



Australian Radio Communications Industry Association
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The Project Manager,
Spectrum Review,
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Ref: Spectrum Review.

ARCIA represents a significant segment of the land mobile radio (LMR) communications market in the design, manufacture, delivery and support of communications to business critical and mission critical organisations. Our industry and members are totally focused and support these organisations that range from first responders, essential transportation and security, through to the many small business who rely totally on the provision of “instant, must work, group based radio communications” in order to function. Many of these users cannot operate or deliver these essential services without radio communication services which primarily exist within the 400 MHz band. Contrary to the popular belief, the public carriers are not able to fully replicate the performance and services of our industry as there are some features that are not as easily supplied under commercial design criteria models.

We are pleased to be able to take part in the process of consultation with regard to the ‘Spectrum Review’ currently being undertaken by your Department. As a representative organisation, we have undertaken considerable review and held consultations with our membership and stakeholders in the industry as part of this submission. We believe that we can contribute to the general discussion and with regard to the development of future plans and thank you for the opportunity provided so far.

ARCIA strongly supports the concept of change and adoption of new technologies. In our response to the 400 MHz band plan review we even suggested to the ACMA that the model suggested in the discussion paper did not go far enough and that current technology is indeed ahead of the proposals. In fact, as a result of our representations with regard to the 400 MHz band plan review, we are pleased to report that the changes promulgated in the review together with the advances in digital radio technology have opened up the potential for a four-fold increase in capacity without the need for additional spectrum. This means that we have seen both innovation and productivity gains as a result from the efforts our industry has put in to working side-by-side with the ACMA as the regulator.



As we look at the requirements that might become evident within the proposed 'Spectrum Review', we must highlight that any outcome proposed must be seen as being demonstrably better than the current system, allowing for new technologies and yet not compromising the certainty or flexibility of the present spectrum allocations. To this end ARCIA is prepared to take a leading position with regard to the proposal for the review and will welcome the opportunity of involvement in this ongoing process.

It is clear that the productivity of the Australian economy as a whole will greatly benefit from spectrum policy that allows new technology to be used as market forces see fit. The review needs to take into account the very long time frames when fundamental shifts in technology occur and the potential future value to the economy. It is also equally important that the review include a frame work that provides access to new technology options for all market variants of new technology including bespoke operations. The economic benefits to all sectors of 'big data' are so profound that Australia cannot afford to limit the benefits to just some industry sectors or carriers. It is also imperative that continued access to aligned spectrum throughout the world is maintained for our industry.

We believe the information contained in the attached submission represents the views of many industries and offers a different perspective from the 'mainstream' communications bodies. We trust that the information adds to the overall level of knowledge being used as the database for the development of the review and we will welcome the opportunity for further involvement. At present ARCIA is undertaking an exercise to develop an economic basis for the value of the LMR industry and the spectrum we occupy, we are hopeful that this might also be an added element to the considerations contained within this spectrum review.

As always, we welcome any opportunities to be involved and assist with the development of sound and logical outcomes. We were pleased to be able to meet with some of the Department staff recently and conduct frank and open discussions on many issues; hopefully we will be able to continue dialogue in this fashion as the review process continues.

Yours sincerely,
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Comments on Department of Communications – Spectrum Review – September 2014.

In considering these responses it must be borne in mind that they relate only to those portions of spectrum allocated for Land Mobile Radio usage, we have not attempted to engage opinions for areas outside of our direct involvement or expertise. As a major consideration with regard to any changes in the areas involved in this spectrum review, we would most strongly suggest that the areas of 'Flexibility' with regard to the allocation, regulation and management of spectrum must be paramount, together with the concept of 'Certainty' in respect of the users having a high level of confidence in their rights to have their access to the spectrum available on a continuing basis to encourage business investment and the resultant productivity gains.

