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**Response to ACMA's consultation on 'Five-year
spectrum outlook 2022–27 and 2022–23 work
program'**

29th Apr 2022

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Pivotel welcomes the opportunity to comment on ACMA's consultation on Five Year Spectrum Outlook for the 2022 -2027 period and 2022-23 work program.

CONTEXTUAL STATEMENT

- Pivotel is well placed to play a unique and relevant role in delivering improved high speed mobile coverage and fixed wireless services enabling innovation to parts of regional and remote Australia while also developing its plans to deliver public-private 5G services to metropolitan regions. 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 more dynamic and flexible approach to managing spectrum access is critical to ensuring a competitive 5G/6G marketplace is able to develop and thrive. While long term, nationwide spectrum licences provide greater certainty to incumbent, national MNOs it can be at the expense of new players in both the metro and regional markets. Newer market entrants such as Pivotel are often unable to deliver new network coverage due to the unavailability of appropriate spectrum that is licenced to incumbent MNOs that provide coverage to less than 65% of the Australian land mass.
- 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 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.

Pivotel has noted the planning arrangements being considered under FYSO – 2022-27 and provides further comments as follows:

LOW BAND SPECTRUM

- Pivotel's approach is not to over-build coverage with our 4G coverage beginning where other MNOs end. Our primary target market is remote Australia which has a low population density, however, our ability to develop innovative new methods to build, connect and operate rural networks has allowed us to see an opportunity to expand mobile coverage into areas where today there is none. This market is most cost-effectively addressed with low-band spectrum which provides the best radio propagation characteristics. An equivalent mid-band solution requires at least three times the infrastructure to deliver equivalent coverage compared to a low-band solution. With the driver to acquire low-band spectrum, Pivotel took part in the recent 850/900 MHz auction, however, due to the spectrum licencing approach and bidding rules, and the resultant competitive bidding from the main

MNOs, Pivotel was unable to acquire spectrum on terms that would provide a commercial rate of return without the ability to 'cross-subsidise' the regional service with revenue from city services.

We therefore request the ACMA create provision for allocation of AWL based low-band spectrum to MNOs such as Pivotel, who are better placed to deliver more targeted and innovative solutions for reducing the digital divide in Australia. The targeted solutions will deliver a more active and high impact outcome for remote Australia which suffers from little to no connectivity.

- Pivotel supports AMTA's response on Media Reform Green Paper released by DoITRC , Australia in Dec 2020, proposing that 600 MHz (second digital dividend) spectrum be made available to MNOs by 2025. We strongly advocate further that **a portion of future 600 MHz (second digital dividend) spectrum be set-aside for AWL allocation** and the development of instruments to allocate low-band AWLs be fast-tracked.
- With a view to make the deployment of infrastructure more affordable in rural and remote regions, network sharing is becoming increasingly popular via neutral hosting or active radio sharing, often realised through government co-funding. However, neutral host services still require access to spectrum which can be problematic when the neutral host does not 'own' spectrum. As a result, the ACMA should consider setting aside low-band spectrum for neutral hosting. This will eliminate a major barrier towards infrastructure development in regional and remote Australia.

MID BAND SPECTRUM

- **1.9 GHz Band:** Pivotel has previously responded to ACMA's consultation in 2022 and has recommended that the band allow use of alternative technologies such as MulteFire, that can smartly and harmoniously operate with class licensed DECT-NR like technologies, thus making efficient use of the spectrum as well as providing flexibility in technology co-existence.
- **3GPP Band-65 (2 GHz Band):** Pivotel is pleased to see ACMA's plans to allocate 2x 25 MHz spectrum in 3GPP Band 65. We have submitted our detailed formal response on the consultation in 2022 and is summarised as follows. There are many use cases to provide wireless data to aviation mostly requiring high bandwidth and low latency. The current aviation solutions delivered using satellite services are limited in bandwidth, bulky in size and are expensive to run. As a result, the use of satellite services in aviation is largely restricted to:
 - • Military aircraft
 - • Limited deployments of in-aircraft passenger Wi-Fi services due to the high cost of the equipment and the satellite data subscription.
 - • Very limited public safety and First Responder organisations who predominantly use terrestrial LTE connectivity for their data needs and thus are limited to ground coverage.
 - MSS solutions largely incapable of meeting the needs of large swathes of the aviation market that could be serviced by a DA2GC only solution, forcing DA2GC operators to offer a MSS component to the service, where there is no standard or global scale to be leveraged, will drive up equipment and service costs to the detriment of end users and potentially destroy the investment case for operators.
- The ACMA is aware of Band-65 scientific licence issued to Pivotel and its planned demonstration of the Air-to-Ground (A2G) service in 2022. The provision of A2G services,

are well established in many regions of the world but is critically lacking in Australia. Band-65 services used in the European Aviation Network (EAN), operating as MSS/CGC, demonstrates the inherent capability and value of the ground component of the EAN. **We believe the ability to operate such a ground-based service should not be restricted by the requirement to operate an MSS component** where such a capability is not available or planned in Australia for the 2 GHz spectrum band. Therefore, we request ACMA consider our response and remove any barriers in providing the Air to Ground technology to Australia as quickly as possible in order to enable commercial deployment of A2G in Australia.

- **3GPP Band-53 (2.4 GHz):** Pivotel offers Globalstar satellite service to its customers. In Australia, the Space-to-Earth spectrum licences (2 483.5 to 2 500 MHz) were owned by Pivotel in the past and then transferred to Mobile Satellite Services Australia Pty Ltd (MSSA) in June 2021. Pivotel supports MSSA's desire in Australia to rollout privately operated, TDD-LTE or 5G terrestrial mobile services as a Complimentary Ground Component (CGC) using small cells. Operation of the terrestrial networks, will use both TDMA-TDD LTE and 5G equipment which has been standardised by 3GPP for the 2.4 GHz band. MSSA intends to deploy a *Network Operating System* as done in other countries to ensure that any potential interference between co-band MSS customers and future terrestrial network customers is managed and mitigated in real time. We request that ACMA remove any barriers in granting Band-53 for CGC use case by mid 2023.
- **3.4-3.8 GHz Band:** Pivotel is pleased to see the ACMA's plans to release a substantial amount of spectrum in the 3.4-4.0 GHz range, in particular, 600 MHz being made available as Area Wide Apparatus Licences (AWL's) in remote areas of Australia, and 200 MHz AWL allocation in regional and metro areas. The allocation will act as a strong catalyst for Australia in adopting 5G technology which is understood to bring great benefits to Australian services and overall economy. Pivotel has planned to provide a separate response on the finer details on some of the questions raised in the relevant consultation papers.
- **RLAN 6 GHz:** We are pleased to see allocation of lower 6 GHz, this will provide capacity to residential users and enterprises especially considering the major paradigm shift where more and more people work at home post-Covid outbreak. The increased capacity will also help off-load MNO traffic to fixed infrastructure thus ease pressure on mobile spectrum. Regarding upper 6 GHz, Pivotel and MSSA had provided a joint response to ACMA's consultation in Feb 2022 whereby indicating serious concerns if anything was done to potentially worsen the interference landscape in the 6 425-7 125 MHz band around MSSA earth station sites as class licenced devices are hard to control and coordinate.

HIGH BAND SPECTRUM

- Pivotel is pleased to see mmWave (26/27 GHz) spectrum made available on AWL basis. Although the coverage range is limited to circa 6 km with current technology and products, it does act as a good alternative to deploy FWA services where mid-band spectrum is not available or has low bandwidth availability.

For any questions in relation to this response please contact:

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