



COMMERCIAL RADIO AUSTRALIA

RESPONSE TO

DIGITAL RADIO STUDY GROUP

REPORT & ISSUES PAPER

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1. EXECUTIVE SUMMARY

Commercial Radio Australia Limited (**Commercial Radio Australia**) is the industry body for commercial radio licence holders who provide services in that part of the spectrum known as the broadcasting services bands (**BSB**) and who are holders, or deemed to be holders by the Australian Broadcasting Authority (**ABA**) of section 36 and section 39 commercial radio licences. For the purposes of this submission, such licensees are referred to as “**commercial radio broadcasters**”.¹

Commercial Radio Australia represents 256 commercial radio broadcasters across Australia or 98% of the commercial radio broadcasting industry.

The issue of digital radio broadcasting is an important one for commercial radio broadcasters as it represents the future of the commercial radio industry in Australia. Digital radio broadcasting represents a natural evolution for commercial radio, just as digital television is replacing analog television, and digital mobile phones have replaced analog mobile phones.

The commercial radio industry is positive and enthusiastic about the opportunities that will arise from the introduction of digital radio technology in Australia.

This submission is a response to issues raised in the Issues Paper dated December 2004 (**Issues Paper**), and attached to the Digital Radio Study Group (**DRSG**) Report, dated March 2004, both distributed for comment in December 2004. The submission provides detailed comments on the areas outlined in the Issues Paper and reflects the structure of the Issues Paper.

The key message that Commercial Radio Australia seeks to convey through this submission is that by supporting the “full conversion approach”, commercial radio broadcasters are not only ready and willing to drive the introduction of digital radio to audiences throughout Australia, but they are better placed to do so than any other industry sector, business or interest group.

The commercial radio industry fully appreciates that significant investments in broadcast infrastructure (including studios and transmission facilities) in the creation of new content, and in audience education and marketing will be required in order to make digital radio broadcast services a reality.

At the same time return on this investment for commercial radio broadcasters will not be obvious for some time as initial audiences will be small and consequently very little, if any, revenue will be generated in the short to medium term.

However, commercial radio broadcasters recognise that this is an investment that needs to be made so that radio does not fall behind other media and communications sectors, and so that Australian audiences are provided with services of a quality equal to those in other OECD countries. Nevertheless it needs to be recognised that the commercial radio industry has recently experienced a period of dramatic change, due to the very significant increase in the number of commercial radio licences on issue.

¹ For clarification, Commercial Radio Australia does not represent licensees who broadcast outside of the BSB, such as holders of licences under section 40 (off band licences). All references to “commercial radio broadcasters” in this submission expressly exclude section 40 off-band licensees.

This has arisen as a result of the licence area planning (**LAP**) process, and the allocation of new licences by the Australian Broadcasting Authority (**ABA**) under the *Broadcasting Services Act 1992* (**BSA**). Between 1995 and 2001, the ABA planned 448 transmitters for new national radio services across Australia, 95 new commercial radio services, 181 new community radio services and 262 wide and medium coverage open narrowcasting radio services.²

The allocation of new commercial radio licences has seen new entrants into the commercial radio sector, as well as existing licensees, making substantial investments in reliance on the existing regulatory regime in the BSA. It has also seen existing licensees adapt and restructure their businesses in response to increased competition for advertising revenue (from new commercial radio broadcasters and other types of new radio broadcasters – such as narrowcasters).

While the commercial radio industry is excited about the digital radio opportunity, its recent experience explains why it is urging the Government to introduce a digital radio policy that allows **commercial radio broadcasters** to:

- drive the introduction of digital radio in Australia and in so doing, ensure that this process is in safe and experienced hands;
- plan for, and make, the large-scale investments required for the roll-out of new digital networks, whilst ensuring long-term economic sustainability;
- invest in the provision of additional and “value-add” content for digital services, including public information services, and data services;
- test, develop and provide, free to air, viable and attractive content offerings on digital radio that will ensure the consumer uptake and adoption of new receiving equipment; and
- encourage interest in digital radio technologies by large receiver manufacturers, distributors and retailers.

The Issues Paper set out three possible regulatory options for the introduction of digital radio in Australia. Commercial Radio Australia urges the adoption of a “full conversion model” that is focussed on replacing the analog technology used by existing “in-band” radio broadcasters (ie radio broadcasters that provide their services in the BSB³).