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

From an ARCA perspective we are caught in a bind where we support the concept of deregulation, however, there are also strong reasons for some of the regulations that have been de-emphasised by the ACMA to be reconsidered. Amongst these is the requirement for some form of equipment standards to apply to the radiocommunications spectrum. Whilst technology has moved from analogue to digital designs to Radiocommunications hardware solutions, the associated standards have not kept pace despite the potential for the new product to cause the same if not more interference in operation. The lack of minimum performance requirements for digital equipment could well lead to portions of the spectrum becoming unusable due to interference problems. Under the Radiocommunications Act and within the general regulatory framework, there is an implied assertion that the spectrum can be licensed for proper use in particular channel sizes supported by an assumed performance model, and that the relevant licences will convey an expectation of the spectrum being 'fit for purpose', in other words free from interference that would limit correct use.

At present the ACMA have adopted the approach of not implementing any form of equipment standards for equipment employing digital modulation and simply allowing any equipment 'that is approved for use in other jurisdictions' to be licensed and operated in Australia. If the overseas approval was identical to the Australian requirements this is a sound and preferable method of minimising the regulations for equipment to be operated in Australia. The problem arises when the frequency bands for operation are different between the locations, for instance, equipment in Europe in the 400 MHz land mobile sector is restricted to 400-470 MHz, whereas in Australia this band covers from 400-520 MHz. This means that equipment approved under the European testing standards has not been tested for the extended limits of the Australian spectrum allocation, and with a variation in excess of 10% of the proposed bandwidth it is possible that performance characteristics may vary outside of acceptable limits. Equipment meeting the requirements of ETSI standards is generally not the problem; however, there is a large amount of cheap and frequency agile equipment now available via the internet. Much of this equipment is well below the performance required to sustain the interference model on which the frequency assignment rules are based. In this situation, how can the ACMA make a judgement, or take action against a licensee using such inferior equipment and causing interference to other services if no standard for minimum performance has been set by ACMA,



It would seem to ARCIA that there is a need for recognition of acceptable overseas standards and that some form of endorsement is required, with the equipment supplier having to accept responsibility that the equipment being imported does actually operate under local conditions; this would then give a point of control of the equipment. The lack of recognition of standards could be carried to an extreme where a third-party country designs its own standards that are at ridiculously low levels of performance, under the present formula as long as the equipment has been approved to another standard it is approved for operation in Australia. Ridiculous though that may seem, it is a possibility and some forms of basic equipment standards are required. The New Zealand regulator (MBIE) manages this issue by continuing to accept appropriate overseas standards for both analogue and digital equipment into its regulatory arrangements, even including AS/NZS4768 which was developed specifically for this region. The associated legislation in New Zealand also assists in this regard by having a wider ranging heads of power than for ACMA in Australia.

A further area of concern is with relation to licensing of equipment; our members have multiple instances where the present ACMA licensing system fails to meet requirements, even to the basic level of a client with many licences having difficulties in organising for all of the licences to expire on a common date. If the system does not capture the dates correctly, the ACMA computer system may cancel the licence and the frequency becomes available for re-allocation by the frequency assigners. This creates much hardship for industry as the client is still using the equipment but the frequencies have now been allocated to a new service, with the problem only becoming evident when both parties are operating equipment. It is also difficult for users to bring different types of licences onto a common expiry date, this is the case with a combination of fixed links and standard land mobile services, they work together but if the licences are on different expiry dates it becomes very confusing for the users.

There is no doubt in the minds of members of our Association that the present licensing system is in need of modification, and that the recently instituted system has generic flaws and doesn't lend itself to being more accessible and manageable by the licensees themselves. In an era when other users of Government services are being encouraged to have an input into the relevant information and assist with keeping it up-to-date through on-line portals and the like, the ACMA system is severely deficient in these areas. Implementation of practices that are already common in similar agencies could see regulation reduced and user interfaces improved significantly.

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

Our input in this term of reference is that although there are many 'miracle inventions' claimed about spectrum and their efficient uses, most of these never actually become marketable commodities. As an Industry Association we are very conscious that in general terms Australia is a 'technology taker' with our radio communication products being sourced from other markets. This is further compounded by the small size of the Australian Land Mobile Radio market in comparison to other regions, all of which means that local manufacturers will generally not be in a position to identify new products with a large percentage of the Australian efforts instead going into enhancements for imported products. The bottom line is that for our 'mission critical' and 'business critical' markets to expand and flourish, the spectrum available must mirror that from overseas regions to provide the best possible utilisation of spectrum.



