

**COMMUNICATIONS  
ALLIANCE LTD**



RESPONSE TO  
THE ACMA DISCUSSION PAPER  
“Strategies for Wireless Access Services – Spectrum  
Access Options Spectrum Planning Discussion  
paper SPP 10/06”

MARCH 2007

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## **INTRODUCTION**

Communications Alliance welcomes the opportunity to submit its views on the potential future use of spectrum.

This submission follows the submission by ACIF to ACMA of its response to the ACMA discussion paper 'Strategies for Wireless Access Services'. ACIF merged with SPAN in September 2006 to create Communications Alliance.

## **ABOUT COMMUNICATIONS ALLIANCE**

The prime mission of Communications Alliance is to promote the growth of the Australian communications industry and the protection of consumer interests by fostering the highest standards of business ethics and behaviour through industry self-governance.

Communications Alliance believes it is in the best interests of all participants, customers and government that the industry takes responsibility for devising practical, self-imposed solutions that are developed by co-operative processes.

In doing so, Communications Alliance seeks to facilitate open, effective and ethical competition between service providers while ensuring efficient, safe operation of networks, the provision of innovative services and the enhancement of consumer outcomes.

Membership of Communications Alliance is drawn from a wide cross-section of the communications industry, including service providers, vendors, consultants and suppliers as well as business and consumer groups.

## **SUMMARY**

Communications Alliance supports the efficient use of spectrum that is consistent with international recommendations. Communications Alliance also supports the use of auctions as an efficient, transparent approach to the allocation of spectrum bands.

Therefore the 2500-2690 MHz and 3575-3710 MHz bands should be made available via auction for alternate uses, with the choice of application to be decided by the licensee.

Operators of Electronic News Gathering (ENG) services have been on notice since the ITU's World Radiocommunications Conference in 2000 (WRC-2000) about alternate uses for the 2500-2690 MHz band.

Communications Alliance understands most fixed point-to-point services in the 3575-3710 MHz bands are in regional or rural areas and any difficulties arising from other uses of the spectrum can be managed on a case by case basis.

Fixed satellite service (FSS) earth stations present a greater challenge because of their sensitivity to interference, lower availability of alternate options (i.e. for communications with 'hard to reach' locations) and the potential costs of relocation. However this is not an impossible problem to solve and the availability of the additional spectrum for alternate uses would enable new services while retaining the FSS earth station functionality.

The new information in the discussion paper about how a private park might operate is welcome. However the continuing uncertainty about important components of a private park (e.g. dispute resolution procedures) means that it is not, at present, a workable model. Communications Alliance congratulates ACMA on seeking creative solutions to spectrum management and is well placed to assist with industry management of a private park should it be implemented. In the meantime, spectrum licensing remains the most viable option for licensing the spectrum bands.

## RESPONSES TO ISSUES FOR COMMENT

### *Suitability of candidate bands*

1. Should the 2500-2690 MHz band be made available in whole or part for WAS applications?

Communications Alliance believes the whole 2500-2690 MHz band should be made available for alternate uses and the choice of application should be determined by the licensee of the spectrum.

Communications Alliance supports the efficient allocation and use of spectrum, in line with the object of the *Radiocommunications Act 1992*.<sup>1</sup>

An auction process achieves efficient allocation of spectrum in a transparent manner. Allowing the licensee of the spectrum to determine its application achieves efficient use of that spectrum.

Allowing the licensee to determine spectrum band use implicitly assumes that spectrum use will be consistent with international recommendations. This is because equipment built to conform to international recommendations has a global market and therefore is likely to have a lower cost for a given functionality.

As ACMA would be aware, the ITU's World Radiocommunications Conference in 2000 (WRC-2000) identified the whole 2500-2690 MHz band for use by IMT-2000 applications<sup>2</sup>.

Therefore the 2500-2690 MHz band should be made available in whole at the earliest possible date and its licensee(s) should be determined by auction. The choice of application(s) should be left to the licensee(s) of the spectrum.

Future Wireless Access Services such as 3G Long Term Evolution will require additional spectrum and based on the current consumption of mobile data services on the latest High Speed Packet Access (HSPA) networks, additional spectrum becomes critical for higher bandwidth applications.

