

**Submission to the Australian Communications and Media Authority Earth  
Station Siting discussion paper**

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21 October 2011

## Introduction

The Australian Subscription Television and Radio Association (ASTRA) welcomes the opportunity to comment on the Australian Communications and Media Authority (ACMA) discussion paper *Earth station siting: Guidance on the establishment of new Earth stations and other space communications facilities or the expansion of existing facilities*.

## About ASTRA

ASTRA is the peak industry body for subscription television in Australia. ASTRA was formed in September 1997 when industry associations representing subscription (multi-channel) television and radio platforms, narrowcasters and program providers came together to represent the new era in competition and consumer choice. ASTRA's membership includes the major subscription television operators, as well as channels that provide programming to these platforms. A list of members is attached at Attachment A.

The subscription TV industry is the undisputed leader of digital broadcasting. A dynamic sector that is constantly evolving and growing, it is received nationally by 34% of Australians through their homes and many more through hotels, clubs and other entertainment and business venues. The STV industry has invested billions of dollars in infrastructure, capital, facilities, productions, programs and services, which has been distributed throughout metropolitan, regional and remote areas. Consequently, the sector has created an enormous number of jobs, investment, infrastructure and production content throughout Australia. In 2010 the subscription television industry invested \$578.4 million in Australian content. In addition, the sector directly employed 4,920 people.

Australia has one of the most heavily regulated broadcast sectors in the world with subscription TV operating in an increasingly competitive environment that is grounded in protecting incumbent commercial free-to-air broadcasters. Subscription TV faces competition from commercial and national broadcasters and their digital multi-channels, new IPTV and on-line content providers streaming services over broadband networks, online movie rental and download services, and DVD rental and sales. Competition in this market will only further increase in the future with developments in technology and the rollout of the National Broadband Network.

## General comments

ASTRA makes the following general comments in relation to the discussion paper:

- As ASTRA outlined in our response to the *ACMA Spectrum Outlook 2011-2015*, the Australian STV sector makes significant use of fixed-satellite services (FSS) operating in the 3.6-4.2 GHz band ('C-band'), including AUSTAR, FOXTEL, Optus, Fox Sports and Sky Racing. A wide range of programming delivered by Australian STV platforms is directly sourced from satellite feeds operating in the C-band, including from Disney Channels, Discovery Channels, BBC, Eurosport, Bloomberg, TCM, Cartoon Network, Boomerang, Sky News UK, Fashion TV, Fox News, CNBC, Animal Planet, ESPN, Kids Co, Aljazeera and CNN.
- ASTRA does not support Earth stations operating in the C-Band being moved from urban to less populated areas to reduce spectrum congestion and minimise interference where spectrum is shared by mobile wireless services and satellite communications. The re-siting of earth stations will result in very substantial costs for the STV sector and program providers associated with infrastructure relocation and the transmission and reception of international programming and ongoing operational costs.

- ASTRA does not agree with what appears to be the underlying assumption in the discussion paper that optical fibre networks will preclude the need for metropolitan satellite gateways, particularly in relation to the distribution of television services received via C-Band..
- ASTRA believes the ACMA is underestimating the substantial infrastructural costs of earth stations, ongoing backhaul fibre costs and the ongoing operational costs that would be associated with the relocation of C-band services to remote locations, as well as the disruption caused to direct-to-home (DTH) residential and commercial users of services delivered in the C-band.
- ASTRA is also concerned that the discussion paper does not appear to give sufficient weight to the vital role of C-band services in the delivery of international program feeds for Australian consumers. The discussion paper suggests that C-band program contribution circuits can migrate to Ku-band or Ka-band. In general, C-band satellites provide broad area coverage suitable for global distribution and is less affected by rain fade thus more reliable for international feeds, while Ku and Ka satellites provide national or regional coverage. The two applications are not interchangeable
- While ASTRA recognises that space service use of spectrum in urban areas may "deny" spectrum for terrestrial services, it can equally be said that encroachment of terrestrial services will impact on the spectrum rights a satellite operator should be able to enjoy from an internationally coordinated geosynchronous orbital slot, denying spectrum that the satellite operator requires.
- ASTRA submits that the site-by-site analysis does not appropriately recognise the important gateway facilities in the Sydney metropolitan region, including those operated by Telstra, Optus, Foxtel, Sydney Teleport, Globecast and UBS/Fox Sports.
- ASTRA reiterates its opposition to any proposed uses of the C-Band for mobile wireless services that would interfere with the operation of existing and future fixed satellite services in these frequencies. At a minimum, wireless mobile networks should not be authorised to operate in proximities to existing earth stations which are likely to cause interference with satellite communications.