There is a cry from the public carriers that their product range can offer the same facilities and features as the existing land mobile markets and whilst this may appear so on the surface, it soon becomes apparent when the actual users are consulted that the carriers offerings still fall short of the actual needs of the market. In many ways this relates to the fact that the carriers design and build their communications networks with the 'retail' users as their primary market, whereas the 'business critical' and 'mission critical' users require much more thought and planning into system design, with greater planning for resilience, redundancy and latency, factors the carriers offer lesser levels due to investment criteria.

The coverage requirements for mission critical services also generally exceed the areas provided by telecommunications services. This also raises issues where some services may require spectrum use in multiple bands to meet the service requirements, at present this includes 400 MHz spectrum for actual operational traffic, but may also include 900 MHz spectrum for low-capacity links to provide the connection between actual transmission sites. In looking to the future there may also be other spectrum for mobile broadband usage, these multiple areas must be treated as one service in any review of band plan allocations.

ARCIA believes that the benefits of new technology will only be seen by all sectors if the frame work can include the ability to deploy technology on a small, medium and large scale to suit the particular circumstances that a commercial or government entity requires. During the ACMA Radcomms 2014 an excellent example was provided by Rio Tinto using LTE technology on a small scale with bespoke quality of service arrangements to meet a critical business need, SAFETY. Under the current framework mobile broad band technology is only intended for the large carrier model, however as that technology moves to lower frequency bands and equipment becomes available to suit entities such as public safety, rail transport, utilities, mining and many other industries, ARCIA believes that the spectrum framework should be able to enable technology options in many different circumstances.

Any review of the framework should look at the relative merits of an open access, or spectrum sharing scheme to allow many different commercial and government entities to use spectrum for LTE, or future, technology options. ARCIA believes that the benefit to the Australian economy of having an open access system could outweigh simply auctioning a new block of spectrum to the highest bidder and suggest that the review would benefit from an economic study into the proposition.

When you consider the case of public safety there is a clear requirement to have secure and resilient communications, including critical voice and data communications. There is also a clear requirement to have priority access to any technology to maintain command and control of urgent situations. Equally there is considerable doubt that State Governments have the financial capacity to build and own these future networks. ARCIA believes that the best way forward to allow public safety entities to leverage the availability of commercial networks and be able to augment coverage or capacity is by having suitable spectrum available in adjacent or complimentary ITU bands that allow public safety access to new technology.



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

In general terms we are supportive of this concept, however, at present the overall spectrum allocation process is done under the guise of 'promoting the best possible public benefit' which at present is limited to the best economic outcome from the spectrum allocation. The emphasis from the major carriers always relates to the economic benefit from the use of spectrum for public systems and this is seen as the driving force behind decisions. To assist with the thrust of this discussion there needs to be a tangible relaxing of the 'economic drivers' involved and an evaluation of the spectrum usage in overall terms of benefit, the social benefits should be given a higher degree of consideration than would presently appear to be the case.

Market based spectrum allocation methods appear to work best with large public access networks, such as the CMTS networks, where there is strong competition from a range of network operators for the available spectrum. The large and growing subscriber markets served by these networks tend to ensure efficient use of the spectrum.

The use of spectrum licensing has been less successful in other frequency bands serving specialised markets such, as the land mobile radio industry. One case in point was the market based licensing of spectrum in the 500 MHz band in the mid to late 1990s. While the initial spectrum auction may have yielded a satisfactory revenue outcome for the government of the day, over the 15 year term of the licences the spectrum remained somewhat under-utilised by the incumbent licensees for a range of technical and commercial reasons. This potentially denied access to this band by others with a greater need or who were better placed to make more efficient use of the spectrum.

The end result was that those segments in the 500 MHz band reverted back to an apparatus licensing regime on 30 June 2012 as the ACMA sought to make more spectrum available as part of its reform of the 400 MHz band. The message for government and regulators is that there is no single allocation method that will efficiently serve all bands and that they should assess the needs of the various vertical markets in a frequency band in deciding the most efficient spectrum allocation method for each band.

