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ACMA Consultations

<https://www.acma.gov.au/Home/theACMA/draft-five-year-spectrum-outlook-2019-23>

Re: WIA response to Five-Year Spectrum Outlook 2019 – 23; The ACMA’s spectrum management work program – consultation draft

The Wireless Institute of Australia thanks the Australian Communications and Media Authority for the opportunity to respond to the Five-Year Spectrum Outlook 2019 – 23; The ACMA’s spectrum management work program – consultation draft.

Attached is the Institute’s response.

The Institute is happy to discuss any aspect of this response with the ACMA.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Justin Giles-Clark', written in a cursive style.

Justin Giles-Clark
President

16 May 2019

WIA response to Five-Year Spectrum Outlook 2019 – 23; The ACMA’s spectrum management work program – consultation draft

The Wireless Institute of Australia (WIA) thanks the ACMA for the opportunity to comment on the draft Five-Year Spectrum Outlook 2019–23 (FYSO), released in April 2019.

The WIA is cognisant of the workload and demands placed upon the ACMA at this time of rapid technological change and market development, and the demands on spectrum from new services such as 5G.

The following issues are of particular interest to the WIA:

1. Review of non-assigned amateur and outpost licensing arrangements (proposed consultation period of 1 October–31 December 2019). The WIA is not in favour of a single licensing system, such as a Class License, for the Amateur Service.

The WIA believes each amateur radio operator needs to continue to be individually licensed and afforded the protections and benefits provided currently by the radiocommunications apparatus licence, consistent with the Department of Communications and the Arts’ Fact Sheet, “Introducing the single licensing system . . .” (at: www.communications.gov.au/have-your-say/consultation-new-spectrum-legislation).

The WIA looks forward to engaging in consultation with the ACMA on amateur licence conditions, as foreshadowed in the FYSO under “Licensing and licensing systems”.

2. Changes to amateur licensing conditions that seek to vary permitted power levels, relax permitted bandwidths and emission modes in certain circumstances, authorise foundation licensees to use digital modes and non-commercially manufactured equipment, and to clarify definitions of certain terminology, (proposed consultation period 1 April–30 June 2020).

Although the Institute remains disappointed that proposed changes to the Amateur licence conditions have not been given a higher priority over the past few years (first raised in 2014, and again over 2016-17), we now look forward to engaging in consultation with the ACMA on amateur licence conditions, as foreshadowed in the FYSO under “Licensing and licensing systems”.

As the WIA has detailed the items of interest in two previous FYSO submissions, it is felt unnecessary to repeat these here; however, we refer you to the following documents online:

[WIA response to ACMA's Five-year spectrum outlook 2018–22](http://www.wia.org.au/newsevents/news/2018/20180712-1/index.php)
www.wia.org.au/newsevents/news/2018/20180712-1/index.php

[WIA response – ACMA Five Year Outlook](http://www.wia.org.au/newsevents/news/2018/20180127-1/index.php)
www.wia.org.au/newsevents/news/2018/20180127-1/index.php

[WIA Licence Conditions Submission - 2018 - with survey results](https://www.wia.org.au/newsevents/news/2018/20180612-1/index.php)
<https://www.wia.org.au/newsevents/news/2018/20180612-1/index.php>

The WIA intends to continue pursuing the proposed changes to amateur licence conditions over the 2019 – 23 FYSO.

3. ACMA’s consideration of outcomes of WRC-15 in the 5351.5–5366.5 kHz band, (proposed discussion paper 1 January–31 March 2020).

Noting the ACMA’s statements on the principles of dynamic spectrum access (DSA) – consistent with this, the WIA believes that the possibility of interference by amateurs to the JORN facility and other incumbents, can be successfully mitigated through permitting a limited, contiguous set of channel frequencies within the WRC-15 allocation, use of time-of-day limitations, and the use of near-vertical-incidence (NVIS) antennas, all aided by the low EIRP.

4. Earlier this year, the WIA ceased providing licence assessments and other services on behalf of the Commonwealth. Although the WIA is no longer involved in providing these services, we are looking forward to working with the ACMA on reforming arrangements for amateur certificates of proficiency over the term of this FYSO in order to achieve the best possible outcome for the Amateur Service under the new arrangements.

