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**CSIRO Astronomy and Space Science (CASS) Comments on
“Spectrum Review: Potential Reform Directions”**

CASS welcomes the opportunity to comment on the consultation document and appreciates the need to manage spectrum efficiently as well as the challenge in finding the right balance between flexibility in the use of the spectrum and certainty for incumbents. CASS has been active over many decades in developing new radiocommunication technologies, for example WiFi, and has an interest in facilitating the introduction of technologies which are more efficient and innovative in their use of spectrum. CASS also operates national facilities in radio astronomy, and is a leading participant in the international mega-science project, the Square Kilometre Array (SKA) radio telescope. The SKA project is an international effort to build the world’s largest radio telescope. Australia is a co-host of the SKA, along with South Africa. The radio astronomy facilities represent a substantial national and international investment and involve international commitments and obligations in spectrum management.

The consultation paper proposes that allocating spectrum to its highest value use (both economic and social) is best supported by an active and deep trading market with transparent and accessible information. It is CASS’s view that this statement principally applies to commercial users of spectrum. Use of spectrum for the public good, such as meteorology, emergency services and science use such as astronomy, cannot be prioritised through a market trading mechanism. We therefore consider that strong regulation and control of spectrum will still be required into the future for such public good services, in order to provide spectrum for public good use, and protect against interference.

As well as the obligations governments have to provide spectrum for the good of its own citizens, and protect the substantial investment in national facility radio astronomy infrastructure, the Australian and Western Australian governments have made commitments to international partners to protect the radio-quietness of the Australian candidate site for the SKA, which is on Boolardy Station in the Mid West of WA. The international partners in the SKA project will desire certainty that their investment in the SKA will be adequately protected. We consider that reforms of spectrum management in Australia should, therefore, ensure continuation of the regulatory protection for the radio astronomy observations of the SKA. In addition, the ACMA currently provides regulatory protection for the national facility radio telescopes in Australia, and continuing protection would be necessary to protect the ongoing national investment in these facilities.

In the context of the general remarks above, we have some questions and clarifications regarding the specific proposals in the document.

Proposal 1: Implement a clear and simplified framework of policy accountability

- *Minister to publicly issue over-arching policy statements, against which the ACMA must act consistently.*
- *Minister to have direction powers in the Radiocommunications Act to enable Ministerial intervention for specific purposes such as to reserve spectrum in a plan, allocate or reallocate spectrum.*
- *The ACMA to be required to notify the Minister of certain decisions and provide an annual work program and key priorities over a three-five year timeframe.*

The ability of the Minister to have direction powers and to intervene for specific purposes would need to be set in the international context of obligations Australia has made to protect the radio-quietness of the site of the international SKA project. Industry proponents who have implemented particular solutions to enable co-existence with radio astronomy may also require certainty that their investment will have longevity, and the solutions developed will continue to be acceptable.

With regard to the second dotpoint, we note from the Directions paper:

“It is anticipated that, having set the policy direction, Ministerial intervention using the specific direction powers would be on an exception basis. If the Minister were to intervene, this would be undertaken in a transparent manner and

directions would be made public. Direction powers would continue to remain available to the Minister to direct the ACMA on the exercise of its spectrum management powers and functions.”

It is not clear from the paragraph quoted above what would trigger the “exception basis”. CASS suggests that more detail be provided about the “specific purposes” which would require Ministerial intervention, and about the decision process for identifying those purposes.

Proposal 2: Establish a single licensing framework

- *Establish a single licensing framework by consolidating the three licence categories (apparatus, class and spectrum) and provide the ACMA with flexibility to set licence parameters, for example, to include band frequency, payment, sharing and trading arrangements.*
- *Tenure of licences to be a parameter, with a maximum term of 15 years to be specified in the legislation.*
- *Renewal of licences to also be a parameter. If the licence provides for a presumption of renewal, the legislation would specify the circumstances under which the ACMA is not required to renew.*

CASS considers that the distinction between apparatus and spectrum licences may be unnecessary and the differences between them in the current regulatory regime could be addressed by a more flexible approach to licensing parameters. It is foreseen that removing this distinction could indeed lead to more flexible use of spectrum.

