Explanatory paper
Draft Variation to Licence Area Plan – Adelaide Radio – No.1 of 2012

SEPTEMBER 2012
Contents

Submissions 1
Explanatory Note 2
Preliminary view 1 – commercial radio 5
Preliminary view 2 – open narrowcasting radio 8
Preliminary view 3 – community radio 9
Preliminary view 4 – licence areas 10
Preliminary view 5 – minor amendments 11
Submissions

The Australian Communications and Media Authority (ACMA) is seeking public comment on a proposed Draft Variation to Licence Area Plan – Adelaide Radio – No. 1 of 2012.

Submissions can be made as follows:

Email: rps@acma.gov.au
Mail: Draft Variation to Adelaide LAP – No 1 of 2012.
      RPS/TPEB/DTD
      ACMA
      PO Box 78
      BELCONNEN ACT 2616
Fax: (02) 6219 5347


Contact details for submissions:

Email: rps@acma.gov.au
Telephone: Nicole Brown (02) 6256 2821
Fax: (02) 6219 5347

The closing date for submissions is 5.00 pm, Friday 2 November 2012.

Effective consultation
The ACMA is working to enhance the effectiveness of its stakeholder consultation processes, which are an important source of evidence for its regulatory development activities.

To assist stakeholders in formulating submissions to its formal, written consultation processes, it has developed Effective consultation: A guide to making a submission. This guide provides information about the ACMA's formal written public consultation processes and practical guidance on how to make a submission.

Publication of Submissions
All submissions received will be made available for public inspection on the ACMA’s web site at http://www.acma.gov.au.

Under subsection 27(2) of the Broadcasting Services Act 1992 (BSA), the ACMA is required to make all submissions available for public inspection. Any submission marked ‘In confidence’, ‘Confidential’ or similar, will not be considered by the ACMA in finalising the LAP variation.

Release of submissions where authorised or required by law
Any submissions provided to the ACMA may be released under the Freedom of Information Act 1982 (unless an exemption applies) or shared with other Commonwealth Government agencies under Part 7A of the Australian Communications and Media Authority Act 2005.

The ACMA may also be required to release submissions for other reasons including for the purpose of parliamentary processes or where otherwise required by law (for example, under a court subpoena). While the ACMA seeks to consult submitters of confidential information before that information is provided to another party, the ACMA cannot guarantee that confidential information will not be released through these or other legal means.
Explanatory Note

This explanatory paper accompanies the proposed Draft Variation to Licence Area Plan – Adelaide Radio – No.1 of 2012.

The broadcast planning functions of the ACMA are set out in Part 3 of the Broadcasting Services Act 1992 (BSA). The ACMA is required to promote the objects at section 3 of the BSA including the economic and efficient use of radiofrequency spectrum, and to have regard to the planning criteria set out in section 23.

Licence area plans (LAPs) are made under subsection 26(1) of the BSA. LAPs determine the number and characteristics, including technical specifications, of broadcasting services in particular areas of Australia with the use of the broadcasting services bands.

The ACMA may vary LAPs under subsection 26(2) of the BSA.

The object of most obvious relevance to the ACMA’s powers in relation to section 26 of the BSA is that at paragraph (a) of subsection 3(1), that being:

> to promote the availability to audiences throughout Australia of a diverse range of radio and television services offering entertainment, education and information.

Section 27 of the BSA provides that the ACMA must make provision for wide public consultation when considering whether to make or vary a LAP.

The ACMA refers to the General Approach to Analog Planning when it considers the planning of broadcasting services. This document sets out the legislative framework and planning criteria as well as the general approach to the planning of broadcasting services. It also contains a record of advice and assumptions about matters relevant to the ACMA’s functions and powers under Part 3 (see subsection 27(2) of the BSA).

The ACMA generally considers variations in response to submissions made to it or on becoming aware of technical issues that need addressing.