Under the full conversion model, commercial radio broadcasters and the national broadcasters (ie the ABC and the SBS) would migrate to digital first, followed by community broadcasters and then by high powered open narrowcasters – over a thousand services across Australia. This approach is required as digital radio should be considered to be a replacement technology, not a “supplementary” or an optional technology.

Given the large numbers of new radio broadcasting licences that have been allocated in recent years, Commercial Radio Australia considers that it would be inappropriate for digital spectrum to be offered to new entrants.

² http://www.aba.gov.au/abanews/news_releases/2001/110nr01.htm

³ “In-band” is any commercial, national or community radio service operating in the AM broadcasting band, 535 to 1605 kHz, or the FM broadcasting band, 88 to 108 MHz.

To put it quite simply, the commercial radio industry is still adjusting to the dramatic increase in competition resulting from the ABA's recent LAP and licence allocation process.

In recognition of the contribution that incumbent commercial radio broadcasters will make in the digital future, and to provide some stability and certainty for the industry, the Government made a preliminary statement in late 2004 of a moratorium on new entrants for an initial period of five years to commence once "technology and spectrum issues are resolved and a timetable for roll out of digital services determined".⁴

Commercial Radio Australia's submission is that this moratorium should be extended to a minimum of 10 years, and that the Government should also place a moratorium on the allocation of any new community or narrowcast analog licences until the planning for the migration of current BSB licensees is completed.

Commercial Radio Australia also requests that the Government make the following decisions about the implementation of digital radio:

- Eureka 147 (**DAB**) is selected as the preferred digital radio technology for Australia;
- Digital spectrum will be "loaned" to existing in-band commercial radio broadcasters at no additional cost (similar to the approach adopted in relation to digital television);
- Spectrum (multiplex) licences will be held by consortia of commercial radio broadcasters and national broadcasters ABC and SBS) in each licence area plan, with each commercial radio broadcaster entitled to access a full one fifth of a multiplex; and no third party multiplex operator regime will be established or considered during the agreed no new entrants period;
- VHF Band III spectrum and L-Band spectrum should be reserved immediately for digital radio rollout for terrestrial in-band radio broadcasters, and should not be planned or allocated for any other purpose;
- Government assistance will be provided to regional commercial radio broadcasters to reflect the cost of infrastructure roll-out; and
- Existing commercial radio broadcasters will be permitted to develop and provide new and innovative "program associated services" including data services. DAB technology will allow commercial radio broadcasters to broadcast additional "layers" of audio streams and data channels, and these are needed in order to encourage listeners to purchase digital radio receivers. However, no "digital only" services should be licensed.

The commercial radio industry is also willing to provide tangible assistance to community broadcasters in respect of access to commercial broadcaster consortium multiplexes; but any arrangements entered into by commercial broadcasters would be directly linked to the achievement of the above policy positions.

These policy decisions will enable the radio industry to evolve (consistent with the evolution occurring in other broadcasting and communications sectors), and will enable the practical and efficient implementation of digital radio in Australia.

⁴ http://www.minister.dcita.gov.au/media/media_releases/introducing_digital_radio_to_australia

The commercial radio industry supports the “full conversion approach” because this reflects the reality that digital radio is a replacement technology, and that this approach is the one which will best promote the objectives in the BSA upon which the entire regulatory framework has been based.

Both the “managed introduction” approach and the “market-based” approach are significant departures from the current regulatory policy of the BSA and if such changes are to be introduced, it is our opinion that this would necessitate a more thorough and wide-ranging review than that set out in this Issues Paper.

2. **PART A – THRESHOLD ISSUES**

2.1 **Threshold Issue 1: Digital Radio Platform**

The commercial radio industry has actively investigated available technologies over the past few years. As a result commercial radio broadcasters support Eureka 147 (**DAB**) as the most appropriate technology for the introduction of digital radio in Australia.

Eureka 147 (DAB)

DAB, while being the most mature of the technologies, is also the most powerful. Adoption of DAB will allow the radio industry the greatest scope to step into the digital age and compete on a level playing field with other media and new technologies.

