Wireless Institute of Australia response to the

Australian Communications & Media Authority Consultation 10/2021:

"Five-year spectrum outlook 2021–26 work program Consultation draft

March 2021"

Contents

Executive Summary

The WIA wishes to thank the ACMA for the opportunity to provide feedback on the items of greatest importance for inclusion in the ACMA's works program for 2021-2022 as part of the Five Year Spectrum Outlook (FYSO) process.

The WIA is particularly supportive of the two specific amateur licensing initiatives proposed in the FYSO, namely:

- continued work on the non-assigned amateur service licensing review

- review of arrangements for amateur service stations operating at increased transmitter power levels

With the changes that these initiatives will bring, the WIA also believes it will be important to find a new way for the amateur service to collaborate with the ACMA on relevant revisions to the amateur syllabus. We therefore ask that the amateur qualification syllabus development be added to the works program, to enable delivery of changes that are likely to arise from the other initiatives.

From the ACMA consultation paper, it is also clear that we are entering a time of unprecedented demand for spectrum by commercial interests, particularly from the mobile broadband and space communities. Spectrum demand in the bands between 1 - 30 GHz has never been higher. This particularly concerns the amateur service and is an area in which the WIA will continue to provide representations.

Considering the increased focus on space based activities in Australia, including a growing interest in using amateur satellites by the educational sector, the WIA seeks an opportunity within the ACMA works program to present a proposal for a new amateur satellite service coordination acceptance policy. The intention is to remove ambiguity around what is considered to be a valid station within the amateur satellite service, and to ensure clarity on the licensing process.

Finally, improving spectrum utility for amateur licensees is also high on the WIA's agenda within existing amateur allocations. In support of this objective, proposals for allowing AOCP(S) access to 50-52MHz and raising the amateur service to PRIMARY status in the 7100 to 7200kHz band have been included for ACMA's consideration.

1.0 Introduction

The Wireless Institute of Australia (WIA) thanks the ACMA for the opportunity to provide feedback on the public consultation titled "Five-year spectrum outlook 2021–26 work program Consultation draft March 2021".

Development of a vibrant and relevant amateur service in Australia is complementary to supporting the national STEM agenda[1] [2]. It is an area of activity that directly contributes to the development of citizen science, technology, IT development and engineering self education, through facilitating experimentation and self learning by all Australians with an interest in the nationally important field of radio communications. For more detail refer to Appendix 1.

1.1 Operational Matters

The WIA is committed to working with the ACMA on the two operational amateur service issues identified in the consultation paper, namely the review of the licensing mechanism and the higher transmitter power consultation. In addition, the WIA seeks ACMA consideration of the following operational issues in the 2021-2022 timeframe

- Define and implement a new model for managing the Amateur Operator Certificate of Proficiency syllabus that retains amateur service engagement in the process, considering that those changes will be required as part of the licensing reforms.

- Review the effectiveness of the amateur service examination system in light of the lack of growth of newly licenced operators in Australia, particularly through 2020 under COVID when compared to other countries.

- As the International Amateur Radio Union (IARU) representative in Australia, the WIA is about to finalise its policy[3] on processing Australian amateur satellite licence applications. We will seek to present it to ACMA within the next 3 months.

The WIA will seek preliminary discussions with the ACMA in order to progress these matters, and to better understand the ACMA's priorities and direction.

1.2 Spectrum Access

The WIA notes the FYSO has identified work items involving the 2.3GHz and 3.4GHz bands of interest to the amateur service. The ACMA can expect submissions from WIA on these matters.

Other bands the WIA wishes to focus on include the 50 - 52 MHz segment and the 7100 - 7200 kHz segment. Proposals have been made for both of these to be added to the ACMA works program.

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[1] https://www.dese.gov.au/australian-curriculum/support-science-technology-engineering-and-mathematics-stem
[2] https://www.chiefscientist.gov.au/sites/default/files/STEM_AustraliasFuture_Sept2014_Web.pdf
[3] https://www.wia.org.au/newsevents/news/2020/20201121-1/documents/Draft%20WIA%20Policy%20on%20Amateur%20Satellites.pdf

2.0 Issues for comment

The WIA thanks ACMA for the opportunity to comment on the following specific questions.

