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**Allocation limits advice for 3.4–4.0 GHz band allocation in
remote areas**

Response to ACCC Consultation Paper

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ACCC Consultation Paper
Allocation limits advice for 3.4–4.0 GHz band allocation in remote areas

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 3.4–4.0 GHz band allocation in remote areas'.

CONTEXTUAL STATEMENT

- Pivotel is pleased to see the ACMA's plans to release a substantial amount of spectrum in the 3.4-4.0 GHz range and in particular 600 MHz being made available as Area Wide Apparatus Licences (AWL's) in remote areas of Australia.
- Spectrum in these bands is crucially important for the delivery of 4G and 5G mobile coverage, typically in relation to wireless broadband (WBB) usage, alongside low band spectrum for coverage and mmWave spectrum for 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.
- Pivotel's view is that a dynamic and flexible approach is appropriate recognising the different needs and characteristics of Australia's unique and geographically dispersed population providing more targeted and innovative approaches, which are required to service these low population density areas and more unique locations.
- 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.
- It is pleasing to see the ACMA's intention to adopt a more granular apparatus licensing approach to regional spectrum as demonstrated in the recent 26 GHz spectrum allocation and this upcoming 3.4 – 4.0 GHz allocation in remote areas.
- 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.

1. What are the likely intended uses of 3.4–4.0 GHz band spectrum in remote Australia?

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

As identified by the ACCC there will also likely be demand for local area WBB (LA WBB) usage for enterprise use such as mining, agriculture, local government and industrial applications where dedicated high bandwidth is required. We believe much of the demand for eMBB and LA WBB will come from non-personal applications such as machinery, mobile assets, remote monitoring etc requiring local and wide area mobility rather than nationwide mobility.

It should be noted that eMBB requires high speed backhaul which is not readily available in remote areas. This may therefore foster development and innovation in edge based solutions where the information is captured and processed locally without the need for centralised processing in the cloud over high speed backhaul. We anticipate this will be the technical model for many of the enterprise markets mentioned above.

Point-to-Point (PTP) and Point-to-Multipoint (PMP) microwave long range links could also benefit from 3.4 GHz spectrum due to the lower propagation loss compared to spectrum available at higher frequencies.

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

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

Pivotel intends to provide eMBB, Fixed Wireless Access (FWA) as a LA WBB service to Regional and Remote areas where available population and enterprise use cases enable an economically viable business case.

(b) Do you expect your intended use is likely to change in the future? If so, please provide examples of how that might change.

The intended use is unlikely to change.

(c) 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?

For PTP and PMP operation, minimum channel size of 40 MHz is recommended.

For all WBB usage, a minimum channel size of 40 MHz is recommended.

The likely use cases for eMBB and LA WBB will require support for data rates in the 100Mbps to 500Mbps range and can be serviced with a combined spectrum holding of 80 -120 MHz. Support for FWA services will benefit from spectrum allocations of 100MHz to 200MHz over the medium term.

(d) Is your demand for the spectrum for current use, or more likely to arise in the future?

Pivotel has existing and prospective customers where access to this spectrum could be of immediate benefit.

3. Is there likely to be demand for the spectrum from entities that do not propose to use the spectrum but rather, intend to provide access to the spectrum to other users? If so, what is the extent of demand from these entities and in what geographic areas?

Pivotel is unaware of entities that intend to use this spectrum purely for the purpose of providing access to third parties to generate revenue but is aware of cases where AL spectrum holders in other bands have 'acquired' spectrum primarily for the purpose of providing access to others.

4. How is demand likely to be impacted by the:

a) apparatus licence arrangements;

As mentioned above, Pivotel firmly believes that the granular licencing (AWLs and ALs) is the most appropriate administration method for regional and remote Australia. This will encourage bespoke cost-efficient location based solutions servicing remote areas and populations whilst fostering competition.

(b) likely format of the administrative assignment process; and

Pivotel believes that a similar approach to that adopted for applications for area-wide licences in mmWave bands is appropriate which is a fair and equitable process for the acquisition of AWL's that has been previously adopted by the ACMA.

The apparatus licence mechanism is not seen as a significant barrier other than the observation that some entities have hoarded the spectrum with no intended deployment plan.

Licence duration should be maximum of 5 years with the right to renew. ACMA should impose a licence condition that deployment must become active within 3 years from first issue date to discourage spectrum hoarding.

5. What are the relevant downstream markets that are likely to be impacted by the 3.4–4.0 GHz band allocation in remote areas? Please clearly define the geographic dimensions of these markets, the providers of services and the end-users in these markets.