DAB is the ideal choice for commercial radio broadcasters for the following reasons:

- *Affordable Receivers*: Free to air radio needs cheap receivers to flourish. While there are several technologies available (as discussed below), only DAB has so far produced affordable receivers from a wide range of manufacturers. Adopting any other technology will involve an element of risk in waiting to see if manufacturers will produce affordable receivers. This is especially true when considering ISDB-T as no commercial receivers are available.
- *Wide Band Signal*: DAB multiplexes or bundles several signals together to form a wideband signal. This in combination with time interleaving is the best solution to combat the effects of frequency selective fading. IBOC and DRM are both narrow band technologies, so can only rely solely on time interleaving.
- *Flexibility*: The DAB ensemble is a much higher bit rate transmission system than either DRM or IBOC. This means there is more flexibility for commercial radio broadcasters to reconfigure their services as required to fully use the capabilities and power of the digital radio technology.
- *Proven Technology*: DAB is a mature, proven technology. DAB broadcasts have been on air for over nine years. This means that there are a number of equipment suppliers and receiver manufacturers with proven products. Adopting DAB technology is a low risk solution, when compared with other available technologies.
- *Multilayering*: Overseas experience suggests that merely simulcasting existing audio services may not provide commercial radio broadcasters with a valid and supportable business case for driving the change to digital technology. DAB will allow commercial radio broadcasters to broadcast additional "layers" of audio streams and data channels to value-add to their main broadcast services.

It is considered that Digital Radio Mondiale (DRM) may be a supplementary system, for the future, for remote, international and wide area coverage.

While any consideration of a hybrid technological solution for remote and wide area coverage is an issue for further examination, this does not prevent the Government from announcing broad policy proposals as requested by the commercial radio industry.

Increased international interest in DAB (as outlined in the DRSG Report) and DMB (Digital Multimedia Broadcasting – an extension of DAB) further strengthens the position of DAB. DMB services use the same multiplexes and transmitters as more traditional DAB services. The continued interest in DMB services, particularly in Korea, will drive the cost down of equipment necessary to build DAB broadcast networks.

Digital Radio Mondiale (DRM)

As noted above, DRM may be an appropriate solution for providing digital services over sparsely populated areas, but is not a solution for populated areas today for the following reasons:

- *AM Sites.* Difficulties in finding new broadcast sites or adding to existing MF sites near populated areas.
- *Noise.* High levels of man-made noise in the AM band.
- *Little Value Add Capacity.* Very little capacity for any extra data services or “layering” of audio streams; it can really only simulcast the analog service.
- *Narrowband.* It is a narrowband solution so will have some issues with multipath induced frequency selective fading in built up areas. (Reflections from buildings at certain distances can temporarily “notch out” the main signal).

Given the pressures on AM broadcasting in metropolitan and densely populated areas, DRM is not considered a solution for metropolitan or populated areas. Commercial radio broadcasters consider a hybrid approach may achieve best coverage in the longer term in large regional LAPs.

It is therefore suggested that a full DAB service be provided in the population centres in regional licence areas, with DRM used to extend coverage over wider areas as a second phase for rollout, if and when necessary.

Remote area licensees, from an economic perspective, may find DRM is the most efficient and cost effective means of transmitting in digital to wide areas. However, as DRM uses AM band spectrum, it should be noted that there may not be sufficient available spectrum to begin planning for DRM - particularly during a simulcast period.

HD Radio (IBOC) USA

IBOC/HD radio is not appropriate for Australian commercial radio for the following reasons:

- *Proprietary Technology.* It is a proprietary system belonging to a single foreign company that requires an annual licence fee to allow broadcasters to use the technology. It does not seem sensible to require Australia’s free to air radio services to use a proprietary system.
- *Night propagation problems.* A night time switch off is required in America and may be necessary in congested/ metropolitan areas of Australia. Such a requirement would cause commercial radio broadcasters in Australia great concern.
- *Availability of AM Receivers.* The IBOC system is based on 20 KHz bandwidth channels on a 10 KHz raster. For it to work in Australia that will need to be altered to an 18 KHz bandwidth on 9 KHz raster. While this may be technically possible, it is likely to be many years before receivers are made available for consumers which work on this basis. The cheap mass market receivers that are expected to be produced for the American market may not work in Australia.

- *Lack of Flexibility.* The IBOC/HD system is designed to simulcast existing analog services, and does not have the capacity to allow the broadcast of much, if any, value add services or features. This will not provide enough incentive for consumers to buy new digital radios.
- *Narrow band Solution.* Being a narrow band solution, IBOC can never be as capable at coping with frequency selective fading. This means that IBOC will struggle in built up areas in precisely those locations where multipath is currently an issue.