## **Responses to requests for comment in the discussion paper**

ASTRA provides the following responses to the specific issues raised for comment in the discussion paper. Some questions have been grouped together where they cover the same or similar ground.

### **1. The ACMA seeks comment on the proposed objectives for the development of a long-term sustainable strategy for the siting of satellite Earth stations and other space communications facilities.**

ASTRA would agree to the development of a long-term strategy for meeting the future requirements for satellite Earth stations that takes into account long-term commercial sustainability and the significant investment already made in existing Earth station infrastructure. However, ASTRA expresses its concern that the ACMA paper appears to pre-suppose that relocation of existing Earth station facilities is appropriate, inevitable and desirable, and that the major objectives for Earth station siting are likely to be geared towards achieving this pre-supposed outcome.

While ASTRA would agree with the premise in the discussion paper that "...considerable public benefit is derived from both space and terrestrial services" (p.5) ASTRA would stress that the public benefit derived from services that rely on C-band is optimized through the location of

satellite Earth stations in high population areas, as demonstrated by the large number of licensed Earth stations and even larger number of unlicensed dishes in high population areas receiving direct-to-home satellite services. Sharing C-band spectrum with terrestrial services in high population areas would be highly disruptive and not a feasible alternative.

On pages 1-2 of the discussion paper the ACMA states that:

Given the high levels of interference protection required by satellite and space services, and the competition between space and terrestrial services to use spectrum in an area, establishing a space or satellite facility near large population centres can deny terrestrial services that are of potentially higher value to a large number of customers.

ASTRA notes that, equally, the operation of a terrestrial service in a satellite band denies the use of that band by satellite services in that terrestrial space. International satellite operators have made significant investments for an internationally coordinated satellite slot and there is a legitimate expectation that countries serviced by that satellite position would not implement spectrum use arrangements that threaten the commercial viability of service provision from those satellites.

ASTRA would therefore not agree with the ACMA's analysis of the ideas proposed in the discussion paper against Principle 1 and Principle 2 of its *Principles for Spectrum Management* as they relate to C-band satellite services. In respect of *Principle 1 – Allocate spectrum to the highest value use or uses* and *Principle 2 – Enable and encourage spectrum to move to its highest value use or uses*, ASTRA submits that the potential for interference between space and terrestrial services, and the need for C-band services to be located close to large population centres, means that there would be real difficulties for shared access without significantly impacting on the commercial viability of C-band service delivery, thus significantly affecting the public benefits derived from use of this spectrum.

## **2. The ACMA seeks stakeholder comment on any additional pressures that should be considered in the context of Earth station siting.**

No further comment.

## **3. The ACMA seeks comment on areas of growth in the satellite industry. Where is the biggest growth expected? Are there any emerging applications for satellite services that are expected to impact spectrum requirements?**

The discussion paper states (p.13) that:

Satellite communications involves a 15-year investment cycle, necessitating long-term strategic planning so that the industry can respond to spectrum allocation changes.

While ASTRA would agree that long-term strategic planning is required, ASTRA understands that it would be more accurate to characterize a satellite life cycle as spanning 20-25 years, from concept to End of Life. Once launched, satellites are usually designed for 15 year life spans, however the planning phase prior to launch can be up to 5 years, while satellite often over extend their design life.