Further, the WIA also looks forward to participating on the proposed syllabus review panel.

In addition, the WIA maintains a policy that the transaction costs faced by licensees are minimised to the extent possible, while ensuring licensees have registered callsigns. The WIA notes that maintaining the register of radiocommunications licences vis-à-vis amateur licensing creates an administrative burden.

To this end, the WIA proposes that the ACMA adopts a model similar to other nations' (eg. Ofcom's in the UK), where licences have a long tenure (say, five years), it is the licensee's responsibility to maintain currency, and fee transactions are only imposed at issue and renewal.

It is concerning to the WIA that licensing issues are being considered when the foreshadowed new Radiocommunications Act is not in place and there is little or no indication about how the new Act will deal with delegations, regulations and codes of practice.

To summarise, the Australian radio amateur community requires:

- individual licences bearing a unique callsign
- certainty of licence tenure
- an equitable framework of transaction costs
- certain and continuing access to frequency bands throughout the radiofrequency spectrum
- continuing participation and representation in spectrum management processes.

Appendix 1 details the ITU definition of the Amateur Service and its value to the community and industry.

Consultation question

1. What further improvements to the FYSO would make it easier for stakeholders to engage with the ACMA on its spectrum management work program?

As proposed in responses to previous FYSO Discussion Papers, the WIA suggests implementing meetings with stakeholders held on a regular, scheduled basis, rather than ad hoc, and held throughout the years of the work program.

The WIA notes the assorted plans for consultation on various Amateur Service matters outlined in the current FYSO (April 2019).

Consultation question

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 five years?

As highlighted in the WIA's submission to the ACMA of June 2018, the following is noted:

Radiocommunications and IT technologies have been going through significant development over the past decade, which is envisaged to continue, perhaps at an accelerated pace.

The amateur radio community has always adopted and adapted new technologies as they emerge.

Although difficult to quantify, the economic benefit to the community from amateur radio is arguably substantial. Wireless communications is ubiquitous in our modern society, and as a nation we must maintain a core of engineers and technicians who are highly skilled in emerging wireless technologies. Amateur radio as a hobby can spark an interest in science, technology and engineering (STEM) pursuits, and lead into lifelong careers for young Australians.

Since inception, the Amateur Service has provided a training ground for new technologists interested in developing their skills and knowledge in radio communications. Many wireless technologies, which are commonplace today, were developed by radio amateurs, and more recently "Maker" groups have benefited and expanded their skills using the enhanced communications capabilities offered by an amateur radio licence.

Amateur radio enthusiasts have pioneered new narrow-band digital modes which offer reliable communications at low-powers and in noisy RF environments. Over coming years, the amateur service is expected to make greater use of wideband modes such as digital television and IP-based mesh network applications. Wideband internet-like applications are expected make greater use of amateur spectrum at 50 MHz and above.

Amateurs have maintained a presence in satellite and space technologies since soon after manmade satellites first emerged.

Sophisticated plans for satellites carrying amateur radio equipment are actively under way. For example, it is envisioned that geostationary orbit satellites will carry amateur radio experiments in the near future, while other amateur satellites are planned to be launched into eccentric (Molniya) orbits, as has occurred previously, providing satellite accessibility for periods up to half a sidereal day. Such future satellites are planned or envisioned to use amateur microwave allocations, as these frequencies offer particular advantages. However, while amateur satellite allocations are noted in the ITU table of spectrum allocations, they are in amateur secondary allocations and affected by recent ACMA decisions.

Some technology developments are threatening the health of the radiofrequency spectrum as a resource. Already, the situation with EMC, EMI, and RFI involving electronics and IT equipment, has a cumulative impact, raising the RF noise floor significantly across the spectrum from LF through to UHF, particularly across urban areas. This impacts all spectrum users.

Radio amateurs often have to work with weak signals from distant stations, or wish to experiment with radio propagation modes that involve weak signals. Like the rest of the population, radio amateurs mostly live in urban areas where high to very high levels of urban RF interference from non-RF sources is frustrating their abilities to operate, particularly on the HF and VHF bands, even extending to the 70cm band. This phenomenon has driven the development of remotely located amateur stations outside urban areas with its dominating RFI, which can be operated from amateurs' urban homes, or anywhere, via the internet.

