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Dear Manager - Wireless Broadband Section

REVIEW OF THE 1.5 GHZ BAND - CONSULTATION 16/2022

The following commentary is provided on the basis that Powercor Australia Ltd (PAL) is an Incumbent Licensee of 25 x 1.5GHz Fixed Point to Point Links since Pre 1996.

Powercor Australia (PAL) is the Electricity Distribution business with Western Victoria as its franchise area (the area west of Hume Hwy and extending to the NSW and SA borders – bounded by Mildura – Cobram East (Murray River boundary) to the North, Nhill to the West, Heywood, Portland, Warrnambool to the South and Shepparton to the East).

The franchise area is rural and remote with regional townships – Ballarat, Bendigo, Shepparton, Horsham, Geelong, Mildura, and Warrnambool.

PAL operates and manages the Electricity Distribution Network to serve customers in the defined franchise area. With the increasing impetus for distributed renewable energy generation, there is significant growth in Windfarm and Solar Farm installations in the franchise area feeding to the electricity grid – these developments are government mandated to achieve net zero emission targets.

A reliable, robust low latency and cost-effective Communications network is necessary to monitor, control and operate the Electricity Distribution Network. For this purpose, a Digital Radio Network has been developed and deployed providing a backbone radio network covering the rural and remote areas (A optical fiber network provides communication links to the outer Melbourne eastern fringe and a core ring linking major rural towns – Geelong, Ballarat, Bendigo, Woodend, Sunshine, Werribee). Renewable Energy Generators such as Windfarms and Solar Farms require Communication links to provide Scada and Tele-protection signaling services to safely connect to the electricity grid and Scada feeds to AEMO who manage the electricity market on a day-to-day basis (this is mandatory requirement without which the Solar and Wind farms cannot generate). In the electricity industry the Control and Protection communication services are not run over third party networks or public networks to ensure a secure communications environment under the sole control of the Electricity Authority.

PAL inherited several legacy radio sites that were originally setup for land mobile coverage in the franchise area. These radio sites are scattered at random and were not particularly selected for point-to-point radio hops and backhaul. Some of the legacy radio sites provide good elevation and their location is conducive to engineer long radio hops. PAL has 25 x 1.5GHz Fixed Point to Point Radio Links with long hop lengths (30Km – 110Km) by prudent choice of existing radio sites to achieve link performance objectives with the minimal infrastructure investment. Thus, at present PAL operates an end to end 1.5GHz multi hop backhaul radio link network established at economical cost without numerous intermediate radio sites. This 1.5GHz radio backhaul network provides the vital mission critical communications to rural and remote PAL Zone Substations as well as Wind farm and Solar Farm installations.

To re-engineer the existing 1.5GHz backbone radio network in another band(3.6 GHz and above) would be cost intensive with numerous intermediate new radio site establishment (typically 30 -40Km hops) and the propagation is worse off than in 1.5GHz Band. For these reasons PAL would like to continue use of the 1.5GHz Band (in its current asymmetric channel pair assignments) into the future to ensure the viability of the backhaul radio link providing an essential service to Victoria and keeping the cost of electricity distribution down as its goal.

[Ref: ACMA Review of 1.5GHz Discussion Paper - sec C (Page-2) > *work with other incumbent licensees to determine their ongoing needs in the 1.5 GHz band, the impact any changes may have on them, and whether there are viable alternatives for the continued delivery of their services.*]

ACMA Discussion Paper – Comment on Items

[Ref: ACMA Review of 1.5GHz Discussion Paper – sec B (Page-1)]

Considerations at the 2015 World Radiocommunication Conference (WRC-15) resulted in the identification of the 1427–1518 MHz frequency range for International Mobile Telecommunications (IMT).¹

The 1427 – 1518 MHz segment of the 1.5 GHz Band [includes the segment 1452 – 1492 MHz originally reserved for DSB services and in the Radiocommunications 1.5 GHz Frequency Band Plan 2015 (1.5 GHz band plan)) to preserve options for possible terrestrial and satellite audio broadcasting services in the 1452–1492 MHz band. However, the ACMA is not aware of any demand domestically to support such use. [Ref: ACMA Review of 1.5GHz Discussion Paper – sec A (Page-1) and sec E (Page-5)]

