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

Response to ACCC Consultation Paper

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ACCC Consultation Paper
Allocation limits advice for 3.4 and 3.7 GHz band spectrum licence allocation

Australian Competition and Consumer Commission

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Pivotel welcomes the opportunity to comment on the ACCC's consultation paper 'Allocation limits advice for 3.4 and 3.7 GHz band spectrum licence allocation'.

CONTEXTUAL STATEMENT

- Spectrum in the 3-4GHz mid bands is crucially important for the delivery of 4G/5G/6G services for both mobile coverage and especially in relation to wireless broadband (WBB) usage, alongside low band spectrum for coverage and mmWave spectrum for very high-speed low latency applications.
- Providers such as Pivotel are well placed to play a unique and relevant role in improving coverage and bringing innovation to parts of regional and remote Australia. This is however predicated on access to suitable spectrum at a cost that enables a reasonable return on investment.
- A flexible spectrum management approach consisting of Spectrum Licences covering large geographic and even national regions combined with Area Wide Licences that enable place based networks will encourage a larger and more diverse range of network operators. Licence fees also need careful consideration with place based networks typically targeting very specific populations, often with very low density and high natural operating costs that reduce the potential for operators to receive a commercial return on investment.
- As such, Pivotel has consistently advocated for a combination of spectrum licence for more populous and high traffic areas, combined with Area Wide Licences (AWLs) or Apparatus Licences (ALs), for regional and remote parts of Australia, as opposed to a blanket national spectrum licence approach.
- As a mobile operator focussed on regional and remote Australia, we observe that rural community communication needs are constantly evolving, and Pivotel is keen to see appropriate spectrum allocation methodologies that enable these markets to be served in new and innovative ways, now and into the future.
- It is pleasing to see the ACMA is planning to release additional spectrum licences across Australia. It is also heartening to see ACMA's intent of defragmenting the spectrum through the options presented in their consultation.

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

It is Pivotel's view that the mid band spectrum is most suitable for wide area WBB (WA WBB) / enhanced Mobile Broadband (eMBB) using 5G technology and Fixed Wireless Access (FWA) for high-speed broadband to the premise and workplace.

We expect to see demand for local area WBB (LA WBB) and private LTE / 5G usage for enterprise use such places as universities, mining, ports and industrial sites as well as across agriculture, local government, utilities and transport corridors where dedicated high speed services demanding bandwidth is required. In addition to personal use, we believe much of the demand for LA WBB will come from place based applications such as machinery automation and autonomous operation, and remote monitoring, requiring local and wide area mobility rather than nationwide mobility.

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

a) In which geographic areas do you intend to use the spectrum?

Pivotel does not plan to acquire spectrum licenses to overbuild and compete with existing MNO WA-WBB deployments in major population areas. Pivotel is developing plans to make use of the AWL mechanism to support place based LA-WBB use cases on a public-private network model (utilities, ports, manufacturing etc.) in high-density population zones.

In regional areas, we believe the AWL allocation of 200 MHz in the 3.8-4.0 GHz band may be insufficient to address the expected demand and depending on MNO allocation limits across the 3-4GHz band, new entrants may be restricted from accessing sufficient spectrum. Ideally, potential new entrants will want access to 100 MHz bandwidth to satisfy the demand coming the WA-WBB and FWA use cases. As a result, Pivotel may consider acquiring spectrum licences in 3.4 GHz and 3.7 GHz space if the auction price enables a viable business case in regional areas, where Pivotel could use it to deploy 5G services.

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?

Typically, TDD 100 MHz spectrum is needed for capacity to support WA-WBB, LA-WBB and FWA use cases.

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

Based on Pivotel's recent experience in the 850/900 MHz auction, where the only option was to acquire spectrum licence covering the entire regional zone of Australia, it became

abundantly clear that incumbent MNOs with large customer bases are in a far stronger position to acquire national (metro and regional) spectrum than MNO's such as Pivotel who deliver place-based, bespoke and cost-effective solutions, effectively shutting them out from acquiring this scarce and critically important asset when a wide area, price based allocation methodology is used. Therefore, it is important that the AWL allocation in the 3.8 GHz band is not consumed by spectrum licensees and that allocation limits across the 3-4GHz band are put in place to prevent the incumbent MNOs from acquiring all available AWL licences.

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

Regarding spectrum licences, Pivotel notes and understands the desire of MNOs to achieve as much defragmentation and geographical consistency as possible, therefore, the minimum period of the spectrum licence should be set to facilitate the defragmentation of spectrum to the maximum extent possible.

Pivotel supports spectrum licences with a minimum 15 year term. We recommend AWL licences be set at 5 year terms with the right to renew for another 5 years.

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

Pivotel recommends that 3.4 GHz Urban Excise space be spectrum licenced for the sake of consistency in allocation as its surrounding geographic area will have spectrum licences. It is recommended that AWL 3.8 GHz space be segmented to allow macro and restricted cell use cases. Segmentation is recommended to have: 160 MHz for macro and 40 MHz for restricted cell, with 40 MHz channel as fixed size allocated per operator. For a given geographic area, up to four AWL macro cell operators could be accommodated within 160 MHz, and in addition, one operator could deploy restricted cells within Urban Excise. This configuration will maximise number of AWL operators that can be supported within the available Urban Excise spectrum.

