Wireless Institute of Australia response to the

Australian Communications & Media Authority Consultation

"Five-year spectrum outlook 2025–30 and 2025–26 work program"

March 2025

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Contents

Executive Summary

The WIA thanks the ACMA for the opportunity to respond to your consultation on the Five Year Spectrum Outlook (FYSO) works program for 2025-30. The following are the key areas that the Wireless Institute of Australia asks the ACMA to focus on over the coming 12 months:

1. Resolving issues with the documentation that supports an amateur radio operator's rights to access the Radiocommunications (Amateur Stations) Class Licence 2023

2. Addressing the issues that the WIA has previously identified with the management of amateur radio call signs in the Australian External territories and Australian Antarctic Treaty lands

3. Providing a commitment to commence work in 2026 on a new general access to higher transmitter power privileges for the Amateur Service

4. Addressing issues identified in the administration and delivery of Amateur Operator Certificate of Proficiency examinations, including improving syllabus and examination question review transparency

5. Addressing issues with Amateur Assigned Repeater and Beacon station call sign allocation processes

6. Give consideration to expanded spectrum access privileges on the 51 - 52 MHz and 5351.5 - 5366.5 kHz bands and preserving access to the 2300 - 2302 MHz band.

1.0 Introduction

The Wireless Institute of Australia (WIA) thanks the Australian Communications and Media Authority (ACMA) for the opportunity to provide feedback on the public consultation titled *"Five-year spectrum outlook 2025–30 and 2025–26 work program – Draft for consultation, March 2025."*

The WIA recognises the critical role that the Amateur Service plays in fostering innovation, education, and skills development across Australia. The continued development of a vibrant and relevant Amateur Service is directly aligned with the objectives of the national Science, Technology, Engineering, and Mathematics (STEM) agenda[1] [2]. By providing a platform for practical experimentation, hands-on learning, and community engagement, amateur radio contributes meaningfully to building Australia's sovereign capabilities in telecommunications, electronics, and emergency communications preparedness.

The Amateur Service is unique in its ability to attract individuals of all ages—from school students to retired professionals—who seek to explore, understand, and contribute to advances in radiofrequency technologies. These contributions often translate into broader societal benefits, including enhanced technical literacy, innovation in wireless technologies, and improved resilience in times of natural disaster or communication system failure.

Given these benefits, we are keen to see the ACMA maintain a dedicated and active work program that continues to support the Amateur Service. This includes ensuring ongoing access to relevant spectrum, enabling flexible licensing and regulatory frameworks that encourage participation, and recognising the public value derived from the service. These actions are essential to ensuring that the Amateur Service can continue to deliver outcomes in the national interest.

(For more detail, refer to Appendix 1.)

[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

2.0 Amateur Stations Class Licence 2023 - outstanding issues

Firstly, the WIA welcomes the ACMA's statement that "We will continue to adjust our amateur radio service delivery where practicable, and aim to review and consult on a proposal to make minor amendments to the amateur radio Class Licence in the future." (p.58). However, the WIA has received feedback, both from member and non-member amateur radio operators alike, that there are several key concerns that have arisen from the Radiocommunications (Amateur Stations) Class Licence 2023 transition that, to-date, the ACMA has been unwilling to address. The WIA is seeking several specific work items to be included in the ACMA FY25 program to address these concerns.

2.1 Call sign certificate and certificate of proficiency documentation

On multiple occasions during 2024, the ACMA has been advised of the dissatisfaction with certification documentation being provided to Amateur Service operators; in particular to those who held an Apparatus Licence prior to February 19th 2024. Currently, the only way these operators can prove their entitlement to access the Class Licence was to present a copy of the letter they received from ACMA prior to the Class licence conversion, coupled with a copy of their valid apparatus licence that was in force prior to February 19th 2024.

To better understand the impact this arrangement has caused, the WIA conducted a survey in March/April 2025 to research the community views on the new Class Licence arrangements. While the full survey results are still being analysed, early results indicate a significant level of dis-satisfaction exists with the current arrangements. Feedback to date indicates that many amateurs have tried to use the Class Licence documentation for a range of licence, travel and planning activities, only to have the documentation questioned or outright rejected. Further details will be provided once the full survey analysis has been completed.

