



2nd December 2014

Project Manager,
Spectrum Review,
Department of Communications,
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Ref – Spectrum Review – Potential reform directions discussion paper.

ARCIA (Australian Radio Communications Industry Association) is pleased to provide a formal response to the 'Potential Reform Directions' discussion paper. The purpose of our response is to provide a Land Mobile Radio (LMR) industry perspective to this report and the proposals included therein. At the very outset we wish to highlight that we believe very strongly that the proposed review and changes are in the best interests of the spectrum and its users, however, there will be many issues to be addressed and the final result should be a system that will encompass all of the necessary legislation and guidelines to provide a seamless and efficient removal of 'red tape'.

Recognised by the ACMA as the peak industry body representing the LMR industry in Australia, ARCIA represents a significant segment of the radio communications stakeholders in the 400MHz sector of the spectrum. Our members provide the design, manufacture, delivery and support of business critical and mission critical communications services to virtually every segment of the radio users in this valuable spectrum area. Our industry and members are focused and support these organisations that range from first responders, essential transportation, security and small business who rely totally on the provision of "instant, must work, group based radio communications" to function. Many of these users cannot operate or deliver these essential services without radio communication which primarily exists within the 403-520 MHz spectrum, the '400MHz band'.

Within our response we have alluded to the necessity for a well-defined set of operational guidelines, as well as a transparency of the decision-making processes being necessary in any changes. These are areas that must be well defined as it is our considered opinion that we would not wish to see an environment develop similar to the USA where there is a whole industry of 'Spectrum lawyers' who end up determining the market forces and requirements within a litigious environment. It is a fact that within the LMR spectrum the bulk of the users have no knowledge or visibility of the spectrum licencing processes and rely on their equipment of network supplier to advise them and 'take care of the details'.



We have also highlighted the fact that spectrum on its own is of no use, it requires significant capital investment to be able to utilise the spectrum. In any situation where changes are going to be made to networks or licence allocations there will always be a significant amount of capital investment involved in the process. For instance, the changes introduced to partition government and non-government services in the 400 MHz band has never really established a clear and practical boundary as services move from government to commercial control through policy change and contracting arrangements. Indeed the main reasons why government services do not pool their communication needs has much more to do with funding, control and operational objectives than the availability of common spectrum. This has seriously impacted the completion of the review of the 400 MHz band as Government agencies do not have the funds available to undertake the spectrum changes.

In closing we commend the Minister and the Department for undertaking this review, with the rapid changes in technology that we see now and the development in many 'wireless' applications, it is indeed timely to review the present situation. The only caution we would offer is that it can lead to serious consequences if the results of change are not understood and the overall system is compromised. Removing one bolt at a time from a bridge would not appear to be a problem, but when many bolts are removed without consideration, somewhere along the line with one extra bolt the bridge will collapse, we don't want a well-managed spectrum to become a casualty because no proper evaluation of the risk assessment was completed early in the process.

Yours sincerely,
Australian Radio Communications Industry Association (ARCIA) Inc.

Ian Miller – Executive Officer.



Spectrum Review –Options Consultation Paper, November 2014

General comments

Introducing economics as the major factor in managing the transition of spectrum to its highest value use is a commendable but difficult concept when considering the vast differences between competing spectrum uses and the knowledge base of the end users. Physics determines through time, frequency and distance criteria how much separation is required between services. The base data used to calculate this also involves the transmissions mode, power levels and transmitter and receiver performance. If spectrum were exactly like land, then we would not need some vacant areas of spectrum during the allocation process, these can be viewed as ‘easements’ in the land simile but they are a technical necessity in spectrum planning.

In addition it must be recognised that not all frequencies and services are equal. As has been indicated by ARCIA in recent responses to proposed fee increases in land mobile bands, statistics indicate that the demand does not exceed supply for justifying the increases. More critically however, the actual licence fee or any moderate fee increase has much less effect on a land mobile services existence than does band re-plan implementation the effects of embargoes and the uncertainty introduced by restriction of the maximum licence renewal period back to only one year.

To consider economics purely on the basis of the immediacy of demand does not value the existing use or its related capital investment. You only have to look at the “market forces” that were used to justify the spectrum marketing of frequency bands which went to telecommunications application, with the subsequent claims of infrastructure investment from the incumbent users who were not keen to put that spectrum to market again by the same method. The proposals below still do not acknowledge existing infrastructure as an important economic factor.