As the ACMA would be aware, concerns have arisen across the world about the advent and experimental implementation of Wireless Power Transfer (WPT) technology for charging electric vehicles. It uses very high power RF to transfer energy. This has the potential to cause significant levels of RFI. It is noted that WPT is on the WRC-19 agenda.

It is widely acknowledged and understood that "disruptive" technologies and innovations drive the advancement of technological industries, particularly the IT sector. The same is true for the radiocommunications sector, and amateur radio has played a role over every decade across the past century; increasingly so over the past two decades.

Consultation question

3. Do you have any comments about the ACMA's planned international engagement activities?

The WIA is a member of the International Amateur Radio Union (IARU, www.iaru.org), which represents the interests of the amateur and amateur satellite services internationally and is recognised by the International Telecommunications Union (ITU). Membership of the IARU comprises the national societies of each separate country or territory. The WIA was one of the first 14 national societies to become a member of the IARU when it was formed in 1925.

As you would be aware, the IARU is a Sector Member of the ITU Radiocommunications Sector and actively participates in many ITU meetings, including the World Radiocommunications Conferences (WRCs).

WIA appointees participate in the work of international spectrum management, including Australian Radio Study Groups in preparatory work for WRCs, and in Australian delegations to WRCs. As you may be aware, WIA member Dale Hughes has been a key member of ACMA delegations to WRCs for more than a decade.

The Institute is happy for the above arrangements to continue.

Consultation question

4. Do you have any feedback on the ACMA's plans for monitoring, initial investigation, preliminary replanning or re-farming of bands?

The WIA looks forward to participating in stakeholder consultations on matters relevant to the Amateur Service and the Australian radio amateur community.

Specifically, the WIA notes the ACMA’s comments on the following and will maintain a watch on developments.

- 3.3 GHz (3300–3400 MHz) band
- 5725–5850 MHz band – WRC-19 agenda item 1.16.

Pursuant to the WIA’s existing submissions on amateur licence conditions, we seek consideration of the following proposals concerning amateur access to the 5351.5–5366.5 kHz band (60 metres) and an amateur allocation at 70.0-70.5 MHz.

5.3 MHz

The WIA is keen to see amateur access to this band – at this early stage – in line with the original intent of the WRC-15 agenda item, which involves relatively short range daytime use of near vertical incidence skywave (NVIS) propagation, rather than long-distance use. Accordingly, the WIA proposes that the following general conditions for operation be considered:

- allocation to Advanced licensees only
- a geographic exclusion zone of 200 km around incumbent user base sites
- daylight operations only, limited to 7am to 7pm daily local time
- interleaving narrowband digital transmissions between assigned land mobile services

The WIA envisions adopting a Band Plan as in the table below, and promoting its use by Advanced licensees.

Frequencies (kHz)	Bandwidth (Hz)	Preferred mode and generic usage	ITU Region 3 status
5351.5 - 5354	500	CW, narrowband modes – digital modes	Secondary Amateur
5354 - 5366	2700	All modes – USB for phone operation	
5366 – 5366.5	See Footnote	Weak signal modes	

Footnote: maximum bandwidth suggested of 20 Hz.

In so far as possible interference to incumbent stakeholders is concerned, the WIA refers to that input to the last FYSO provided by the Department of Defence, which stated that it could consider an amateur allocation in this band. The WIA notes that much of the 5.3 MHz band is already allocated to land mobile services and if Defence is agreeable, then amateur usage could be allowed so long as harmful interference to incumbents is forestalled or mitigated.

70 MHz

The WIA has proposed a secondary allocation to radio amateurs at 70.0 – 70.5 MHz. A detailed submission was provided to the ACMA on 11 July 2014 in response to RALI LM2 of 30 July 2016. The WIA’s submission is available online, at: <https://www.wia.org.au/newsevents/news/2016/20160806-1/index.php>

Further to that submission, we propose that the WIA obtain a contiguous set of 12.5 kHz channels across this band under Scientific licences, that the Institute would then authorise third parties to undertake propagation studies, compatibility studies and/or other experiments (eg. digital mode transmissions, wideband transmission experiments, etc).

