# Acknowledgment of Country

We, Pivotel, acknowledge the Traditional Custodians of the lands where we work and live. We celebrate the diversity of Aboriginal peoples and their ongoing cultures and connections to the lands and waters of Australia.

We pay our respects to Elders past, present, and emerging and acknowledge the Aboriginal and Torres Strait Islander people that have contributed to the development of our business.

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# Response to ACMA Request on ESL Low Band Use Case

# Executive Summary

- Low Band (700-900MHz) has approximately 6 dB better propagation and penetration characteristics compared to mid-band (1.8 GHz,1.9 GHz, 2.1GHz)
- Without access to Low Band Spectrum:
  - More sites are required to provide same coverage, making some solutions not commercially viable. e.g. [redacted]
  - Pivotel will have limited commercial viability with mid-band in specific private network use cases e.g. [redacted] and problems with dense bush
  - In-Building service is substantially limited in use-cases such as remote towns.
  - At best, 68% of Australia's land mass has no utilisation of low-band spectrum

# Pivotel's Submission and Criticisms

- Pivotel's submission pushes for UIOLI/UIOSI and AWLs for low-band
- Criticisms of Pivotel's submission focus on perceived lack of detail on:
  - Practical means of coordinating sites between carriers to mitigate interference
  - Purchase of spectrum in whole areas except for towns, limiting viability in said towns for other potential spectrum holders (price based on pops)

- Other submissions note that spectrum licenses in low-band should be maintained due to the increase in LEO DtM offerings, however the limitations have not been addressed.
  - LEO DtM solutions generally require line-of-sight to overhead satellites. This means in-building and areas with tree canopies would not have coverage.
  - Satellite comms are susceptible to cloud cover and rain fade, making them not suitable for Mission Critical Services.
  - Limitations in latency and throughput requirements are not well addressed by LEO DtM, especially where a private terrestrial radio network with an edge core would solve both issues.

# Response to Criticisms

- Pivotel suggests a mechanism be set up to enable coordination between AWL spectrum holders. This would not behave similarly to the existing secondary market where there is no obligation for spectrum license holders to provide access. This would enable conflicts based on co-channel interference bases to be worked through.
- Pivotel suggests that low-band in terrestrial radio is required for more diverse, innovative, and specific use cases than LEO DtM services can provide. These services include private agribusiness and mining networks, and remote/regional area in-building coverage requirements.
- Therefore, provisions for AWL access such as UIOLI/UIOSI and AWLs as access mechanisms should be available in remote and regional areas.
- Examples of scenarios where access to low-band spectrum are needed follow in this slide pack.
- Regarding 3.7GHz AWLs in remote and regional areas, excluding population centres is by design as Pivotel's objective is to not overbuild existing networks. Section 4.2 of RALI MS 47 (ACMA Coordination Guidelines) allow AWL-AWL and AWL-SL coordination and therefore, Pivotel is not preventing other operators from accessing any geographically unused spectrum.