Submission to the Productivity Commission

Review of the Radiocommunications Acts and the Role of the Australian Communications Authority

COMMONWEALTH DEPARTMENT OF
TRANSPORT AND REGIONAL SERVICES

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PRODUCTIVITY COMMISSION *REVIEW OF THE RADIOCOMMUNICATIONS ACTS AND THE ROLE OF THE AUSTRALIAN COMMUNICATIONS AUTHORITY*

SUBMISSION BY THE DEPARTMENT OF TRANSPORT AND REGIONAL SERVICES

The Department of Transport and Regional Services (DoTRS) has policy interests in spectrum management in the following areas: Aviation, Maritime, Land Transport, the Global Navigation Satellite System (GNSS), and Regional Services and consequently considers it important to advise the Productivity Commission how spectrum management impacts on the responsibilities of this Department and the crucial spectrum issues involved.

The Department would also like to state that it supports both the Airservices Australia and the Australian Maritime Safety Authority (AMSA) submissions.

The overview below presents a synopsis of the main concerns of DoTRS, and as far as possible the rest of this paper attempts to address questions raised in the Productivity Commission's *Issues Paper*.

OVERVIEW

The major concern in relation to **aviation, maritime and land transport** is the protection and availability of radiofrequency spectrum as it relates to safety of life services. The Department considers that, in recognition of their public benefits, spectrum requirements for safety of life services should not be subject to the market-based allocation process for spectrum. It also believes that sharing of aeronautical spectrum by other services that are not providing safety of life functions and are not subject to the same world wide standards of performance and operation provides significant potential for harmful interference to aeronautical services involving significant safety of life concerns.

In relation to **regional services**, the key issues are:

- non-metropolitan regions need to have sufficient access to spectrum allocations for delivery of services (which in turn encourages further regional development);
- spectrum management needs to include consideration of likely population growth and demand for services in regional, rural and remote Australia; and
- competition policy and competition limits need to strike the right balance between ensuring a service is provided (even if it is a monopoly service) and encouraging competition.

BACKGROUND

The Department is represented on the International Radiocommunications Advisory Council (IRAC) which assists the Australian Communications Authority (ACA) in performing its spectrum management functions. In particular, IRAC oversees preparation of the Australian brief for the World Radiocommunication Conferences (WRCs) held every three years. DoTRS is currently contributing to the formulation of the transport position on spectrum management for the next WRC in 2003 as well as to Australia's preparations for the next International Telecommunications Union (ITU) Plenipotentiary (PP-2002), and the 2nd Asia Pacific Telecommunity (APT) Preparatory Meeting for the ITU Plenipotentiary 2002.

As stated above, this Department has policy interests and responsibilities in spectrum management in Aviation, Maritime, Land Transport, GNSS and Regional Services.

Aviation

The Department has developed with the aviation industry and other Government Agencies, Australian Aviation Industry[1] Spectrum Guidelines (copy at Attachment A) agreed at officials' level with the Australian Communications Authority (ACA). The Deputy Prime Minister and Minister for Transport and Regional Services, the Hon John Anderson MP, has endorsed these guidelines. The Minister wrote to the Minister for Communications, Information Technology and the Arts, the Hon Richard Alston MP, on 22 September 2001, seeking his endorsement for the guidelines. This will assist in formulating the transport positions for the above fora. In particular, the guidelines relate to concern about preservation of the spectrum for safety of life services.

Maritime

The Department, in consultation with the Australian Maritime Safety Authority (AMSA), contributes to the development of maritime navigation communications policy.

The Department, therefore, has an interest in spectrum management issues with respect to AMSA's Global Maritime Distress Safety System (GMDSS) and AMSA's Differential Global Positioning System (DGPS), as well as the new Automatic Identification System (AIS) for ship tracking in the Great Barrier Reef and the existing and proposed coastal radio services on behalf of its stakeholders, the States and Northern Territory.

Rail

The Department is promoting the standardisation of data protocol used for communication systems on Australia's interstate rail network. Standardisation is being encouraged to aid the process of providing safe, reliable, economic and effective management and operation of trains within the interstate rail network. The allocation of spectrum specifically for rail use may contribute to the achievement of this objective.

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[1] This includes both the Aviation Industry Sector and the Government Aviation Sector: Department of Transport and Regional Services, Airservices Australia, the Civil Aviation Safety Authority and the Department of Defence.

Global Navigation Satellite System

The Global Navigation Satellite System has created opportunities for new Australian and international technological advances resulting in a wide range of economic and social benefits. This has resulted in the recognition of the need for coordination and standardisation at the national and international levels in order to reduce duplication and inefficiencies while encouraging innovation and development and commercialisation of new ideas.

GNSS is a generic term covering a number of existing and planned constellations of satellites, and complementary systems, used for determining positions across the globe. The three systems of direct interest to Australia are the Global Positioning System (GPS), the Global Orbiting Navigation Satellite System (GLONASS) and the planned Galileo system.

GNSS provides highly accurate positioning and timing data to a common and worldwide standard. Coordinated with data communications services, eg radio or mobile telephone, it plays a key role in the operation of powerful, integrated information management and control systems with a diverse range of applications affecting many parts of the national and regional economies.

GNSS based navigation for aviation is providing significant operational benefits through more efficient and flexible tracking between departure and arrival points, and enhanced safety in enroute and terminal areas by reducing hazards related to uncertainty of position. The GNSS technology also reduces delays, provides for better airport and runway utilisation, and increases flexibility and efficiency of flight operations by reducing fuel required, through more efficient flight routing in and around airports, thus providing an environmental benefit by reduced noise and fuel emissions. In the case of current GPS based Instrument Flight Rules (IFR) enroute and non-precision approach approvals in Australia, such benefits are already being realised.

Australian GNSS Coordination Committee

The Federal Government has recognised a need for effective coordination of GNSS implementation in Australia. The Minister for Transport and Regional Services established the Australian GNSS Coordination Committee (AGCC) in May 2000. The AGCC reports to the Minister and to the Australian Transport Council (Federal and State transport ministers).

The role of the AGCC is to consider and develop mechanisms to coordinate all land, sea and air aspects of GNSS; promote the safe and effective utilisation and development of GNSS in Australia; and coordinate national security issues, the application of augmentation systems, and the national use of GNSS in other relevant applications.