ISDB-T Japan

ISDB-T is technically an interesting solution, but it is still in the development stage. There is no guarantee that affordable receivers for use in the Australian market will be manufactured in the foreseeable future. Mass market free to air radio cannot survive without affordable receivers.

Having considered all the available technologies, the commercial radio industry is satisfied that DAB is the most appropriate technology for Australian conditions. As digital radio is implemented, DRM systems could also be used in sparsely populated areas outside regional centres.

2.2 Threshold Issue 2: Approaches to Implementation

Commercial Radio Australia is of the firm view that digital radio technology is a replacement for current radio broadcasting technology. Digital radio broadcasting is an evolution for radio just as digital television technology is for analog television and digital telephony was for the mobile phone industry.

The Issues Paper noted that the DRSG had identified three possible approaches to the implementation of digital radio. Of these, commercial radio broadcasters support the “full conversion model” for the introduction of digital radio technology into Australia. The reasons for this preference are explained below.

FULL CONVERSION

Commercial Radio Australia, on behalf of its members (existing in-band commercial radio broadcasters), supports a full conversion approach to the implementation of digital radio in Australia.

Since 2001, the entire commercial radio broadcasting industry (AM and FM broadcasters, regional and metropolitan broadcasters), has been committed to making the transition from analog to digital radio. This commitment continues, and has strengthened. The commercial radio industry seeks to move together to replace analog technology with DAB in a way that will provide all commercial radio broadcasters with equal access to digital spectrum

Just as for the television industry, Commercial Radio Australia’s submission is that a full conversion model should be implemented for radio. However, lessons learnt from the digital television conversion process may also be relevant here.

In particular, some commercial television broadcasters have argued that audiences need the incentive of expanded service offerings in order to invest in digital receivers.

While ABA research has demonstrated that radio audiences are highly satisfied with the radio services that are presently provided in analog mode,⁵ it is recognised that audiences may need more than a promise of better sound quality in order to buy new digital radios (even though these are expected to be more affordable than the cheapest digital television set top boxes).

For this reason, commercial radio broadcasters will seek to broadcast additional "layers" of audio streams and data channels, which are considered to be "value-adds" from an audience perspective, and which will also ensure that the potential of the new technology is effectively exploited.

As noted above, Commercial Radio Australia's key submission is that digital radio technology should be introduced as a replacement for analog technology.

In terms of coverage under a DAB regime, it would be anticipated that the first implementation step would be to achieve 80% coverage of the Australian population through the rollout of metropolitan and major regional centres first, in a timeframe to be agreed by Government and the commercial radio industry. This would be followed by implementation of digital radio services in rural areas.

The obvious objective would be to achieve equivalent coverage (in terms of audience reach) within licence areas to that which is being achieved by use of analog radio technology. It is important that rural audiences are not left out of the digital radio future (as discussed below).

As outlined, under the Full Conversion Model, commercial radio broadcasters and the national broadcasters (ie the ABC and the SBS) would migrate to digital first, followed by community broadcasters and then by high powered open narrowcasters.

Where the reception of a services is limited by the category of the service (eg in the case of narrowcasting services) or the technical specifications of the service (eg local community broadcasters), digital coverage should be consistent with the current *licensed* geographic analog coverage.

Simulcasting is an important element of the "full conversion" model.

Given that commercial radio broadcasters will be carrying the costs of two transmission systems (ie analog and digital) for some time, from a commercial perspective the industry would support the switch off of analog broadcast services at the appropriate time but subject to three important conditions:

- the majority of commercial radio listeners have had adequate time and opportunity to purchase digital radio receivers ;
- there has been an adequate moratorium on the issue of new licences (to new entrants), to allow the industry to recoup the significant investment in the infrastructure for the new technology; and
- there is a legislative guarantee/provision that any analog spectrum handed back is not used for broadcasting purposes, in recognition of the fact that digital technology is replacement technology.

⁵ ABA, "Understanding Community Attitudes to Radio Content", October 2003.

As the Government is aware, the commercial radio industry in Australia has signalled that it will fund the “lion’s share” of the roll-out cost of the digital radio infrastructure provided that it receives some certainty from the Government in terms of access to digital spectrum, (on a long term loan basis), to enable incumbent commercial radio broadcasters to replace their analog services; a moratorium of a minimum of 10 years during which no new/additional services or third parties will be licensed; and assistance for regional commercial radio broadcasters.