The negative economic force at play with band replan implementation is the disruption and lost business caused by changes to existing services. This coupled with new equipment costs and tenure uncertainties in many cases forces businesses to choose less effective, but possibly more guaranteed communication options such as mobile phones, the concept of ‘highest value use’ is disregarded due to external factors.

Industry and the users need assurance that the economic modelling for changes in spectrum allocation and usage is in line with external factors and not just internal ACMA modelling as appears at present. As the ACMA loses its technical knowledge resource in preference to gaining other skill sets, the downside is making bad decisions because of a poor understanding of technical constraints of the spectrum parameters and the requirements of its end users in creating a market. To this end it becomes imperative that in order to ease the amount of red tape and inefficient use of the spectrum, a properly considered and implemented spectrum plan must be prepared by the ACMA as the beginning of the process, not as the end result.

Policy framework

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.*

ARCIA support the concept of introducing a maximum 15 year licence period and also having renewal as a parameter.

In respect to the five year spectrum works program, ARCIA notes that the current resourcing arrangements do not provide sufficient flexibility for the ACMA to respond expediently nor adequately to unforeseen spectrum, commercial and interference issues that arise.

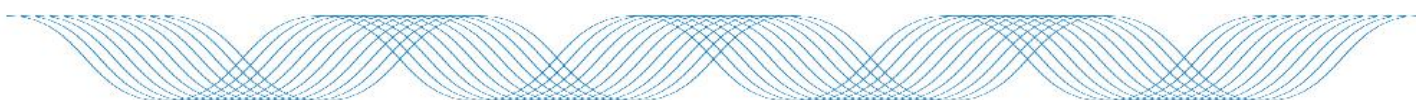
Adding overriding Ministerial direction to outcomes in principle offers benefits for expediting major technology changes in a timely manner, however, it does bring into question the reasons for such directions and how lobby groups and certain service providers might exercise unfair force on decisions through political means. The ACMA moved away from the process of picking technology winners after some bad experiences with prejudging market outcomes for CT2 technology and setting aside spectrum.

Single licensing framework

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.*

ARCIA support the concept of removing the boundaries created by having only the three current licensing approaches. In moving to a parameter based system it must be noted that one solution may not fit all and the characteristics of each current licence type should be kept as options where they may still be the most efficient approach. In the case of Class licensing where there is little if any engagement with the end user and there are many spectrum elements and indeed no records of where services are deployed, unless the licence is broken up into those spectrum elements then it is hard to see how the licence would limit to 15 years. More likely it would continue but in time discrete elements may change or be removed in line with international market and technology changes. Indeed the current class licence using a no licence fee, non-interference, no protection basis with equipment supply regulated, seems to work efficiently.



Allocation and reallocation

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.*

ARCIA can see many benefits in this approach and when viewed in conjunction with other options outlined in the spectrum review process offers much flexibility. The changes would only be of benefit as long as the incumbents cannot be forced to vacate the spectrum once the new 'licensee' assumes control.

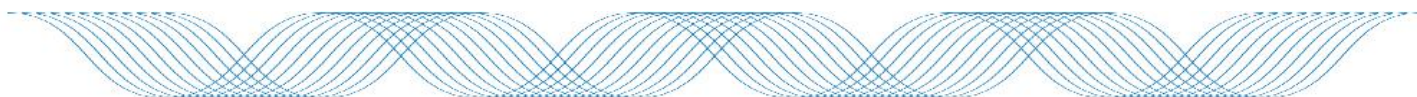
Pricing and market information

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.*

Whilst ARCIA support the overall concept of 'highest value use', there needs to be a clear definition of what this constitutes and how it will be calculated. To work only with the fiscal definition means that the 'social benefit' resulting from spectrum use is not specifically or realistically addressed. The recent report on valuing the land mobile radio spectrum commissioned by ARCIA provided information on the resulting benefits from that section of spectrum that had never been provided previously. The benefit levels were well in excess of the supposed economic benefit attained simply from the income of Apparatus Licence fees and incorporated a significant 'social benefit' estimate.

The only way that this proposal would effectively operate would be in an environment where the benefits are established through independent sources and reflect the varying interests of different users of the spectrum. This economic research would have to be accepted and endorsed by the ACMA to give credence to any 'highest value' allocations and the underlying parameters utilised in reaching the decisions. This would entail a serious and considered use of the 'ACMA Consultative process' and not just the issuance of papers and limited regard to the issues raised within responses.