Membership of the AGCC is drawn from a range of users and providers across aviation, defence, emergency services, land and maritime transport, academia, communications, timing, geomatics and geophysics, security and service providers. The ACA participates in AGCC meetings in an advisory capacity.

Regional Services

The use of spectrum has a significant impact on regional development and on the delivery of various services to regional, rural and remote Australia. There is an ever-increasing importance being placed on e-commerce, online connectivity and mobile communication for economic, social and environmental development and sustainability in regions.

ISSUES

Objectives of the Radiocommunications Act (2.1 *Issues Paper*)

Do the objectives of the RCA adequately describe the social, environmental and economic problems which radiocommunications legislation should address?

Aviation

DoTRS considers the *Radiocommunications Act 1992* (the *Radiocommunications Act*) does not place sufficient emphasis on the importance of the radiofrequency spectrum for safety of life functions, particularly for the aviation and maritime industries.

As stated in the Airservices submission to the Review:

> *The safety of air operations is vitally dependent on the availability and protection of reliable communications and navigation services. The high integrity and availability requirements associated with aeronautical safety systems demand special conditions to avoid harmful interference to these systems. Increasing demands from non-aviation services for spectrum in or near aviation bands not only increase the difficulties for spectrum acquisition as services expand and new technologies are developed, but also more seriously increase the potential for interference and threaten aviation safety. Safety is an absolute prerequisite for continued growth of the global air transport industry.*
>
> *The ITU Member States recognise that the safety aspects of radionavigation and other safety services require special measures to ensure their freedom from harmful interference (ITU Article S4.10, refer Attachment 1/D). This special recognition of aviation as providing a "public service" within Australia is not reflected in Australia's radiocommunication legislation.*

DoTRS supports Airservices Australia's recommendations that:

- ***Aviation safety services be specifically referred to and be given at least the same prominence as Defence, Police and Emergency services in terms of spectrum protection in the Act.***
- ***Economic considerations alone should not be allowed to determine spectrum allocation for services which are dependent on the radiofrequency spectrum and have safety of life implications.***

- ***In view of the safety of life implications associated with the aeronautical services and the need to ensure avoidance of interference to aeronautical services, management of aviation spectrum must be subject to firm and decisive control by Government and not left to industry self regulation or control by any commercial organisation.***

- ***In finalising positions affecting aviation spectrum for World Radio Conferences (WRC) and other international fora, the Australian Communications Authority should continue to consult with the Departments of Transport and Regional Services (also represented by Airservices Australia and Civil Aviation Safety Authority) and Defence.***

GNSS

The objectives of the *Radiocommunications Act* could better address the international context.

Australia does not exist in isolation. Existing major users of GNSS include international maritime and aviation industries. The Australian use of GNSS developments from overseas and the export of Australian innovations require a multimodal, interoperable and international perspective. GNSS, in the form of raw satellite signals, is being provided, free of charge, by other countries, and Australia is developing a greater reliance on access to these signals. GNSS contributes to the social (including safety of life), environmental (including improved environmental management and reduced pollution) and economic (including transport efficiencies and precision agriculture) well being of Australia.

DoTRS recommends that the objectives of the Radiocommunications Act be expanded to recognise the multimodal, interoperable and international elements involved in GNSS use.

Should the tradeoffs between competing economic and social uses of spectrum be more clearly articulated in the principles governing spectrum management?

Aviation

As discussed above, in recognition of the public benefit of radiofrequency spectrum use for aeronautical safety of life services, the Australian Aviation Government and Industry Sectors have developed Australian Aviation Industry[1] Spectrum Guidelines. They have been endorsed by the Deputy Prime Minister and Minister for Transport and Regional Services, the Hon John Anderson MP, who has, in turn sought endorsement from the Minister for Communications, Information Technology and the Arts, the Hon Richard Alston MP. These guidelines which have been agreed with the ACA at officials' level propose that spectrum requirements for these services should not be subject to market-based allocation processes.

DoTRS agrees with Airservices Australia that aeronautical safety of life services should not be subject to market-based allocation of radiofrequency spectrum for the following reasons:

- *the potential for costs to escalate substantially to the aviation industry without commensurate benefits to the public, noting the absence of a world price for aeronautical spectrum;*
- *the risk to the international competitiveness of the Australian aviation industry due to the need for aeronautical equipment standardisation and interoperability in global air transport operations;*
- *the risk of significant non-Australian ownership of this resource that is critical to international and domestic aviation;*
- *the need for additional national legislative and regulatory arrangements to protect national allocations;*
- *the possibility of jeopardising international agreements and coordination;*
- *risk of accepting short term financial returns on the use of spectrum at the expense of provision for the necessary long lead times for the introduction of aviation services.*

DoTRS support Airservices' recommendation that the Radiocommunications Act be amended to indicate that radiofrequency spectrum use for aeronautical safety of life services be not subject to market-based allocation processes to ensure public and national interests are protected. It is proposed that a clause (similar to that provided for the ABA clause 36 (5)) be inserted with the intent that spectrum allocated by international agreement to aeronautical services not be designated for spectrum licensing.

Rail

The rail industry has indicated that one of the limiting factors for future communications' development is the uncertainty created by the lack of permanent radio frequency spectrum allocations. In the interest of developing the national communications infrastructure, it is recommended that the issue of a permanent allocation of the remaining Railways of Australia frequencies specifically for rail use be thoroughly explored with industry.

DoTRS recommends that the issue of a permanent allocation of the remaining Railways of Australia frequencies specifically for rail use be thoroughly explored with industry.

The approach to allocating spectrum under the *Radiocommunications Act* (2.2 *Issues Paper*)

Does the current process of consultation with the ITU promote Australia's interests effectively?

Aviation

Australia, as part of its global responsibilities, takes into consideration international aviation plans to ensure maximum economic and social benefits to Australia. It is essential that in its consultation with the ITU, the ACA continues to take careful consideration of the global nature of the aviation industry and its economic benefits to Australia.

DoTRS recommends that the ACA continues to take careful consideration of the global nature of the aviation industry and its economic benefits to Australia in its consultation with the ITU.

GNSS

Australia is party to the *Constitution of the International Telecommunications Union* (ITU) which governs all telecommunications between States and coordinates the international allocation of radio frequencies and other parts of the spectrum. GNSS signals are authorised and protected in the ITU's *Radio Regulations* as Radio-Navigation Satellite signals.