Prior to the allocation of the 472-479 kHz band to the Amateur Service, the WIA was issued with experimental licenses for experiments in the 505-515 kHz band. The results of these activities in the lead-up to WRC-12 were set out in a report, which is available online, at: <http://www.wia.org.au/newsevents/news/2011/20110828-1/index.php>.

Consultation question

5. Do you have any feedback on optimising established planning frameworks?

The WIA has no comment to make, but wishes to participate in public consultation where the interests of the Australian radio amateur community may be concerned.

Consultation question

6. Do you have any comments about the ACMA's approach to the forward allocations, or the prioritisation and timing of allocations?

The WIA is generally disappointed that issues affecting the Australian radio amateur community appear to have been allocated a very low priority over the past few years.

Consultation question

7. Do you have any feedback on the ACMA's approach to improving how we manage spectrum?

The WIA would prefer a more structured approach to stakeholder consultation on spectrum management issues.

As noted earlier, the WIA suggests that the ACMA implement meetings with stakeholders held on a regular, scheduled basis, rather than ad hoc, and held throughout the years of the work program.

Consultation question

8. Do you have any comments about the ACMA's planned activities for licensing and licensing systems, pricing, and compliance and enforcement?

The WIA is not in favour of a single licensing system such as a Class type license for the Amateur service.

The Institute believes each amateur radio operator should continue to be individually licensed and afforded the protections of a radiocommunications apparatus licence.

It is the Institute's policy that the transaction costs faced by licensees are minimised to the extent possible, while ensuring licensees have call signs registered with the ACMA. To this end, the WIA proposes that the ACMA adopts a licensing model similar to other nations' (eg. Ofcom's in the UK), where licences have a long tenure (say, five years), it is the licensee's responsibility to maintain currency, and fee transactions are only imposed at issue and renewal.

Appendix 1

The Amateur Service

ITU definition. The Amateur Service is defined in the **International Telecommunications Union (ITU)** Regulations as follows:

1.56 amateur service: A radiocommunication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, by duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest.

1.57 amateur-satellite service: A radiocommunication service using space stations on earth satellites for the same purposes as those of the amateur service.

The Amateur Service exists to meet the needs of the community for public access to the radiofrequency spectrum for self-training, experimentation and self-development. These purposes clearly fall within the objects of the Radiocommunications Act 1992, in particular, the object to:

(b) make adequate provision of the spectrum . . . for use by other public or community services; but not diminishing the other equal objects.

It is understood that the same or similar objects will be preserved in a new Act resulting from the current Spectrum Review.

Value of the Amateur Service to the community and industry

The licensing of qualified people to use Amateur Service frequency bands throughout the spectrum has created an invaluable public good which, of itself, carries an intrinsic worth, an “intangible” community asset that cannot be reduced to a monetary value as is spectrum sought and used by for-profit commercial interests.

A community resource. The Amateur Service represents a large resource of qualified and experienced radio operators and equipment dispersed throughout the community and world-wide. Radio amateurs seek to explore and experiment with new technologies, yet retain an interest in, and continued use of, technologies of the past, albeit in a modern context.

The 14,000 strong radio amateur population in Australia is relatively stable, with younger Foundation grade licensees replacing the numbers of older radio amateurs lost to aging. Currently, there are approximately three million radio amateurs world-wide.

STEM education and research. The WIA believes that, given appropriate policy and regulatory settings, there is an expanding role for amateur radio to play in Australian education and research – especially in the STEM sector (science, technology, engineering and mathematics) – albeit through a fairly rigorous set of entry criteria.

When someone is able to conduct a practical investigation for themselves, they gain a better understanding and a deeper knowledge of the subject than by any other means.

Given suitable licensing conditions, amateur radio spectrum could be used to a much greater degree within educational organisations for teaching and research purposes – the so-called ‘sand-pit’ concept of spectrum allocation and use, and contributing to the increased educational focus on STEM subjects and courses.

There are many examples from over the decades where amateurs have explored radio communications concepts that have been subsequently developed (ex-Amateur Service) into successful commercial technologies. Examples include the development and use of Low Earth Orbit (LEO) satellites – the OSCAR series, or Orbiting Satellites Carrying Amateur Radio, being the prime exemplar. Visit: https://en.wikipedia.org/wiki/Amateur_radio_satellite.

