



WIRELESS INSTITUTE OF AUSTRALIA

PO Box 2042
Bayswater
Victoria 3153 Australia
Phone: + 61 3 9729 0400
Facsimile: + 61 3 9729 7325
nationaloffice@wia.org.au
ABN 56 004 920 745

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Spectrum Reform
Department of Communications and the Arts
PO Box 2154
CANBERRA ACT 2601

Wireless Institute of Australia - Response to Radiocommunications Bill 2017

The Wireless Institute of Australia (WIA) welcomes the opportunity to comment on the proposed Radiocommunications Bill 2017 released on 19 April 2017 and accompanying information papers released subsequently.

The WIA confines its comments to issues most relevant to the amateur radio community in Australia.

The WIA is the national organisation of amateur radio operators (www.wia.org.au) who are licensed by the Australian Communications and Media Authority (ACMA). The WIA is the peak body representing the interests of the Australian radio amateur community, nationally and internationally, through formal liaison with the ACMA, additional government agencies and other organisations.

Australia's licensed radio amateurs are, together, a significant stakeholder in spectrum policy decisions, legislation and regulatory activities. A comprehensive explanation about amateur radio in Australia and its community benefits is set out in **Annex 1**.

Founded in 1910, the WIA is acknowledged as being one of the first radio societies in the world, and is the world's oldest national amateur radio society.

A key role of the WIA is providing training and licence assessment services for people interested in obtaining their amateur licence, particularly young Australians.

WIA volunteer appointees participate in the work of spectrum management, consultative and standards bodies, including:

- Australian Radio Study Groups in preparatory work for World Radio Conferences (WRCs)
- Australian delegations to WRCs,
- Standards Australia's standards committees, and
- the Radiocommunications Consultative Committee.

A WIA volunteer, Dale Hughes VK1DSH, has been Chair of Working Group 1 within Working Part 5A since 2013, including attendance at WRC-12 and WRC-15 as a member of the Australian delegation.

In addition, the WIA has a contract with the Commonwealth, represented by the ACMA, to deliver administrative services that include the management of examination services, the issue of certificates of proficiency, and administration of licence call signs for the amateur service.

In the global radiocommunications sector, the WIA is a member of the International Amateur Radio Union (www.iaru.org), which represents the interests of the amateur and amateur satellite services internationally. The IARU is recognised by the International Telecommunications Union (ITU) and a number of regional telecommunications organisations. The IARU is a Member of the ITU Radiocommunications Sector and actively participates in many ITU meetings, including the WRCs.

Membership of the IARU is comprised of 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. There is an IARU association in each of the three ITU regions across the world; the WIA is a founding member of the Region 3 association (www.iaru-r3.org), which serves the Asia-Pacific nations. A WIA volunteer currently serves as one of the six directors of the IARU Region 3 organisation.

WIA Amateur Community Engagement

Upon the release of the Bill, the WIA prepared, promoted and undertook a consultation process through an on-line system to allow all interested parties in the Australian amateur radio community the opportunity to provide comments and suggested changes.

The following submission generally reflects the broad views of the amateur community distilled through this process. In addition, the WIA also derived views and opinions of amateurs through monitoring and noting commentary on amateur radio-specific social media and on-line forums, along with correspondence to the WIA, and discussions at amateur radio club meetings and events.

Objectives of the Act

The WIA supports the Objectives of the Act as they reflect the use of spectrum for defence, public and community purposes.

The use of spectrum by the amateur service is a significant example of community purposes where benefits result. Collectively, the amateur radio community:

- provides technical training, particularly of young Australians, for people who wish to pursue an interest in radiocommunications
- creates within the community a cohort of technically knowledgeable people qualified in radiocommunications operations, some of whom would not otherwise acquire that knowledge
- motivates young people to pursue education and careers in the fields of science, technology, engineering and maths (STEM)
- contributes to the development of technology and communications infrastructure
- contributes to the advancement of scientific knowledge
- enhances international understanding and goodwill through person-to-person communication
- provides radiocommunications infrastructure supporting safety and operations of community sporting events, and
- has the ability to establish *ad hoc* communications support in the event of emergencies and natural disasters.