The amount of radio spectrum is finite, and even with increasing levels of efficiency in using spectrum, there are increasing demands eg from mobile telephony organisations for allocations of spectrum and shared access to the spectrum used by the GPS. Such sharing would have an adverse impact on GNSS and although previous sharing requests have been refused, the demands for such sharing are likely to increase.

The use of GNSS cuts across many diverse sectors of industry and commerce and there is no formal Australian industry body that represents these organisations. The AGCC, with a three year life, is attempting to gain coordinated satellite navigation industry views on GNSS issues.

DoTRS recommends that the importance and diversity of GNSS users be taken into account by the ACA, including through direct consultation, in consideration of issues regarding GNSS signals.

<u>Licensing</u>

What is the potential for allowing entities other than the ACA to issue licences?
What would be the advantages and disadvantages of delegating this function to other government agencies or private sector entities?
Is the licensing system effective in managing frequency interference?

The ACA is responsible for ensuring that the spectrum is operated under the terms of the *Radiocommunications Act* and Regulations. It is also the responsibility of the ACA

to ensure that there is regular monitoring of the spectrum so that both nationally as well as internationally there is lawful use of the spectrum and interference is minimised.

DoTRS recommends that the ACA continues as the spectrum regulator and takes active measures to control interference to radio services by regular monitoring of the radiofrequency spectrum, nationally and internationally.

Standard setting

What are the advantages and disadvantages of mandatory standards and labelling.

In relation to interference with the safety of life component of the spectrum from users of other parts of the spectrum, suitable standards, where possible, to avoid such interference are essential. It is equally important that such standards should be monitored on a continuing basis. This is a significant concern as delivery of services essential for safety of life can be seriously affected. As stated previously in relation to **aviation**, the high integrity and availability requirements associated with aeronautical safety systems demand special conditions to avoid harmful interference. Increasing demands from non-aviation services for spectrum in or near aviation bands not only increase the difficulties for spectrum acquisition as services expand and new technologies are developed, but also more seriously increase the potential for interference and threaten aviation safety. **Maritime** issues include concerns regarding the risk of unacceptable levels of interference on the HF band and increasing levels of interference on Differential GPS (DGPS) used for vessel navigation radars. In relation to **GNSS**, interference, whether intentional or not, that affects GNSS signals is a concern.

The Department recommends that the Commission should continue to set and monitor standards, where possible, to avoid the risk of unacceptable levels of interference for all safety of life services.

Licensing (2.2 *Issues Paper*) and Non-commercial use of the spectrum (2.6 *Issues Paper*)

Is there an alternative to licensing for allocating spectrum?
and
How should 'public or community services' be defined?

GNSS

Interference, whether intentional or not, that affects GNSS signals is a concern. Apparently to obtain the ACA's protection from, or action to cease, such interference requires the GPS signals to be licensed under the *Radiocommunications Act*.

Even though these satellites are totally foreign owned and operated, the *Radiocommunications (Foreign Space Objects) Determination 2000* of the ACA in relation to the *Radiocommunications Act* specifically includes the GPS system. The GPS signals remain unlicensed within Australia, although consideration is being given to the possibility of one or more Commonwealth agencies, specifically the Department of Defence, applying for a GPS spectrum licence.

As stated previously, Australia is party to the *Constitution of the International Telecommunications Union* (ITU) which governs all telecommunications between States and coordinates the international allocation of radio frequencies and other parts of the spectrum. GNSS signals are authorised and protected in the ITU's *Radio Regulations* as Radio-Navigation Satellite signals.

The ACA view is:

From a legislative point of view, the Radiocommunications Act 1992 requires that the operation of radiocommunications devices be authorised by a radiocommunications licence issued by the ACA. It also requires the ACA to ensure that the government receives a return for the use of the community resources (that is, revenue from licence fees). Since 1996, the ACA has established licensing arrangements for space-based radiocommunications services that provide ubiquitous services through Australia. To date, these arrangements have applied to the use of satellites to provide communications services rather than to provide navigation services. However, from the perspective of the Act, what is important is that spectrum is being used and that there should be return to community for that use.

From a public policy perspective, it is difficult to see how government (through the ACA) could charge one class of satellite systems for their commercial use of spectrum for communications purposes but not charge another class of satellite systems for the commercial use of similar spectrum for navigation purposes. And if we don't charge satellites for the spectrum that they use, that raises the question of why we would charge terrestrial systems for the spectrum that they use (and so on).

This is not to deny that the international arrangements established through the ITU provide a degree of protection to the operation of GPS. But international arrangements are not Australian law. If GPS is to have any legal standing as a radiocommunications service protected by the Australian domestic regulatory framework, its use of spectrum needs to be authorised by a radiocommunications licence issued by the ACA.

Legal advice on this matter from the Attorney General's Department of 18 October 2001 (Copy at Attachment B), stated:

- *The Commonwealth Government can not issue (class or apparatus) licences for satellites owned and operated by a foreign government, nor is the intention of the Act to regulate foreign space objects.*
- *The Act regulates radiocommunications between Australia and foreign space objects and does not regulate space objects themselves.*
- *The ACA has not allocated the bandwidth that the GPS operates under for spectrum licensing … and therefore Australia is not in breach of its international obligations.*

A meeting of the AGCC Legal Issues Working Group has had some initial consideration of the legal advice. The ACA adviser stated that the ACA may have a different view from that contained in the advice. As an initial outcome, the Working Group is examining whether the existing licences under the *Radiocommunications Act* adequately deal with the unique characteristics of GNSS signals. As part of this exercise, the Working Group has decided to consider other mechanisms including a possible fourth class of licence.