ARCIA would tend to favour retention of the current mix of apparatus licensing and spectrum licensing for the various frequency bands, based on the needs of different vertical markets. It may well be that a new format of licensing be investigated where only the individual parameters are varied to suit the application and the particular users requirements, thus allowing for a potential 'mix' of applications and uses in any frequency band. This could then replace the existing three classes of licences and bring in a simpler and more manageable system, such a system would also offer the possibility of the actual regulations for operation of the service to be stipulated on the actual licence document rather than buried in the reference documents as is presently the case.

In considering any changes to the method of spectrum allocation or structure of particular frequency bands, the Government and the ACMA need to ensure that they review all of the required legislative changes, administrative procedures and resources in place well in advance of the implementation of the proposed changes. One case in point was the recent reform of the 400 MHz band, where the ACMA accepted ARCIA's proposal for licence fee concessions to those licensees who chose to implement the changes ahead of the required transition deadlines. When it came time to implement these changes, the ACMA discovered that existing legislation did not allow it to offer the proposed financial incentives and further legislative changes were needed which took time to implement. The net result was that many of the early adopters of the band plan changes missed out on those licence fee concessions, financially disadvantaging them compared to those that implemented the changes later.



Also at an administrative level, the ACMA was slow to put in place the necessary resources and systems to support implementation of the 400 MHz band plan changes.

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

Our primary concern in this area is that in many instances the ACMA adopt a position and it is not prepared to entertain different points of view or recognise any concerns or future problems that may arise from the position. To be a truly representative 'World's best regulator' there needs to be a much more open and transparent process, with the ability for stakeholders to challenge decisions and have them reviewed in an independent manner, without this being seen as a personal affront by ACMA staff. There does need to be some form of input from the Department of Communications and there needs to be interaction between the Department officers and the relevant stakeholders in Industry, not necessarily in just a lobbying fashion either. The Department officers should have visibility of regulation and use of the spectrum and be able to immediately recognise the needs of all spectrum users so that they can advise the Minister independently of ACMA opinion or policy.

We would also suggest that there should be a more open methodology in the allocation of spectrum and the management of it. An example of this is with regard to the Public Safety Agencies and their spectrum requirements. For many years each Government has represented the needs of their agencies and presented a common voice through the NCCGR, however, this situation is perhaps changing. With the review of the 400MHz band the management of the Government segments is being pushed back onto the various State Governments to act as spectrum managers and regulators. This increased workload, together with the pressure on every Government to reduce overheads may well mean that the ability to fulfil this role is becoming more difficult. It is also leading to some inconsistencies in the way that some spectrum segments are being administered by different states, which leads to increased frustration amongst various government users and industry. It is often the members of our Association who have the skills and knowledge to assist in this area, yet we are never involved in the discussions or planning exercises involved. As well as seeing the difficulty in Government agencies trying to manage their requirements, we can also foresee the problems that will arise as the ACMA step back from the direct management of this sector of spectrum. It is our belief that the ACMA should NOT be abrogating this responsibility and should fulfil the role of both regulator and manager of all segments of the spectrum.

Further to the above comments, we would suggest that although the Minister must have the capacity to amend the spectrum usage plans as per the policy of the Government of the day, these changes should be mindful of the requirements of incumbent users with regard to the 'flexibility and certainty' of spectrum access. We would suggest that the role of the Department of Communications should be to ensure that any considerations by Government and the Minister are not taken in a pre-emptive manner and are reviewed before being passed to the Authority for implementation.



ARCIA has concerns with regard to the make-up and knowledge of the actual members of the ACMA, we are concerned that the people who sit at 'Board level' of the ACMA have little knowledge of how many of the actual users of the spectrum operate and do not seem inclined to learn more about the use of the resource of which they are purportedly managing and regulating. We base this comment on our Associations issuing personal invitations to each of the members of the Authority to attend the largest Australian Radiocommunications conference and exhibition in Melbourne in October. Not only was there little interest in any of the individual members attending, there was scant regard paid to even acknowledging the invitations or responding. To ARCIA this indicates that the Authority members are prepared to base their judgements on spectrum management matters purely on the information presented to them by ACMA managers together with their own general knowledge gained in the public domain. We believe the Authority members should be familiar with the resource they manage and how it is used by all approved users.