Global standardization of enhanced wireless broadband services via IMT2000 is occurring and it will rely on this band being available in significant blocks per license holder in a paired form. The utilization of

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<sup>1</sup> Section 3 of the Radiocommunications Act 1992.

<sup>2</sup> Refer to <http://www.itu.int/ITU-R/conferences/wrc/wrc-00/results/index.html>

unpaired spectrum has been low and capacity exists in the 2.3 and 3.4 GHz bands.

A view expressed to Communications Alliance by its membership is that the spectrum is not made available, then Australia will have limited ability to deliver competitive super fast broadband via wireless access technologies.

*If it were, what would the implications (costs) be for ENG applications?*

As mentioned above, Communications Alliance does not rule out the use of the 2500-2690 MHz band for ENG. If existing providers of ENG services acquire rights to use the 2500-2690 MHz band through an auction then the implications would be limited to the cost of acquiring spectrum through an efficient, transparent, allocation process.

Should the spectrum be licensed to an organisation that does not wish to limit use of the 2500-2690 MHz band to ENG then obvious implications could include:

- (i) The costs of transferring ENG services to a different spectrum band. This would be where the provider of the ENG service wishes to continue being the licensee of the spectrum for ENG. The major cost here is assumed to be that to modify or replace ENG specific equipment. Or,
- (ii) The costs of using new communications applications, such as high speed wireless data communications services, in place of dedicated communications equipment for ENG services. This means the provider of the ENG service would want to 'outsource' the licensing cost of the spectrum for ENG services to another spectrum licensee and pay to deliver the ENG information on an ad hoc or contracted basis.

Note there may be benefits as well as costs for broadcasters that use newer communications technology for ENG. For example, the use of broadband equipment that is based on specifications for a global mass market may be substantially cheaper than dedicated equipment built for specialist services such as ENG. This would offset the costs of some of the implications mentioned above.

It is difficult to quantify the implications for ENG applications because of the absence of readily available costing information. This means Communications Alliance is unable to provide a more detailed response to this question.

2. What are the implications if the 2500-2690 MHz band is not made available for WAS?

In line with the response to question 1, Communications Alliance believes the 2500-2690 MHz band should be made available and the choice of application should be left to the licensed user of the spectrum.

If the band is not made available for WAS then the band could still be made available for other applications, although this would be an unnecessary restriction on use of the band.

If one interprets the question to mean "what are the implications if ACMA maintains the status quo?" then the biggest implication is the opportunity cost. To maintain the status quo would perpetuate the inefficient use of spectrum and ACMA would not be managing spectrum in the best interest of the Australian community if it permitted the continuation of such inefficiency.

This is because:

- (i) ACMA would forgo revenue from a possible spectrum auction;
- (ii) End users would have less choice of services; and
- (iii) Aspiring providers of WAS are unable to offer services and generate income from those services.

Of course an implication for current users of the spectrum band is that they will continue to use the spectrum band at its existing cost.

Another implication to consider is a timeframe for a decision i.e. if it is not made available for a period of time, or not made available indefinitely/for the foreseeable future.

In the immediate short term there is no concern about spectrum availability for wireless access services. For example, there is spectrum licensed for wireless access services that is not being fully used e.g. spectrum around 2.3GHz and 3.5GHz is licensed nationally and currently used for commercial services in Sydney, Melbourne, Wagga Wagga and Tamworth.

However if the spectrum is not made available in the next couple of years then the combination of the ITU forecast for spectrum demand and anecdotal reports from carriers of increasing utilization of existing spectrum allocation indicates there will be a spectrum shortage for wireless access services.

This suggests ACMA's current activity to prepare spectrum for future use is prudent and Communications Alliance congratulates ACMA on its forward looking approach to planning spectrum use.

*3. Should the 3575-3710 MHz band be made available in whole or part for WAS applications?*

Consistent with the response to question 1 for the 2500-2690 MHz band, Communications Alliance believes the whole 3575-3710 MHz band should be made available to enable more efficient spectrum use and the choice of application should be determined by the licensee of the spectrum.