It is recommended that where spectrum is authorised and protected by the ITU's Radio Regulations as Radio-Navigation Satellite signals:

- ***the Commonwealth, or another body acting in the public interest, should be able to take out a 'public interest' licence for this part of the spectrum, which would enable the licence holder, on behalf of GPS or other GNSS users, to protect the signal used by GPS and other GNSS satellites; or***
- ***this part of the spectrum be exempted from the requirement for Australian licensing, including any charges, and to receive, as a minimum, the full protection from interference or spectrum sharing etc endorsed by the ITU.***

This recommendation is based, in part, on:

- ***the objective of the Radiocommunications Act 1992[2] of maximising the overall public benefit (objective (a));***
- ***providing a flexible approach to meeting the needs of users of spectrum (objective(c));***
- ***taking account of the value of both commercial and non-commercial use of spectrum (objective (e))***
- ***recognition of the international significance of this matter; and***
- ***demonstrating a good citizen commitment to Australia's membership of the ITU.***

Maritime

While the Department notes that auctions of spectrum have not yet adversely impacted upon marine safety communications, the Department is concerned that auctioning does have the potential to seriously impact upon marine emergency communications.

The Department suggests that the existing spectrum for maritime distress, urgency and safety communications, as set down in the ITU Radio Regulations, should be preserved from commercial acquisition and reserved for the exclusive use of maritime distress, urgency and safety communications.

Any International Maritime Organization (IMO) recommendations on this issue should be given full consideration.

Because maritime distress, urgency and safety broadcasts are provided in the public interest, spectrum use for these purposes should not attract charges.

The Department recommends that existing policy to quarantine spectrum for safety communications be maintained.

Rail

As the issues raised in the aviation and maritime sectors may also apply to the rail sector, it is important that the allocation of spectrum be thoroughly explored with the rail industry. The availability of spectrum may contribute to the objective of harmonisation of communications on the interstate rail network.

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[2] Box 2.1 **Objectives of the *Radiocommunications Act 1992***, Productivity Commission *Review of the Radiocommunications Acts and the Role of the Au Radiocommunications Australian Communications Authority. Issues Paper* August 2001

Charging for the use of spectrum (2.3 *Issues Paper*)

Do auction processes ensure that spectrum is allocated to the uses that are of highest value to society?

What is the definition of the *highest value to society*? There is no guarantee that the highest price paid for spectrum produces an outcome that is of high value to society. Equally, public or community service uses of the spectrum may produce outcomes of high value to society but their need to use the spectrum may not be able to be met because of the high value of the licence fee ie the potential user may not be able to afford the spectrum licence fee. Accordingly there should be some definition of what is high value to society.

DoTRS recommends with Airservices Australia that a clear distinction be drawn between the user who has the greatest financial resources to secure the spectrum and the user who provides the highest value to society. Regulatory processes need to be effective to ensure that uses valued highest by society be given preferential access to spectrum particularly where safety of life is involved.

Non-commercial use of the spectrum (2.6 *Issues Paper*)

How should 'public or community services' be defined?

Aviation

Refer to Aviation comments under the heading: *Objectives of the Radiocommunications Act*.

Maritime

As stated above, the Department suggests that the existing spectrum for maritime distress, urgency and safety communications, as set down in the International Telecommunications Union (ITU) Radio Regulations, should be preserved from commercial acquisition and reserved for the exclusive use of maritime distress, urgency and safety communications. Any International Maritime Organization (IMO) recommendations on this issue should be given full consideration. Because maritime distress, urgency and safety broadcasts are provided in the public interest, spectrum use for these purposes should not attract charges.

DoTRS recommends safety of life services be specifically referred to as a 'public or community service' and be given at least the same prominence as Defence, Police and Emergency services in terms of spectrum protection in the Radiocommunications Act.

How should 'adequate provision of spectrum for public or community services be determined?

Adequate spectrum for aviation services must take into account the need:

- for guard bands in order to avoid potential harmful interference to aviation safety services due to incompatible non-aviation services in an adjacent band;

- for spectrum availability to meet future demands, noting the long lead times involved in infrastructure planning and deployment; and
- to ensure equipment standardisation and interoperability of aeronautical radio systems to facilitate global harmonisation of air transport operations.

GNSS

Refer to GNSS comments under the heading: *Objectives of the Radiocommunications Act, Licensing*.

Satellites (2.8 *Issues Paper*)

GNSS

What allocation and charging arrangements should apply to spectrum for satellite operations?

As stated above, GNSS signals are authorised and protected in the ITU's *Radio Regulations* as Radio-Navigation Satellite signals. This gives international recognition that GNSS usage of spectrum is a particular class of satellite usage. As recommended above, the international allocation of spectrum for this particular class of usage should be treated as a special case.

The European Union is planning a satellite constellation, Galileo, for use in 2008. This would be an alternative to, but compatible with, GPS. Unlike GPS, Galileo will not be free to users other than for a basic service level; access to higher service levels will require a commercial arrangement and payment of fees. The Galileo project has filed for an allocation for GNSS spectrum from the ITU.

It is recommended that, regardless of the commercial functions of part of the Galileo constellation, or any other GNSS constellation, the ITU allocation of spectrum for Radio-Navigation Satellite signals retain its special classification and be exempted from the requirement for Australian licensing, including any charges.

Impact of the legislation on competition (2.9 *Issues Paper*)

Use of spectrum and regional impact

Regional Services

The use of spectrum has a significant impact on regional development and on the delivery of various services to regional, rural and remote Australia. There is an ever-increasing importance being placed on e-commerce, online connectivity and mobile communication for economic, social and environmental development and sustainability in regions.

In the past, telecommunications connectivity in regional, rural and remote Australia focused predominantly on landline connections (the major exception being DRCS – digital radio concentrator system). However, these days technology that transmits and/or receives via terrestrial wireless and satellite connections is becoming much more a part of the technological environment individuals and businesses find themselves in.

It is against these considerations that DoTRS submits that the effective use of spectrum is of key importance to the telecommunications future of regional, rural and remote Australia. Management of the spectrum must ensure that the needs of non-metropolitan regions are considered and adequately addressed – this includes making sufficient spectrum available in the future in regional areas to realise the development potential that emerging technological advances offer. Making "spectrum available" not only relates to the allocation of certain bandwidths, but also ensures that the costs of accessing the allocations are not too high to deter companies from investing in service delivery to non metropolitan areas.

This raises the question of competition limits. In 'thin' markets, such as rural and remote Australia, there may not be a commercial case to support more than one service provider at this time. However, as most licences issued for spectrum use are typically greater than 10 years, consideration needs to be made of the potential growth in the demand for services in current 'thin' markets and therefore the possible situation where a thin market today may well support more than one provider in several years' time.