The ACMA's current response to the problem, specifically: the ACMA's preferred approach of making contact with the affected parties to explain how they view the current ACMA documents as suitable and adequate is causing delays and unnecessary angst for Australian amateur radio operators, as well as what we can only conclude is an increase in the ACMA's administrative workload. The WIA would prefer the ACMA simply change the documentation so that all Radio Amateurs in Australia can be provided with a single document that brings together the various pre-requisites into a simple certificate that unequivocally proves they are authorised to operate an amateur radio station under the terms of the Radiocommunications (Amateur Stations) Class Licence 2023. This should have been a simple administrative task. The WIA can not therefore understand the reticence by the ACMA to acknowledge and address this short-coming.

The WIA in FY25 is therefore seeking an undertaking from the ACMA to:

- Formally acknowledge the ongoing concerns of amateur operators on this matter and agree to provide revised certification documentation for the Amateur Service

- Undertake to redesign the documentation so that all required information is provided on a single simple certificate, not dissimilar to the information included in part of the original Apparatus Licence certificate previously provided. Such a new certificate must at a minimum include:
    - the operator's identify
    - a statement as to which certificate of proficiency is held
    - what their assigned station call sign(s) allocation is
    - that they are permitted to operate amateur radio stations in other countries in accordance with the relevant CEPT endorsements, and
    - an explanatory statement indicating that as a result of those certifications, that the named individual is granted the rights to operate an amateur radio station under the Amateur Class Licence determination

- Provide an update to the ACMA Assist portal to allow all amateur operators to download such a certificate relevant to their station.

During the Class Licence consultations over 2022-2023, the ACMA gave various undertakings that the Class Licence conversion would have net zero operational impact and no-disadvantage to the Amateur Service. At this time, the WIA views that ACMA has fallen short of this commitment, and has broken the trust with the Amateur Service community on this matter and initial analysis from the ACMA Class Licence Performance Survey support this finding.

2.2 Australian External and Antarctic Territories station call sign certification

The WIA, during the various consultations held regarding the class licence conversion, communicated to the ACMA several requirements relating to the management of amateur radio call signs, specifically relating to how call sign prefix series are accessed and used within the Amateur Service. Specifically, the ACMA was asked to not support the use of call signs with the VK0 or VK9 prefixes by stations that were located within the Australian mainland. While we thank the ACMA for accepting this as a requirement desired by the Amateur Service, we have the view that the implementation can be improved.

Over the past 3-4 years, the ACMA has repeatedly presented the case to the WIA that call signs, while required by ITU RR.19, are of little to no operational value to the ACMA itself as a spectrum regulator, and so allocation could be arbitrary in nature. The WIA, however, provided explanations of how the call sign structures provided geographic significance to operators within the world-wide Amateur Service, and how that was a feature of call sign structure design that we wished to see preserved.

Upon the release of the final Class Licence instrument, the WIA observed that the ACMA had failed to understand the operational requirements of the Amateur Service specifically regarding the VK9 and VK0 call sign series. The intent, valued by Radio Amateurs, of providing 'exotic' callsigns to regions such as the Australian

territories, is to provide DXpeditions[3] a distinct form of on air identification that highlights the unique nature of the location and their operation. This makes achieving contact with those stations a worthy goal of amateur operators world wide keen to pursue contact with as many exotic locations around the world as possible. We feel that this has now been significantly compromised by the actions of the ACMA.

The result has been the up-ending of decades of operating conventions within the global Amateur Radio Service. In addition, the ACMA has placed additional blanket administrative constraints and costs on the allocation of the VK9 and VK0 call sign prefix series that are hindering or disadvantaging those who wish to activate these locations, either as visitors or as residents. In particular, the WIA believes this to be unfair to residents of these territories. This view is supported by the preliminary analysis of the ACMA Class Licence Performance Survey from both past and future visitors and current residents of these external territories. In addition, the rollback of the grand-fathering undertakings made by ACMA, and the new restrictions that appear to have been placed on the allocation of these callsigns, are all at odds with delivering a zero operational (no-disadvantage) impact to the Amateur Service through the class licence conversion process.

To resolve these issues, the WIA seeks the following changes to the ACMA call sign allocation guidelines and Class Licence instrument within the FY25 operational year.

1. For amateur station operators whose permanent residential and postal address are both within the external territories: that they be granted the right to be allocated a VK9 or VK0 call sign on the same cost and renewal terms as amateur operators on the mainland states receive for their primary amateur radio station callsigns (i.e. no charge and 5 year renewal).