The FSS Standard C Band world-wide comprises the band 3400 to 4200 MHz. It is not evident why the ACMA would propose the band 3575 to 3710 MHz for WAS as opposed to 3575 to 3700 MHz, a 10 MHz incursion into the Standard C Band, especially as there are around 18 FSS licences on issue in the frequency band 3600 to 3800 MHz excluding those in remote areas. Some of these licences are for major earth stations in the Sydney area. Co frequency and adjacent frequency FSS operation with WAS will require significant technical coordination and cost. The 10 MHz incursion will add unnecessary complication.

*If it were, what would the implications (costs) be for fixed point-to-point links and fixed-satellite services?*

Communications Alliance understands the implications for most fixed point-to-point links would be low, if any. This is because most of them are located in rural and remote areas, where the combination of relatively low demand for applications such as broadband WAS along with the directional nature of a point-to-point link means the probability of interference is slight. Therefore it may be possible to leave many point-to-point links in place, even as secondary services. In metropolitan areas the relatively low number of fixed point-to-point links means that it may be possible to leave some of the point-to-point links in place and address the exceptions on a case-by-case basis.

An obvious implication for FSS earth stations if the 3575-3710 MHz spectrum band was used for applications other than the existing uses would be the cost of relocation. Such cost information is not readily available therefore Communications Alliance is not in a position to quantify it. However for a major earth station we understand the cost would be measured in millions of dollars. Further comment is made on possible relocation under the response to question 8.

Another implication is the risk of interference between possible applications (such as broadband WAS) with existing fixed satellite



receivers for broadcasts of TV services from outside Australia. Communications Alliance understands that Australia does not offer protection for the reception of these services if they are not licensed but notes there may be some community benefit from ACMA raising awareness among end users of these satellite receivers about the potential impact if ACMA enables alternate spectrum usage in the 3575-3710 MHz band e.g. increased risk of interference leading to a reduced ability to receive the satellite TV service(s).

One member of Communications Alliance has voiced concerns over the increased risk of interference and has reported that satellite operations in places including Australia, Bolivia, Fiji, Hong Kong, Pakistan and Indonesia have been negatively affected by spectrum in the 3575-3710 MHz band being used to deliver WAS type services. Where WAS systems such as wi-fi and wi-max share the same spectrum bands as satellite systems, operating in the 3400-4200 MHz band Standard C band, substantial interference to the point of system failure has been reported.

*4. What are the implications if the 3575-3710 MHz band is not made available for WAS?*

Consistent with the response to question 2 for the 2500-2690 MHz band, Communications Alliance believes the main implication if the 3575-3710 MHz band is not made available would be to incur an opportunity cost.

Whilst Communications Alliance has not carried out an analysis of the current or future benefit obtained from the use of the FS and FSS in this spectrum our belief is that to maintain the status quo would perpetuate the inefficient use of spectrum; and ACMA would not be managing spectrum in the best interests of the Australian community if it permitted the continuation of such inefficiency.

This is because:

- (i) ACMA would forgo revenue from a possible spectrum auction;
- (ii) End users would have less choice of services; and
- (iii) Aspiring providers of WAS are unable to offer services and generate income from those services.

These factors should be considered against the benefits of current use.

## ***If the 2500-2690 MHz band were available for WAS***

5. Which segmentation option would you prefer? Why?
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### **Option 2 preferred**

As mentioned previously, Communications Alliance supports letting spectrum licensee(s) determine the choice of application. Therefore it prefers Option 2, namely 2x70MHz blocks for paired use, 50 MHz block for unpaired use. This is because:

- (i) it is aligned with European arrangements, which would mean Australian use of the spectrum could benefit from the economies of scale of equipment produced for a larger market;
- (ii) it is less complicated than Options 3 to 6; and
- (iii) it is more flexible than Option 1 because it provides for both paired and unpaired spectrum usage.

### **Option 1 acceptable as well**

Communications Alliance considers Option 1 (i.e. Segmentation into blocks of equal size) acceptable as well because it does not prescribe the application of the spectrum.

### **Options 3 to 6 not supported**

Communications Alliance does not support Options 3 to 6 because they allocate spectrum to a specific application, namely ENG. As stated previously, Communications Alliance believes the allocation of spectrum for specific applications can lead to inefficient usage of spectrum.