The challenge, then, for competition policy is to balance the tensions between ensuring a commercial provider 'buys' regional and rural licences at spectrum auctions (possibly through the incentive they may be a monopoly provider), and seeking to ensure that the potential for competition in rural and regional markets exists for the future.

If spectrum managers conclude that the market would not commercially support greater than one provider in regions, and the spectrum allocations thus go to one provider, there would need to be some mechanism included in the license condition that compelled that provider to deliver a service. This may be a "use it or loose it" type clause. However, such a requirement places a higher than normal burden on a commercial provider. Consequently, the incentive to invest would need to be via a low entry cost – ie the licence cost would need to be very low and with a long-term period, say 20 years (this point should also be considered in the context of Issue 2.3 – *charging for the use of spectrum*; and Issue 2.4 – *licence tenure and band clearance*). This approach would probably not be amenable to an auction. It may be that the Commonwealth would nominate a set cost for the licence and then seek tenders from interested providers, the winning tender being that which contained the best, genuine, service delivery outcome for the set cost.

What this discussion also reveals is the need for spectrum allocation planning in rural and remote areas to take account of population distribution forecasts ten years and more into the future, and the corresponding demand for services.

There are three key concerns in relation to regional services. Firstly, non-metropolitan regions need to have sufficient access to spectrum allocations for delivery of services (which in turn encourages further regional development). In addition, spectrum management needs to include consideration of likely population growth and demand for services in regional, rural and remote Australia. Finally, competition policy and

competition limits need to strike the right balance between ensuring a service is provided (even if it is a monopoly service) and encouraging competition.

It is recommended that:

- ***non-metropolitan regions have sufficient access to spectrum allocations for delivery of services (which in turn encourages further regional development);***
- ***spectrum management includes consideration of likely population growth and demand for services in regional, rural and remote Australia; and***
- ***competition policy and competition limits strike the right balance between ensuring a service is provided (even if it is a monopoly service) and encouraging competition.***

CONCLUSION

In summary, the major concern of DoTRS is the protection and availability of radiofrequency spectrum as it relates to safety of life services. The Department considers that, in recognition of their public benefits, spectrum requirements for safety of life services should not be subject to the market-based allocation process for spectrum. It also believes that sharing of aeronautical spectrum by other services that are not providing safety of life functions and are not subject to the same world wide standards of performance and operation provides significant potential for harmful interference to aeronautical services involving significant safety of life concerns.

Accordingly, the Department's recommendations are directed to the above objectives with a view to the ACA and other relevant agencies having due regard to the possible risks involved in not providing adequate protection and preservation of spectrum related to safety of life services.

DoTRS makes the following recommendations:

1. ***Aviation safety services be specifically referred to and be given at least the same prominence as Defence, Police and Emergency services in terms of spectrum protection in the Radiocommunications Act.***

2. ***Economic considerations alone should not be allowed to determine spectrum allocation for services which are dependent on the radiofrequency spectrum and have safety of life implications.***

3. ***In view of the safety of life implications associated with the aeronautical services and the need to ensure avoidance of interference to aeronautical services, management of aviation spectrum must be subject to firm and decisive control by Government and not left to industry self regulation or control by any commercial organisation.***

4. ***In finalising positions affecting aviation spectrum for World Radio Conferences (WRC) and other international fora, the Australian Communications Authority should continue to consult with the Departments of Transport and Regional Services (also represented by Airservices Australia and Civil Aviation Safety Authority) and Defence.***

5. DoTRS recommends that the objectives of the Radiocommunications Act be expanded to recognise the multimodal, interoperable and international elements involved in GNSS use.

6. The Radiocommunications Act be amended to indicate that radiofrequency spectrum use for aeronautical safety of life services be not subject to market-based allocation processes to ensure public and national interests are protected. It is proposed that a clause (similar to that provided for the ABA clause 36 (5)) be inserted with the intent that spectrum allocated by international agreement to aeronautical services not be designated for spectrum licensing.

7. DoTRS recommends that the ACA continue to take careful consideration of the global nature of the aviation industry and its economic benefits to Australia in its consultation with the ITU.

8. DoTRS recommends that the importance and diversity of GNSS users be taken into account by the ACA, including through direct consultation, in consideration of issues regarding GNSS signals.

9. DoTRS recommends that the ACA continues as the spectrum regulator and takes active measures to control interference to radio services by regular monitoring of the radiofrequency spectrum, nationally and internationally.

10. DoTRS recommends that the Commission should continue to set and monitor standards, where possible, to avoid the risk of unacceptable levels of interference for all safety of life services.

11. ***DoTRS recommends that where spectrum is authorised and protected by the ITU's Radio Regulations as Radio-Navigation Satellite signals:***

- ***the Commonwealth, or another body acting in the public interest, should be able to take out a 'public interest' licence for this part of the spectrum, which would enable the licence holder, on behalf of GPS or other GNSS users, to protect the signal used by GPS and other GNSS satellites; or***
- ***this part of the spectrum be exempted from the requirement for Australian licensing, including any charges, and to receive, as a minimum, the full protection from interference or spectrum sharing etc endorsed by the ITU.***

12. Recommendation 10 is based, in part on:

- ***the objective of the Radiocommunications Act 1992[2] of maximising the overall public benefit (objective (a));***
- ***providing a flexible approach to meeting the needs of users of spectrum (objective(c));***
- ***taking account of the value of both commercial and non-commercial use of spectrum (objective (e))***
- ***recognition of the international significance of this matter; and***
- ***demonstrating a good citizen commitment to Australia's membership of the ITU.***

13. DoTRS recommends that existing policy to quarantine spectrum for safety communications be maintained.

14. DoTRS recommends with Airservices Australia that a clear distinction be drawn between the user who has the greatest financial resources to secure the spectrum and the user who provides the highest value to society. Regulatory processes need to be effective to ensure that uses valued highest by society be given preferential access to spectrum particularly where safety of life is involved.

15. DoTRS recommends safety of life services be specifically referred to as a 'public or community service' and be given at least the same prominence as Defence, Police and Emergency services in terms of spectrum protection in the Radiocommunications Act.

16. It is recommended that, regardless of the commercial functions of part of the Galileo constellation, or any other GNSS constellation, the ITU allocation of spectrum for Radio-Navigation Satellite signals retain its special classification and be exempted from the requirement for Australian licensing, including any charges.