2. The process for providing non-resident amateur radio operators access to VK9 and VK0 call signs for use while they are visiting those territories is currently unclear. While the WIA agrees with the ACMA solution of treating the call signs in the same manner as special event call signs (i.e. there is an administrative allocation fee charged, and the call signs normally are only assigned for one year before being returned to the pool), the requirements for proving intent to operate are not clear. To address this, the ACMA is requested to amend the policy as follows:

    a) to manage the scarcity of these call signs, their allocation should continue to be made under similar conditions to those attached to special event call signs
    b) The necessary evidence justifying the request needs to be limited to presenting nothing more than airline and/or accommodation bookings, proving intent to travel to the territory to operate.
    c) That it be possible for an individual to apply for more than one VK9/VK0 call sign in a given calendar year (with a limit of 3), as particularly when engaging in portable expedition type operation, the Amateur Service values being able to assign a call sign to a place - eg holding separate call signs for operation on Christmas Island vs Cocos (Keeling) Island.
    d) Use of these call signs should be limited to transmissions occurring from those territories.

[3] DXpeditions are typically temporary amateur radio stations set up and operated from rarely activated locations to enable long distance (DX) communications from those locations to amateur radio operators around the globe.

3. The WIA also seeks an undertaking from the ACMA to honour the previously agreed grandfathering of VK9/VK0 call sign allocations that were held by Australian Radio Amateurs prior to the conversion to class licensing. Evidence provided to the WIA suggests that the ACMA is failing to fulfil this agreement.

4. Finally, the WIA is seeking a commitment by the ACMA in 2025 to revise the Class Licence by removing the current (unnecessary) legal definition of where VK9 and VK0 call signs can be allocated. In its place, the ACMA should restore the administrative level arrangements that existed prior to class licence conversion. Preliminary analysis of the ACMA Class Licence Performance Survey indicates significant support from within the Amateur Service to deliver this outcome.

   Specifically:

   a) VK9 call sign prefixes are allocated for amateur stations to operate in Norfolk Island, Lord Howe Island, Willis Island (and all of the Coral Sea Islands greater than 500 km from the mainland coast line), Christmas Island, Cocos (Keeling) Islands and Ashmore Reef.

   b) VK0 call sign prefixes are allocated for amateur stations to operate from ANARE facilities within the Australian Antarctic Treaty zone, Macquarie Island and the Heard and MacDonald Islands.

3.0 Higher power permanent authorisation for the Amateur Service

3.1 Existing arrangements - observations

The WIA firstly wishes to acknowledge the work undertaken by ACMA to implement the Scientific Licence solution for maintaining access to a high power operating permit, in the short term, for Radio Amateurs seeking to undertake challenging experiments, including communications exploiting various scatter modes (e.g. meteor scatter, ionospheric scatter etc), as well as moonbounce (Earth-Moon-Earth) and other space operations.

While the WIA had some misgivings about this approach, we have observed at least one successful application which demonstrated consistency with the administrative requirements that existed prior to the Class Licence. The WIA also welcomes the acknowledgement by ACMA that there is more work to do on the issue of higher power privileges.

3.2 Future arrangements - firm commitment sought

Interest in being able to access higher power privileges is still high among Australian Radio Amateurs. Activities where higher power access are highly desirable include:

- HF Long Distance communications for all purposes
- VHF low-band long distance communications

This is in part due to the long distances from Australia to most other parts of the populated world (long distance for the Amateur Service implies inter-continental communications over distances exceeding 10,000 km). Maintaining reciprocity with foreign amateur stations also improves 2-way communications, a key factor also driving the desire to access 1 - 1.5 kW privileges on the HF bands in particular.

Australia, today, is now one of the last jurisdictions that limits its Amateur Service to only 400 W Px (120 W Py). Recently, even OFCOM granted UK amateur stations access to 1 kW under appropriate EMR management guidelines, and New Zealand Radio Amateurs have had access to 1 kW privileges for over 10 years. All of these factors combine to make this one of the major areas of reform that Australian amateur radio operators are seeking from the ACMA.

At the same time, the WIA does acknowledge that providing wider access to higher power privileges will be challenging, and is likely to require a substantial amount of work on the part of both the ACMA and the Amateur Service representative bodies to achieve a framework that satisfies ACMA's EMR safety and EMI concerns, while not creating unnecessary administrative overheads for Radio Amateurs. While this work began initially in 2012, its lack of progress has become a significant point of frustration for Australian Radio Amateurs.