The technical training to obtain the qualification for an Amateur licence necessarily involves elements of science, technology, engineering and mathematics (STEM), which are identified as important to Australia's future.

The social and technical education developments that accrue to the community must not be underestimated. The attachment to this submission – **Annex 1** – highlights the not-so-well understood benefits of amateur radio and the need for continued access to spectrum for Australia's radio amateurs.

Part 3 – ACMA Work Program

The WIA welcomes these changes to the ACMA's overall management of spectrum use and allocation.

A yearly work program built around known priorities is supported and, as indicated in the supporting ACMA information paper, stakeholder consultation is an essential element.

The WIA is of the view that, understandably, the amateur and amateur satellite service may be considered by the ACMA to be a low priority. However, the WIA suggests that, if changes to the spectrum allocations flowing from WRCs, or requests for access to other spectrum, are not considered or changed in the "first or second year", then the priority must be elevated in subsequent years.

Based on the ACMA's information paper, the WIA is of the view that the program is spectrum-centric and suggests that the work program should also include consideration of changes to licence parameters, both technical and operational.

Part 4 – Radiofrequency Spectrum Plans

The WIA supports the continued role of the Spectrum Plans in determining segments and uses for spectrum that accord with the ITU Table of Allocations as applies to the amateur and amateur satellite services.

In the past, the WIA has sought Scientific licences for the purposes of technical research and investigation in support of ITU/IARU initiatives that would potentially be inconsistent with the Spectrum Plans.

The WIA would not support any diminishing of these arrangements.

Part 5 – Operation of radiocommunications devices

From the responses by amateur licensees to WIA consultations, the issue of possession and operation of radiocommunication devices is the most important aspect of radio amateur activity. The amateur service is unique in the sense that it is the operator who is licensed as a technically qualified individual, rather than the specified equipment or technology, as with other radiocommunications services.

The ITU and the Australian Radiofrequency Spectrum Plan define the amateur and amateur satellite service thus:

amateur service means a radiocommunication service for self-training in, intercommunication using, and technical investigation into, radiocommunications by individuals who:

- (a) are licensed under the Act to do so; and
- (b) do so solely with a personal aim; and
- (c) do not have a pecuniary interest in doing so.

Central to contemporary activities in the amateur service is the ability to design and build radiocommunications transmitters, with some limitations being imposed on certain licence grades determined by the level of qualification.

The world-wide amateur community has access to manufactured equipment (transmitters and receivers) that goes through an approval process in the country of manufacture in some individual countries. In Australia, equipment manufactured for the amateur market is not required to comply with an Australian equipment standard.

Other typical amateur activities include the modification or re-purposing of commercial radiocommunications equipment intended for other services, by way of hardware, firmware or software modification in order to work within the currently prevailing amateur licence conditions related to spectrum, emission modes and transmitter power levels.

Another potential unforeseen consequence is the possession of ex-commercial and ex-military radiocommunications equipment in private historical collections or museums. Some of these collections use amateur spectrum for live displays.

In summary, radio amateurs operate radiocommunications stations involving equipment that may:

- be designed and constructed by themselves or other amateurs, or built from 'kits' of parts intended for amateur radio applications
- be assembled from commercially manufactured equipment originally produced for civilian, government or military applications, and adapted or re-purposed for use on amateur radio spectrum bands
- be assembled from commercially manufactured equipment designed for the world amateur radio market
- comprise a variety of combinations and permutations of the above.

The WIA would be very concerned if these established conditions and understandings were to be diminished through the strict application, or unintended misapplication, of the proposed Bill's provisions.

Part 6 – Licences

The WIA generally supports the concept of a single licence system. The current licensing arrangement has three types of licences – Foundation, Standard and Advanced – determined by the level of qualification and attached licence conditions.

The extension of licensing periods up to 20 years is supported.