17. It is recommended that:

- ***on-metropolitan regions have sufficient access to spectrum allocations for delivery of services (which in turn encourages further regional development);***
- ***spectrum management includes consideration of likely population growth and demand for services in regional, rural and remote Australia; and***
- ***competition policy and competition limits strike the right balance between ensuring a service is provided (even if it is a monopoly service) and encouraging competition.***

ATTACHMENT A

AUSTRALIAN AVIATION INDUSTRY[3] GUIDELINES FOR GOVERNMENT CONSIDERATION FOR THE PRESERVATION AND AVAILABILITY OF THE RADIOFREQUENCY SPECTRUM FOR AERONAUTICAL SERVICES

GUIDING PRINCIPLES

These guidelines present the advice from the Australian Aviation Industry for the Australian Government to consider in formulation of any national or international proposals for allocation, reallocation or modification of the radiofrequency spectrum for aeronautical services that provide a safety of life function.

- The protection and availability of radiofrequency spectrum are essential for aeronautical services to permit the safe and efficient operation of aircraft. In recognition of their public benefits, spectrum requirements for aviation safety of life services should not be subject to the market-based allocation process for spectrum. The following considerations are of critical importance to the aeronautical industry:

  – avoiding potential harmful interference to aviation safety services; and
  – the need for spectrum availability to meet future demands, noting the long lead times involved in infrastructure planning and deployment.

- Sharing[4] of aeronautical spectrum by other services that are not providing safety of life functions and are not subject to the same world-wide standards of performance and operation, provides significant potential for harmful interference to aeronautical services. Consequently, no allocation to another service in an aeronautical frequency band should be considered without first carrying out rigorous and conclusive sharing studies which demonstrate that sharing will not have any adverse implications for the safety of operations of these aviation systems.

- In considering proposals to modify the use of frequency bands allocated to those aeronautical services which provide for safety of life, careful consideration must include:

  – the possible impact of the proposed changes on the safety of operation of the affected service;
  – the consequences for future national, regional and global development of the aeronautical service with particular focus on the adequacy and availability of spectrum;
  – the dependency of aviation on spectrum;
  – the necessarily long lead times for the introduction of aviation services; and
  – the need to ensure equipment standardisation and interoperability of aeronautical radio systems to facilitate global harmonisation of air transport operations.

- In considering proposed changes to the radiofrequency spectrum that have implications for safety of life aeronautical services, Australia will take note of ICAO's advice on the matter. This will be done through Airservices Australia in the consideration of issues relating to aviation spectrum with other aviation bodies that play a key role in aviation in Australia and are concerned with aviation spectrum issues at national and international radiofrequency spectrum meetings. Airservices Australia will also actively participate in ICAO forums providing advice on the migration to improved spectrum planning and more efficient technological solutions, and will continue to provide timely advice to our domestic consultative process.

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[3] This includes both the Aviation Industry Sector and the Government Aviation Sector: Department of Transport and Regional Services, Airservices Australia, the Civil Aviation Safety Authority and the Department of Defence.

[4] Various possible sharing scenarios include distance separation, frequency separation and/or co-frequency sharing.

ATTORNEY-GENERAL'S DEPARTMENT

Office of International Law

01/4980 RG OIL

ATTACHMENT B

18 October 2001

Mr Simon Clegg
Legal Group
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Dear Simon

THE SPECTRUM AND GPS - REF NO: LG0601-84

I refer to your request for advice on the protection of the spectrum used by the Global Positioning System (GPS) for satellite navigation.

Summary

2. You requested advice on the following questions:

(a) What is the basis in international law for the application of the Australian *Radiocommunications Act 1992* to satellite transmitters in outer space that are owned and operated by a foreign government?

The operation of the *Radiocommunications Act 1992* ('the Act') to foreign space objects is limited in its extraterritorial application. In my view the Act does not purport to regulate foreign space objects but rather to regulate radiocommunications between foreign space objects and devices as provided in Part 1.4 of the Act. Its operation is therefore based on domestic not international law. Foreign space objects are subject to quasi-territorial jurisdiction which occurs, as with ships, by reason of the nationality of the owner. It is therefore the responsibility of the State where the owner has nationality to regulate foreign space objects.

(b) Is there an international obligation for Australia to preserve and protect the necessary radiocommunications bandwidth for satellite navigation purposes?

Australia as a party to the *Constitution of the International Telecommunication Union* has an international obligation to allocate bandwidth to avoid interference, and to improve the use of radio-frequency spectrum and of the geostationary-satellite orbit for radiocommunication services. This obligation is reflected in s.3(a) and s.3(h) of the Act.

(c) If such an obligation does exist:

(i) Has Australia discharged the obligation through the licensing regime and other mechanisms established under the *Radiocommunications Act 1992?* (Alternatively, is Australia in breach of its international obligations by leaving the relevant spectrum bandwidth open for licensing by any interested party?)

The Act meets Australia's international obligations by requiring a spectrum plan dividing the spectrum into appropriate frequency bands which is governed by a licensing system. The Act also provides penalties for interference with radiocommunications and for operation of devices without a licence. Currently, frequency band plans issued under the *Radiocommunications Act 1992* do not include bandwidth in which the GPS currently operates. However, if the bandwidth currently used by GPS and recognised in the Table of Frequency allocations in the *Radio Regulations* is allocated by the ACA to an alternative service, this may contravene Australia's international obligations.

(ii) Can the Commonwealth Government issue class licences or apparatus licences for satellites owned and operated by a foreign government?

The Commonwealth Government can not issue licences for satellites owned and operated by a foreign government, nor is it the intention of the Act to regulate foreign space objects.

(iii) Apart from a spectrum licence, what other mechanisms could be used to give effect to this obligation?

Alternative methods for regulating radiocommunications between foreign space objects and devices is a policy question for consideration by responsible agencies, in particular in consultation with the ACA. Consideration should be given to issuing a class licence in relation to devices licensed under the Act to transmit and receive GPS radiocommunications. This could also be reflected in the spectrum and frequency band plans developed by the ACA.

General Comments

1. What is the basis in international law for the application of the Australian *Radiocommunications Act 1992* to satellite transmitters in outer space that are owned and operated by a foreign government?