5. 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?

The 3.4GHz and 3.7GHz bands are technically equivalent and inter-changeable. 3.4 GHz and 3.7 GHz spectrum licences are expected to be sought by incumbent MNOs to increase their capacity in metro areas and the higher populated regional areas in order to primarily provide 5G eMBB services.

Across metro and large regional centres, we expect to see strong demand for private and hybrid public-private networks offering new entrants the opportunity to provide purpose built placed based LA-WBB networks servicing industrial sites, ports, utilities etc. New

entrants must have access to spectrum to enable a competitive marketplace in the delivery of those networks.

Regional towns, associated agricultural hubs, fisheries, ports, tourist sites, utilities and industrial enterprises will be big beneficiaries from high speed eMBB and FWA services providing:

- Access to high speed internet services in areas that are currently lacking adequate high speed data connectivity, helping to bridge the 'digital divide' between the city and regions,
- Improved health and safety,
- Economic growth through improved access and adoption of new technologies,
- Improved workforce capability relating to access to digital technology and connectivity,
- Faster and more reliable internet connectivity for telehealth and education.

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

Future markets will be driven by ongoing innovation in areas such as precision agriculture, autonomous vehicles, autonomous aircraft, drones and vessels, and autonomous manufacturing and industrial sites including new industrial enterprises such as renewable energy. Additionally, 5G applications and use cases are emerging and will continually evolve.

Pivotel is also of the view that mobile network deployments using small cells to deliver full mobile service capability through 4G (and 5G) networks having satellite backhaul is the cost-effective means to deliver telecom infrastructure to remote areas. The satellite backhaul could use high speed LEO / MEO satellite, or traditional microwave terrestrial backhaul where available. The architecture will cost-effectively address the combined need for fixed broadband, mobile, and IoT (tablets, security cameras, sensors etc.) to service people living in regional and remote areas.

Distinct from traditional Fixed Wireless services that only provide homestead broadband, mobile standards-based technology can provide multiple capabilities through the same network. These include:

- Broadband to the Home;
- Broadband to portable / mobile devices in the coverage footprint;
- Voice and text services, in the home or out and about;
- Direct communication with IoT sensors and/or backhauling of aggregated IoT data;
- Security and surveillance using high definition cameras;
- Asset management and monitoring
- Management of automated drones over wide areas for crop inspection, livestock assessment etc., and;
- A natural migration path to 5G technology.

Both terrestrial and air space use cases will require access to new spectrum across various bands depending on the most appropriate application and availability.

7. 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?

As mentioned earlier, Pivotel estimates that the AWL demand at 3.8 GHz will exceed its supply (200 MHz) allocation in metro and regional areas, thus each AWL operator is unlikely to be able to access sufficient spectrum to deploy a robust WA-WBB and/or LA-WBB service. Hence, the key competition issue in metro and large regional centres will be access to spectrum with the risk of the incumbent MNOs acquiring all available spectrum if allocation limits are not imposed. The allocation limits must be set to allow for the emergence of new competitors over an extended period of time as the market evolves.

8. 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?

As above, the key competition issue in metro and large regional centres will be access to spectrum with the risk of the incumbent MNOs acquiring all available spectrum if allocation limits are not imposed. The allocation limits must be set to allow for the emergence of new competitors over an extended period of time as the market evolves.

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

Yes. Allocation limits are essential to ensure equitable access to spectrum for new entrants who are best placed to provide tailored and innovative solutions to wide ranging and unique demands. Having a small number of large national providers tie up the vast majority of spectrum will likely suffocate the potential for these newer entrants to service the growing need for bespoke solutions.

10. 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?

3.4-4.0 GHz band is primarily for 5G TDD and its carrier aggregation with other FDD bands (such as 2.1 GHz, 1.8 GHz etc.) is not available, therefore, consideration of allocation in other bands is not relevant.

11. 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?

Pivotel has no comment.

12. 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?

It is Pivotel’s understanding that as part of the MOCN deal, TPG has provided Telstra the access rights to a large proportion of its low band spectrum holdings, resulting in the largest incumbent having access to over 50% of the available low band spectrum and in the process circumventing the allocation limits imposed on Telstra during the 850/900MHz auction. The Telstra TPG MOCN deal will provide Telstra the opportunity to further cement its competitive advantage with the ability to deliver high speed mobile data services over low band spectrum that cannot be matched by any competitor. It is highly unlikely that new and existing competitors will be able to access any meaningful amount of this low band spectrum for the foreseeable future.

Future allocation limits applying to the 3.4 – 4.0GHz band should apply to subsequent joint venture structures and all spectrum holdings across the band including spectrum and AWL licences.

13. 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?

Yes. As stated above, in order to enable effective competition, there must be sufficient and affordable access to mid band spectrum for new and innovative models. Pivotel suggests 150 MHz as a total allocation limit per operator for mid band spectrum licences across the entire range 3.4 GHz to 4.0 GHz, i.e., Incumbents should still be able to access AWLs in the 3.8 GHz GHz band if their total allocation has not exceeded 150 MHz.

14. 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?

Pivotel proposes that a total allocation limit per operator across 3.4 GHz to 4.0 GHz bands be limited to 150 MHz per operator at any geographical area.

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

Pivotel has no comment.

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