The amateur and amateur satellite services are generally harmonised with other licensing systems internationally in respect to qualification levels, most licence conditions, but not all, whereby typical spectrum allocations and usage is coordinated by the IARU. There is a further sub-set of the Advanced type licence for Radiocommunications Repeaters and Beacons that require spectrum coordination with other communications users.

Other aspects used by amateur licensees include:

- The need of a licence certification for amateurs travelling overseas under the European Conference of Postal and Telecommunications Administrations (CEPT), under the HAREC T/R 61-01 Recommendation, that states that the licence accords with the CEPT requirements. Australia is a signatory to this agreement;

- Licensees have the ability to seek a variation to the licence conditions for specific purposes, typically for increased transmitter power for weak-signal propagation experiments, or research related to Earth-Moon-Earth communications;
- Licences held by an amateur organisation issue third party authorisation under section 114 of the current Act. The WIA holds a considerable number of licences and has issued authorisations to allow other groups to use the licence(s).
- Radio Clubs authorising members to use the licence for use in radio sports contests and events;
- Amateurs have the ability to transfer licences to another suitably qualified person. This generally relates to the use of a particular radio station call sign.

The WIA seeks that all these provisions are carried forward into a new licence regime for the amateur and amateur satellite service.

In summary, radio amateurs require:

- individual licences
- certainty of licence tenure, preferably for the longest possible period
- where fees are applicable, an equitable and transparent fees framework
- certain and continuing access to allocated frequency bands throughout the radiofrequency spectrum, and
- continued participation in spectrum management processes at local, national and international levels.

Further, the WIA supports the need for a Register of Communications licences that includes all parameters associated with a licence.

Part 7 – Spectrum Authorisations

The WIA is of the opinion that amateur licensing in its current form is a hybrid mix of conditions that accord with the international allocation of spectrum for amateurs where radiofrequency segments are allocated with varying emission and transmitter parameters.

This is unlike typical use of a Class Licence, where spectrum is “channelised” to a fixed number of channels, utilising defined (standard) equipment and little or no regulatory control of users.

The WIA has noted the ACMA’s information paper on spectrum authorisations that suggests the amateur service may be a candidate for such arrangements under given circumstances. The WIA would need to consider the fine detail, but is of the opinion that a spectrum authorisation has greater disadvantages than the current licence arrangements. The main issue is related to the cost of access to spectrum.

Apart from the foregoing comments on licences, the WIA is of the view that, if this arrangement of licensing by Spectrum Authorisation was to go forward, over time there would be loss of visibility of actual amateur licensee numbers, that would put pressure on the assignment of call signs for the amateur service. Also, there is the strong belief that amateur spectrum may develop into an un-regulated environment that would undermine the orderly use of spectrum with attendant potential negative consequences on other licensed spectrum users from undisciplined or illegal transmission.

The WIA would not support any move to a licence type that reduces visibility of amateur licensee numbers, or that results in an unregulated environment, given the qualification requirements for individual amateur licensees.

Part 8 – Certified Operators (Qualifications)

The WIA supports the retention of individual qualifications as a prerequisite to applying for an amateur radiocommunications licence. The WIA is of the view that qualifications underpin the necessary competency to operate and maintain radiocommunications transmitters to ensure public safety and to minimise potential interference to other radiocommunications users.

Part 9 – Interference management

The WIA supports the proposed changes in the Bill for the mitigation and resolution of interference complaints.

In developing guidelines, the WIA suggests that reference also be made to the ITU Radio Regulations to differentiate between Primary and Secondary users regarding the avoidance of interference.

Part 10 – Equipment

The WIA cautiously supports the separation of equipment standards and supply from licensing. The increased regulatory tools available to the regulator are also supported.

The amateur community in Australia and internationally is only too keenly aware of the increase in spectrum pollution, despite the existence of equipment standards. Without adequate spectrum controls on equipment performance, there is the prospect of adverse economic impacts arising from increasing spectrum pollution. This is already evident.

