
84. As noted above, Telstra is operating 100 MHz bandwidth channels across the 3.4/3.6 GHz band in Adelaide, Brisbane and Canberra and 80 MHz bandwidth channels in Sydney and Melbourne and 60 MHz bandwidth channels in Perth as a result of third-

party authorisations with TPG. Optus submits that any existing and/or potential sharing arrangements and/or third-party authorisations for use of spectrum within the 3.4-4.0 GHz band must be taken into consideration for the purpose of providing advice on allocations limits for the auction of licences in the 3.4 GHz and 3.7 GHz bands.

11. Should existing spectrum holdings in bands other than the 3.4–4.0 GHz band (i.e. other mid-band licences) be considered in the ACCC’s assessment of allocation limits?

85. Optus agrees with the general principle expressed by the ACCC that only spectrum holdings “that are substitutable to the spectrum to be allocated in the 3.4 GHz and 3.7 GHz bands for the intended use cases” should be taken in account for the purposes of the ACCC’s assessment of allocation limits.²² On this basis, Optus does not consider any spectrum holdings other than the 3.4-4.0 GHz should be considered in the ACCC’s assessment.
86. In determining substitutability for the 3.4-4.0 GHz band, Optus notes that there have been no recent technological shifts since the 3.6 GHz allocation. Optus refers the ACCC to the Explanatory Statement for the *Radiocommunications (Spectrum Licence Limits—3.6 GHz Band) Direction 2018*, issued following the ACCC’s advice to the Minister on allocation limits for the 3.6 GHz auction, where it states that

“However at present, spectrum holdings in the 1800 MHz, 2 GHz, 2.3 GHz, and 2.5 GHz bands are not a close substitute for the 3.6 GHz band for several reasons. Development of 5G technical standards are focussed on the 3.4-3.7 GHz frequency range and on time division duplex (TDD) technical specifications.

Current spectrum holdings in the 1800 MHz, 2 GHz, 2.3 GHz and 2.5 GHz bands are in a frequency division duplex (FDD) configuration, which is not compatible with a TDD configuration. The ACMA would need to re-plan FDD-configured bands to a TDD configuration to meet 5G standards, or alternatively wait until such a time that 5G standards have evolved to include FDD configurations before these bands can be repurposed for 5G. Further, spectrum holdings below 2.5 GHz are thought to be less feasible for certain technical benefits that 5G is expected to enable (for example multiple input multiple output, or MIMO, applications).

The 3.4-3.5 GHz frequency range is the closest substitute for the 3.6 GHz band and can provide the same benefits in terms of 5G technology as the 3.6 GHz band. In its advice to the Minister, the ACCC recommended that existing spectrum licence holdings in the 3.4-3.5 GHz frequency range should be taken into account when determining allocation limits for the auction.”²³

87. Optus considers that this position has not changed other than to confirm, for the sake of completeness, that for the same reasons, the 3.7 GHz band (i.e 3700 MHz and 4000 MHz) should also be considered a direct substitute for the 3.4 GHz (and 3.6 GHz

²² ACCC Consultation Paper, p.15-16

²³ Explanatory Statement for the *Radiocommunications (Spectrum Licence Limits—3.6 GHz Band) Direction 2018*, p.16

bands). In other words, to the extent that these bands are treated separately for the purposes of the ACMA's reallocation process, they should be considered substitutes and therefore subject to a "cross-band" limit as was the ACCC's advice in regard to the 3.6 GHz auction. On this basis, Optus does not support the inclusion of any other spectrum holdings in the ACCC's assessment.

88. **[CiC begins]**

89. **[CiC ends]**

90. As noted in the ACCC Consultation Paper, Optus has 100 MHz in existing 3.4-4.0 GHz band spectrum holdings in Sydney and Melbourne. Optus has delivered a high quality 5G service in Sydney and Melbourne based on its 3.4 GHz holdings, complemented by its holdings in the 2.3 GHz band. It is important that Optus is enabled to provide similar capabilities to customers in the other Metro markets as well in regional centres.