In relation to increased use of higher frequency bands such as the Ku-band, ASTRA does not agree with the ACMA's conclusion that these bands are "well placed to meet the long-term capacity requirements of satellite users", nor that the higher frequency bands provide comparable performance to the lower frequency bands for satellite services. ASTRA submits that the satellite broadcasting applications for C-band and Ku-band are quite distinct and not interchangeable as the discussion paper seems to suggest. For international program feeds, the C-band is far more suitable because of its wide area coverage, useable size dishes and higher resistance to rain fade. The trend towards use of higher frequency bands is primarily due to limited expansion capacity in

the C-Band (with higher frequency bands used as expansion bands) rather than comparable performance characteristics of these bands.

**4. The ACMA seeks comment on the methodology used to establish a benchmark population level below which Earth station operation would be reasonably secure in the long term.**

ASTRA submits that the methodology should also take into account population density as well as population levels when assessing the secure operation of Earth stations in the long term. The stated 25,000 should include the area over which this population covers.

**5. The ACMA seeks stakeholder comment on any additional categories of tools that could be used to address the various pressures on spectrum used by the satellite and space sectors.**

No further comment.

**6. The ACMA seeks comment on using opportunity-cost pricing of spectrum for satellite Earth station licensing based on spectrum denial caused to terrestrial services.**

While ASTRA would agree with a general principle of market-based spectrum pricing, the ACMA must also take into account circumstances where certain frequencies have optimal technical characteristics for particular uses and/or where there are internationally agreed uses for certain spectrum bands. C-Band spectrum is internationally recognised as optimal for satellite communications, and superior than higher frequency alternatives.

ASTRA does not necessarily agree with the statement (p.20) that:

With the ever-growing web of optical fibre backhaul available, traditional arguments about the need to establish or preserve satellite and space gateway facilities in populous areas no longer hold.

In our view, this statement does not reflect the commercial realities associated with services using C-band. Backhaul costs from a remote location are prohibitive, as video program services accessed from C-band feeds require high data usage and transfer capacity. Australian fibre backhaul costs can often be more expensive than overseas fibre.

ASTRA submits that the analysis does not appear to sufficiently take into account the large number of licensed and unlicensed Earth stations operating in large urban population centres, and significant disruption that would flow from the movement of these stations and/or the operation of terrestrial services within the same frequencies.

**7. The ACMA seeks information on any additional planning and technical tools that could be used to manage interference into satellite Earth stations and other space communications facilities.**

ASTRA agrees with the ACMA's list of planning and technical tools that could be used to manage interference into satellite Earth stations and other space communications facilities.

**8. The ACMA seeks comment on the use of filtering in Earth receive stations and its applicability and usage in interference mitigation.**

The discussion paper states that filters fitted to receivers raise the noise floor of the receiver, which may be intolerable where the received strength is very low. ASTRA notes that this is because of inline losses, which can mean a larger dish is needed to compensate for the losses, increasing costs to mitigate interference beyond a filter alone.

**9. The ACMA seeks comment on alternative methods of interference management should guard bands be reviewed in the future.**

ASTRA submits that guard bands are an important tool in interference management and need to be sufficiently wide to account for practical filters and/or receiver out-of-band rejection. ASTRA supports and would refer the ACMA to the submissions from FOXTEL and Premier Media Group in relation to this question.

**10. The ACMA seeks comment on all matters related to site interference protection.**

No further comment.

