### The Project Manager

### Spectrum Review

### Department of Communications

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### Dear Sir/Madam,

Thank you for the opportunity to participate in and comment on, this important policy issue. I hope that in your review you do not overlook the opportunity to “create” more virtual spectrum space through use of fibre optics (FO) (through say an NBN infrastructure) or the effective destruction of spectrum from due to the ever increasing spectrum noise floor ( eg from say VDSL cable operation in unshielded unconditioned lines raising spectrum noise floor and effectively reducing the effectiveness of say a broadcast transmitter!). It is important that a full systems approach be adopted in the review: I cannot see the full contextual basis for both the terms or your issues- or how you come up with these and am hoping, this will become clearer as the review progresses.

As an accredited person I perform full value engineering analysis for clients who think that they need spectrum. Almost always I determine that use of VPN (Internet)networks, use of class licenced (eg CB) spectrum or public cellular produces the optimum solution- meaning of course, that I don’t need to make spectrum assignments. This process of value engineering and quality assured engineering process ( in part governed by ACMA’s Radio licence assignment instructions- RALI) during spectrum management, intrinsically ensures the most efficient spectrum use- through application of realistic and agreed probabilistic scenarios, radio physics and of radio technology.

I hope that the review is able to consider the role of the ever advancing electronic technology has made in the evolution of spectrum productivity- I make the example that if we were still using electronic valve technologies the competition framework inherent in the Radiocommunication Act (*the Act*) would be somewhat impotent. Observed spectrum efficiency gains, I would argue, are mainly due to *advanced signal processing* (trading off spectrum usage by advanced computation/electronics etc).

With respect to you terms of reference, I offer the following broad comments, shown in underline text:

### Term of Reference 1:

**Simplify the framework to reduce its complexity and impact on spectrum users and administrators, and eliminate unnecessary and excessive regulatory provisions**

The problem here is one of good governance. Every lawmaker/ regulator should have a quality process to ensure there are no obsolete or orphan regulations /laws. This should be an ongoing process and not just part of some topical event. I would think that it is probably illegal for the Government to have any regulation that is not directly (or derived) from higher level laws.

In this example, every regulation should be traceable to *the Act.*( there are many software tools that automate this traceability process). In this case, until you update *the Act,* it would appear *premature* or questionable to consider any change to subordinate legislative instruments ( what has changed to abrogate these?) : it is not a logical systematic approach unless it is part of the ( bottom –up) process to revise *the Act.*

Under this term of reference the review will consider the scope for:

* Simplifying ( or making them more concise? more accurate? ) the Objects of the Radiocommunications Act (section 3) and making them more relevant (to who/what?) Will the scope include KPI’s against each Object?
* simplifying and streamlining the planning, allocation, licensing and re-issue processes within the Radiocommunications Act Yes, please consider the convergence between the various radio service types.
* simplifying/reducing the regulatory burden of technical regulation and interference management requirements I thought that regulations were drafted in a way to be concise and –through the RIS/NIA process – any burden was understood /accepted? There will always be scope to “simplify “ regulations but who bears the cost/risk should be considered.
* removing specific areas of the Act or the requirement for subordinate instruments that are little used or no longer relevant e.g. the continued relevance/usefulness of the Governor-General’s powers to declare an emergency. If this was part of an ongoing part of normal business practice such review would not be necessary!

### Term of Reference 2:

**Improve the flexibility of the framework and its ability to facilitate new and emerging services including advancements that offer greater potential for efficient spectrum use, while continuing to manage interference**

Under this term of reference the review will consider:

* whether planning instruments – such as the Australian Radiofrequency Spectrum Plan – can be made more flexible and accessible within the treaty framework established by the International Telecommunication Union radiocommunication sector. The review should consider in this context that Australian policy is that we are a “standards taker –not maker”. It should be noted that most (all?) planning instruments now do allow for operation in derogation of the instrument when permitted through technical discussions with ACMA.
* whether allocation and licensing processes can be made more flexible, including exploring the feasibility of parameters-based licensing or making incremental improvements to existing processes The major way to increase flexibility is to make more use of the private sector/ small business, ACMA accredited persons
* whether the framework should support greater spectrum sharing, including whether legislative barriers to spectrum sharing/coexistence of services and licence types should be removed Yes, consider if all licences types can be freely traded as in a spectrum licence. Secondary spectrum allocation users should be given significant licence tax relief and those who seek and require no interference protection and can prove no interference should be allowed free spectrum access – a universal LIPD class!.
* updating definitions and concepts in the framework to reflect converging and changing technologies and markets/supply chains Should also make it clear- and without any doubt- the exact component of electromagnetic waves being regulated eg stationary magnetic/electric, so called Hertzian and Sommerfeld surface waves.
* alternative, more responsive, approaches to technical regulation, compliance and enforcement.