There would seem to be difficulties, however, in applying the same approach to class licences, where most end users (of devices such as keyless vehicle entry, remote controls, WiFi or baby monitors) are unaware of the existence of a licence much less its conditions. In the case of class licences, compliance is principally managed through manufacturing and distribution (import) requirements, not through negotiation between the ACMA and the end user. Eliminating this distinction could lead to confusion, and the benefit of such a change is not clear.

Currently, control of interference to CASS’s radio telescopes is managed under regulatory instruments specific to class, apparatus and spectrum licences. For the radio telescope facilities on Boolardy Station in Western Australia, interference from apparatus-licensed equipment is regulated by a Radiofrequency Band Plan and RALI MS 32. Interference from spectrum-licensed equipment is managed by conditions in each spectrum licence, but in general these refer to the provisions (geographic zones and interference thresholds) of the Band Plan and RALI MS 32. In both cases, interference is assessed before installation of a radio transmitter and can be prevented or mitigated from the beginning. Replacing apparatus and spectrum licences with a single category would not appreciably affect this arrangement.

However, interference from class-licensed equipment is restricted through conditions in several of the class licences and enforcement is predicated, for the most part, on educating local users or on observing an interfering source after the fact. It would be problematic to address interference requirements for class-licensed equipment in the same manner as apparatus or spectrum-licensed equipment.

CASS supports the consideration of tenure as a parameter in apparatus and spectrum licences and considers that 15 years is an appropriate maximum term. CASS also supports a parameter for the renewal of licences (for apparatus and spectrum licences). As the users, location and category of class-licensed equipment is not individually registered by the ACMA, it is challenging to see how licence tenure or (non-) renewal could be a parameter for such equipment.

Proposal 3: More flexible allocation and reallocation processes

- *Provide the ACMA with greater flexibility to determine the most appropriate allocation process and method.*
- *The ACMA’s annual work program to specify timing of allocation processes and the ACMA to report against these.*
- *Allow the ACMA to reallocate spectrum without the need for a Ministerial determination.*
- *Manage changes of use by setting appropriate licence terms that allow for replanning.*
- *Authorise the ACMA to allocate encumbered spectrum enabling incumbent users to continue operating in the band following reallocation.*

CASS considers that the proposals under this item are reasonable in the context of a merged apparatus/spectrum licence type. However, apart from possibly allocating additional spectrum for class-licensed applications, CASS considers that the issues may be less relevant to radio systems currently covered by class licences.

Proposal 4: Establish a more transparent and flexible approach for spectrum pricing to promote efficient use and re-use of spectrum

- *Prices for spectrum to be market-based, with the ability for Ministerial intervention to determine otherwise on an exception basis.*
- *Pricing for administrative allocations of spectrum to be reviewed, simplified and made consistent and transparent.*

As mentioned above, market-driven approaches to spectrum are not appropriate for allocation of spectrum for the public good, or for protection of the spectrum environment for public good services such as meteorology and radio astronomy. The proposal that the Minister can intervene to determine that prices should not be market based on an exception basis may be important protection for such services.

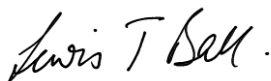
Any increase in flexibility such as secondary trading of spectrum should consider robust protections and balances in place to ensure that all players are aware of constraints and regulations required to protect spectrum for public good services, and to ensure that radio-quiet zones for radio astronomy remain effective. For example, it may be inconsistent with radio-quiet requirements for a license holder within a radio-quiet zone to move their license to a different use which would create greater interference to radio astronomy. The statement in the consultation document “a reformed framework should provide for exceptions to the market-based approach on a case by case basis where there is a sound public interest rationale” is very important and the protection of public good services should be a primary consideration when proceeding with any reform.

Proposal 8: Facilitate greater user involvement in spectrum management

- *Allow the ACMA to delegate spectrum management functions to other entities.*

If spectrum management is delegated to other entities, as suggested in Proposal 8, we consider it critical that the provisions to protect the radio-quietness for radio astronomy remain, and that coordination ensures the continuing protection of spectrum used for the public good.

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