3. The first issue to be addressed is the scope of the Act in relation to foreign space objects. Section 16 makes provision for the application of the Act outside Australia as follows:

(1) Except so far as the contrary intention appears, this Act applies outside Australia (whether or not in a foreign country), but only in relation to:

(a) Australian citizens ordinarily resident in Australia, in respect of radio emissions intended to be received in Australia, other than:

(i) radio emissions made by a genuine member of the crew of a foreign vessel, foreign aircraft or foreign space object in the course of his or her duties as such a member; or

(ii) radio emissions made from a foreign country by a person in the performance of

a duty imposed by the law of that country; and

(b) members of the crew of Australian aircraft, Australian vessels and Australian space objects; and

(c) Australian aircraft, Australian space objects and Australian vessels; and

(ca) foreign space objects, in the circumstances specified in a written determination by the ACA; and

(d) anything to which this Act extends because of section 17.

4. The Australian Communications Authority (ACA) made a determination under s.16(1)(ca) of the Act that the Act applies outside Australia if the foreign space object is 'a space object that is part of the Global Positioning System that is owned, controlled, or operated by, or for, the Department of Defense of the United States of America'. Section 15 provides that the Act applies to all the external Territories. Section 17 provides that the Act also applies to 'adjacent areas', as defined in the *Petroleum (Submerged Lands) Act 1967*. The reference in s.16(3) that section 195 of the Act applies without limitation outside Australia (whether or not in a foreign country) concerns the use of transmitters on board foreign space objects in a manner likely to interfere substantially with radiocommunications in Australia or between a place in Australia and a place outside Australia. This section applies to interference of radiocommunications within Australian jurisdiction.

5. There is a rebuttable common law presumption of statutory interpretation that legislation does not operate extraterritorially For example, in *Jumbunna Coal Mine NL v Victoria Coal Miners' Association* (1908) 6 CLR 309, O'Connor J at 363 stated:

> "In the interpretation of general words in a Statute there is always a presumption that the legislature does not intend to exceed its jurisdiction. Most Statutes, if their general words were taken literally in their widest sense, would apply to the whole world, but they are always read as being prima facie restricted in their operation within territorial limits."

6. Paragraph 21 (b) of the *Acts Interpretation Act* mirrors this common law presumption. Paragraph 21 (b) provides as follows:

21. In any Act, unless the contrary intention appears:

(b) references to localities jurisdictions and other matters and things shall be construed as references to such localities jurisdictions and other matters and things in and of the Commonwealth.

7. The effect of paragraph 21 (b) is that, unless there is a contrary intention, a Commonwealth Act would be interpreted as applying only to things in and of the Commonwealth. Whilst the Act clearly intends to have some extraterritorial application, as provided in section 16, it is unclear whether all of the remaining provisions of the Act are intended to apply to foreign space objects. That is there is no contrary intention exhibited in the remaining provisions that the Act is intended to apply outside of things in and of the Commonwealth.

8. The scheme of the Act is to regulate radiocommunications in Australia. The extraterritorial application of the Act appears to be primarily to ensure that the legislation can be effective in

regulating radiocommunications in Australia (in this regard see generally paragraph 16(1)(a)). To this extent, radiocommunications transmitted from foreign space objects to Australia and radiocommunications received by foreign space objects from transmitters in Australia are subject to the Act.

9. In my view section 16 does not automatically extend the application of all the provisions of the Act to all the radiocommunications transmitted and received by foreign space objects. Section 16 is subject to a contrary intention in other parts of the Act. For example, there is nothing to suggest in Part 3.1 that a foreign space object must hold a licence to transmit radiocommunications irrespective of whether or not those radiocommunications are transmitted or received in Australia. Rather it is persons or entities within Australian jurisdiction who must hold a licence to transmit or receive radiocomunications from foreign space objects.

10. The *Radiocommunications Legislation Amendment Act (1999)* amended the Act to include foreign space objects. Both the second reading speech and the Explanatory Memorandum state that "companies which intend to invest in the launch and operation of space objects need to be assured that radiocommunciations signals to and from their space objects are not interfered with. The proposed amendments ….in relation to space objects will allow the ACA to regulate communications with space objects." The Explanatory Memorandum acknowledges that foreign space objects are principally regulated by other nations. Prior to this amendment it was not possible to regulate to control radiocommunications interference from space objects.

11. The Outer Space Treaty laid down for outer space an international legal status quite different from the status of air space, the latter being under the sovereignty of the underlying State. However no agreement exists as to where the regime of airspace ends and that of outer space begins. Article VIII of the 1967 Outer Space Treaty, which is declaratory of international law declares that "ownership of objects launched into outer space…is not affected by their presence in outer space or on a celestial body or by their return to the Earth…" This is also reiterated in Article 12 (1) of the Moon Treaty.[5]

12. The Act therefore intends to regulate radiocommunications between Australia and foreign space objects and not to regulate foreign space objects themselves. The extraterritorial application of the Act is therefore confined to regulating transmission and reception of radiocommunications between foreign space objects and a device within Australian jurisdiction. In effect this means, that Australian jurisdiction would commence in relation to radiocommunications to or from foreign space objects at the point of entry into or up to the point of exit out of Australian airspace. As such there is no international legal basis, or requirement for such a basis, for the application of the Act. The Act implements regulatory control of radiocommunications that fall within Australian jurisdiction.

2. Is there an international obligation for Australia to preserve and protect the necessary radiocommunications bandwidth for satellite navigation purposes?

13. Australia as a party to the *International Telecommunication Union (ITU) Constitution* has an international obligation as a member of the Union under Article 1(2):

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[5] "Insofar as the ownership of space objects is concerned, these two provisions may be regarded as merely declaratory of general international law." Refer *Encyclopaedia of Public International Law, Vol II,* North Holland, Amsterdam (1989), p.310.

(a) to effect allocation of bands of the radio-frequency spectrum, the allotment of radio frequencies and registration of radio-frequency assignments and any associated orbital positions in the geostationary-satellite orbit in order to avoid harmful interference between radio stations of different countries and

(b) to coordinate efforts to eliminate harmful interference between radio stations of different countries and to improve the use made of the radio-frequency spectrum and of the geostationary-satellite orbit for radiocommunication services.