The review could consider a private sector based fully competitive spectrum management approach ( this was a key objective in the original drafting of *the Act*) using accredited persons instead of ACMA staff. Roles of private sector could extend to spectrum policing/compliance/ monitoring under contract to ACMA or a licence holder who is suffering interference.

### Term of Reference 3:

**Ensure efficient allocation, ongoing use and management of spectrum, and incentivise its efficient use by all commercial, public and community spectrum users**

Under this term of reference the review will consider:

* whether the Objects of the Radiocommunications Act place an appropriate emphasis on economic and allocative efficiency A systems approach is required here- there are many affected externalities and resolution if most often by consensus – not always an evidence based paradigm.
* whether changed planning arrangements could improve efficiency But note that efficiency in spectrum management often involves shifting cost/ responsibility between parties. Perhaps *effectiveness* should be given an equal measure to efficiency in the review.
* how reallocation of spectrum can be facilitated, including the approach to providing financial assistance to spectrum users displaced through reallocation processes and the value of tools such as incentive auctions The review should ensure that spectrum that has unique natural properties (eg spectral emission lines from molecules used in Science Services) continued to be protected and to allow for future expansion for climate monitoring and the like. Where citizens wish to receive overseas satellite broadcasts at their own expense- just because these private systems are not recorded on ACMA Spectrum Register is no excuse to ignore their needs.
* how charging arrangements can incentivise efficient use, including the potential role of opportunity cost pricing and the effect of taxes levied, fee exemptions and concessional arrangements Yes licence free access should be given to those who have the technology to use *any* spectrum without causing harmful interference to licenced users or expecting protection- this will incentivise development of new systems similar to those used by the military decades ago This occurs under the current arrangements in certain bands/services.
* what non-price mechanisms are available and appropriate for improving efficiency, including greater spectrum sharing capabilities Sequency domain spectrum sharing and removal of competition at the infrastructure level could be considered. The original  *Act* was about retail competition not about the fostering of the proverbial “parallel railway lines”. As an accredited person, my own spectrum monitoring activities I can see many times where one competitor is fully loaded while a competitor has a lesser loaded spectrum- that is not accessible by the other. This is an example where competition has failed to ensure spectrum efficiency but ensured licence holder profitability.
* licence tenure, renewal processes and resumption and compensation rights

Consider the inconsistency of licence tenure for apparatus and spectrum licences- is there really justification for the difference?

* whether there is sufficient information about the spectrum market available for users to make informed decisions about availability, use, sharing, leasing, sale or purchasing of spectrum Especially open and readily accessible information- but review should take qualitative analysis of the effectiveness of the market approach to spectrum as distinct from the consumer/customer market.
* other ways to facilitate the secondary market for spectrum. To also include that for apparatus licenced spectrum and the market for private sector any /all spectrum management

### Term of Reference 4:

**Consider institutional arrangements and ensure an appropriate level of Ministerial oversight of spectrum policy and management, by identifying appropriate roles for the Minister, the Australian Communications and Media Authority, the Department of Communications and others involved in spectrum management**

Under this term of reference the review will consider:

* whether – under the Radiocommunications Act and ACMA Act – the Minister’s current powers are sufficient for the oversight of spectrum policy and management or are of too much power?
* whether the Minister’s current powers are targeted at the right level of intervention
* whether the ACMA’s spectrum management responsibilities under the Radiocommunications and ACMA Acts are appropriate, including whether its satellite filing and coordination responsibilities should be explicitly recognised Satellite coordination and filing should not be a monopoly by ACMA. There are many private sector satellite spectrum engineers who can and should do all of the work.
* whether the ACMA as the spectrum manager has appropriate information sharing and compliance and enforcement powers .
* the respective spectrum management roles of the Department and ACMA and private sector entities
* the extent to which other entities exercise the roles provided for them in the Radiocommuniations Act and whether these should be retained Or expanded to cover contestable work hitherto a monopoly of ACMA.
* whether other entities should play a greater role in spectrum management including in areas such as frequency assignment, interference management, private band management and technical regulation. This should cover all aspects of management including monitoring, compliance etc

### Term of Reference 5:

**Promote consistency across legislation and sectors, including in relation to compliance mechanisms, technical regulation and the planning and licensing of spectrum**

Under this term of reference the review will consider:

* whether it is appropriate to continue to retain different approaches to spectrum for different sectors, or whether a more consistent and simpler approach should be adopted The review may like to see how other non- communications sectors (eg Electricity/Energy) and compare.
* how technical regulation and compliance and enforcement provisions in the Radicommunications Act – including standards, labelling and offence provisions – can be made more consistent with other portfolio legislation and with whole of government approaches . For example the  *Act* in its enforcement provision demand a reverse onus of proof that only exists elsewhere in terrorist legislation. It should be up to the Government to prove non-compliance and do so without reference to a person’s technical knowledge etc or a valid excuse: these are remnants of the very early days of wireless.
* the desirability of establishing avenues for international and domestic collaboration and international information sharing regarding the importation of non-compliant devices. We are a standards taker not maker and have no indigenous industry so why not let overseas markets sort this out?