The cost of establishing the digital radio trials in the Sydney LAP has, to date, been a little over \$3 million. There will be additional costs to ensure full coverage of the Sydney LAP. It is acknowledged that costs for digital rollout in each LAP will differ and detailed work is now underway to assess transmission and infrastructure needs and subsequently costs.

During the rollout period commercial radio stations are willing to simulcast their programs in both digital and analog formats as well as offering additional “value add” services such as extra audio streams complementing content of the main audio broadcast, additional text and audio information services, plus enhancements such as graphics and still pictures.

The full conversion model will guarantee the most certainty for radio broadcasters, listeners, investors, advertisers and businesses and manufacturers of receivers. The commercial radio industry, having committed to funding the majority of costs for full conversion, will be keen to drive digital uptake. This will be the quickest and cheapest way to convert all existing analog services to digital.

Efficiency considerations also need to be highlighted when considering who should be responsible for the operation of digital radio multiplexes. This is discussed below.

An ‘Economic Welfare’ Test for the Full Conversion Model

Digital audio broadcasting (DAB) involves transmission from a multiplex through which a mix of radio programmes (and other services) are ‘grouped’ together or assembled for simultaneous transmission.

As noted, DAB is essentially a *replacement* technology of analog that provides an enhanced form of transmission. It is only an *augment* technology during the transition from analog to digital.

There is a question of whether Australia should implement DAB using a licensing model similar to that in the UK, i.e., introducing a new licence for a non-broadcaster/third party multiplex operator.

Given the nature and function of the multiplex (to package the mix of programs for transmission to listeners), the licensee (and owner) of the DAB multiplex is essentially assigned the role of “gatekeeper” to the range of radio services on their multiplex, and indeed, becomes the gatekeeper to the spectrum. In the UK, given the available multiplex capacity, there has been an inevitable trade-off between quality (bit rate) and the number of radio services that can be ‘packaged’ through use of the multiplex.

One “economic welfare test” for the proper and successful transition from analog to digital is that no listeners are worse-off due to withdrawal or cessation of particular broadcast services, and at least some listener segments are made better-off. (Note that this is simply an application of the so-called potential Pareto criterion).⁶

⁶ Another relevant “economic welfare” test might be to ensure that digital receivers are available and affordable to consumers.

In adopting a UK-type licensing approach, what is clear is that the multiplex licensee determines the mix of radio services that will be provided through its multiplex in its “service area”. Under the UK licensing criteria, the multiplex licensee has an obligation “to ensure a variety of local programs and fairness in contracting with program providers”. However, this leaves open the questions of what constitutes the appropriate mix of public, commercial and community programs (and whether it is appropriate that the multiplex operator should have the power to determine this issue); and what is the “fair” charge or levy for accessing the multiplex.

From the perspective of this “economic welfare test”, Commercial Radio Australia considers that a multiplex operator (and “gatekeeper”) will need to ensure the continuity and diversity of existing services. This leaves open the question of whether a non-broadcaster multiplex operator would (in the absence of licence conditions similar to those imposed on a broadcaster under the BSA, including social and cultural obligations) perform its activities in a way that is consistent with the Government’s DAB objectives.

By contrast, a broadcaster-run multiplex that was built on the basis that access would be needed for all commercial broadcasters, [and that capacity would also need to be made available for other licensed broadcasters in due course], would reflect the diversity that was promoted through the ABA’s LAP process (given that the ABA was required to have regard to the diversity objective in the BSA when it planned new services during the LAP process).

Also, existing radio broadcasters have the experience to ensure that the commercial radio services provided through digital multiplexes do offer diversity within the commercial broadcasting category (indeed, this is the market’s response to competition, and leads to differential branding of formats).

In this context, the introduction of a ‘gate-keeping’ type of licence is not only superfluous, it will result in a costly and unnecessary (implied) restructuring of the radio industry.

In particular if multiplex access charges are set at levels that make it uneconomic for some existing radio broadcasters (especially regional commercial radio broadcasters and smaller metropolitan commercial radio broadcasters) to produce and continue to transmit existing services or new types of enhanced services, then arguably some listeners in the service area will be made worse-off. In other words, the introduction of a ‘gate-keeping’ type of licence will fail the ‘economic welfare’ test.

Simulcasting and Costs Burden of Existing Broadcasters

Simulcasting is a costly activity, basically because broadcasters have to incur operating costs associated with the two forms of broadcasting devices or transmitters.