2.1 ACMA Questions - Part 1

> 1. *Do you have any feedback on the ACMA's approach to the five-year spectrum outlook?*

No Comment.

> 2. *Are there other technology developments or sources of spectrum demand that the ACMA should be aware of in considering spectrum management over the next 5 years?*

2.1.1 HF Spectrum Demand

Global demand for HF amateur spectrum has grown, particularly since the start of the COVID pandemic. Congestion (particularly on the 7MHz band) from both legitimate and unauthorised illegal transmissions is often severe during times of increased ionospheric propagation.

Additionally, heightened tensions across the globe have increased the use of high-power HF radar systems which frequently disrupt HF amateur communications across large segments of spectrum, particularly on the lower frequency bands. Increasing spectrum access within the 3-10MHz range is seen as vital to enable sufficient frequency agility for the amateur service, so that communications can be maintained when large amounts of spectrum are suffering interference from international radar based intruders [4].

The WIA intends to seek expansions to amateur bands in the 3-12MHz segment over the next 5 years for Australian amateurs, at least in alignment with international allocations, although the WIA acknowledges that this is a lower priority than other items proposed.

2.1.2 UHF/SHF Spectrum Demand

The Wireless Institute seeks to draw attention to the ongoing disruption caused to the amateur service by spectrum reallocation activities.

The amateur service has faced a significant reduction in access to UHF spectrum over the past 10 years. In total, 318MHz of spectrum has been withdrawn in the 420, 576, 2300 and 3400MHz bands across much of Australia. This represents a loss of over 42% of available spectrum to the amateur service. If the impact of LIPD transmissions on spectrum usability is also considered, a further 250MHz of spectrum has been degraded in many areas, particularly on the 433 MHz, 2400 MHz and 5700 MHz bands. The overall impact has been a net 76% reduction in usable spectrum in many locations across Australia for many types of amateur service communications.

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[4] International Radar intruders are often monitored, occupying up to 80-160kHz of spectrum in the 3.5, 7MHz and 14 Mhz bands.

The most affected activities to date have been wideband Amateur Television services. Many television repeater stations have faced multiple spectrum withdrawals, resulting in repeated replanning, service reconstruction, or in some cases the cessation of ATV activity in an area.

The WIA requests that future spectrum reallocation discussions give due consideration to maintenance of sufficient amateur spectrum, so activities such as amateur television can continue to operate with a level of certainty.

2.2 ACMA Questions - Part 2

> *3. Do you have any feedback on the ACMA's plans for monitoring, initial investigation, preliminary replanning or implementation of bands?*

In addition to the amateur spectrum already identified for review in the 2.3GHz and 3.4GHz bands, the WIA would like to see the following specific issues added to the items under initial investigation for 2021-2022.

- <u>Extension of operating privileges for AOCP(S) class licensees to include access to the 50-52 MHz band.</u>

  The reason for this request is that the majority of weak signal / long distance activity on the band by AOCP(A) licensees occurs in the segment 50 to 50.5 MHz, which discriminates against Standard licensees who can only access 52 MHz and above.

  The preference for using the lower end of the band stems from the nature of ionospheric propagation at these frequencies and the fact that there are times when the Maximum Usable Frequency (MUF) will reach 50 MHz but not extend to 52 MHz. This is not an overall change of spectrum access level for the amateur service, as it would remain as a secondary service at this time. Therefore is not seen as something that would impact the primary "broadcasting" spectrum user (especially considering broadcasting is not currently active in this band within Australia).

- <u>The WIA requests the ACMA conduct a further review of the defined usage of 7100-7200 kHz in the Australian Radio Spectrum Plan.</u>

  Noting the proposed changes already being made to withdraw Broadcasting as a defined use of the 7100-7200kHz band in the draft 2021 spectrum plan, the WIA seeks to open discussions with ACMA on how the fixed and land mobile use could also be withdrawn from the band, elevating the amateur service to PRIMARY status in Australia. (The WIA notes that there is currently only one scientific licence assigned in this segment). The WIA and IARU objective is to bring the segment status into alignment with the majority of jurisdictions around the world where the amateur service is the sole primary spectrum user, hence the WIA views this matter with some importance.

