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The Manager, Spectrum Planning Section
Spectrum Planning and Engineering Branch
Communications and Infrastructure Division
Australian Communications and Media Authority

By online submission

Dear Sir/Madam

Thank you for the opportunity to comment on the ACMA's options paper addressing Future Use of the 3.6 GHz band (the Options Paper).

Background

As noted in previous ASTRA submissions to the ACMA regarding the 3.6 GHz band,[1] ASTRA's members make use of C-Band spectrum adjacent to the 3.6 GHz band for the reception of international programming. Specifically, Foxtel uses the 3.7 GHz band to receive programming from overseas (C-Band 3.7 to 4.2 GHz), which ensures a rich diversity of programming is available to Australian customers. Fox Sports also receives a broad range of international sports programming via C-Band downlinks and relies on those links to bring in major and niche sporting events from Europe, Asia and the UK.

Program streams currently downlinked for broadcast to Australians on the Foxtel platform include:

- CNN
- BBC World News
- CNBC
- Discovery turbo
- Discovery Kids
- Discovery TLC
- Discover Science
- Animal Planet
- Bloomberg
- Europsort news

Note that some of these signals are also on-supplied to other television providers in Australia, such as Fetch TV.

In its submission to the ACMA's 2016 consultation paper addressing Future Use of the 1.5 GHz and 3.6 GHz Bands, ASTRA expressed its concern regarding the potential risk of interference for existing licensed C-Band earth stations in the adjacent 3.7 to 4.2 GHz band. ASTRA expressed support for existing sharing studies for C-Band spectrum to be revised using 5G parameters to determine the scope of that potential risk, and the appropriate interference protection measures for existing licensed earth stations in the adjacent bands.

[1] http://astra.org.au/images/pages/FINAL_ASTRA_sub_5G_spectrum_091216.pdf

ASTRA was therefore disappointed to find that the Options Paper does not address the issue of potential interference to earth stations in the bands adjacent to 3.6 GHz. In this submission, ASTRA puts forward a proposal for managing the impacts of such potential interference.

Future use of the 3.6 GHz band

As an industry providing streaming media services intended to be consumed anywhere, anytime, ASTRA recognises the importance of finding suitable spectrum to enable the timely roll out of 5G services. For this reason, ASTRA supports moving the 3.6 GHz band to MBB use to facilitate a 5G rollout as soon as possible.

However, ASTRA seeks to balance this with the importance of ongoing protection for licensed C-Band earth stations in the adjacent 3.7 GHz band, as ASTRA's members rely on these links to deliver a diverse range of content choices to Australian consumers.

It is our view that the ACMA's proposal to completely clear and re-farm the 3.6 GHz band will not deliver a timely rollout. We also note that the ACMA's proposal would not ensure adequate protection of licensed adjacent services.

ASTRA believes that a combination of:

- Ongoing protection for incumbent 3.6 GHz FSS earth station licensees for 15 years;
- Ongoing protection for licenced C-Band earth stations in the adjacent bands for the period of the incoming 3.6 GHz spectrum licence;
- Immediate auction of the 3.6 GHz band, encumbered; and
- Enabling clearance of the 3.6 GHz and adjacent bands through commercial negotiations between incoming licensees and incumbents

is the best way to manage the competing requirements of MBB spectrum demand and the interests of incumbent service providers. This solution would result in a more timely release of MBB spectrum and would enable licenced incumbents to exit that spectrum in a way that minimises adverse financial, business and social impacts.

Ongoing protection

Under our proposal (which is similar to that outlined in Telstra's 26 May 2017 open letter to the ACMA), in band FSS Earth Stations should continue to be protected for 15 years. A longer period of protection for existing licensees may be appropriate for areas 2 and 3 (as identified in the Options Paper) because it is likely that demand in those areas (for use for MBB) will come later than in metropolitan areas.

ASTRA proposes that licenced C-Band earth stations in the adjacent 3.7 to 4.2 GHz band would continue to be protected from interference from MBB services in the 3.6 GHz band through the development of a suitable RAG and/or RALI (similar to the 3.4 GHz band). This would be in recognition of the strong social dividend created by the use of that spectrum to deliver a diverse range of news and entertainment services. The period of protection would be for the same period as the incoming 3.6 GHz band spectrum licence.