To the extent that advertising revenues are proportional to the addressable market, (i.e. listeners with the right equipment), simulcasting, at least in the first few years of DAB broadcasting, will not yield an extra dollar of advertising revenue for commercial radio broadcasters. This impact is compounded by the fact that the costs of a commercial radio station are largely fixed in terms of program production and salaries.

The commitment of existing radio broadcasters to the development of new services will be a financial drain on some existing radio broadcasters, especially if – as has been the case in some of the EU markets – DAB services are not likely to be profitable immediately (in other words, it will take some time for the return on DAB investments to occur).

Where there is a third party multiplex operator, also seeking to make a profit, there could be some churn in the program services provided on any particular multiplex, as some service providers may find it uneconomic to continue with the service in the face of a profit oriented multiplex access cost *on top* of their program production costs.

Not only would this be disruptive for listeners, but it could create a ‘vicious multiplex cycle’ – the multiplex operator may seek to recover its costs by raising access charges to the remaining service providers. As the more financially vulnerable service providers withdraw from the DAB market, there will be less diversity in the program content for consumers.

The full conversion model with licences (or access, if licences are not required) allocated in each licence area to existing commercial and public broadcaster consortiums allows stations in the same market to share facilities, and thus costs, without the burden of an ongoing third party cost layer levying access fees on an annual or otherwise regular basis. Just as in Sydney (in the context of the current digital radio trial), this simply involves commercial arrangements between the relevant stations that are operating the multiplex.

As noted earlier, given their experience, existing radio broadcasters are best placed to ensure the continuity and diversity of existing services. The sharing and/or joint operation of the multiplex would alleviate the financial burden of stations (in that transmission equipment costs would be shared) and it could also underpin the introduction of more high quality and diverse value-add services in each licence area.

As discussed below, ensuring diversity of services in a digital radio environment is an important policy consideration. This is highlighted in the objectives of the BSA, as discussed below.

Broadcasting Services Act Objectives

The full conversion model is the implementation model which will best promote the objects of the BSA.

It is acknowledged that the objects of the BSA sometimes lead in different directions, but in the radio context, the objective that has been given the greatest priority by the ABA (in the LAP planning context) is the “diversity object”.

Planned diversity of services is one of the principal public benefits delivered under the present regulatory regime, and this is also expressed in the BSA as an objective driving the implementation of digital broadcasting in Australia.

The full conversion model will best promote the diversity objective, and will promote more of the other objectives in the BSA than any other regulatory model.

By way of background, the regulation of broadcasting in Australia is driven by a range of public interest considerations which are intended to achieve social, cultural and economic objectives.

This is reflected in the regulatory scheme in the BSA for the planning and allocation of broadcasting licences, the ownership and control of broadcasting licences, and the content of broadcasting services.

For example, the objectives in the BSA include:

- to promote the availability to audiences throughout Australia of a diverse range of radio and television services offering entertainment, education and information (section 3(a));
- to provide a regulatory environment that will facilitate the development of a broadcasting industry in Australia that is efficient, competitive and responsive to audience needs (section 3(b));
- to promote the role of broadcasting services in developing and reflecting a sense of Australian identity, character and cultural diversity (section 3(e));
- to promote the provision of high quality and innovative programming by broadcasters (section 3(f));
- to encourage broadcasters to provide for an appropriate coverage of matters of local significance (section 3(g));
- to encourage broadcasters to respect community standards in the provision of broadcasting material (section 3(h)); and
- to ensure the maintenance and where possible, the development of diversity, including public, community and indigenous broadcasting, in the Australian broadcasting system in the transition to digital broadcasting (section 3(n)).

To illustrate the scope of these objectives, some examples are set out below.

Cultural objectives for free to air broadcasting include:

- the development of a sense of cultural identity (and sharing an Australian cultural perspective);
- the production and broadcast of innovative, high quality programs; and
- ensuring that local communities receive content that is relevant to them.

Social objectives for free to air broadcasting include:

- ensuring all Australians receive a diverse range of broadcasting services, and have access to the entertainment, information and education contained in television and radio programs (“universal coverage”);
- maintaining and developing a sense of community; and
- ensuring the free flow of diverse opinions and information to sustain an informed Australian community and to contribute to the health of Australia’s democracy.