Background

In April 2007 a test transmission licence was issued to the commercial radio broadcasting service 5DN to allow it to operate on 5 kilowatts (kW) during the day and 3.3 kW at night following a request to address problems with coverage in the north and south of its licence area. The test transmissions were designed to ensure that there were no long term seasonal effects on MF-AM broadcasting services nationally and internationally due to the changes in 5DN’s technical specifications.

No complaints about degradation to existing services or interference were received by 5DN or the ACMA during the test transmission period. 5DN have continued to operate with these revised technical specifications.

On August 12 2009, the ACMA released for public consultation a Draft Variation to Licence Area Plan – Adelaide Radio – No1 of 2009 This draft instrument proposed to modify radio services in the Licence Area Plan – Adelaide Radio – September 2001 (the Adelaide LAP) by:

- changing the transmission site, increasing the maximum power levels, adopting day/night switching power arrangements\(^1\) and changing the

\(^1\) Day/Night switching refers to a technique designed to improve the reception and coverage of existing AM broadcasting services by relying on the different propagation characteristics of AM-MF radio signals by day and by night. As distant, co-channelled AM radio signals are prone to interfere with one another over much
• directionality of the radiation pattern of the existing commercial radio broadcasting service 5DN; and
• changing the radiation pattern of the existing high powered open narrowcasting radio service broadcasting on AM frequency 1539 kHz.

The draft instrument also proposed to update the descriptions of the existing commercial and community radio licence areas in the Adelaide LAP to 2006 census data, and to make minor amendments to delete information included for reference only that did not form part of the LAP and whose inclusion may have created confusion.

Information regarding the proposed variation was made publicly available in an accompanying explanatory paper.

The consultation period commenced on 10 August 2009 and concluded on 11 September 2009. The ACMA received two submissions; one from DMG Radio Pty Ltd (DMG), the licensee of the Adelaide commercial radio services 5ADL and 5SSA; and one from W &L Phillips Pty Ltd (Flow FM) the licensee of the remote commercial radio service 8SAT.

DMG’s submission advised that the actual locations of its 5ADL Adelaide and 5SSA Adelaide Foothills transmitter sites were not the same as the nominal locations described in the Adelaide LAP.

The ACMA’s Broadcasting Services (Technical Planning) Guidelines 2007 (the TPGs) provide some flexibility for licensees wishing to use an alternative to the nominal site published in a LAP subject to certain criteria being met. This criteria is designed to ensure that the use of an alternative site would not cause interference to radiocommunications services, or to existing or planned broadcasting services shown in a licence area plan.

The ACMA’s assessment of the 5ADL/5SSA transmitter locations is that although operating from a different site than the nominal location described in the Adelaide LAP meets the criteria specified in the TPS. That being it will not change the planned performance of both services and updating the Adelaide LAP to reflect their actual locations will remove any confusion about the authorised operation.

Flow FM’s submission opposed the draft proposal for the 5DN radio service on the grounds the amount of signal overspill in the Remote Commercial Radio Service Central Zone RA1 licence area (RCZ) is excessive. The submission also objected to the use of overspill percentages by the ACMA in the original draft variation claiming it presented a distorted view of the actual amount of signal overspill in those areas of the RCZ that border the Adelaide RA1 licence area as opposed to the wider RCZ.

The RCZ extends across western New South Wales, parts of Victoria and most of South Australia and the Northern Territory.

Flow FM further submitted that if overspill figures were considered locally that the amount of populations covered would be different to that highlighted by the ACMA in its explanatory paper. Flow FM claimed that as a percentage of the actual populations in the Mid North (Kapunda) area, York Peninsula (Maitland and Yorketown) and Kangaroo Island (Kingscote) where the combined population is approximately 24,000 persons, at the existing power level of 2 kW the 5DN would cover 1000 persons or 4.2% of the persons in those communities. At 3.3 kW (the new night-time value) that would increase to 3180 persons or 13% and at 5 kW it would cover 7632 persons or 31.8%.

larger distances at night then during the day, it may be possible to operate a transmitter at much higher power during the day-time than during the night. As such changes do not impact on the productivity of the AM-MF spectrum, this approach is regarded as a spectrum efficient technique to improve the coverage and reception of AM-MF services.
Flow FM concluded that while it did not support the ACMA’s proposal if the ACMA did make the variation it should consider a reciprocal amount (13%) of signal overspill by the 8SAT service into the Adelaide RA1 licence area.