12. How should the variations in geographic boundaries for both existing and, potentially, new licences be taken into account in determining the operation of any allocation limit?

91. Optus agrees that the misalignment of geographic boundaries, particularly in the 3.4 GHz band, creates significant complexity in the calculation of allocation limits. As a first step, Optus recommends that the ACMA lead a 3.4 GHz band realignment with the 3.6 GHz band boundaries to resolve the boundary and non-uniform frequency allocation issues created by legacy allocations. Such an alignment would remove complexity and enable the ACCC to more easily calculate allocation limits based on existing spectrum holdings.
92. Alternatively, if this cannot be achieved within the planned reallocation schedule, Optus suggests that the ACCC considers a "percentage of population" based criteria for calculating allocation limits. Such an approach would involve setting a threshold to determine whether a licensee "holds" spectrum in a particular region – for example, if a licence holds spectrum covering 15% or more of the population of a geographic area, then this would be counted towards its aggregate holdings in that area.
93. The effect of this approach may be to exclude areas where a licensee has minor or "insignificant" holdings and there is no overlap of 3.4 GHz and 3.6 GHz geographic areas. Optus considers that such an approach is a good proxy for gauging a licensee's relative market position in an area and notes that it has been used in previous assessments.²⁴ If such an approach is adopted, Optus preference would be for a 15% threshold and determined in accordance with the HCIS – List of Population Data document published by the ACMA.
94. An overarching objective of allocation limits for the 3.4 GHz and 3.7 GHz reallocation process should be to enable the band to be configured to achieve 100 MHz (contiguous)

²⁴ Radiocommunications (Spectrum Licence Allocation — 3.6 GHz Band) Determination 2018 where it states at section 12(4) the aggregate population of one or more parts of a regional area referred to in that subsection is *insignificant* if, and only if, the aggregate population of those parts of the regional area is less than 15% of the total population of that regional area determined in accordance with the HCIS – List of Population Data document published by the ACMA on its website, as that document existed at the time the spectrum licence limits direction was made

channels per MNO. In addition, a dedicated sub-frequency range in all geographic areas comprising of 300 MHz bandwidth should facilitate only 3GPP deployments and ensure protection for each of the current national MNOs.

95. Any advice on allocation limits should take into account deployable channels and not the amount of spectrum held that cannot be deployed. Unfortunately, due to legacy allocations, there remains material amount of highly fragmented, inefficiently allocated mid-band spectrum that cannot be effectively utilised.
96. For non-5G deployments, other users and use cases should be limited to AWLs in the upper 200 MHz of the band (noting that NBN occupy spectrum licenced spectrum at the bottom of the 3.4 GHz band and currently operate a 4G network). This will ensure that any proprietary technologies may continue to be deployed, while ensuring that any interference impact on national 5G networks are minimised.

13. How should the ACCC take Telstra and TPG's proposed network sharing arrangement into account when assessing the need for and nature of allocation limits? Are there other third party authorisations in place for licenses in the 3.4–4.0 GHz band or other mid-bands?

97. Mobile competition, particularly in regional Australia is under threat. Market conditions and Government security decisions have cemented Telstra's dominance and is undermining competitive investment. The recent announcement of Telstra to acquire TPG's regional spectrum, and for TPG to decommission its regional network, is likely to entrench Telstra's dominance further.
98. While the ACCC has correctly noted that "Telstra has the lowest [3.4-4.0 GHz] holdings amongst the MNOs across all metropolitan areas", Optus submits that it has effectively the equivalent amount of spectrum as Optus in all metropolitan areas other than Sydney and Melbourne.²⁵ Optus also notes that the ACCC's position does not appear to take into account the fact that Telstra is operating 100 MHz bandwidth channels across the 3.4/3.6 GHz band in Adelaide, Brisbane and Canberra and 80 MHz bandwidth channels in Sydney and Melbourne and 60 MHz bandwidth channels in Perth as a result of third-party authorisations with TPG.
99. In regional areas, for legacy reasons or otherwise, significant spectrum imbalances continue to persist and this has and will continue to challenge regional 5G rollouts if unaddressed.
100. Telstra now have a material coverage advantage in 5G – primarily through upgrading its regional network sites, which still include a large number of sites originally built through Government funded CDMA programmes. Telstra continues to benefit from the lion's share of Government regional funding, receiving 75% of funding under the Mobile Black Spots Program (MBSP).²⁶