While Options 3 to 6 might be seen as a practical compromise that allows ongoing use of spectrum for Electronic News Gathering, it is inconsistent with international recommendations and prevents efficient allocation of the whole 2500-2690 MHz spectrum band.

Communications Alliance's belief is that Option 6 should not be considered, since it is based on bandwidth segments (7 MHz) that are inconsistent with all other global broadband wireless technologies (based on 5 MHz multiples). The adoption of Option 6 is likely to restrict technology choice and would not represent sensible use of the valuable spectrum resource.

If one of Options 3 to 6 should be adopted however, Communications Alliance suggests:

- (i) the use be by all broadcasters on a shared basis.
- (ii) the use of self regulation to coordinate spectrum use. There is a limited number of broadcasters so one assume they should

- be able to develop the required procedures e.g. for notification, shared use and dispute resolution.
- (iii) ACMA sets a 'sunset' date for ENG use of the spectrum. This would allow migration by ENG applications to other spectrum band(s) and/or technology. While any of Options 3 to 6 would be a sub-optimal outcome, setting a sunset date would move towards more efficient allocation and use of the spectrum band.

*6. What options would you prefer for the management of incumbent fixed point-to-point services? Why?*

As mentioned above, many of the incumbent fixed point-to-point services may be able to continue to exist satisfactorily as secondary services, with exceptions addressed on a case-by-case basis e.g. migration to other technologies. Therefore Communications Alliance supports point-to-point services becoming secondary services after a predetermined time, or immediately after the allocation to a license holder is made if there is a sufficient notice period. This also would then allow for new 2.5 GHz WAS services to provide wideband point-to-multipoint wireless services for regional/rural communities.

***If the 3575-3710 MHz band were available for WAS***

*7. How much spectrum should be made available? Why?*

The spectrum 3575-3710 MHz could be made available, subject to negotiation of appropriate band edge arrangements at 3700 MHz. This allows for more efficient use of the spectrum, by making it available to a larger number of users, particularly in areas of higher population densities. It would also benefit the community through an auction determined price for the spectrum being delivered to the government.

*8. What options would you prefer for the management of incumbent FSS earth stations? Why?*

Communications Alliance suggests ACMA could work with the federal government to facilitate the relocation of FSS earth stations in the long term to new, dedicated sites in areas of lower population density than their current location.

This would require locations in both eastern and western Australia to permit ongoing satellite coverage for existing services e.g. over the Indian and South Pacific Oceans. Capital costs would be incurred for

major earth stations including construction of infrastructure and equipment. These include backhaul communications, access roads, buildings, power, water supply, back up power supply, fuel storage, staff housing and amenities. Additional operating costs would be involved including backhaul communications leasing costs, costs of fuel and other essentials and possibly remote site allowances for staff.

*In particular, should FSS earth stations be grandfathered? If so, for how long?*

As ACMA would appreciate, to relocate a FSS earth station requires a complex planning, approvals and construction process. Similarly the closure of an existing FSS earth station requires planning to migrate existing services. Also, FSS earth stations provide services that are not easily substituted e.g. communications to hard to reach locations and areas reliant on C band, such as the island nations of the South Pacific, whose rainfall makes the use of Ku Band satellite communications unreliable. Therefore any existing FSS earth station would need a period of time prior to its relocation.

As well, ACMA should limit the development of new FSS earth stations to areas outside metropolitan areas to retain the option for future use of the 3575-3710 MHz spectrum band. Therefore it is appropriate to have a grandfather period for existing FSS earth stations.

The number of FSS earth stations potentially affected by changed spectrum use in the 3575-3710 MHz band is understood to be in single digits. Therefore it might be possible to manage relocation of FSS earth stations to areas of lower population density (to reduce the risk of interference), possibly with federal government assistance e.g. in areas such as planning approvals.

In the absence of detailed information on all the FSS earth stations that might be affected it is not appropriate for Communications Alliance to recommend a duration for a grandfather period. Given that some satellite contracts mirror the life of the satellite transponders, which may be 15 years, the period is unlikely to be short.