Immediate auction

The 3.6 GHz band should be progressed as soon as possible to the licence auction stage for MBB services. The demand for and potential uses of this spectrum is well evidenced, and it is ASTRA's view that completely clearing the band of incumbent services prior to auction will take too long and will unreasonably delay 5G rollout.

To avoid this, ASTRA believes the spectrum should be auctioned encumbered with existing licences, so as to make the spectrum available for MBB services as soon as possible.

Clearance of the 3.6 GHz and adjacent bands

As noted above, we propose that existing in band FSS Earth Stations be protected for 15 years. We propose that licensed Earth Stations in the adjacent band be protected for the life of the incoming 3.6 GHz spectrum licence. However, this does not mean that the spectrum could not become available for MBB use much sooner.

Similar to Telstra's proposal, ASTRA proposes that the clearance of 3.6 GHz and adjacent bands take place through free and open commercial negotiations between incumbents and incoming spectrum licensees. If the successful spectrum licensee finds that demand warrants clearance of the band in a particular location earlier than the protection time frame, then the spectrum licensee may enter commercial negotiations with the apparatus licensee to clear the band earlier. Clearance would occur where the expense of clearance is exceeded by the commercial value to the incoming spectrum licensee of clear use of the 3.6 GHz or adjacent band.

In the case of the adjacent bands, this could occur in geographical areas where incumbent use in the adjacent band is preventing use of the 3.6 GHz band for MBB.

Relocation of FSS earth stations

ASTRA notes the ACMA is seeking views on issues surrounding the development and establishment of an east coast Earth Station protection zone, with the aim being clearance of Earth Stations from geographic areas with strong demand for MBB.

ASTRA notes the following considerations must be taken into account when considering candidate locations:

1. Availability of high capacity trunk fibre at a reasonable cost (ie, Gb/s fibre)
2. Locally available, high quality technical and maintenance support (ie, close to a regional population centre)
3. Good road access
4. Local airport close by if the location is some distance from a major population centre
5. Natural topographic protection, and
6. As close as possible to Sydney, considering the above factors and protection required.

ASTRA has not investigated suitable locations in any detail, but suitable topographic locations immediately west of the Blue Mountains, or on the Sydney-Canberra route (Goulburn/Southern Highlands) may be worth investigation.

ASTRA acknowledges that in previous submissions, it has argued against relocation of the multiple C-Band earth stations used by ASTRA members, on the grounds of capital and ongoing costs. ASTRA is prepared to consider proposals for relocation where the costs of relocation are negotiated and agreed between incumbent C-Band licensees and incoming spectrum licensees in the 3.6 GHz band, and on the condition that a suitable alternative location (having regard to the factors outlined above), can be found.

Use of the 5.6 GHz band for wireless broadband services

ASTRA notes the ACMA is considering the 5.6 GHz band to support point-to-multipoint licences affected by replanning of the 3.6 GHz band. ASTRA does not support this proposal as far as it relates to metropolitan areas.

Australia should be seeking to align its use of the 5.6 GHz band with international use to maximise the amount of WiFi spectrum available in the 5 GHz band. WiFi has become a very important method for connectivity and distribution of internet and multimedia

applications within households. It is therefore an important contributor to the productivity offered by pervasive internet availability.

The WiFi channels currently embargoed in Australia are internationally defined as DFS/TPC so that they may detect and not interfere with other uses of the band such as weather radar. The current embargo prevents the use of 3 x 20MHz channels, 2 x 40 MHz channels, 1 x 80 MHz channel (out of 6 in total) and 1 x 160 MHz channel (out of 2 in total). There is evidence that non-compliant equipment is already entering the Australian market using these channels.

If point-to-multipoint was deployed in 5.6GHz it must not prevent the use of those WiFi channels in the band and may, by default, exclude their use by denying access to Wi Fi DFS/TPC carriers though the presence of 5.6GHz point-to-multipoint carriers. ASTRA would only support relocation of WISPs in 5.6 GHz in regional and remote areas.