The WIA therefore wishes to see the ACMA commit to a formal start date for this work, with our preference being early in 2026. The WIA also seeks an undertaking from the ACMA to make the work a collaborative process with the Amateur Service so that a positive workable outcome can be reached that accommodates the requirements of both Radio Amateurs and the regulator while engaging in current industry best practice.

The WIA is matching this request with the development of a significant program to up-skill and educate the Australian Radio Amateur Community on EMR/EMC requirements including the provision of tools sets to calculate and estimate exposure levels along with techniques and methods to reduce those levels.

4.0 ACMA Amateur Certificate of Proficiency process concerns

4.1 Syllabus quality concerns and alignment of examination questions to the syllabus

The WIA has been advised by the WIA education committee following reports from ACMA accredited assessors involved in administering amateur radio examinations of growing concerns regarding some recent changes to examination questions and the processes being used to execute those changes. Specifically, Assessors are observing that:

1. There is now a greater expectation for formula understanding. It has been noted that some formulas were more appropriate to professional qualifications.
2. There is a change in emphasis in syllabus questions.
3. There is an absence of a publicly verifiable peer-review process for assessment questions.
4. There is now a strong similarity between Standard and Advanced level questions, and some questions are inappropriate for their particular grade.

We believe the changes identified result in unnecessarily increased access barriers to amateur radio for individuals who left school early, as well as those with learning or physical disabilities.

The WIA believes that the reported shift in the focus of amateur radio assessments, the resulting discrimination concerns, the lack of a visible peer reviewed content, and the relevance of the amateur radio syllabi in the ‘information age’ are all issues that warrant attention during this work program.

The WIA has recently made available drafts of revised syllabi developed by the WIA Education committee and the WIA is supportive of a joint ACMA-WIA syllabi review committee.

4.2 Re-sit examination delay - a poor outcome

The WIA is concerned that a candidate who sits for an amateur radio assessment, but is unsuccessful, is prevented from reattempting an assessment for a further three months.

This is a new requirement that came into effect when the assessment process was transferred from the previous provider to the ACMA. In the past, candidates were able to re-sit an assessment shortly after further instruction.

This represents a significant drop in service outcomes under the ACMA compared to the previous assessment provider, and is causing considerable concern within the amateur community. It is an issue that warrants urgent review during this work program.

5.0 Amateur repeater & beacon administration

5.1 Amateur repeater and beacon RALI revision

The WIA wishes to advise the ACMA that it will be conducting a technical review of the Amateur RALI technical instruments in the October-December 2025 timeframe, in alignment with a planned review of the Amateur Service frequency band plans intended to be completed by the end of this calendar year.

The ACMA will be asked if it wants to conduct separately a consultation with its AP community on those revisions in due course, or is it happy to accept the outcome of the WIA's own planned public consultations (which will be conducted in a similar manner to ACMA and which will be open for direct contribution by the APs should they desire to do so).

5.2 Repeater call sign allocation process

There has been some recent confusion regarding how Radio Amateurs go about obtaining a call sign for a new amateur repeater or beacon site. This process appears to have been disrupted in the transition back to ACMA administration from the previous operators.

The WIA is therefore seeking documentation from the ACMA that describes how a new repeater callsign is allocated. Specifically, provision of:

- a register of available amateur repeater call signs;
- clear instructions on the allocation process.

5.3 Revision of the Radiocommunications Licence Conditions (Amateur Licence) Determination 2015

The WIA has noted in the ACMA FYSO work plan an intention to remake the original apparatus licence determination as it is sunsetting in 2025. The WIA supports this work but also notes that , today, it is only mostly applicable to Amateur Beacon and Amateur Repeater stations. Therefore, this is an opportunity to remove a number of unnecessary administrative restrictions and limitations operators of those stations face.

The WIA will be preparing a submission to the ACMA's planned consultation in due course.

6.0 Amateur Radio spectrum access

6.1 51 - 52 MHz Band - lifting emission mode restrictions

Self education and learning through private experimentation is a key activity of the Amateur and Amateur-Satellite services as defined in the ITU Radio Regulations 25. In the last 12 months, interest has been expressed by several groups in Victoria, Queensland and South Australia to conduct standard definition television transmission experiments using relatively narrow modulation schemes on the amateur VHF bands. The modulation under consideration is DVB-S operating with less than 1 MHz bandwidth.