> 4. Do you have any comments about the ACMA's approach to forward allocations?

No comment

> 5. Do you have any other comments on Part 2?

No Comment

2.3 ACMA - Overall: FYSO format

> 6. How do you use the FYSO (for example, read once a year or regularly refer to)?

The FYSO document is something that typically is reviewed by the WIA yearly as each consultation is published. It is utilised by the WIA to focus amateur service consultations and strategic policy and procedure development. The FYSO also provides information that is utilised for planning in International Amateur Radio Union regional conferences and meetings.

> 7. Do you find the 6-month and annual progress reports useful?

The reports are useful in tracking progress on issues affecting the amateur service.

3.0 Conclusion

The WIA values an ongoing and productive relationship with the ACMA and appreciates the opportunity to provide input to the work program planning processes of the ACMA, understanding that there are limited available resources and many competing priorities within the field of radiocommunications regulation.

Principle areas of regulatory focus for amateur licensees will always revolve around protecting spectrum access rights, maintaining or obtaining spectrum access parity with the amateur service globally (part of the IARU harmonisation agenda). Streamlining operational regulatory processes related to qualification management, licensing and enforcement is also of major importance to amateur licensees where changes can bring about a positive outcome for the amateur service. Ultimately, the WIA is looking to work with the ACMA to increase the value of the amateur service to the Australian people, through value creation as well as cost reduction. These are fundamental tenets to meeting the expectations of the amateur service.

The objectives outlined in this response all target these key areas. The WIA asks that they be considered by ACMA as important items for inclusion in their works program for the year ahead.

A.1 Appendix I - Introducing The Amateur Service

Amateur radio is a science-based technical activity enjoyed by over three million people worldwide. It is a recognised radiocommunications service by the International Telecommunication Union (ITU) and is listed in the ITU Radio Regulations as the 'amateur service' and the 'amateur-satellite service'.

The International Amateur Radio Union (IARU) is the global sector representative body for the amateur service. It is recognised by the United Nations as a Non-Governmental Organisation (NGO) by virtue of its consultative status with other United Nations bodies, i.e. International Telecommunication Union (ITU). The ITU recognises the IARU as an international organisation (CV/Art.19, No. 231). IARU has worked with the ITU for nearly a century and is a Sector Member of the Radiocommunication Sector (ITU-R), playing a full part in the work of ITU-R as it affects amateur radio spectrum, and also of the Development Sector (ITU-D), relating to developing countries and emergency communication.

The Wireless Institute of Australia (WIA) is one of the founding member societies of the IARU Region 3 branch. WIA representatives are frequently members of Australian delegations to ITU-R Working Party meetings and World Radiocommunication Conferences. The WIA is also the sole representative member of the International Amateur Radio Union (IARU) in Australia.

- The amateur service is a radiocommunication service:
    - for the purpose of self-training,
    - Intercommunication and technical investigations carried out by duly authorised amateurs,
    - persons interested in radio technique solely with a personal aim and without pecuniary interest.
- And the amateur-satellite service is:
    - A radiocommunication service using space stations and earth satellites for the same purposes as those of the amateur service.

Areas where the amateur services brings value to the community with no cost to the Government and community include:

A.1.1 Inter-communication

- **Inter-communication** - facilitating the exchange of ideas, wellbeing, connectedness and understanding across Australia's multicultural community.

    In particular, using the idea of self reliant communication, the amateur service supports the health and wellbeing of the Australian community through events such as:
    - Scout & Guide Radio Jamboree [5] held globally each year.
    - Community sporting events [6] such as canoe marathons, car rallies, cross country cycling, equine endurance, fun run events and more.
    - Radio Sport activities enable physical fitness and activity through (for example) the ARDF international competitions which combine orienteering with radio direction finding, as well as the Summits on the Air program (mixing mountaineering with amateur radio).