ASTRA responds to the specific questions contained in the Options Paper in **Appendix A** to this submission.

If you have any queries or would like to discuss the issues raised in this submission, please contact Holly Brimble, Policy and Regulatory Manager (holly.brimble@astra.org.au).

Yours sincerely

Andrew Maiden
CEO

APPENDIX A

ASTRA ANSWERS TO ACMA QUESTIONS

1. Should the 3.6 GHz band be progressed from the *preliminary replanning* stage to the *re-farming* stage in the ACMA's process for considering additional spectrum for MBB services? Why/Why not?

   The 3.6GHz band should be progressed as soon as possible to the licence auction stage for MBB services, on the basis that FSS in band and adjacent C-band protection issues are addressed. The spectrum should be auctioned encumbered with existing FSS Earth Station licensees protected for 15 years, so as to make the spectrum available for MBB services as soon as possible, where possible, whilst protecting existing licensees.

2. Do the areas identified in this analysis cover the likely areas of high demand for access to the 3.6 GHz band? Would smaller or larger areas be more appropriate? Why?

   No comment.

3. If any part of the 3.6 GHz band is re-allocated for the issue of spectrum licences is seven years a suitable re-allocation period? If not, what period of time would be appropriate?

   In band FSS Earth Stations should continue to be protected for 15 years. Geographic relocation of Earth Stations should be a commercial negotiation between the successful spectrum licensee and the FSS Earth Station licensee.

   Out of band FSS Earth Stations (3.7 to 4.2 GHz) should be provided interference protection through the RAG (Radiocommunication Advisory Guidelines) and/or RALI to be developed for the MBB use of the band similar to those developed for the 3.4 GHz band.

4. Should different re-allocation periods be considered for different areas? For example, should a longer period be considered for services outside Area 1?

   A longer period of protection for existing licensees may be appropriate for areas 2 and 3 because it is likely that demand in those areas (for use for MBB) will come later than in metropolitan areas.

5. Are these guidelines appropriate? Why?

   No comment.

6. Are there any other issues that affect the usability of an area-wide licence that should be taken into account when defining the licence area?

   No Comment.

7. If point-to-point licences are affected by replanning activities in the 3.6 GHz band, are the options identified for point-to-point licences suitable? Are there any alternative options that should be considered?

   No Comment.

8. Is the 5.6 GHz band a viable option for wireless broadband systems?

   No. Australia should be looking to align its use of the 5.6 GHz band with international use to maximise the amount of WiFi spectrum available in the 5 GHz band. WiFi has become a very important method for connectivity and distribution of internet and multimedia applications within households and so is an important contributor to the productivity offered by pervasive internet availability. ASTRA would only support relocation of WISPs in the 5.6 GHz band in regional and remote areas.

9. Under what circumstances should apparatus- and class-licensed arrangements be considered for the 5.6 GHz band?

   As per the answer to Question 8 ASTRA supports the class licence option for 5.6 GHz as expressed in Appendix 3 of the Options Paper. The 5.6 GHz band should be class licenced aligning with the rest of the use of the band for Wi Fi purposes. As with international practise, DFS/TPC operation should be required on WiFi carriers in the 5.6 GHz band to protect Metrological radars from interference.

10. If apparatus licensing arrangements are developed for wireless broadband systems in the 5.6 GHz band, are the notional arrangements proposed in Appendix 3 suitable?

    No. See Above.

11. If point-to-multipoint licences are affected by replanning activities in the 3.6 GHz band, are the alternative options identified suitable? Are there any alternative options that should be considered?

    The 5.6 GHz band is not suitable. There may be options to share the use of the 3.6 GHz band in regional areas depending on the demand for bandwidth for MBB services over time. It is possible to envisage both services being offered by the same operator or cooperation between operators to share the same technology and spectrum resource.

12. The ACMA seeks comment on the suitability of the current west coast Earth Station protection zone located near Mingenew, WA, for long-term satellite service use. Are the current regulatory arrangements effective?