**11. The ACMA seeks comment on issues raised in the band-by-band analysis chapter, particularly comments on specific frequency bands. Do you agree with the analysis? Why or why not?**

ASTRA makes the following comments in relation to the band-by-band analysis:

- ASTRA does not agree with the general proposition at the commencement of the chapter that space services share spectrum with terrestrial services. ASTRA understands that, overall, spectrum sharing with space services is not common practice. While sharing with terrestrial services does (or may) occur with respect to the space research services (SRS), radio astronomy services (RAS) and mobile satellite services (MSS), tracking, telecommand and control (TT&C), fixed satellite services (FSS) and broadcasting satellite services (BSS) generally do not. TT&C, FSS and BSS are likely to account for the greatest number of Earth stations and by far the majority of unlicensed Earth stations including all FOXTEL and AUSTAR satellite installations. ASTRA also notes that, at present, ENG sharing remains a proposal at this stage.
- ASTRA submits that, in the case of C-band services in high population areas, “denial” of spectrum for terrestrial services does not deny the highest value use of the band.
- The discussion paper states (p.38) that the 3400-3600 MHz band (‘lower’ or ‘extended’ C-band) is allocated in a secondary basis to the FSS and on a primary basis to the FS, and that within the FS, it is currently possible to deploy WiMax P-MP data systems. ASTRA queries the extent to which WiMax services have been deployed in Australia and internationally. ASTRA would be skeptical that there is sufficient demand for use of this band for WiMax, and that this would also be the case for the rest of C-band.
- ASTRA does not agree with the statement that “C-band systems are not able to be deployed ubiquitously in Australia”. A substantial number of licensed Earth stations operate in the C-band, as well as many thousands of unlicensed dishes servicing residential and commercial premises. The ACMA’s recent Earth Station licensing paper estimates that there are up to 200,000 unlicensed residential and commercial C-Band Dishes.
- ASTRA would oppose any widespread use of the 10.7-11.7 GHz band for mobile broadband. Operation of mobile broadband terminals in this band is likely to cause interference to STV installations in the adjacent 11.7-12.75 GHz DTH service band. These installations are designed to be protected against interference from satellite services in adjacent bands but not from terrestrial services. ASTRA is aware, for example, of a small number of microwave links operating in this band that are known to cause local interference issues. The 10.7-11.7 GHz band is also a possible area of expansion for Ku DTH services.
- ASTRA agrees with the ACMA’s assessment that no future pressures from alternative technologies are anticipated in the 11.7-12.75 GHz band (Ku band) and welcomes the ACMA’s continued support for deployment of existing systems. As the ACMA would be aware, AUSTAR and FOXTEL DTH services operate in the band.

**12. The ACMA seeks comment on issues raised in the site-by-site analysis. Do you agree with the analysis? Why or why not?**

ASTRA makes the following comments in relation to the site-by-site analysis:

- *Optus Belrose* (p.56): ASTRA understands that the main Optus C-band facility is at Oxford Falls, not Belrose.
- *C-band receive sites around Sydney CBD* (pp.56-57): ASTRA submits that the discussion of C-band receive sites in Sydney significantly downplays the important facilities located in Sydney such as:
  - Oxford Falls: both Testra and Optus operate extensive C-band gateway facilities in this location
  - Foxtel North Ryde
  - Globecast
  - Sydney Teleport
  - Fox Sports and UBS
  - ABC 7, 9, and 10
  - Sky Racing
  - All major city hotels

**13. The ACMA seeks comment on the concept of satellite parks.**

ASTRA does not support the concept of satellite parks for C-band Earth station facilities. Such a move would lead to significant infrastructure costs of the earth stations and backhaul fibre costs along with the ongoing operational costs, threatening the economic viability of C-band operations, particularly in relation to the delivery of satellite-based services through Sydney.

**14. The ACMA seeks comment on the usage and effectiveness of the Mingenew Satellite Park. Are the current regulatory arrangements effective?**

**15. The ACMA seeks comment on the potential to implement a band plan to provide stronger legislative protection to the Mingenew Satellite Park.**

ASTRA has no comment in relation to the Mingenew Satellite Park.