Perhaps the one essential criterion that appears to be being diluted as other pressures are brought to bear is that of the ACMA as the true 'band manager'. At Radcomms 2014 there were several comments made about the potential for others to act as 'band managers', however, whilst ARCIA can see some benefits in this regard, the over-arching responsibility of the actual band management and indeed spectrum management must remain with the ACMA and no efforts to delegate the responsibility for this role must be permitted. Others may fulfil some or part of the role as band manager; however, the ACMA must retain the responsibility to ensure that interference mitigation techniques and mediation requirements are operated within one jurisdiction and not spread across others with varying degrees of responsibility or stake in the outcomes.

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

Although similar in thrust to ToR1 above, we are concerned that recent interpretation by the ACMA in this regard has been to minimise the supposed need for regulations and place more emphasis on economic justifications. As a result the ACMA has been 'dumbed down' with less technical resources available to input to the decision making process and this will have a negative effect in the longer term. We are also concerned that in some instances the ACMA approach has been along the lines of any detrimental effect on the spectrum as a result of interference can be prosecuted under the terms of the users licence conditions. We are of the opinion that if one of the major resource projects has an issue with equipment that apparently carries an approval, yet creates interference, there is a real risk of the resource company challenging the ACMA within the legal system and that without actual definitions of equipment standards the judiciary could well have problems trying to defend the ACMA position.

ARCIA members also have concerns that in many ways the ACMA are undertaking roles and instituting policy in an independent manner between the various sections of the ACMA. This leads to situations where the effects of some long-ranging decisions are corrupted by other uncoordinated, yet related, activities and the end result is decisions and policy made on incorrect information. There needs to be much more correlation between various sections of the ACMA to ensure that there are no competing policy issues that can have negative effects on proposed outcomes and that each policy decision and outcome is based on the total picture and not just partial information.



In considering the long-term implications of this issue, we have serious concerns with the present inclination of the ACMA to reduce the emphasis on regulation and equipment standards in favour of letting the market decide on the best outcome. Although in a simplistic marketing concept this would seem to be a viable idea, we would caution against it with the suggestion that the situation in the United States of America should be considered. With a very similar scenario to that proposed by the ACMA, the American format has descended into a minefield of legal challenges and has seen the growth of 'Spectrum lawyers' who decide most of the merits and differences in legal battles. Even the strongest supporters of the free market approach will decry the present outcome of legal battles. One only has to look at the relaxation of restrictions on legal advertising in Australia to realise that the 'no win, no cost' format will soon follow and this then means that lawyers will adjudicate the responsibility for spectrum regulation and take control out of the hands of the regulator. This is not a recipe for fair access and usage of the spectrum, simply a consolidation of the biggest winning the most valuable spectrum.

When we consider the overall scenario our Association has serious concerns with any concept that implies consistency as being equal for all spectrum users. There are totally different requirements for the many users of the spectrum and with this in mind we find it difficult to see how equality of access can be graded when comparing the Broadcast sector with the Public Carriers, or more to the point, the demands of spectrum from the Public Carriers compared to the more specialised requirements of the Public Safety sector and the business requirements contained within the Land Mobile sector. Whilst both the Broadcast and Carrier markets have strong presence and are able to loudly voice their requirements, the Public Safety Agencies are limited in their ability to represent their needs because of different needs between the various agencies, plus the demands of the Land Mobile Radio users are impacted by a much wider range of even smaller users with little presence in the overall arguments.