In considering Flow FM’s submission the ACMA determined that the only way to confirm the actual signal levels, and therefore the actual amount of people receiving the radio signal, outside the Adelaide RA1 licence area would be if a signal strength field survey was conducted.

The licensee of 5DN Southern State Broadcasters Pty Ltd (SSB) was approached and agreed to conduct a field survey that would take measurements across five locations in the RCZ.

The findings of the survey and the proposal to vary the 5DN survey are discussed further at Preliminary View 1.

New Request

On 5 August 2010, Music Broadcasting Society of South Australia Inc (MBS), licensee of the existing community service 5MBS, proposed that they be allowed to increase their maximum power level and adopt an omni-directional radiation pattern to address deficient coverage within the Adelaide Foothills licence area.

An assessment of this request is discussed further at Preliminary View 3.

Revised Draft

As it would be more administratively efficient to consider the request from MBS as part of the current Adelaide LAP variation the ACMA is proposing to release a revised draft variation to address this request along with the previous submissions received and the field survey results supplied by SSB.

After considering the above, the ACMA has decided to release a Draft Variation to Licence Area Plan – Adelaide Radio – No 1 of 2012 which proposes to:

- vary the technical specifications of the Adelaide commercial radio broadcasting service 5DN to allow a change of transmitter site and radiation power and permit day/night power switching to increase day-time power to 1085 V and night-time power to 880 V (Preliminary View 1);
- vary the technical specifications of the Adelaide high powered open narrowcasting (HPON) radio service on AM frequency 1539 kHz currently operated by Radio TAB to reflect its actual operating conditions (Preliminary View 2);
- vary the technical specifications of the Adelaide Foothills community radio broadcasting service 5MBS to increase its maximum effective radiated power (ERP) to 2.5 kW and adopt an omni-directional (OD) radiation pattern (Preliminary View 3);
- update the description of the existing commercial and community radio licence areas in the Adelaide LAP so that they are defined in terms used in the 2006 census and are consistent with the ACMA’s most recent determination of population of a licence area under section 30 of the BSA (Preliminary View 4); and
- make minor amendments to correct previous drafting errors and update technical specifications in the Adelaide LAP (Preliminary View 5).

A full discussion of these matters is set out below.
Preliminary view 1 – commercial radio

The ACMA proposes to vary the Adelaide LAP to change the technical specifications of the existing commercial radio broadcasting service 5DN at Adelaide, South Australia. It is proposed that this service now operates on:

1323 kHz from 5UV Tower site South Terrace WINGFIELD with a maximum cymomotive force (CMF) of 1085 volts (V) during daytime hours and a maximum CMF of 880 V during night-time hours, with a directional (DA) radiation pattern.

In considering the reception deficiencies previously reported by Southern State Broadcasters Pty Ltd (SSB), the ACMA acknowledges that Adelaide’s population is increasing, expanding and getting denser and, as a result, the level of environmental and man-made noise has increased. To maintain the required grade of service, 5DN had sought to change its transmission site, increase its power level to maximum of 1085 V (Day) and 880 V (Night) and change the directionality of its radiation pattern.

A consequence of increasing 5DN’s power level is that the 5DN signal, as a percentage of population, in the adjacent licence areas of Murray Bridge RA1, Spencer Gulf RA1 and Remote Commercial Radio Service Central Zone RA1 will increase slightly.