Australia's second satellite was Australis OSCAR 5, designed and built in 1965 by a group of University of Melbourne engineering students and launched in January 1970. OSCAR 5's design and construction preceded that of WRESAT, developed in 1967 by Australia's Weapons Research Establishment (WRE) and University of Adelaide, but WRESAT was launched from Woomera in November 1967. Visit: www.wia.org.au/newsevents/news/2017/20170927-1/index.php; and www.dst.defence.gov.au/innovation/wresat-%E2%80%94-weapons-research-establishment-satellite. <http://centralblue.williamsfoundation.org.au/oscar-5-the-first-australian-built-satellite-michael-spencer/>

LEO satellites will play a significant role in development of the Internet of Things (IoT). Australian development of satellites designed around Amateur Radio frequency bands, some for IoT applications, is currently under way in projects at the Australian National University, University of Adelaide, University of Melbourne and the University of NSW. Visit: www.wia.org.au/members/broadcast/2017_wianews/display.php?file_id=wianews-2017-05-21

Community service. Month-in, month-out, year after year, amateurs across Australia use their skills, assets and resources to provide radiocommunications support for organised community events, generally through local radio clubs and groups working with community event organisers. These services are provided at no expense to the public. Without safety communications, many of these events would be very limited in scope, or not take place at all. Further, many such events occurring in rural areas bring economic benefits to the local community.

Other community activities involving radio amateurs range across all sorts of sporting rallies, scout and guide camps and jamborees – including the global "Jamboree of the Air", held annually since 1957 – bush walks, marathon runs, walk-a-thons, bike-a-thons, horse enduros, boating and canoeing events, community celebrations and parades.

In addition, radio amateur groups and clubs engage in development, promotion and running of community and school education programs in basic electronics and radiocommunications, including demonstrations of space science and communications via Low Earth Orbit satellites (FUNcube, etc) and the Amateur Radio in the International Space Station (ARISS) program, in which students get to ask questions and talk to ISS astronauts. Visit: <https://www.sarcnet.org/>

Achievement. While commercial and defence operations focus on reliable, high signal-to-noise ratio communications, radio amateurs deliberately seek to explore testing and establishing communications under difficult circumstances where weak-signal reception is the norm, rather than the exception. The amateur radio community in Australia, and globally, has built up a commendable record of investigation and achievement in advancing the state of the art with weak-signal communications technologies and techniques.

Innovation. Innovation in the use of radio/wireless technologies in increasingly diverse applications continues relentlessly, both within and beyond the sphere of amateur radio activities, and the WIA sees that it is important to facilitate radio amateurs' ability to adopt or adapt innovations without unnecessary impediments.

Technological leadership. The amateur radio community stimulates technological leadership within its ranks. Radio amateurs have made significant technical contributions to the understanding and use of electromagnetic propagation, single-sideband radio, high frequency data communication systems, digital radio protocols and communications satellite design, among other things.

It is widely acknowledged and understood that “disruptive” technologies and innovations drive the advancement of technological industries, particularly the IT sector. The same is true for the wireless / radiocommunications sector, and amateur radio has played a role over every decade across the past 100 years; increasingly so over the past two decades.

When all else fails. Amateur radio continues to play an important role in disaster communications and has a unique ability to provide radio communications independent of the telephone network or other radio services.

Although emergency services in Australia are now well equipped with modern communications infrastructure, amateur radio has proved to be of value in the first few hours of an emergency as “first/early responders”, before other services have time to respond, and in a back-up communications role when all else fails.

In addition, radio amateurs are able to provide a skilled manpower resource, which can be drawn on in emergency situations. Use of amateur radio capability is still part of disaster planning in Australia and many other countries, particularly across our neighbouring regions of South and South East Asia.

Recent examples where radio amateurs provided first-response communications services following natural disasters or emergencies include: the Victorian Black Saturday bushfires of February 2009, the Queensland floods in January 2011, the 2004 Boxing Day Indian Ocean tsunami, and Typhoon Haiyan of 2013 (www.wia.org.au/newsevents/news/2013/20131115-2/index.php) that devastated the Philippines, and the 2018 Thailand Cave Rescue (www.wia.org.au/newsevents/news/2018/20180711-3/index.php).