    The value of these community based, community delivered communications capabilities via radio are hard to calculate in dollar terms, but are nonetheless invaluable to the function of such events. Indeed, during this

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[5] https://www.jotajoti.info/
[6] https://www.areg.org.au/archives/category/activities/rpm200

COVID19 pandemic, more and more people have turned to, or returned to, amateur radio as a way of keeping in touch with community, friends and family across town or across the world.

A.1.2 Self Training

- **Self training** - promotion of Scientific, Technology, Engineering, Arts and Mathematics (STEAM) accessibility throughout Australian society, not just through formal education channels. This delivers value through:
  - School science programs [7] through, for example, communicating with the International Space Station (ARISS) [8] or flying and tracking high altitude balloons (e.g. Project Horus [9]).
  - Engineering professional development through self training on advanced communications techniques particularly on the VHF/UHF/Microwave bands.
  - Citizen science programs such as wildlife tracking, National Science Week - Festival of Bright Ideas[10], space weather monitoring [11], radio propagation studies[12] and many more
  - Advanced Communications Techniques Developments are being undertaken by individuals and groups across the country are facilitating new advanced communications techniques including developing new modes and methods of communication via radio (for example the development of HF digital voice communications using the Codec2 based FreeDV [13] modulation or advanced weak signal communications using modes (using the WSJT-X software suite) [14] such as FT8, JT65, WSPR, MSK144 and many more.
  - Building practical skills within graduate professionals and helping bridge the gaps that have appeared in formal radiocommunications educational pathways (eg the loss of the BOCP and TVOCP certifications) through self training able to be undertaken within the amateur service.
  - Recommendation ITU-R M.1043-2 [15] addresses the use of the amateur and amateur-satellite services in developing countries. It recommends that administrations encourage and facilitate the amateur and amateur-satellite services in order to develop radio operator skills, train engineers and technicians to design, construct and maintain radio equipment and systems, assist in forming groups capable of providing local support, exchange technical and operational information, experiment with new technology, and establish stations in rural and remote areas, among several other objectives.

A.1.3 Disaster Relief Communications

- **Disaster Relief Communications** - where in Australia organised self-training obtained within the amateur service facilitated by groups such as the Wireless Civil Emergency Network (WICEN) [16] has enabled operators from the amateur service to act for the direct benefit of the community. For example:
  - Relief Operators in disasters - WICEN operators played roles as relief operators in disaster communications centres during the Summer 2019/20 bushfires.

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[7] https://www.sarcnet.org/
[8] https://www.ariss.org/
[9] https://www.areg.org.au/archives/category/activities/project-horus
[10] https://festivalofbrightideas.com.au/
[11] https://www.solarham.net/
[12] http://wsprnet.org/drupal/wsprnet/map
[13] https://freedv.org/
[14] https://physics.princeton.edu/pulsar/k1jt/wsjtx.html
[15] http://www.itu.int/rec/R-REC-M.1043/en
[16] https://wicen.org.au/

- Secondary backup communications - WICEN trained amateur radio operators also provided communications networks to the community on the NSW south coast last year when the public and government communications networks failed.
- Primary disaster communications channels - amateur radio was one of the first means of communications re-established in Darwin in 1974 after Cyclone Tracy - being used to carry news and information for the ABC and 2GB out of Darwin.
- International Disaster communications [17] - the amateur service is recognised as a vital source of skilled operators able to enter disaster areas and set up communications networks with limited support. It was the amateur service that stepped in during several of the Carribean hurricanes in the last couple of years. This capability of the amateur service is in fact recognised and encouraged in the ITU Radio Regulations through ITU-RR 25.9A.
- Recommendation ITU-R M.1042-3 [18] addresses disaster communications in the amateur and amateur-satellite services. It is recommended that administrations encourage the development of amateur service and amateur-satellite service networks capable of providing radiocommunications in the event of natural disasters, that such networks be robust, flexible and independent of other telecommunications services and capable of operating from emergency power, and that amateur organizations be encouraged to promote the design of robust systems capable of providing radiocommunications during disasters and relief operations.

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[17] https://www.iaru.org/on-the-air/emergency-communications/
[18] http://www.itu.int/rec/R-REC-M.1042/en

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