14. When making decisions concerning allocation of frequency, the ACA must take into account the *International Telecommunications Union Constitution* and *Convention* and the *Radio Regulations* in accordance with s.299 (1) of the *Radiocommunications Act 1992* which states that:

(1) A person or body exercising a power under this Act (other than in Part 4.4 or 5.5) must have regard to

(a) any agreement, treaty or convention, between Australia and another country, or countries that makes provision in relation to radio emission; and

(2) Nothing in this subsection (1) limits the kinds of matters to which the person or body may have regard in exercising those powers.

15. Australia as a party to the Constitution and Convention is also bound under Article 44 of the Constitution by the provisions of the *Radio Regulations.* Article 44 states, "in using frequency bands for radio services, Members shall bear in mind that radio frequencies and the geostationary-satellite orbit are limited natural resources and that they must be used rationally, efficiently and economically, in conformity with the provisions of the Radio Regulations."

16. The *Radio Regulations* in Article S4.1 provide that Member States shall endeavour to limit the number of frequencies and the spectrum used to the minimum essential to provide in a satisfactory manner the necessary services. Article S4.2 states that Member States undertake that in assigning frequencies to stations which are capable of causing harmful interference to the services rendered by the stations of another country, such assignments are to be made in accordance with the Table of Frequency Allocations and other provisions of the Regulations.

17. While there is an obligation to allocate bands of radiofrequency in order to avoid harmful interference, there is no absolute obligation to allocate bands of radio frequency. In fact, both Article 44(1) and the *Radio Regulations* emphasise that Members shall limit the number of frequencies used to a minimum. The obligation is to preserve frequency allocated in the Table of Frequency allocations from harmful interference. The absence of an allocation of frequency by a Member State does not contravene this obligation. The obligation may however, be contravened where the Member State allocates frequency in contravention of the Table of Frequency allocations and that allocation causes harmful interference to the service allocated in the Table of Frequency.

3. If such an obligation does exist:

(a) Has Australia discharged the obligation through the licensing regime and other mechanisms established under the *Radiocommunications Act 1992*? (Alternatively is Australia in breach of its international obligations by leaving the relevant spectrum bandwidth open for licensing by any interested party?)

18. The Act provides in s.30 that the ACA may prepare a spectrum plan which must divide the spectrum into such number of frequency bands as necessary for regulating radiocommunications including future use and control and prevention of interference. Section 32 also requires the ACA to prepare frequency band plans which make provision for the purposes for which each band can be used.

19. The Act regulates radiocommunications through a licensing system which governs the operation of devices for transmitting and receiving radiocommunications as well as spectrum licences for accessing designated parts of the spectrum. In order for radiocommunications to receive the protection of the Act they must be licensed. The Act provides three types of licences, apparatus, class and spectrum. Each of these licenses contain core conditions including conditions relating to interference and use of frequencies in particular see ss.66, 108, 110 and 133. Licenses may be suspended or cancelled and penalties apply for unlicensed operation of radiocommunication devices.

20. Part 4.2 of the Act regulates interference with radiocommunications and provides penalties for such acts. Section 195 provides that a person who uses a transmitter on board a foreign space object that interferes substantially with radiocommunications within Australia or between Australia and a place outside Australia is subject to a penalty.

21. The provisions of the Act in relation to spectrum plans, interference and the licensing system satisfy Australia's international obligations to effect allocation of the spectrum and improve its use as well as avoid harmful interference. Furthermore, the ACA may develop plans for spectrum and frequency use which are subject to public comment under s.33. Spectrum and frequency plans regulate the purpose for which parts of the spectrum and frequency bands may be used. This includes reservation for future use and reservation for prevention or control of interference to radiocommunciations.

22. Further to our telephone discussion of 3 July 2001 I note that there is also an issue regarding the extent of current regulation and protection afforded to radiocommunications to or from the Global Positioning System (GPS) under the Act. Currently, radiocommunications to or from the GPS would be afforded protection under the Act through an apparatus licence. Any person receiving radiocommunications from or transmitting radiocommunications to the GPS would be required to obtain an apparatus licence or would be subject to a penalty. The license is subject to the conditions described above as well as to general provisions relating to interference in Part 4.2 of the Act.

23. The ACA has not allocated the bandwidth that the GPS operates under for spectrum licensing. The bandwidth that the GPS operates under is therefore not available for licensing whereby operators of devices licensed under the Act can be excluded from accessing that bandwidth. The ACA has not allocated the bandwidth for an alternative service to that allocated in the Table of Frequency Allocations which would cause harmful interference to GPS and therefore Australia is not in breach of its international obligations.

(b) Can the Commonwealth Government issue class licences or apparatus licences for satellites owned and operated by a foreign government?

24. The Commonwealth Government does not have the jurisdiction to issue licences for satellites owned and operated by a foreign government, nor does the Act envisage a necessity for the Commonwealth Government to do so, in order for the Act to operate as it was intended. In particular, the purpose of the amendments to the Act referring to application of the Act to foreign

space objects (including satellites) is to protect radiocommunications to and from the foreign space objects from interference from third parties which fall under Australian jurisdiction. The Act clearly does not seek to licence the operation of satellites which fall under the jurisdiction of the State where the owner is a national. The *Radio Regulations* in S15.20 state that "representations relating to any serious infringement committed by a station shall be made to the administration of the country having jurisdiction over the station, by the administrations which detect it."

(c) Apart from a spectrum licence, what other mechanisms could be used to give effect to this obligation?

25. This is a question of policy that should be determined in consultation with the Australian Communications Authority. However, there is an issue as to how GPS should be preserved for future use. International obligations do not extend to preservation of GPS. Rather the international obligation extends to efficient allocation of the spectrum. However, there may be a public interest argument to preserve that part of the spectrum used by GPS to ensure continued non-exclusive access to GPS.

26. Currently the allocation of spectrum by the ACA does not include the frequencies on which GPS radiocommunications are transmitted or received. To ensure that GPS in the future continues to be accessible to the general public, the ACA may consider issuing a class licence in relation to GPS. Alternatively, the ACA may consider amending the existing class licence for communications between licensed devices and space objects to authorise transmission and reception of radio emissions at frequencies that the GPS uses. The spectrum plan could reflect the reservation of part of the spectrum for use by the GPS by allocating that bandwidth in a frequency band plan.

27. Please contact me if you wish to discuss these issues further.

Yours sincerely

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