Proposal 5: Structuring payment schedules for licences

- *Provide flexibility in the timing and approach for payment of licence fees.*

In determining the licence periods and payment options, consideration should also be given to the infrastructure costs associated with spectrum usage. In almost every instance, the actual costs of establishing a service to utilise spectrum are many times higher than the licence cost. Lengthy up-front payment periods may discourage legitimate spectrum users from entering the market. To this end it may be that lesser licence periods are provided to limit the amount of initial investment but that there is a 'rolling five year renewal period' which would then allow for better planning of resource and finance allocations. The area of concern raised earlier with regard to the infrastructure investment is an important factor that must be contained within any decisions in this area. The mere fact that the major telecommunications providers were not in favour of the spectrum going back to market at the end of the 15-year period due to capital investment must be taken into account across all sectors of spectrum use. On this basis there must be a common guideline for all spectrum users as the product is of no use without capital investment to utilise the spectrum and harvest and benefits or revenue.

Proposal 6: The ACMA to take an open data approach to substantially improve the range, availability and quality of information provided to support an efficient spectrum market

- *The ACMA to report to the Minister through its annual work program on its efforts to improve and maintain the range, availability and quality of information to support the spectrum market.*
- *Provide the ACMA with authority to collect information from industry relevant to the performance of its functions and exercise of its powers.*

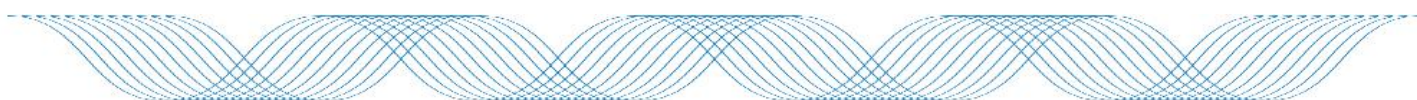
The recent report "Valuing mission critical radio services: A study of the economic value of land mobile radio spectrum in Australia" which was commissioned by ARCI mentions the paucity of data available with regard to spectrum usage and equipment values. The report did move towards correcting that situation in some ways, however, ARCI strongly believes that the present situation of the ACMA making decisions without a complete set of database tools is flawed. More open information regarding the state of health and utilisation of the spectrum is essential, as are more open details about the amounts being paid for spectrum on a common denominator such as the amount per kilohertz per geographic area or per capita would open up information as to the potential highest value uses.

Compensation

Proposal 7: Payment of compensation for resuming all or part of a licence

- *Provide for common compensation provisions for resumption of licences.*
- *Whether compensation is payable in event of resumption to be a licence parameter.*

Whilst we welcome the concept of compensation, the outline in the proposal is very limited and does not take into account the external factors involved. Due to the significant infrastructure involved in the provision of some services, this should also be considered as part of the overall compensation issue. For instance, SCADA systems have very high capital investment in fixed equipment, with potentially values in excess of 100 times the licence value. Forced re-location has expenses beyond pure licence costs and these should be considered as part of the overall decision making process. It may well be that when the 'total spectrum usage' value is taken into account, some apparently 'low value uses' might in fact become very high value uses because of the return on the spectrum being used. With systems such as Scada (which operate 24/7) or many trunked radio networks, the total infrastructure value and benefits associated with that equipment can easily introduce factors needing to be consideration other than just basic spectrum formulae.



User involvement in spectrum management

Proposal 8: Facilitate greater user involvement in spectrum management

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

ARCIA very much support this proposal and are keen to see others involved in the process, either for profit or as a service to industry. The major concern in this proposal is that for the process to operate efficiently and effectively, the ACMA must first prepare a proper plan and guidelines for a Band Manager to operate under. Without this underlying plan, to work on any band, the Manager would be continually attempting to clarify or operate under regulations that are not clearly defined and thus subject to challenge. ARCIA do not support developing any form of system that would see the spectrum becoming the domain of lawyers and litigious parameters replacing common-sense regulations or guidelines.