²⁵ ACCC Consultation Paper, p.15

²⁶ Andy Penn August 2021 Full Year Financial results presentation stated "Now, our competitors like to talk up their 5G networks. But let me tell you, they are just not in the same league. Our 5G network is now more than twice the size of our nearest competitor...we cover more than 75% of the population"

101. The 5G network advantage Telstra has over the market is greater than the advantage it held for 4G, where it only held a one year first mover advantage and a two-year regional coverage advantage. Telstra's two-year 4G advantage enabled Telstra to gain 14% share in subscribers.
102. Under the proposed regional arrangements, Telstra will entrench its dominance in regional Australia. The arrangements provide for TPG to lease its regional spectrum assets to Telstra in exchange for access to Telstra's 4G and 5G RAN on 3700 sites. Further, TPG will decommission over 700 regional towers. The proposed arrangements will not result in any additional mobile coverage – it merely makes TPG a re-seller of the Telstra network on par with other Telstra MVNOs like Belong and Boost.
103. Telstra already has a spectrum advantage across the 3.4 GHz and 3.6 GHz bands in almost all regional markets (see **Attachment A**). On the basis of the information available, the proposed spectrum lease arrangements will grant Telstra full control, equivalent to ownership, of TPGs 700 MHz, 850 MHz and 3.5 GHz spectrum and access to its 1800 MHz and 2100 MHz spectrum. The effect of this arrangement will be to provide Telstra with control/access to:
 - (a) 65% or 130 MHz of all low band (700 MHz and 850/900 MHz bands)
 - (b) 70% or 220 MHz of all mid-band FDD spectrum (1800 MHz, 2100 MHz and 2600 MHz bands) and
 - (c) 76% or 95 MHz of 3.5 GHz band
104. These calculations are based on analysis undertaken by Optus and provided in **Attachment B**.
105. **[CiC Begins]**
106. **[CiC Ends]**
107. The geographical scope of the agreement appears to be all areas outside metro excluding remote locations where 2% of the population reside. The population coverage affected by the deal is the approximately 18% of Australians living in these areas (i.e. metro fringe and key regional centres).
108. TPG is effectively withdrawing from regional Australia – it will decommission more than 700 existing sites and rely solely on Telstra infrastructure investment decisions to determine where it can supply services. The notion that TPG will be entering markets where they were not previously present is spurious as the agreement appears to place no real incentive on TPG to invest. The agreement also restricts TPG from launching 5G services until 6 months after Telstra does, giving Telstra a first mover advantage in all regional markets covered.
109. The proposed arrangements are not comparable to joint venture passive infrastructure deployments commonly approved in the EU where parties to a sharing agreement are required to commit resources to network deployment. Rather, Telstra will get access to 169 sites that TPG does not decommission thereby further entrenching its network dominance. There will be no incentive for TPG to invest in any infrastructure outside of

metropolitan areas and Telstra will not be under any competitive pressure to expand its network unless Optus invests in those areas.

110. Indeed, the agreement is not expected to increase coverage in the remote areas or increase coverage of the 5G network in the regions covered.
111. In addition to the above concerns, Optus notes that Telstra and TPG already have an agreement in the 3400 – 3600 MHz band where Telstra is operating 100 MHz bandwidths in Brisbane, Canberra and Adelaide, 80 MHz in Sydney and Melbourne and 60 MHz in Perth.
112. **[CiC begins]**
113. **[CiC ends]**
114. The effect of the proposed arrangements will be to substantially lessen competition in regional telecommunications markets to the significant detriment of the long-term interests of end-users.
115. Optus submits that the ACCC must take Telstra and TPG's proposed arrangements into account when assessing the need for and nature of allocation limits. Given the timing of the proposed reallocation processes, Optus considers that the ACCC must decide between two different courses of action:
 - (a) Provide advice on the spectrum allocation limits prior to any decision on the proposed arrangements between Telstra and TPG – in which case Optus submits that the ACCC must advise on the allocation limits having regard to all potential spectrum accessible by Telstra and TPG as a result of the proposed spectrum leasing deal accompanied by a second assessment applicable in the event that the deal is blocked.
 - (b) Advise the ACMA to postpone the reallocation process until it has made a decision on whether the proposed arrangement is anti-competitive for the purposes of the *Competition and Consumer Act 2010*.

