Response to '2020 Radiocommunications Reform – Consultation Paper' and Exposure draft: Radiocommunications Legislation Amendment (Reform and Modernisation) Bill 2020

CSIRO Astronomy and Space Science
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Introduction

CSIRO Astronomy and Space Science (as a current licensee and operator) welcomes this opportunity to comment on the consultation paper and exposure draft in relation to a new Radiocommunications Bill.

CSIRO Astronomy and Space Science (CASS) is responsible for the management and operation of the Canberra Deep Space Communication Complex (CDSCC) and other NASA facilities in Australia under a government to government treaty between Australia and the USA as well as a Cooperating Agency Agreement between CSIRO and NASA. CSIRO is also responsible for managing the operations of the European Space Agency (ESA) space research activities in Australia, including the operation of the Space Research Services (SRS) earth station at New Norcia in W.A. under the provisions of a long-standing Treaty between the Australian government and ESA. CDSCC and New Norcia are both integral and vital parts of the respective global networks represented as NASA's Deep Space Network (DSN) and ESA's tracking network (ESTRACK), respectively. Each provide ongoing and invaluable contributions to international space exploration. They both comprise substantial earth station assets developed over 50 years of cooperation including very large antennas at the NASA CDSCC facility and ESA New Norcia facility, enabling tracking of dozens of international Near-Earth and Deep-Space missions representing spacecraft assets in excess of $35 Billion dollars. Additionally, both NASA and ESA continue to invest substantial sums of money in expansion and upgrade projects to maintain a world leading space research and exploration capability in Australia. The capability for these stations to continue their space research work, under local management by CSIRO, is critically dependent on the ongoing access to the requisite radiocommunications frequency spectrum, as has been the case for over 50 years.

Furthermore, CASS builds and operates national facilities for radio astronomy, which is recognised, for the purposes of spectrum management, as a radiocommunication service by the ITU and the Radiocommunications Act 1992. In the next few years, CSIRO will be a key contributor to the

construction of the 1 Billion Euro Square Kilometre Array telescope, with the low frequency component to be built on the Murchison Radio Astronomy Observatory (MRO) managed by CSIRO.

These facilities represent substantial national and international investment and involve international commitments to controlling interference spectrum management. Research in support of technology for these services has led to new technologies such as WiFi and improved antenna designs for the wider radiocommunications industry.

We therefore have an interest not only in protecting our existing facilities but in facilitating the introduction of technologies which are more efficient in their use of spectrum. We appreciate the need to manage spectrum efficiently, as well as the challenge in finding the right balance between flexibility and certainty for incumbents.

Response to questions in the Consultation Paper

1. Given the established administrative practice of ACMA preparing the Five-Year Spectrum Outlook on an annual basis, does the proposed legislative ACMA annual work program provide stakeholders any additional benefit in terms of certainty and transparency?

Yes. The annual work program would provide additional benefit as it would provide a graduated transition from the indicative outlook provided in the FYSO to a more specific and temporally based formalised work program (including possible consultation if appropriate) for the upcoming financial year. The inclusion of this additional 5-year program could provide a similar, but perhaps more detailed, complementary function to that currently provided by the FYSO. We also have an interest in understanding how the ACMA intend to act on relevant Ministerial policy statements, as discussed below.

2. Under the reforms, there will be several legislative mechanisms to provide transparency, clarity and, potentially, review rights to existing licence holders where ACMA is seeking to re-allocate spectrum (such as the annual work program and licence renewal statements). In these circumstances, does the spectrum re-allocation declaration process continue to be of use to stakeholders?

Yes. The spectrum re-allocation declaration process is of use because it gives advance notice to all stakeholders who might be potentially affected by the change.

3. The reforms are intended to permit ACMA to facilitate the development and testing of banned devices in Australia through the exemptions framework provided for in relation to the revised Part 4.1 of the Act, while still protecting existing licence holders from interference. Do the proposed exemption provisions achieve this aim?

No comment.

4. The reforms introduce graduated compliance mechanisms for ACMA to regulate and enforce the provisions of the Act. Are ACMA's proposed powers appropriate and are there any additional regulatory tools that stakeholders would like to see be made available to ACMA to perform its spectrum management functions?

ACMA's proposed powers are appropriate noting the appropriate increased devolution of process-based operational decisions to ACMA. We have no specific comment regarding new additional regulatory powers.

5. Are there any additional transitional matters or grandfathering of processes that should be considered? For example, do you consider that any additional existing processes or provisions should be retained for current licences, with the new provisions only applying to licences issued after the reforms commence?

As noted in more detail in the following section, the provisions of existing RALIs should continue to apply during and after the transition.

The proposed option of issuance of 20 year apparatus licences provides the Space Research Service managed by CSIRO with a requisite enhanced assurance of long term operations integrity and protection of the significant past and future investments by Space Agencies within Australia. CSIRO's radio astronomy planning has always assumed renewal of apparatus licences, so the longer tenure is not of concern.

6. Are there any additional reforms the Department should consider as part of the proposed amendments to the Act, or that should be considered further as part of future reforms to the spectrum management framework?