The increase in signal level into the adjacent markets was first tabled in the explanatory paper for the 2009 Draft Variation to the Adelaide LAP. They were based on a theoretical assessment at a suburban grade of service and are reproduced below:

<table>
<thead>
<tr>
<th>Adjacent Licence Area</th>
<th>Existing 465 V OD Day &amp; Night time Power</th>
<th>880 V DA Night Time Power</th>
<th>1085 V DA Day Time Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murray Bridge RA1</td>
<td>7.5%</td>
<td>5.5%</td>
<td>8.7%</td>
</tr>
<tr>
<td>Spencer Gulf North RA1</td>
<td>2.2%</td>
<td>4.6%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Central Zone RA1</td>
<td>0.6%</td>
<td>2.0%</td>
<td>4.8%</td>
</tr>
</tbody>
</table>

In considering Flow FM’s submission the ACMA determined that the only way to find the actual signal levels, and therefore the actual amount of people capable of receiving a radio signal, outside the Adelaide RA1 licence area would be if a signal strength field survey measurement was conducted in these adjacent licence areas.

SSB was approached and agreed to conduct this field survey. The field survey required that SSB take signal strength measurements across nine population centres in the RCZ. It was conducted in late December 2009 and early January 2010.

The results of the SSB survey as well as a previous field survey conducted by the former Postal and Telecommunications Department has provided the ACMA with realistic field strength signals.

---

2 According to census data, the Adelaide RA1 licence area population has grown approximately 6.3% from 1,089,107 in 2001 (1996 census data) to 1,158,187 in 2009 (2006 census data). According to the Australian Bureau of Statistics publications “Regional Population Growth Australia 2000-01” and “Regional Population Growth Australia 2008-09”, the 602.2 people per sq.km in 2001 to 650 people per sq.km in 2009. The 2009 rate is the highest of all Australian capital cities.

3 Survey map information is more accurate than software predictions, as it is directly related to field strength on the ground.
In determining what constitutes signal overspill the ACMA refers to section 25 of the TPG’s. This section specifies that in the case of AM services:

If a transmitter is sited at a location other than the nominal location, the licensee must ensure that the median ground wave field strength of the transmission in any urban centre beyond the licence area boundary does not exceed the greater of:

(a) the level that would be received if the transmitter was operating from the nominal location; or
(b) 2.5 mV/m (or 68 dBuV/m).

After considering this guideline the ACMA now finds that the percentage of population receiving a signal at a suburban grade in the adjacent licence areas was and now is:

<table>
<thead>
<tr>
<th>Adjacent Licence Area</th>
<th>Existing 465 V OD Day</th>
<th>Proposed 1085 V Day</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murray Bridge RA1</td>
<td>0%</td>
<td>1.1%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Spencer Gulf North RA1</td>
<td>19.2%</td>
<td>25.3%</td>
<td>6.1%</td>
</tr>
<tr>
<td>Remote Central RA1</td>
<td>11.7%</td>
<td>13%</td>
<td>1.3%</td>
</tr>
</tbody>
</table>

The ACMA concedes that while 5DN’s signal levels outside the Adelaide licence area will increase, this increase does not include any urban centres that did not already receive a signal.

The increase in signal levels in the RCZ can be primarily attributed to the propagation of AM airwaves over water and the close proximity of the Spencer Gulf RA1 licence area to the Adelaide RA1 licence area.

AM radio signals are guided along the surface of the earth and only reduce in signal strength at a rate dependent upon the electrical properties of the ground along which it is propagating. Salt water is an extremely good electrical conductor and therefore AM radio signals propagating over the ocean are only slightly alleviated and may reach as far as a few hundred kilometres. This is quite unlike FM radio propagation which travels through the atmosphere and are not overly affected by ground conductivity. These signals are rapidly blocked either by intervening hills and mountains or by the earth itself at the visual horizon.

The ACMA has investigated whether it would be possible to minimise this signal overspill by some other method, such as reducing the power in those directions. It found that reducing power in only certain directions while possible would result in a radiation pattern that would not be cost-effective to implement and would be unlikely to be supported by the licensee.

In deciding whether to permit the proposed technical specifications for 5DN, the ACMA understands that it must strike a balance between the rights of listeners within a licence area to receive their local services at the planned grade of service, and the need to avoid unwarranted signal overspill into adjacent licence areas.