*In general, what arrangements should be considered for the protection of earth stations?*

Communications Alliance believes an exclusion zone in areas of high population density (i.e. metropolitan areas) is an impractical proposition that ACMA would find very difficult to enforce. This is because the combination of the propagation distance for wireless services and the ability of portable and/or mobile devices that are

used on those services to be inadvertently and intermittently brought into and out of an exclusion zone to an earth station.

While a similar risk exists in areas of lower population density, the probability of it occurring would be substantially less because the risk would be correlated with the (lower) population in the area surrounding the earth station.

9. *What options would you prefer for the management of incumbent fixed point-to-point services? Why?*

As mentioned in the response to question 3, a *laissez faire* approach to address fixed point-to-point services on a case-by-case basis by exception is considered feasible.

ACMA may wish to consider clearing all fixed point-to-point services in this band in metro areas to facilitate maximum capacity for alternate use such as metropolitan WAS services. In regional/rural areas a co-ordinated sharing regime could be more appropriate to enable recognition of the essential role of fixed point-to-point links in providing connection of a variety of communities in isolated or remote locations.

### **Licensing options**

10. *Which licensing option(s) would you prefer for WAS in the 2500-2690 MHz band? Why?*

Communications Alliance prefers spectrum licenses as the licensing option in the 2500-2690 MHz band, primarily because of the potential problems in managing interaction between different license types and spectrum licensing is the most feasible approach in capital cities.

Each of the class, apparatus and spectrum license options has its merits for different circumstances, as covered in the discussion paper. However the absence of certain details on how to manage spectrum in a private park means there is, at present, difficulties in mixing spectrum, apparatus and class licenses, particularly in adjoining areas.

For example, if there was only spectrum licensing in a metropolitan area but apparatus or class licensing in a neighbouring rural area, it is uncertain how interference could be managed at the boundary between the two areas.

The ACIF submission in 2006 to ACMA on its discussion paper "Strategies for Wireless Access Services" suggested ACMA provide more details on the private park concept. The additional information in the current

discussion paper is welcome progress but there are more details required before the private park concept can be a workable model for spectrum management.

In light of this, Communications Alliance would welcome ACMA's consideration of the following specific technical and operational difficulties with the private park concept:

- (i) The reliance on technology-specific features such as "dynamic frequency selection" and contention-based protocols assumes specific technology compatibility features. This would tend to constrain the kinds of wireless systems that could be deployed - shifting away from the principle of "technology neutrality" and allowing the market to decide best usage;
- (ii) The assumption that all technology variants likely to be deployed in a "private park" will be universally capable of effective inter-working in context of dynamic frequency selection & contention-based protocols. This is risky because there are many technology examples (past & present) showing difficulties in such 'inter-working', e.g. X.25, CCS#7, 802.16 WiMAX, & others. Failure to properly inter-work could create sufficient interference throughout the licensing period to render the band a commercial failure; and
- (iii) Significant operational detail is lacking from the ACMA "private park" concept. This leads to the concern that interference/sharing disputes could well escalate into litigation in the absence of the various ACMA legal instruments that provide the absolute rights regime underpinning the current spectrum licensing framework.

In addition to this, it remains unclear what, if any, dispute resolution procedures ACMA envisages would be used for addressing interference between different licensees in the one area.

The ACIF submission also offered to play a part in industry self management of a private park model. ACIF merged with SPAN in September 2006 to create Communications Alliance and it remains open to discussions with ACMA on a possible role in a private park model.

11. *What areas should the licenses cover? (e.g. Australia-wide, capital cities, regional areas, state-wide)*

Communications Alliance believes there are benefits in issuing a national license (i.e. covering all states, the ACT and NT) along with license areas for capital cities, regional areas and 'other' areas.

Given the potential interest in the spectrum (based on the ITU forecast demand for services and anecdotal reports of increasing utilization of existing spectrum allocations for mobile communications services) this approach could accommodate the interest of national organizations wanting national coverage as well as organizations with interest(s) in particular areas of the country that may find the cost of a national license a barrier to market entry.