Please see the comments in the following section regarding the definition of the radio astronomy service in the Act.

Further issues

Recognition of radio astronomy as a radio service

Radio astronomy, although recognised as a radiocommunication service in both international and national spectrum management, has requirements which are not always obvious to the spectrum management community. As a passive (non-transmitting) service with extremely sensitive receivers, operating at frequencies determined by natural processes, radio astronomy is particularly vulnerable to interference from active (transmitting) radio systems.

The Radiocommunications Act (1992) identifies radio astronomy in terms with the potential for misinterpretation. From Part 1.4, Division 3: (with emphasis added)

20 Radio transmissions for the purpose of measurement

(1) This Act applies in relation to:

(a) a measurement **transmission** made in the course of, or in relation to:

…

(ix) the making of **astronomical** or meteorological observations; or

…

in the same way as it applies in relation to radiocommunication.

and

(2) This Act applies in relation to:

(a) a measurement **transmitter** used in the course of, or in relation to:

…

(ix) the making of **astronomical** or meteorological observations; or

…/

in the same way as it applies in relation to a radiocommunications transmitter.

…

21 Astronomical and meteorological observations

This Act applies to a radio **emission** in connection with making **astronomical** or meteorological observations in the same way as it applies to a radiocommunication.

While radio astronomy is 'the making of an astronomical observation', radio telescopes are not transmitters and do not make transmissions (or 'emissions'). The 'transmitters' in radio astronomy are distant natural objects in space, such as stars or gas clouds. The emissions are natural by-products of the chemical reactions in these objects, which will occur regardless of any legislation.

The wording 'measurement transmission' (or 'transmitter') is therefore an inaccurate way of conveying the intention that radio astronomy receivers should be protected. Protection of natural emissions does not necessarily equate to protection of the radio telescope receivers, which are not described in the Act.

CSIRO notes that the ITU Radio Regulations expresses the concept clearly in 4.6: 'For the purpose of resolving cases of harmful interference, the radio astronomy service shall be treated as a radiocommunication service.'

Meteorology is mentioned in association with radio astronomy in the sections above. Some meteorological observations are, like radio astronomy, passive (receive only) while others are active (both transmitting and receiving). It may therefore be appropriate to replace 'astronomical and meteorological observations' in section 20 and 21 with 'active meteorological observations' and provide a new section(s) for 'radio astronomy and passive meteorological observations.'

CASS requests that the description of radio astronomy observations be clearer in identifying that the radio astronomy service is considered a radiocommunications service for the purposes of the Bill. We propose that the references to 'astronomical observations' be moved from sections 20 and 21 to new sections which address 'measurement receivers' and 'measurement reception' in relation to radio astronomy and passive meteorological observations. The wording of Radio Regulations 4.6 would serve as a useful model.

Continuity of protection for the Space Research Service and Radio Astronomy Service in Australia

The Space Research Service and Radio Astronomy Service are currently protected in Australia through a number of mechanisms. One is the allocation, in the Australian Radiofrequency Spectrum Plan, of particular frequency bands for communications with space vehicles, and of frequencies related to specific chemical signatures. These allocations are based on the international framework in the ITU Radio Regulations as well as additional Australian footnotes. In particular, the allocations for RAS, while important, do not cover the full range of frequencies used for radio astronomy.

Additional protection procedures for SRS are specified in the Television Outside Broadcast (1980-2110 MHz and 2170-2300 MHz) Frequency Band Plan 2012 and in ACMA RALI FX21 (2015), RALI

MS33 (2015), RALI MS37 (2013), RALI MS38 (2015) and RALI MS43 (2016). Further protection for RAS is provided in ACMA RALI MS 31 (2006), RALI MS 32 (2007) and the Radiocommunications (Mid-West Radio Quiet Zone) Frequency Band Plan 2011.

Various class licences also contain conditions related to the protection of SRS and RAS facilities.

In relation to the RAS, Australia has made commitments to the international community to protect the full benefit of the investment in SKA scientific infrastructure. The government treaty between Australia and the USA covering the management of CDSCC specifies that the 'Australian Government shall take all reasonable steps to protect the radio receiving facilities of the stations from harmful radio frequency interference from sources outside the stations.' SRS facilities in Australia have also been critical to safety of life issues related to manned space missions and this is expected to increase in future with multiple plans for international manned space missions.

It is therefore vital that these protections continue under the new Radiocommunications Bill without interruption or revision.

CASS requests that the regulation and policy protecting SRS and radio astronomy, with the current technical limits, be maintained in the transition to the new spectrum management regime.

Policy guidance

It is understood that, within the framework of the new Bill, policy guidance may be provided through Ministerial Policy Statements. CSIRO would welcome early visibility of this guidance when it may affect the SRS or RAS.

CASS requests that relevant Policy Statements are made available in a timely manner so that CSIRO can make informed decisions about any changes which might affect the space research service or radio astronomy.

Conclusion

CSIRO Astronomy and Space Science values the opportunity to provide input to the consultation process and the development of the revised Bill. We thank the Department and the ACMA for their hard work to date and look forward to continued opportunities for consultation and feedback.

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