THE NEED FOR ALLOCATION LIMITS

14. Do you think allocation limits are necessary for the 3.4 GHz and 3.7 GHz band spectrum allocation? Relevantly, would allocation limits promote competition and encourage investment in infrastructure, including in regional Australia?

116. Optus submits that allocation limits are clearly necessary for the 3.4 GHz and 3.7 GHz band spectrum allocation. The potential competition implications of the spectrum sharing under Telstra and TPG's proposed merger deal require careful consideration in formulating these allocation limits.
117. The assessment of regional allocation limits must be made in the context of the proposed merger deal, on the basis of a counterfactual analysis of the competition implications. Regardless, it is crucial that allocation limits are applied to the acquisition of

3.4-4.0 GHz spectrum given Telstra's significant regional spectrum holdings in the 3.6 GHz band.

118. At a minimum and in the interests of promoting competition, MNOs or affiliated entities should all have the ability to acquire an aggregate of 100 MHz of spectrum in the 3.4-4.0 GHz band in all areas. Ultimately the capacity of this spectrum to be effectively utilised in the long term will depend on alignment of geographic boundaries and defragmentation. Optus urges the ACCC to advise the ACMA of the long-term importance of this as a pre-requisite to reallocation.

15. If so, do you think a cross-band limit or an in-band limit would be more appropriate? What do you think the quantum of the allocation limit should be? Do you think different allocation limits should apply to metropolitan and regional areas? How would the application of these allocation limits affect the relevant downstream markets?

119. Noting that there is potential for the 3.4 GHz and 3.7 GHz bands to be treated separately for the purposes of reallocation, Optus considers that a cross band limit, within the confines of the 3.4-4.0 GHz band is appropriate. For reasons set out above, Optus does not consider a cross-band limit for bands outside of the 3.4-4.0 GHz band should apply.
120. Ideally, Optus considers that in all geographic areas no person, or specified group of persons, should be allowed to purchase an amount of spectrum in any auction of the 3.4 GHz or 3.7 GHz bands which would cause its aggregate holdings across the 3.4–4.0 GHz band to exceed 100 MHz. This is on the basis that 3GPP currently only enables up to 100 MHz channels.
121. However, Optus reserves its final view on the quantum of spectrum pending further clarity from the ACCC on the status of Telstra and TPG's proposed agreement(s). If the ACCC is minded to provide its advice to the ACMA on allocation limits before reaching a final view on Telstra and TPG's proposed arrangement then Optus insists that the ACCC must assess Telstra and TPG's relevant spectrum holdings in both metro and regional areas on a collective basis. To be clear, Telstra and TPG should be treated as affiliated parties and one entity for the purposes of any allocation processes.

16. Are there other factors that you consider the ACCC should consider in assessing the possible allocation limits to apply?

122. As noted, the alignment of geographic areas of lot configurations will support any spectrum allocated in the band moving towards its highest value use. Optus urges the ACCC to carefully consider the impact of existing misalignment of geographic boundaries in its advice on allocation limits for the relocation of 3.4 GHz to 3.7 GHz bands.
123. Further, as noted above, the ACCC must consider the implications of Telstra and TPGs proposed deal as well as other third-party authorisation arrangements with a view to ensuring that nascent competition in 5G services in regional Australia is sufficiently protected for the long-term benefit of end-users.

Attachment A – [CiC begins]

Attachment B – [CIC ends]