Economic objectives for free to air broadcasting can include:

- ensuring that the broadcasting industry is efficient and competitive and contributes to national economic growth;
- ensuring that spectrum is used to meet a wide range of audience demands.

As a result of this regulatory history, community service requirements and service expectations have been developed over time.

Government intervention in the broadcasting sector has required commercial radio broadcasters to use the spectrum they have been allocated to provide services of a quality over and above what would occur in a purely market-driven industry (in terms of both coverage, involving for example the installation of additional transmission equipment, and content, involving for example the provision of local programming).

Consequently, Australian audiences are amongst the best served in the world and have strong expectations about the content and technical quality of free to air broadcasting services. Audiences also have expectations about the number of free to air broadcasting services they should be able to receive. As discussed below, these expectations support the implementation of the “full conversion” model.

Expectations of Commercial Radio Listeners

Free to air radio is listened to by 95% of the Australian population. On average, commercial radio listeners tune in for over 3 hours each day. Of all the radio broadcasting sectors, free to air inband commercial radio broadcasting has the largest audience share (80% of this 95% figure), with the national radio broadcasting services (including the 5 ABC radio networks and SBS radio) having a 12% share and the community and narrowcasting radio broadcasting sectors having a 4% share.

Allocating spectrum (or “*Loaning spectrum*” to use terminology used in relation to digital television conversion) to incumbent commercial radio broadcasters under the full conversion model will be the quickest and cheapest way to facilitate the transition to digital radio and create the best framework for investment and innovation. Incumbent commercial radio broadcasters have committed listeners and so have the ability to build awareness and to best influence consumer attitudes to digital radio.

However, a conversion policy which introduces additional competition during the conversion process (eg through the licensing of new entrants to provide competing services, whether in analog mode or digital mode) is not only unfair, but would undermine the Government’s intentions for the uptake of digital services. This is because existing commercial radio broadcasters would have less resources to devote to the promotion of digital.

Also, listeners are likely to be discouraged from digital radio if there is no continuity in their favourite commercial and public radio services on the digital platform. For example, the introduction of “digital only” services (licensed to new entrants) would not only fragment the listening audience, but would also be likely to result in existing in band broadcasters responding to the competitive threat in ways that would undermine the promotion of digital radio technology. This would not be in the interest of radio audiences, nor would it be in the public interest more generally.

Manufacturers will also commit to building digital receivers that feature the functionality that audiences will find compelling if the critical mass exists in the form of potential markets – in Australia the 80% of Australians who listen to commercial radio broadcasters. This is another reason why digital radio policy should encourage full migration of in band broadcasters to the digital platform.

On commercial radio, audiences expect to, and do, receive a broad range of formats (from top 40 to classical to talk-back to easy listening) and to be kept informed about issues of relevance on a day to day basis – traffic reports, weather reports, emergency information and news of local events. They also expect to hear Australian voices (for example, Australian announcers and voice-overs are heard on commercial radio, programming is not syndicated from abroad). Only a full-conversion model can guarantee continuity of the high quality free to air commercial radio services to which Australian audiences are accustomed. A full conversion model would carry over existing radio broadcasting services into the digital environment, and reflect the careful licence area planning decisions previously conducted by the ABA (which were intended to promote diversity of services). Further, a full conversion model would not undermine the investments that have recently been made in the commercial radio sector, as outlined below.

Significant investments already made

The Government will be aware that in the commercial radio broadcasting sector, very large investments have been made in new commercial radio licences.

These investments have occurred in reliance on the existing regulatory scheme, on the understanding that the radio licences made available under the licence area planning (**LAP**) process were among the last that would be made available for allocation, and on the basis that the BSA would continue to regulate how licences were planned and allocated in the future, and that any future arrangements would be stable and predictable (in accordance with the regulatory policy in the BSA).

For example, hundreds of millions of dollars have been paid for new capital city commercial radio licences in recent years. If the Government had announced that it was seriously contemplating options other than the full conversion model for digital radio implementation, it is highly likely that the considerable premiums paid for new licences would not have been offered.

A change in the current system now, after the Government has collected very significant payments for new free to air in band commercial radio licences, would undermine the valuation of all commercial radio licences across Australia and cause significant economic damage to commercial radio broadcasters industry-wide.

DAB investment will be expensive, so regulatory certainty is needed to provide the momentum for commercial radio broadcasters to engage with the medium and actively promote it.