The ACMA’s general approach is to permit minimal signal overspill as to ensure coverage of significant population centres at the required grade of service within a licence area, except where that overspill would be excessive.

At the proposed technical specifications the ACMA has found that an additional 123,200 persons\(^4\) or 10% of the population of the Adelaide RA1 licence area would be able to receive 5DN at an urban grade of service as tabled below:

\(^4\) 2006 census data.
<table>
<thead>
<tr>
<th>Grade of Service</th>
<th>Existing 465 V OD Day</th>
<th>Proposed 1085 V DA Day</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>946,605 persons or 82% of licence area population</td>
<td>1,069,825 persons or 92% of licence area population</td>
<td>123,220 persons or 10% of licence area population</td>
</tr>
<tr>
<td>Suburban</td>
<td>1,123,650 persons or 97% of licence area population</td>
<td>1,140,650 persons or 98.5% of licence area population</td>
<td>17,000 persons or 1.5% of licence area population</td>
</tr>
</tbody>
</table>

**Conclusion**

In this instance taking into account the actual increase in coverage in Adelaide area, the ACMA believes that, at the CMF level of 1085 V, the level of signal received in adjacent licence areas is a necessary result of the provision of the 5DN service within the Adelaide RA1 licence area, particularly noting the propagation characteristics of AM transmission. To not increase 5DN’s power level may result in a significant percentage of the population of the Adelaide market receiving a deficient service at the expense of avoiding a small increase in the signal level into the adjacent markets.

The ACMA is therefore of the view that the economic and efficient use of the spectrum and the objects of the BSA, particularly that object at paragraph 3(1)(a), are likely to be promoted by allowing the change of site, increase of power and modification of pattern for the 5DN service.
The ACMA proposes to vary the technical specifications of the existing high powered open narrowcasting (HPON) service operated by RadioTAB in Adelaide to change the antenna pattern. It is proposed that the RadioTAB HPON service operate on:

- 1539 kHz from Paralowie, with a maximum cymomotive force (CMF) of 1.12 kV (equivalent to a transmitter power of 5 kW) with a directional antenna pattern.

The frequency 1539 kHz was first made available in 1994, under section 34 of the BSA, for a HPON in Adelaide.

The HPON service was implemented at a transmitter power of 5 kW, with a directional antenna pattern with CMF restrictions towards Sydney and the Gold Coast to protect these medium wave services at night.

When the licence area plan for Adelaide radio was determined in 2001 the technical specifications made available for the HPON service on 1539 kHz described a different radiation pattern different to the one already implemented. This inconsistency occurred due to the manual compilation of licence areas and licence data at the time.

The ACMA now proposes to update the LAP technical specifications so that they reflect actual operating conditions. These proposed changes to the technical specifications in the LAP will have no impact on Radio TAB coverage or reception.

(This preliminary view was first proposed in the Explanatory Paper to Draft Variation to Licence Area Plan – Adelaide Radio – No.1 of 2009 and has not changed since that time.)
The ACMA proposes to vary the technical specifications of the existing community radio broadcasting service 5MBS at the Adelaide Foothills. It is proposed that this service operates on:

> 99.9 MHz from 208 South Terrace ADELAIDE with a maximum effective radiated power (ERP) of 2.5 kilowatts (kW) using a omni-directional (OD) antenna pattern.

In August 2010 Music Broadcasting Society of South Australia Inc (MBS) proposed that they be allowed to increase the maximum ERP of their existing 5MBS community radio service from 2 kW to 2.5 kW and adopt an OD radiation pattern to address deficient coverage within the Adelaide Foothills RA1 licence area.

An assessment of MBS’s request found that increasing the maximum ERP to 2.5 kW and operating with an OD pattern had the potential to cause interference to the reception of the 5WOW community radio service in its Port Adelaide RA1 licence area. The likelihood of interference occurring however could only be confirmed by 5MBS operating at its proposed power level and pattern.