12. *If the 2500-2690 MHz band was allocated for WAS, and a block of spectrum in the band was preserved for ENG operation, how should the ENG spectrum be licensed? Why?*

Consistent with the response to questions 1 of 10, Communications Alliance suggests:

- (i) the 2500-2690 MHz band be licensed by spectrum license and the price be determined by auction; and
- (ii) the choice of application (e.g. ENG or otherwise) in all locations be left to the licensee of the spectrum as much as possible.

13. *Which licensing option(s) would you prefer for WAS in the 3575-3710 MHz band? Why?*

Consistent with the response to questions 3 and 10, Communications Alliance suggests:

- (i) the 3575- 3710MHz band be licensed by spectrum license and the price be determined by auction; and
- (ii) the choice of application (e.g. point-to-point, FSS earth station or otherwise) in all locations be left to the licensee of the spectrum as much as possible.

14. *What areas should the licenses cover? (e.g. Australia-wide, capital cities, regional areas, state-wide)*

Consistent with the response to question 11, Communications Alliance believes there are benefits in issuing a national license (i.e. covering all

states, the ACT and Northern Territory) along with license areas for capital cities, regional areas and 'other' areas.

### **General licensing issues**

*15. If WAS were authorized under a class licence or a private park (in either of these bands), what should the maximum equivalent isotropically radiated power (EIRP) be? Why?*

Communications Alliance supports alignment with international recommendations wherever possible, including maximum EIRP value(s). It is not in a position to recommend specific value(s) or conditions for maximum EIRP.

*16. Is device registration necessary under a private park? If not, what other arrangements could be used to allow coordination?*

Device registration under a private park is likely to be necessary because it could assist dispute resolution by more quickly identifying potential parties to a dispute. The registration process can be managed by ACMA or by an industry body. A current example of ACMA delegating authority to maintain a register is the Do Not Call Register, currently in development.

*17. Should aggregation of spectrum lots be allowed? If so, how should lots be aggregated (low, high or other)?*

Aggregation of spectrum lots should be allowed because it can enable more efficient spectrum allocation. It also gives bidders more options for spectrum usage across different areas, which should increase the value of the spectrum, which would be reflected in the returns from an auction.

Communications Alliance has no preference on how lots should be aggregated.



## **Other issues**

### **18. What other issues should ACMA consider?**

Other issues ACMA should consider include:

#### **1. A consistent timeframe for licensing.**

The discussion paper mentions apparatus licenses are issued for “up to five years” with an annual tax and one can apply for renewal; spectrum licenses are issued for “up to 15 years” by auction. The proposed Tiers 2 and 3 for a private park include both apparatus and spectrum licenses.

This means that different licenses used for similar services in similar areas would operate under different timeframes. However the duration of a license affects the certainty for an investment decision and therefore its value.

Therefore, Communications Alliance suggests there should be greater alignment of the timeframes for the different types of licenses in a private park.

#### **2. Prevention of spectrum hoarding**

The discussion paper states “To prevent against hoarding and anti-competitive behaviour, first tier licensees would be ineligible to apply for a second tier license in their state/territory”.

To guard against spectrum hoarding Communications Alliance suggests the arrangements for a private park also include “use it or lose it” provisions i.e. a requirement to make services commercially available to end users within a specified timeframe after the award of the license.

#### **3. International Issues**

In discussing the FSS ACMA has given limited consideration to the fact that most FSS operate on an international basis. What Australia does impacts on other nations in its region, particularly those in areas of high rainfall, such as Papua New Guinea, Fiji and other island nations in the Pacific.

Further, Australia receives a substantial amount of live television programming via C Band FSS. For example the Foxtel earth station in Sydney receives programs which are then routed onwards by cable

and Ku band satellite to viewers in Australia. Programs such as the Beijing Olympics in 2008 will be received via C band earth stations.

There are many thousands of unlicensed C band dishes throughout Australia in metropolitan and non- metropolitan areas, serving hotels and private residences. It is for consideration how the government will deal with interference to FSS from WAS.

FSS C Band networks are a significant component of Australian Government communications for its international diplomatic, defence and police deployments. It is unlikely that the Australian ends of these networks could be satisfactorily located in remote areas of Australia.



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