The availability of this spectrum will likely encourage and support regionally focussed mobile operators such as Pivotel, WISPs and new providers of 'private' networks for enterprise applications. Agriculture, fisheries, ports, tourism, utilities and industrial enterprises together with remote communities will be big beneficiaries from high speed eMBB, LA WBB 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 the bush,
- 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.

Areas with a reasonable sized population or enterprises with a strong business case will determine business viability alongside government grants that support investment.

6. Are there any relevant markets in which the services could be provided by different types of network deployment?

Pivotel is of the view that mobile network deployments using small cells to deliver full mobile service capability through the construction of 4G (and 5G) networks that are able to meet the combined need for fixed broadband, mobile, and device (tablets, security cameras, IoT sensors etc) provide the most dynamic and future proof approach to service people living in regional and remote areas.

Distinct from traditional Fixed Wireless services that only provide homestead broadband, mobile solutions use standards-based LTE (4G) technology that 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.

7. Are there any relevant markets which consist of a single, or very small numbers of, end-user(s)?

Yes. Very small towns and rural properties outside of towns typically have poor or non-existent coverage as the major mobile operators tend to focus on covering townships and roads (which typically also lose coverage once you get outside the towns coverage perimeter).

There are also a substantial number of remote communities including indigenous communities that are not served.

With appropriate spectrum and incentives, targeted and innovative solutions can be cost effectively deployed to service these small number of end users.

There will also be many applications where the number of end users will be low but the number of connected devices may be high. Examples include fisheries, agriculture and utilities such as solar and wind farms.

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

Apart from providing basic connectivity (i.e., voice and data) future markets will be driven by ongoing innovation such as precision agriculture, autonomous vehicles, autonomous aircraft and drones and new industrial enterprises including renewable energy. Additionally, 5G applications and use cases are emerging and will continually evolve.

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

9. Do you have any views on the state of competition in the relevant downstream markets discussed by the ACCC?

One of the ACMA's guiding principles is to "maximise...the overall public benefit derived from using the radiofrequency spectrum." Despite substantial Federal and State Government programs, with the majority of this funding being issued to the largest incumbent operator, the historical practice of issuing mobile specific sub 1GHz spectrum on a national basis, has resulted in scarce and valuable

spectrum being underutilised, and in some cases unused in approximately two thirds of Australia's landmass, with little means of access for providers other than the large incumbents. The sharing of spectrum by the incumbents to other parties has been virtually non-existent with very few cases of actual sharing having occurred. Pivotel has a spectrum sharing agreement in place with TPG but to date has only deployed network at one location although approval has been provided for two other remote locations.

The lack of access to suitable spectrum is deterring investment and innovation in the development of suitable alternatives to the existing large incumbent(s) to the detriment of public users.

The current national licencing approach effectively 'locks out' non-incumbent providers from building new and innovative solutions and does not deliver on the requirement to "maximise, by ensuring the efficient allocation and use of the spectrum, the overall public benefit derived from using the radiofrequency spectrum".

The lack of competition and innovation in addressing regional and remote coverage has led to the incumbents choosing not to build networks beyond selected profitable areas unless they attract significant government subsidy. This has left us with a sub-optimal outcome whereby the incumbent operators have exclusive access to spectrum that is not being used, and whereby governments are forced to contribute substantial sums of money to encourage further build out of networks, most often to further enhance the coverage of the largest incumbent and effectively reducing, or removing all together, competition and choice for users in regional and remote areas.

This historical approach has had the effect of stifling competition and investment from smaller more innovative companies with leaner, newer technologies and approaches, that have emerged in recent years. Newer players such as Pivotel have demonstrated a capability and desire to build out innovative forms of demand driven, community based mobile coverage that can deliver the digital farm and community where today it does not exist. New and emerging satellite technologies have the potential to provide the critical backhaul capability which when paired with access to low band spectrum can unlock vast areas underserved by the current mobile networks.

The lack of suitable broadband and high speed mobile access deprives remote properties and communities from the benefits of the digital economy, and first-world health, safety and education, that most Australians, who live in 'economically viable areas' take for granted.

10. Are there any other markets that you consider relevant? How would the allocation of spectrum in the 3.4–4.0 GHz band in remote areas impact competition and investment in these markets?

The ACCC in its description of the national mobile services market only references the three large incumbent national MNO's, Telstra, Optus and TPG, with the remainder of the market being made up by MVNO's. It does not explicitly acknowledge other MNO's such as Pivotel who are focussed exclusively on servicing remote and regional Australia.

For reference, Pivotel operates a mobile and satellite telecommunications network pursuant to a carrier licence issued by the Australian Communications and Media Authority in accordance with the Telecommunications Act 1997 (Cth) (Telco Act) and operates ground infrastructure in Australia, making it the fourth public mobile carrier in the country, and has been providing tailored voice, messaging and data solutions to these communities since 2003.