**16. The ACMA seeks comment on all issues surrounding the development and establishment of an east coast satellite park, particularly on what factors would be necessary to make it an attractive option for Earth station location.**

As noted above, ASTRA does not support the concept of satellite parks, given the significant infrastructure costs of the earth stations, backhaul fibre costs and ongoing operational costs could threaten the economic viability of C-band operations as they relate to service provision in metropolitan areas.

ASTRA also submits that proposals for an east coast satellite park do not take into account the significant number of users of DTH satellite services that would be directly affected by such a move.

**17. The ACMA seeks information on areas that may be potentially suitable for the establishment of an east coast satellite park.**

For the reasons outlined above ASTRA does not support the notion of satellite parks in the Liverpool Plains region or elsewhere for C-Band downlinks.

**18. The ACMA seeks comment on the concept of defining a maximum guard band width for space services—both on the technical and policy basis for the development of this option and the proposed figures of 10 MHz or one adjacent channel width, whichever is smaller. Comment is also sought on the implementation of geographic exclusion zones and the proposal for a 20 km exclusion zone for C-band Earth receive stations.**

ASTRA notes that the guard band is dependent on the frequency used. As such, 10MHz may not be the requirement for C-Band. As ASTRA noted in its response to the ACMA's *Towards 2020—Future spectrum requirements for mobile broadband* discussion paper, the November 2010 ITU Report regarding *Studies on compatibility of broadband wireless access (BWA) systems and fixed-satellite service (FSS) networks in the 3.4-3.6 GHz band* (ITU-R Report S.2199) concluded that:

...to provide protection to FSS receive earth stations, some separation distance between the stations of the BWA network and the FSS receive earth stations is required. The magnitude of this separation distance depends on the parameters of the networks, the protection criteria of concerned satellite networks and the deployment of the two services and if the two services operate in the same or in adjacent frequency bands.<sup>1</sup>

In particular, the report concluded that, where BWA and FSS operate in overlapping frequency bands, the approximate required separation distance would be several tens to in excess of 100km.<sup>2</sup>

**19. The ACMA also seeks suggestions and information on other incentives that could potentially be offered to encourage the siting of Earth stations in areas of low population density.**

No comment.

**20. The ACMA seeks comment on any other issues regarding Earth station and space communication facility siting that should be considered.**

No comment.

**21. The ACMA invites suggestions for alternative approaches to achieving greater opportunities for both terrestrial and space services to achieve their highest value use.**

No comment.

Please feel free to contact myself or Simon Curtis, Policy and Regulatory Affairs Manager, on (02) 9776 2684 if you wish to discuss further anything in the above.

Yours sincerely



Petra Buchanan  
CEO

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<sup>1</sup> ITU, *Studies on compatibility of broadband wireless access (BWA) systems and fixed-satellite service (FSS) networks in the 3.4-3.6 GHz band* (ITU-R Report S.2199), November 2010, p. 18.

<sup>2</sup> Ibid.



# **ATTACHMENT A**

## **Subscription Television Platforms**

AUSTAR  
FOXTEL  
Optus Television  
Telstra

## **Program Channel Providers**

Aurora  
Australian Christian Channel  
Australian News Channel  
BBC Worldwide Channels Australasia  
Bloomberg Television  
Discovery Networks  
E! Entertainment  
ESPN  
Eurosport  
Expo Networks  
KidsCo  
Movie Network  
MTV Networks  
National Geographic  
NBC Universal  
Nickelodeon  
NITV  
SBS Subscription TV  
Premier Media Group  
Premium Movie Partnership  
Setanta Sports Australia  
Sky Racing  
Turner International (Australia)  
TV1  
TVN  
TVSN  
Walt Disney Company (Australia) Pty Ltd  
XYZnetworks Pty Ltd

## **Communications Companies and Other Associate Members**

Ai Media  
Cath Ward Media Services  
Ignite Media  
Multi Channel Network  
The Playroom Sydney/Omnilab

## **Affiliate Members**

Baker and McKenzie  
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