To undertake these experiments a prime segment has been identified in the 51 - 52 MHz band that currently sees only occasional use for most other amateur activities. However, this band is blocked from such experiments due to the emission bandwidth being limited to 100 kHz. This restriction is also not universal across the entire 50-54 MHz amateur band; as above 52 MHz, the bandwidth restriction is removed.

The WIA therefore requests that the ACMA remove the bandwidth restriction between 51 and 52 MHz at its earliest convenience.

Support for lifting the emission bandwidth restriction in this segment will go a small part of the way towards offsetting the past spectrum losses incurred by the Amateur Service that have impacted amateur television transmission capabilities in the 70cm (420-430 MHz), 50cm (576-585 MHz), 23cm (1215-1240 MHz), 13cm (2302-2400 MHz) and 9cm (3400-3600 MHz) bands over the past three decades.

6.2 International 5 MHz Amateur band - Australian access

Interest in accessing the 5 MHz Amateur band established at ITU WRC 19 remains strong in Australia. While the WIA acknowledges the concerns raised by Dept of Defence and NSW Ambulance during the consultation IFC-13-2020 conducted by ACMA in 2020, the WIA continues to seek opportunities to find a way forward on this band for the Amateur Service in Australia.

The usefulness of this spectrum to the Amateur Service, in particular during periods of high solar flux and geomagnetic disturbances for maintaining short haul (less than 500 km) daylight HF communications, can not be denied. Over the past two years, the lack of spectrum between 3.5 and 7 MHz at times creates challenges to communications that could easily be overcome through access to the 5 MHz spectrum.

In support of this, the WIA would welcome an opportunity to revisit the potential for access to the to broaden the opportunities for the Amateur Radio Community to undertake further experimentation and self-training through access to the 5 MHz band.

6.3 Continuation of the Amateur 2300 - 2302 MHz band

The WIA seeks continued access to the 2300 - 2302 MHz frequency band for advanced amateur operators for use in areas where the weak signal segment on 2403 MHz suffers unacceptable interference from ubiquitous urban digital links and other related devices, and to enable continued weak signal terrestrial contacts along with moonbounce (EME) contacts with overseas stations operating on 2304 MHz.

It is noted that the 10 MHz band immediately below 2300 MHz is allocated for space applications in radio astronomy. The Australian Radio Amateur Community has maintained an exemplary relationship with users of this band, avoiding instances of interference. The 2300-2302 MHz Amateur band provides an erstwhile 'guard band' between terrestrial applications in 2302-2400 MHz and radio astronomy below 2300 MHz.

7.0 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.

Principle areas of regulatory focus for amateur operators will encompass protecting spectrum access rights, maintaining or obtaining spectrum access parity with the Amateur Service globally (part of the IARU harmonisation agenda), and making opportunities for the ongoing exploration of communications techniques within the Amateur Service. Streamlining operational regulatory processes related to qualification management, licensing, and enforcement, is also of major importance to Amateur Licencees 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 enhancing its accessibility while minimising administrative overheads and unnecessary interactions with ACMA staff.

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 its works program for the next year and beyond.

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 frequent 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 [4] held globally each year.
    - Community sporting events [5] 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

[4] https://www.jotajoti.info/
[5] 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 [6] through, for example, communicating with the International Space Station (ARISS) [7] or flying and tracking high altitude balloons (e.g. Project Horus [8]).
    - 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[9], space weather monitoring [10], radio propagation studies[11] 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 [12] modulation or advanced weak signal communications using modes (using the WSJT-X software suite) [13] 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 [14] 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 Institute Civil Emergency Network (WICEN) [15] 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.

[6] https://www.sarcnet.org/
[7] https://www.ariss.org/
[8] https://www.areg.org.au/archives/category/activities/project-horus
[9] https://festivalofbrightideas.com.au/
[10] https://www.solarham.net/
[11] http://wsprnet.org/drupal/wsprnet/map
[12] https://freedv.org/
[13] https://physics.princeton.edu/pulsar/k1jt/wsjtx.html
[14] http://www.itu.int/rec/R-REC-M.1043/en
[15] 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 establish vital links and information from Darwin to Police and other services, including broadcasters such as the ABC and 2GB, and later, evacuation information.
- International Disaster communications [16] - 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 Caribbean 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 [17] 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 organisations be encouraged to promote the design of robust systems capable of providing radiocommunications during disasters and relief operations.

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