Pivotel expects the availability of new 3.4 GHz spectrum to result in an increase in competition and investment as it will enable existing and new providers to innovate and create tailored solutions to address these smaller communities of end users. As these solutions are targeted at specific areas where demand and need exists, an apparatus/AWL licence approach is essential for making the

necessary spectrum available to as many solutions and network providers as possible. This principle applies for all spectrum bands and is crucial in enabling cost effective access for this 'place based' approach which is a recurring theme in government supported programs.

The enabling of competition and a strong ecosystem of service providers will ultimately result in lower cost and better choice thus making it more affordable and accessible for remote Australians, and will help reduce the digital divide between the city and the bush and allow them to take part in the technology evolution.

11. To what extent, if any, would licence duration impact competition and investment in these markets?

Licence duration provides certainty and confidence hence a duration of 5 years with the right to renew over 20 years would provide sufficient assurance to potential applicants seeking to invest in regional and remote networks.

12. For an industrial end-user in a remote area, are the deployment models substitutable? That is, would wide area wireless broadband be substitutable for local area wireless broadband? Would these services be substitutable for private LTE, or 5G networks?

Private LTE or 5G networks are well suited to an industrial remote user in Australia because a bespoke cost-effective solution tailored to meet the exact need can be efficiently deployed and a clear business case developed. Whilst WA WBB use case makes sense for regional Australia, LA WBB is more relevant for remote Australia especially for industrial users who have no coverage. WA and LA WBB, and 4G/5G networks, are not fully substitutable due to the high mobility needs of certain applications which cannot be met with WBB.

13. Do you consider that substitutable spectrum exists for the 3.4–4.0 GHz band in remote areas to enable the provision of services in the relevant downstream markets? If so, what spectrum do you consider to be a substitute?

We do not consider there to be other substitutable spectrum to the 3.4-4.0 GHz band due to the scarcity of sufficient available spectrum in comparable bands. The only spectrum that could be considered somewhat substitutable in regional and remote areas is 2.1 GHz and 1.8 GHz spectrum, however, the spectrum allocation is limited to 10 MHz FDD channel per operator and is not always available.

Where available, this limit offers limited capacity to deploy high speed FWA and eMBB services for remote communities and industries.

14. Does the availability of substitutable spectrum differ within the remote area? Are there areas within the remote area, where no substitutable spectrum exists?

As per 13 we do not consider there to be available substitutable spectrum across the remote area.

15. Should the ACCC take into account the availability of spectrum in the 1800 MHz band in remote areas when assessing the need for allocation limits? If so, how?

It is recommended that 1.8 GHz spectrum availability should not have any bearing on 3.4 GHz allocation limits as they are incompatible as FDD and TDD bands and there are no products known to Pivotel that deliver performance aggregation between the two bands. Furthermore deployment of both radio types simultaneously would not be cost-effective.

16. Do you consider that there is a risk that a single party may seek to acquire the entire, or majority, of spectrum available in any given areas? Please provide reasons and evidence for your views.

Yes, there is a possibility that an entity may seek to acquire the majority or entire amount of spectrum available without allocation limits. There have been observed instances where spectrum camping appears to exist in some regional / remote areas without any real intention to build infrastructure.

It would also be inappropriate for one, or more parties to acquire the vast majority of spectrum purely for sub-letting purposes as this would create a monopoly and / or a high level of ownership concentration, which would ultimately force pricing up and not allow for competitive or equitable outcomes.

17. Do you think that allocation limits are necessary for the 3.4–4.0 GHz band allocation in remote areas? Relevantly, would allocation limits promote competition and encourage investment in the relevant markets?

Yes, allocation limits should apply in order to encourage competition and investment as spectrum is an essential enabler.

18. If so, what do you think the appropriate allocation limits should be? Do you think different allocation limits should apply to different geographic areas within the remote area?

Yes, limits can vary per region. e.g. in remote areas the limits could be higher compared to regional.

- For PTP, limit should be 160 MHz
- For PMP, LA and WA WBB (incl 5G), limit should be 200 MHz

In addition to maximum limit, the combined limit per operator of all services PTP, PMP, WBB and FWA must not exceed 50% the total allocation set by ACMA for the area thus allowing at least two operators to acquire spectrum in the same area.

19. How long do you think any allocation limits should apply for?

It is recommended that allocation limits should apply in regional and remote spectrum with no end date. The allocation limits should be reviewed after first 5 years to determine demand and interest in the spectrum.

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

None.

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