Technical regulation

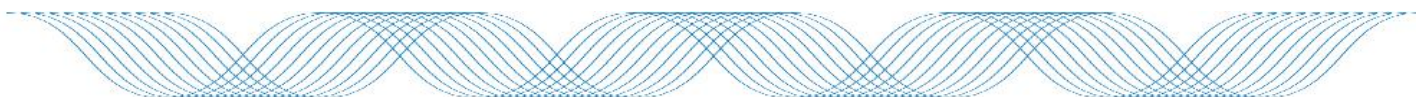
Proposal 9: Develop more principles-based device supply regulation

- *Provide the ACMA with increased flexibility to construct device supply schemes appropriate to specific circumstances.*
- *Increase incentives for users and suppliers to manage risk and resolve interference and disputes in the market.*
- *ACMA to develop and publish guidelines as to its dispute management process.*
- *Minimise to the extent appropriate existing record-keeping and labelling requirements having regard to risk factors.*
- *Reform the definitions relating to supply to oblige all persons in the supply chain to take reasonable steps to ensure that compliant devices are supplied to the Australian market.*

This is also an area where ARCIA offers qualified support. This is an admirable aim; however, the communications world is split into three distinct ITU regions for commonality and regulatory reasons. The two major developed regions, Europe and the Americas are not able to agree and have common equipment standards or even common spectrum usage plans. This means that the Asia-Pacific region is potentially importing products based on spectrum plans from other areas of the world. Australia as a 'technology importer' faces a significant challenge in addressing these differences. With this in mind there must be a set of guidelines developed to identify the requirements of our market and how products and services from other regions can be adapted for local use.

Providing more flexible and appropriate supply regulation could lead to just focusing on what causes problems after the fact. This approach means a serious issue may have to happen before something is done but because ACMA resources are being tied up by Five Year Planning Cycles it also means that actions to solve the problem will be too late. Using preventative maintenance with product when you know there will be issues is always less expensive than throwing the whole thing out once it is broken. For the system to operate in this format there needs to be specific and defensible information, with all information readily identifiable and available as part of the ACMA data in the public domain so that we don't have to develop 'Spectrum lawyers'.

The concept of increasing the degree of responsibility to include all members of the supply chain as well as the end user is an excellent approach and if based on defensible regulations and guidelines will ensure a higher level of compliance with spectrum licence conditions. This will also have the effect of bringing the parallel importers and illegal manufacturers of 'copy products' into the management loop and under some level of control.



Compliance and enforcement

Proposal 10: Improve regulation by extending the suite of enforcement measures available to the ACMA

- *Substitute civil penalties for the existing criminal offences, where appropriate.*
- *Enable the ACMA to impose civil penalties, issue remedial directions and formal warnings for the purposes of managing and controlling interference or a breach of licence conditions.*
- *Apply strict liability provisions and infringement notices to a broader range of offences where appropriate, for example, operation of prohibited devices and interference endangering safety.*
- *Provide the ACMA with powers to issue recalls, interim bans formal warnings and public warnings to manage the supply of non-compliant devices.*

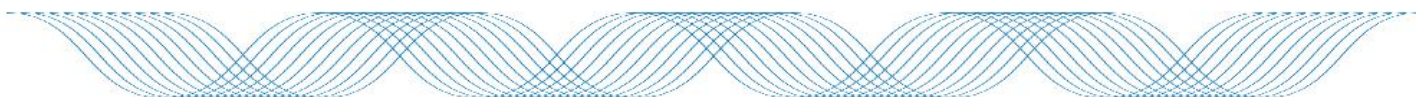
ARCIA strongly supports this proposal, with the proviso that the ACMA must seriously undertake to actively become involved in the process. The present ACMA policy management favours education rather than penalty, probably because of the necessity to have to resort to criminal justice processes; however, at present the abuse of the rules is achieving economic advantage and encourages more abuse. Often the industry that follows the rules suffers a commercial disadvantage which also sends a negative message to everyone.

Moving spectrum to its highest value use

Proposal 11: The ACMA to continually review options for allocating spectrum to alternative / higher value uses and to ensure that barriers to achieving this are reviewed and removed where appropriate

As indicated previously in this response, we have concerns about how this is going to be achieved without much research to ensure that the ACMA can identify all of the relevant factors that are encompassed in determining the relative value of the spectral use. The very fundamental premise in this proposal is that the comparative uses can be compared on a level playing field; the concept is sound and will be supported by ARCIA when we can see that the factors involved are being identified and weighted correctly against all of the criteria. The simple economist's catch-cry of 'highest value use' implies an easily understood result such as in the oft-used land simile. In reality there are many factors to be considered, not the least of which is the capital infrastructure costs associated with either setting up a form of spectrum use or having to re-locate from one section of the spectrum to another.