In the above scenario consideration for new IMT services to be accommodated and restricted in the 1452-1492 MHz Band with “coexistence” of Point-to-Point Fixed link channelling restricted to rural and remote areas with limited exclusion areas of 5 -10Km radius around major rural towns. [Ref: ACMA Review of 1.5GHz Discussion Paper – sec D (Page-3)]

Also, to preserve the asymmetric Point to point link frequency allocations outside the 1452-1492 MHz Band for continued use of Fixed links for Electricity Distribution Sector – Essential Services for compliance with “Legislative and policy environment” as it has impact on public safety and delivery of community Services at lowest cost for commercial purposes. [Ref: ACMA Review of 1.5GHz Discussion Paper – sec F (Page-5)]

In addition, Telstra use of the 1.5GHz Fixed P-P Links to meet USO obligations for Contract with Commonwealth that runs to 30 June 2032. PAL continued use of the existing 1.5GHz asymmetric Fixed

P-P channelling arrangements is warranted on the back of Telstra requirement for continued use of the 1.5GHz Band -Fixed Link Plan. [Ref: ACMA Review of 1.5GHz Discussion Paper – Sec G (Page-6)]

Investigate coexistence of existing 1.5GHz asymmetric fixed link channel pairing in the 1427 – 1518 segment of the Band with IMT services in the rural and low-density remote areas of Victoria. If IMT is for deployment in Metro and City high density areas with proper non-interference protocols it should be viable to operate the 1.5GHz Fixed links assignments in rural and remote areas of Vic.

In summary

- A critical part of the PAL existing private network is the 1.5Ghz links which are used as our “backbone” and extends from Portland in the Southwest of Victoria through Horsham, Kerang, Shepparton and terminating at the Bendigo control centre.
- The 1.5Ghz band was chosen based on the
 - propagation required to achieve the necessary line of sight to effectively maintain a reliable link.
 - Supporting the necessary bandwidth ~10Mbps in a hub and spur arrangement where “other” technologies are used for the last mile monitoring of SCADA devices.
- Typically, these links are in areas where fibre is either not available (Commercial options cost prohibitive) or the 1.5Ghz link is deployed as part of our network diversity design.
- The RTU end points feed their data into the 1.5GHz backbone for integration & reporting at the host Scada DMS platform in addition to other mission critical platforms.
- If the 1.5Ghz band were no longer available to Powercor, a complete system re-design would be required to replicate the existing network typology.
- Use of the 800Mhz band for example, whilst allowing a similar link distance (propagation) will not allow for required bandwidth.
- Use of 6Ghz will allow for the required data rates, however the link distance is reduced considerably and require the establishment of additional sites to complete link paths.

Powercor does and will continue to look at alternate means of communications such as fibre for these sites.

Powercor currently owns approximately 1000 Kms of fibre and has plans to extend this footprint on a case-by-case basis where it makes economic sense (by comparison PAL operates approximately 4000Kms of Radio Path). It's also has existing 3rd party arrangements with other fibre providers for access to this service as this forms part of our Private data network, though also subject to robust cost benefit constraints.

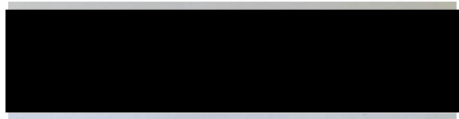
If ACMA did decide to make changes to the existing 1.5Ghz band, Powercor would require a minimum of 5 years notice to fund and roll out a project to replace the existing 1.5Ghz links with an alternate comms path including diversity and redundancy.

In conclusion: -

- It is probable that not all existing 1.5Ghz links would be replaced with a radio link but this would be on a case-by-case basis. Powercor feel that the limited amount of spectrum in use now at fixed locations in predominantly regional and remote areas should be able to coexist with the proposed new services.
- Powercor do not foresee a requirement to increase the use of 1.5Ghz spectrum, nor do we have any immediate plans to replace any existing links.
- Powercor does currently operate several radio links in the 400-500Mhz, 1.5Ghz and 11Ghz bands based on propagation at a given sight, bandwidth required and network diversity.

Powercor is happy to meet with the ACMA to further discuss our future spectrum requirements, but now respectfully requests no changes to the 1.5Ghz band of part of the spectrum currently being used by Powercor for the foreseeable future for the reasons outlined and discussed in this correspondence.

Yours Sincerely



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