As a result the ACMA on 9 January 2011 authorised 5MBS to conduct a three month test transmission to determine whether that interference would occur. 5MBS undertook and completed its test on 9 April 2011 and advised there was no interference to the reception of 5WOW or any other broadcasting service during the test period.

The ACMA therefore is of the preliminary view that the Adelaide LAP be varied to change the technical specifications of the 5MBS community radio service to increase its maximum ERP to 2.5 kW and allow for the adoption of an OD radiation pattern. These changes will maximise the coverage of the 5MBS service, be more cost effective to implement and maintain and will represent an economic and efficient use of the radio planning frequency spectrum.
Preliminary view 4 – licence areas

The ACMA proposes that the existing commercial and community radio broadcasting licence areas in the Adelaide LAP be redefined using 2006 census data but otherwise remain unchanged.

The licence area for the commercial radio broadcasting services in the Adelaide RA1 licence area in the Adelaide LAP are currently described using boundaries from the 2001 census.

The licence areas for the community radio broadcasting services in the Adelaide Foothills RA1, Adelaide SW RA1, Barossa Valley RA1, Port Adelaide RA1 and Salisbury RA1 licence areas in the Adelaide LAP are currently described using boundaries from the 1996 census.

The ABS has made available to the ACMA the most recently published census count (2006) as prepared by the Australian Statistician. Therefore, the ACMA proposes that these licence areas be redefined using 2006 census data, but otherwise remain unchanged.

These updated licence areas are detailed in the document “Licence Area Maps” that accompanies this explanatory paper.
The ACMA proposes to update Schedules and Attachments in the Adelaide LAP.

The ACMA proposes to make amendments to Schedules One, Two, Three, Four, Five and Six and to each of the Attachments that contain the characteristics, including technical specifications, of the radio broadcasting services in the Adelaide area.

These proposed amendments delete information, included for reference only, that does not form part of the Adelaide LAP and whose continued inclusion is obsolete and may create confusion.

The ACMA does not intend these minor amendments to alter any existing rights or obligations. It proposes to replace schedules and attachments in their entirety, without changing the substantive parts, to facilitate these minor amendments.

The proposed changes to the Schedules include:

> in Schedule One omit the heading “Licence Area Plan - Adelaide Radio – March 2003” and substitute the heading “Licence Area Plan : Adelaide Radio”; and


The proposed changes to the Attachments headings include:

> in Attachments 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.11, 1.12, 1.13, 1.14, 1.15, 1.16, 1.17, 1.20, 1.21, 1.23, 1.24, 1.25, 1.26, 1.27, 1.28, 1.29, 1.30, 2.2, 3.3, 4.2, 4.3, 5.2 and 6.2 omit the heading “Licence Area Plan : Adelaide – September 2001” and substitute “Licence Area Plan : Adelaide Radio”; and


The proposed changes to the Attachments technical specifications include:

> in Attachments 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.9, 1.11, 1.12, 1.13, 1.15, 1.17, 1.19, 1.21, 1.23, 1.24, 1.25, 1.26, 1.27, 1.28, 1.30, 2.2, 3.3, 4.2, 4.3, 5.2 and 6.2 the nominal locations of the transmitter specified has been updated to provide a more accurate description of the transmitter site; and

> in Attachments 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.11, 1.12, 1.13, 1.14, 1.15, 1.16, 1.17, 1.19, 1.20, 1.21, 1.23, 1.24, 1.25, 1.26, 1.27, 1.28, 1.29, 1.30, 2.2, 3.3, 4.2, 4.3, 5.2 and 6.2 under “Site Tolerance ;” omit “Refer to Technical Planning Guidelines” and substitute “Refer to Broadcasting Services (Technical Planning) Guidelines 2007”.

The special conditions at Attachments 1.19, 1.20, 1.21, 1.23 and 3.3 and the special condition numbered (1) at attachment 1.29 have been removed as they are no longer relevant.

The change to the Attachments’ technical specifications has been updated for ease of reference only and does not signify a change to the planned performance of these transmitters.