In very basic terms, the move from 3G to 4G and LTE by the public carriers would seem to be a relatively simple matter of encouraging users to purchase a compatible handset when they update their mobile device, which is probably on a two or three year cycle. This completely ignores the hundreds of thousands of security industry devices that are still operating on 2G/3G technology that are effectively invisible to both the end user as well as the carrier service. The costs of replacing these devices, which are not on a short-term replacement cycle like a consumer device, will be very expensive and should be taken into consideration as part of the technology refresh decision.



1. What changes should be made to the proposals outlined in this paper to make them work more effectively?

Make the hard spectrum alignment decisions based on efficient outcomes

Simplifying spectrum management by deregulation or no regulation will just lead to more import of non-compatible equipment into Australia increasing interference potential. Local decisions about usage based on competing interests will often prevent this happening, however, consideration on the differences in spectrum plans between the major regions in the world (Europe and Americas) must be part of the overall planning approach and documented as such. Problems have arisen with devices utilising 866MHz spectrum out of Europe, as well as devices on the 902-906 MHz band from America. The ACMA needs to develop a proper spectrum plan to make these conflicts part of the process for controlling and limiting the interference potential of these anomalies.

Spectrum and location.

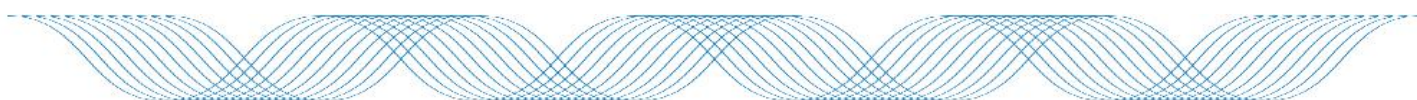
Having a radio site at a location to provide suitable coverage is a major factor in the provision of services to an end user. The spectrum/location platform is really what sustains a service even though the technology may evolve. For land mobile services technology life cycles are much longer and should as a result be depreciated at a slower rate than say telecommunication services as they evolve G by G with almost throw away handset consumables factored into the price structures of monthly service payments. Land mobile services in UHF band had their renewal periods reduced from a potential of five years to one, ARCI supports the move to a potential maximum 15 year licence period. For certainty, at least a five year "moving" minimum period should be reinstated for land mobile services not required to move in the current band replanning with the option to pay in yearly instalments. That would even out and provide a fair cost for end users in any changed arrangements whilst maintaining a level of certainty.

2. What additional proposals should be considered?

Case study 1. In principle it sounds like a good idea and in specific bands such as broadcasting 'white space' it will work. However taking a broader view, the use of generally vacant spectrum requires access to current and very accurate frequency usage and location data. The ACMA would need to keep track of the current actual network frequencies used by the telecommunications carriers at sites in their frequency bands (which can change dynamically), as well as keeping an accurate database of current frequencies and locations of all services.

Case study 2. It must be noted that the ACMA has a responsibility to manage the spectrum in a way that ensures maximum utility. Efficiencies may be achieved through delegating responsibilities for service provision but that does not absolve the ACMA from the ultimate responsibility for spectrum management. Minimising interference is still the ACMA's responsibility and so there would need to be a proper plan developed by the ACMA for the entire spectrum, for the system to be able to effectively operate without requirement further significant input from the ACMA on a regular basis. As was indicated earlier, some "channels" are left vacant for frequency assignment reasons.

The conceptual gains in case study 2 of using cognitive radio system on mass to gain spectrum efficiencies does not really take this into account especially as technology moves to continuous digital transmission modes which are not as accepting to transient interference to their services as analogue services generally were.



3. What timeframes (short-term and longer-term) should apply to implementation of the reform proposals?

This should be part of the next stage of the process as the concepts are developed further. The overall decision for change should be made within the next few months, with a guaranteed date for completion of the planning within twelve months. The individual items would be set to a time-frame indicative of the degree of change involved and the impact on incumbent users.

4. What transitional arrangements should be put in place?

Very concise and practical transitional arrangements are required with realistic time scales. In fact for some services it may be business as usual because the current licensing solution is efficient and effective. E.g. Class licensing provided you don't break the very necessary supply regulation component. The important factor as part of any transitional arrangements has to be the consideration of the capital infrastructure in place for the incumbent users and the use of this as a cost factor for any transition.

Australian Radio Communications Industry Association (ARCIA) Inc.

Ian Miller – Executive Officer – 2nd December 2014