### Term of Reference 6:

**Develop an appropriate framework to consider public interest spectrum issues**

Under this term of reference the review will consider:

* whether public interest services are defined adequately (the Radiocommunications Act defines ‘public and community services’, and includes as a subset ‘agencies involved in the defence or national security of Australia, law enforcement or the provision of emergency services’)
* if the meaning of the term ‘adequate provision’ needs clarification (see 3(b) of the Radiocommunications Act)
* pricing of spectrum for public interest services and the broader issue of ‘value’ (links with Term of Reference 8 below)
* the incentives needed to ensure public interest services use spectrum efficiently, including sharing with other spectrum users where appropriate There is a case for some of this spectrum to be opened up to other users with a pre-emption protocol to allow the services to gain priority as needed. One hopes that Defence networks are built to be sufficiently robust that they could allow for greater sharing.
* the scope and appropriateness of applying market-based principles to public interest services, including incentive auctions But why stop there: why not apply market based principles to these services completely?
* institutional arrangements for the management of Government spectrum. There is scope for greater private sector involvement here- even for Defence as there are “cleared” industry actors available

### Term of Reference 7:

**Develop a whole-of-government approach to spectrum policy**

Under this term of reference the review will consider:

* what would be an appropriate overarching strategic vision/stretch goal for spectrum policy and management over the long term Full and effective spectrum utilisation rather than trying to get the maximum revenue out of the resource.
* what would be appropriate near and long term objectives for spectrum policy and management Greater private sector involvement in shorter term. In long term to ensure no spectrum lays wasted or is unsuitable for use due to EMI pollution etc.
* what are the technological and international developments that will inform the future direction

We follow international trends on hardware and regulations - so these developments are offshore and with little influence by Australia.

* what should be the near and long term allocation priorities. Long term Spectrum allocations must be made for those services that have no other viable/economic choice eg satellite services for remote and territories users, also for those that use unique spectral bands (eg RA/Met Services ). It is important to consider the short term nexus between spectrum reuse (by means of smart radio systems, smaller cells and the like) and those who desire more spectrum to avoid investment in technological alternatives.

### Term of Reference 8:

**Develop a whole-of-economy approach to valuation of spectrum that includes consideration of the broader economic and social benefits**

Under this term of reference the review will consider:

* how spectrum should be valued to inform reserve and re-issue/renewal prices and administrative pricing. There are alternative approaches to allocation such as due diligence- as is used in mobile satellite allocation. If there was an active trading market (say including apparatus licencing), presumably the market would settle this.
* how different competing uses of the spectrum should be valued/evaluated to inform allocation decisions, both in economic and societal terms Clearly the basic principles of radio engineering will determine those uses that must be provided with spectrum- the review must consider basic laws of nature and not those derived from a profit motive alone.
* how spectrum’s contribution to the economy and broader society can be valued. The review should also consider the externality of radio technology- is the growth really due to spectrum marketing or despite this, would advancing technology be the factor driver of economic growth?

# **Questions for stakeholders**

1. What additional issues should be considered by the review?

Clarify the actual property rights on a spectrum licensee, for all classes of licencing, and how these rights may impact on other common law rights. For example, there is a fine for knowingly causing interference, however, should I wish to build a large faraday cage around my property (with local Government approvals etc) to stop/ remove/null an emission or build a skyscraper that blocks someone’s microwave link, I would need to have a “reasonable excuse” to avoid prosecution. Prosecution should only occur when there is clear intent.

There should be consideration to encouraging free use of any spectrum within one’s own land, with interference protection ratios as currently defined applying at the boundaries. A resulting rapid deployment of say low cost femtocells connected to cable broadband would free up demands for more spectrum by some services.

1. Are there any issues you think should be taken off the table?

I think less focus on the marketing issues as these, at least theoretically look after themselves.

1. Which issues should be given priority and why?

TOR 2 is a fundamental- to be done first as it will foster innovation and investment.

1. Which issues can be addressed in the short term (the next 12-18 months) and which should be considered over a longer period? Issues are somewhat contextually interrelated- suggest use of a formal project approach to manage concurrent or contemporaneous work.
2. What should be the extent of reform – can the framework be improved by adjusting what is currently in place or are more fundamental changes required? It would be bold and innovative to consign all current framework to the wpb, however if planned and managed professionally, it is achievable and preferable to cherry picking issues.

I wish to thank the Department for taking the time to read and consider this submission. As an accredited person, I look forward to further involvement in this work.

P McGill

**[Contact details removed]**