Term of Reference 6:

Develop an appropriate framework to consider public interest spectrum issues

It is the considered opinion of this Association that there should be no place for any form of 'market-based mechanism' in the planning, allocation, use and management of the Spectrum for the public interest sector. Although our Association could be deemed by many as not to be involved in this sector, it is our members who will most likely be providing the equipment for use in this segment, and who will probably offer one of the few voices to represent the public interest area as a whole. For many years the relevant Governments have represented the needs of their agencies and promoted the spectrum requirements, but with the pressure on Government agencies to reduce overheads and cut back on unnecessary staffing levels, it has now meant that in many, if not most instances, the expertise no longer exists and the ability to voice their operational requirements has been lost. This leads to a potential miscarriage of process if the public interest users are unable to effectively promote their requirements and the system reverts to market-based decisions. This is potentially detrimental to the end users.

The public carriers are always strong on promoting their ability to meet the demands of the public interest users, yet often the defining characteristics of public interest users are at odds with the commercial fundamentals of the public carriers. The carriers design their networks to make profits for their shareholders, so underlying demands such as network resiliency; redundancy and latency are not placed at the highest priority as required by the public interest users. This fact alone would mean that any 'market-based mechanism' in the allocation of spectrum would compromise the basic premise of many of the public interest users.



Term of Reference 7:

Develop a whole-of-government approach to spectrum policy

One of the major concerns we have is the lack of transparency with regard to some decisions that affect the communications spectrum. For instance, whilst one section of Government has provided a grant for a local company to design and produce a 'GPS Repeater' for use by Government and industry, the ACMA has stated categorically that these devices are illegal and must not be used in any applications, even in underground mine operations. The devices that were subsidised by Government are being sold to some Government Departments and we are reasonably confident they are being used in daily operations, yet the ACMA refuses point blank to consider approving their use under any circumstances. In another instance, a local company which operates a manufacturing capability and employs well over one hundred local employees are designing and manufacturing equipment for specialised applications. An importer has brought product into Australia and although approved locally for one type of application, it is being used outside of the approval. The ACMA state that as the equipment is approved they do not need to consider any further action, even though they have been advised the equipment is being changed and utilised in a non-approved manner, degrading adjacent spectrum.

These inconsistencies seem to occur because the various ACMA sections operate independently and at times appear not to have any cohesive approach to regulations or protection of the spectrum.

There is no doubt that with the plethora of spectrum use contained within the overall Australian economy, and the competitive demands that these many uses involve, there must be a defined approach to the issue. There will be others who will question why there needs to be a 'Whole of Government' approach and will simply press ahead with the concept of market-based allocations. Whilst from an economist's point of view this is entirely justifiable, it does not reflect the issues involved with the many different uses of the spectrum. ARCIA strongly believes that there has to be much more consideration of the overall requirements than a simple economic justification. Compare communication between two fixed points and between a fixed point and mobile. In the first scenario, copper, fibre optic and radio can compete in providing solutions whereas in cases involving a mobile only radio can be used. This alone should send the message that radio spectrum, which is a limited resource, has properties that should be valued above just taking the cheapest "economic" option for any given scenario. Enough has to be available to fulfil the many competing demands of our ever growing society, which now includes machine to machine communication.

Term of Reference 8:

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

ARCIA has serious concerns in this area; we have seen from the last twelve months that more and more emphasis is being placed on 'economic justification' for the evaluation of need and subsequent allocation of spectrum. In an environment where all uses are realistically given proper economic research this is a valid concept, however, in an environment where many small spectrum users and most Public Agencies do not have the time or resources to provide economic research into the benefits they offer, the allocation of spectrum becomes oriented towards the major public carriers who can afford to provide extensive economic justification for their exuberant demands for spectrum.



In response to this ever-increasing trend ARCIA has commissioned independent research in an attempt to provide a realistic valuation of the spectrum utilised for Land Mobile Radio communications, and to further attempt to place an economic value on the benefits gained from use of Land Mobile Radio equipment. This information will be happily shared with Government and others at the appropriate time and will hopefully dispel the proposition that LMR is no longer of any significant value to the economy. Indeed as a generally longer distance technology solution it fits neatly with many others in the converged and interactive environment permitted by cloud technologies.

This response is presented on behalf of the Australian Radio Communications Industry Association (ARCIA) Inc.

Ian Miller – Executive Officer
15th September 2014