    ASTRA has no experience with the Mingenew arrangements. However we support the notion of an East Coast earth station protection zone, subject to an agreement on costs with incoming licensees.

13. In the event FSS earth stations are affected by replanning activities in the 3.6 GHz band, the ACMA seeks comment on:

a. Any issues surrounding the development and establishment of an east coast Earth Station protection zone; particularly on what factors would be necessary to make it an attractive option for earth station operations.

The following are important factors:

1. *Availability of high capacity trunk fibre at responsible cost (ie. Gb/s fibre).*
2. *Locally available first in technical and maintenance support. Ie. Close to a regional population centre.*
3. *Good road access.*
4. *Local airport close by if located some distance from major population centre.*
5. *Natural topographic protection.*
6. *Close as possible to Sydney considering the above factors and protection required.*

b. Whether there are any views on potential candidate locations to consider.

ASTRA has not investigated any suitable locations but suitable topographic locations immediately west of Blue Mountains or on the Sydney/Canberra route (Goulburn/Southern Highlands) may be worth investigation.

c. Whether there should there be more than one earth station protection zone on the east and west coasts of Australia.

There may be a requirement of one in Victoria and Queensland but ASTRA does not have that requirement at this time.

d. If the identification of a central Australia earth station zone should be considered.

ASTRA does not have a requirement at this time.

14. Are the approaches for amateurs, radiolocation services, class licensed devices and TVRO systems suitable?

On the basis that TVRO systems are not licenced ASTRA considers the arrangements suitable. If however the TVRO system is licenced (and therefore becomes a licenced Earth Station it should be protected from interference from a MBB service in the 3.6 GHz through the development of a suitable RAG and/or RALI similar to the 3.4 GHz band.

15. Are there any other options for incumbent services, not identified in this paper, which should be considered?

Yes. A combination of a) sharing arrangements between incumbents and incoming spectrum licensees, which protect incumbents from interference, and b) commercial negotiation between the spectrum licensee and incumbents to clear the band when MBB demand warrants the expense of clearance. This combination would enable the ACMA to move forward to immediate "release" of the band for MBB use where it is able to be done whilst protecting incumbents.

16. Should any of the sharing arrangements discussed in this section be considered for implementation in the 3.6 GHz band? Why or why not?

The options outlined in the Sharing Arrangements section of the Options Paper should be considered. The multi-tiered approach may offer an alternative approach but not on a "no interference no protection" basis.

17. Are there any other sharing arrangements that should be considered?

Yes. As outlined above in ASTRA's answer to question 15.

18. Are there any other replanning options that should be considered?

Yes. As outlined above an Australia wide spectrum licence should be offered encumbered with existing licensees who are protected for a minimum period of time. If the successful spectrum licensee finds that demand warrants clearance of the band in a particular location earlier than the protection time frame, then the spectrum licensee may enter commercial negotiations with the apparatus licensee to clear the band earlier. The protection period for incumbents should be as outlined in Telstra's open letter to the ACMA dated 26 May 2017. This may be considered as option 3e.

19. Which replanning option should be implemented in the band? Why?

"Replanning" of the band would not be required with the above option. The market would drive the repurposing of the band.

20. In the event an area-wide licensing option is implemented, in which of the defined areas (that is, Area 1, 2, 3 and Australia-wide as defined in Appendix 6) should these arrangements be implemented? Are the current area definitions appropriate? If not, what area should be defined?

No Comment.

21. If Option 4a is implemented, what frequencies and areas should be re-allocated for the issue of spectrum licences? How much spectrum should remain subject to site-based apparatus licensing arrangements? Should different amounts be considered in different areas?

The spectrum licence should offer protection of the incumbent FSS Earth Station apparatus licensees for a minimum period of 15 years.

22. If Option 4b is implemented, what frequencies and areas (that is, incumbent apparatus licence services) should remain subject to site-based apparatus licensing arrangements?

The spectrum licence should offer protection of the incumbent apparatus licensees for a minimum period.

23. Comment is sought on the ACMA's preferred option (Option 3c) for the 3.6 GHz band.

See above.