As previously mentioned, equipment manufactured for the amateur market is not required to comply with standards related to radiofrequency performance other than what is contained in Section 7A of the *Radiocommunications Licence Conditions (Amateur Licence) Determination 2015*. The WIA would not support any diminishing of these conditions.

Part 11 – Emergency Orders

The WIA offers no specific comment, but supports the proposed use of emergency orders as they relate to spectrum management.

Part 12 – Accreditation

The WIA supports the proposed legislation related to Accreditation, drawing upon its understanding of the existing accreditation arrangements in the current Act that appear to be working well. In addition, the WIA notes the potential widening of the scope for the provision of other areas for accreditation. Depending on their nature, the WIA is interested in future opportunities.

Part 13 – Industry Codes

In previous submissions on spectrum reform, the WIA supported more industry engagement in the development of codes applicable to radiocommunications sectors.

The WIA suggests that the current conditions regulating the amateur service fall into two areas; (a) the technical parameters, e.g. spectrum segments, emission modes, and transmitter power; and (b) operational practice. The WIA is of the view that the second element, operational practice, could be a suitable role for an Amateur Communications Code. The current arrangements using Determinations is difficult to amend in a timely manner that takes into account the rapidly changing technology landscape, particularly with digital technology. The WIA believes that development of an operational code is a way forward.

Part 14 – Information gathering powers

The WIA offers no comment on this part, as the amateur service does not participate in equipment supply.

Part 15 – Enforcement powers

The WIA supports the ongoing powers and refinements to the enforcement powers.

Part 16 – Spectrum access charges

The cost of access to spectrum is a contentious subject for the amateur community in Australia. This is highlighted by the number of comments received during its engagement process. Most of these comments focus on what other comparable jurisdictions do, where, apart from an access fee, there is no extra charges for the duration of the multi-year or lifetime licence. Some examples are: New Zealand, the United States, Canada, and the United Kingdom. The WIA is willing to work with the ACMA to address this issue.

Part 17 – Delegation

The WIA supports these provisions. As mentioned earlier about the contractual arrangements with the ACMA, the WIA exercises a delegation to issue amateur operator certificates of proficiency. The WIA believes there is scope to undertake additional delegations, in particular dealing with licence issuance and renewals.

Part 18 – Review of decisions

The WIA supports these proposed sections of the Bill

Part 19 – Provisions extending the concept of radiocommunications

The WIA supports these proposed sections of the Bill

Part 20 – Exemptions

The WIA supports the proposed section of the Bill dealing with foreign vessels and aircraft, defence and intelligence, law enforcement and emergency organisations, and things done by the ACMA.

Part 21 – Miscellaneous

The WIA supports the proposed sections of the Bill dealing with record gathering, computerised decision-making, and the making of legislative rules.

Transitional Arrangements

The information papers attached to the Bill package mentions transitional arrangement with some indication of possible timeframes. The WIA supports all of the necessary arrangements for the day-to-day working of the ACMA.

The transition to new licensing, equipment rules, delegation, and accreditation powers would need to be prioritised to meet the operational capability of the ACMA to perform its functions and to meet the expectations of stakeholders.

The WIA is of the view that the ACMA is under-resourced to undertake the transition in a timely manner and therefore suggests extra resources must be provided to assist over the transition period.

Overall Comment

The WIA understands that one of the principals in introducing a new Radiocommunications Act was to simplify and remove un-necessary burden on radiocommunications users and to enable economic and social benefits. The number of pages in this Bill compared with the current Act has not necessarily achieved the simplification.

Overall the WIA is of the view that the Bill appears to meet all the existing challenges to spectrum management. The detail of subordinate legislation would no doubt provoke further discussion.

The amateur service in Australia has been in existence since 1912, and does not want to see any reduction of its existing conditions, but also wishes to work with any regulatory bodies in the development of subordinate legislation to ensure that the basic tenets of the amateur and amateur satellite service are addressed in a sensible manner. As technologies move forward, the rules that affect development must be fit for purpose.

As mentioned above, the WIA has a contractual arrangement with the Commonwealth in respect to the provision of examination services, issuing of certificates of proficiency, and administration functions related to the management of amateur call signs. This arrangement expires in January 2019. The WIA will be interested in continuing its arrangements and possibly taking up other opportunities in areas that the new legislation offers.

The WIA is available to discuss any aspect of its submission and would be pleased to meet with staff from the Department to provide a wider briefing on contemporary developments of amateur radio in Australia and overseas pertinent to the proposed Bill.

The contact person for the WIA will be Mr Peter Young, WIA Regulatory Counsel, who can be contacted on 0438 212 368, or by email, at petervk3mv@tpg.com.au.

Yours sincerely



Justin Giles-Clark

President, Wireless Institute of Australia

ABOUT AMATEUR RADIO

Ever since the advent of wireless technology, individuals with technical interests have embarked on experimentation, to adapt, improve and develop extant technologies and techniques, to satisfy their personal curiosity and drive to learn, without a profit motive.

Such wireless experimenters were recognised in, and licensed under, the *Wireless Telegraphy Act 1912*. They were included in subsequent amendments and regulations, to become known as radio amateurs (“for the love of it”), or more formally – amateur radio operators. Likewise, when the *Radiocommunications Act 1992* introduced Apparatus, Class and Spectrum licensing, amateur radio was brought under Apparatus licensing.

Amateur radio is a not-for-profit community activity. Its purpose is for licensed individuals to advance their knowledge of radiocommunications technologies and communications techniques through self-training, experimentation and technical investigations.

Radio amateurs communicate nationally and internationally, employing a wide variety of technologies using small frequency bands spread throughout the spectrum. Amateur radio frequency bands are allocated through the International Telecommunications Union (ITU) processes, as are spectrum bands for all other radiocommunications services.

The ITU recognises the amateur service in the International Radio Regulations, defining it thus:

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.

Likewise, the ITU also recognises radio amateurs’ interests in space, defining the amateur satellite service as:

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

The amateur service is a significant stakeholder in spectrum policy decisions, legislation and regulatory activities.

In Australia, radio amateurs are licensed by the Australian Communications and Media Authority. The 14,000-strong licensed radio amateur population in Australia is relatively stable. There are approximately three million licensed radio amateurs world-wide.

Throughout every era of development since the advent of radio technology, individuals and groups within society have sought to “conquer the aether” for themselves, to satisfy curiosity as well as to explore ideas and practical applications.

The amateur service provides a trained, regulated and disciplined outlet for those desires. Otherwise, that urge and the desire to experiment with communications might find expression in undisciplined, perhaps illegal, transmissions with potentially dangerous consequences.

The continued existence of the amateur service provides a resource for the self-education of individuals through both peer-to-peer learning and formalised classes undertaken by those who wish to qualify as radio amateurs, providing a basic education in radio communication disciplines for many who would not otherwise acquire that knowledge. 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.

A community resource

Radio amateurs represent a large resource of qualified and experienced radio operators and equipment dispersed throughout the community, and worldwide. 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.

While broadcasting, commercial, defence and telecommunications services focus on reliable, high-strength signals for communications, radio amateurs deliberately seek to explore testing and establishing communications under difficult circumstances, where weak signals are the norm, rather than the exception. Learning to make contact with other stations under difficult circumstances and conditions is a rite-of-passage. In addition, learning to communicate on crowded frequency bands where many operators compete to make contact is part of a radio amateur's stock-in-trade.

The amateur radio community, globally and in Australia, has built up a commendable record of investigation and achievement in advancing the state of the art with weak-signal communications technologies and techniques.

Stimulating technological leadership within its ranks, Australian radio amateurs have made significant technical contributions to the understanding and use of electromagnetic propagation, high frequency data communication systems, digital radio protocols, as well as low Earth orbit (LEO) communications satellite design and operation, 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 radiocommunications sector, and amateur radio has played a role over every decade across the past 100 years; increasingly so over the past two decades.

A catalyst for careers

Over many decades, an interest in amateur radio has served as a catalyst and motivation for many thousands of young people to enter scientific or technological careers. From that start, many individuals have gone on to forge outstanding careers and contributed to Australia's business, government, scientific and technological achievements.

In the current socio-political climate, in which an emphasis on science, technology, engineering and mathematics (STEM) in education at all levels is promoted throughout the academic, business and political spheres, developing an interest in amateur radio provides new avenues and a strong motivator for young Australians to explore and engage in STEM activities, education and careers.

The recent *New Work Smarts* report from the Foundation for Young Australians predicts that workers in future will perform fewer routine and manual tasks, and focus on human interaction, strategic and creative thinking. By 2030, they will be spending greater amounts of time on critical thinking, problem solving, using maths, science and technology, along with written and verbal skills. Gaining and using an amateur radio licence imparts or enhances all of these skills (www.fya.org.au/report/the-new-work-smarts/).

Amateur radio is being introduced to today's school students through such initiatives as the School Amateur Radio Club Network (SARCNET, www.sarcnet.org).

Where an interest in amateur radio motivates young Australians to pursue education and careers in engineering or the sciences, electronics or telecommunications, then the nation benefits, firstly through the tangible addition to our skills resources, and secondly, the economy benefits from their participation in the workforce or through commercial endeavour in their own businesses.

Radio amateurs are employed in highly skilled jobs across many industries, including mining, manufacturing, transport, government services, retailing and education. Gaining their amateur radio licence taught them the skill of “learning to learn”.

The Chief Technology Officer at NSW Police, Syd Griffith, built a distinguished career in technology and communications, beginning with an interest in amateur radio. He still holds a licence, callsign VK2AHF. He was awarded a Public Service Medal for his work in 2009.

A boyhood interest in amateur radio led entrepreneur Dick Smith, callsign VK2DIK, to open a car radio business, from which he subsequently built his iconic electronics retailing empire that he subsequently sold to Woolworths.

Radio amateur Neil Weste, callsign VK2NW, joined forces with a colleague, David Skellern, to found the Sydney-based technology innovator Radiata, which developed a wireless local area network technology that brought \$600m to the economy when it was bought out by Cisco Systems.

Numerous other examples are spread throughout every era of Australia’s economic and technological development since the *Wireless Telegraphy Act 1912* created licensing for use of the radiofrequency spectrum.

Supporting community events

The Australian radio amateur community has a long and distinguished record in providing amateur radiocommunications infrastructure related to safety for community sporting events in urban, rural or remote areas. Such events include car and bike rallies, fun runs, horse endurance events, and canoe marathons.

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.

As a considerable number of such events are of many years’ standing, some over decades, the amateur radiocommunications support systems and operations have evolved and been refined over time.

When disaster strikes

In the past, before the advent of coordinated emergency services, radio amateurs have been called-on, or stepped-in, to provide ‘early response’ communications when landline telephone, mobile phones and other conventional systems failed.

Amateur radio continues to play an important role in disaster communications, particularly in a regional context in the current era, because it has a unique ability to provide communications independent of the telephone network or other radio services.

Radio amateurs can quickly use existing amateur radio networks or establish temporary networks between disparate places or to link different agencies to enhance interoperability.

Although emergency services in Australia are now well-equipped with modern communications infrastructure, amateur radio is likely to be of value in the first few hours of an emergency before other services have time to respond, by providing skilled extra manpower required to cope with extended operations at emergency communications centres, or by deploying their own facilities in the field. Use of amateur radio capability is still part of disaster planning in Australia and many other countries.

Recent examples of where radio amateurs provided first-response communications services, locally or regionally, following natural disasters include: the 2004 Boxing Day Indian Ocean tsunami, the Victorian

Black Saturday bushfires of February 2009, the Queensland floods in January 2011, and Typhoon Haiyan of 2013 that devastated the Philippines.