In the UK, encouragement was offered in the form of 12-year extensions to analog licences for stations that simulcasted digitally. This obviously reduced risk for radio companies' profitable analog businesses - as it was designed to do.

In Australia, where the regulatory and radio landscape is different, (as there is a statutory presumption of renewal of commercial radio licences), this kind of approach is not an option. However, the commercial radio industry is looking for regulatory certainty and encouragement from the Government in the form of an extension of the previously announced moratorium, "loaned" spectrum and regional assistance.

Competition issues

Australia already has one of the most crowded and competitive radio markets in the world with over 2600 free to air commercial, government and niche broadcasters holding licences within the BSB.

The commercial radio industry also competes (or expects to compete) with new and rapidly emerging interactive content services that exploit new digital content delivery technologies. This includes new 2.5G and 3G mobile phone content services, digital music players (e.g. iPod) and streamed audio visual services over the Internet. These have the potential to fragment existing media audiences and increasingly, in the future, attract advertisers away from the traditional media.

Advertising is **the** major source of revenue for free to air in band commercial radio broadcasters and with commercial radio industry profit growing by just 0.2% between 1999 and 2003⁷, the industry knows that digital radio is the only way to guarantee the future, and to ensure that the 3500+ people that work in radio stations across Australia continue to have a job to go to.

⁷ ABA, Broadcasting Financial Results 2002-03

Commercial radio broadcasters need to move forward rapidly with digital over the next few years to be able to compete in the digital age and to retain relevance to advertisers and to listeners.

The replacement technology of digital radio will mean that commercial radio broadcasters will be able to offer dynamic services, including “multi-layering” (ie adding additional complementary audio and text streams to the main existing service), and this will mean that commercial radio broadcasters will be able to continue to compete for advertising revenue against other traditional and new media.

With 80% of Australians listening to in band free to air commercial radio every week, the commercial radio industry is in the best position to spearhead the introduction of digital radio in Australia.

As our digital radio trials and studies have shown (outlined in detail in section 3.3.1 of this submission), Australians are extremely interested in digital radio services and this indicates that the uptake to digital if driven by commercial radio broadcasters, will be fast.

MARKET-BASED APPROACH

Commercial Radio Australia does not support the market-based approach to implementation of digital radio. The market-based approach that is outlined in the Issues Paper would mean that the digital spectrum would simply be auctioned off to the highest bidder.

Commercial Radio Australia wishes to emphasise that not all commercial radio broadcasters will be able to bid for new digital licences (were such licences to be planned and allocated at auction).

As outlined above, the ABA’s LAP process has been accompanied by a period of significant investment and increased competition (resulting in lower profits). However, in any event, auctioning digital spectrum would fail to reflect the regulatory foundations of the BSA.

It is assumed that the “market based” approach would result in “digital only” services being established to compete with the existing analog services. Given the already crowded radio market in Australia, and the recent influx of new stations, it is difficult to see how this model would promote the objectives outlined in the BSA.

It is in the public interest that digital radio is planned and regulated in such a way as to continue to promote the objectives of the BSA.

As explained by the ABA during the LAP process, it does not promote the economic and efficient use of the spectrum if the planning of new services does not result in an increase of services in the longer term (ie if spectrum is planned for services that are not viable or feasible).

To put it another way, if planning of new services drives existing services out of business, this does not promote the objectives in the BSA. This issue is discussed in more detail below under the heading “Costs of digital”.

It can be expected that digital only services would be established to compete with existing services for the most lucrative demographic sectors of the advertising market, and that this is unlikely to result in diversity of formats or innovation.

Also, in the analog context, the ABA has expressly planned for a diversity of services to be provided (in accordance with the categories of service under the BSA) and this includes niche (ie narrowcasting) services and services which do not operate for profit. However, it is difficult to see such services existing under the market-based approach.

Under a market-based approach, the controls that exist under the BSA that relate to diversity of programming are lost (as these sorts of services will not migrate to digital, and will rapidly fall behind as users of “old technology”). In that context, there will be no continuity of the free to air radio services to which Australians are accustomed.

By regarding content and carriage as separate issues, the Market-based approach also seeks to induce changes in market boundaries by dramatically changing the existing regulatory policy of the BSA under which commercial radio broadcasters automatically receive a transmitter licence when they are granted a broadcasting licence. Such policy-induced changes in market boundaries will add to the sector’s transaction costs (e.g. content providers negotiating with transmission operators). This is discussed below.

New transmission methods should not change this regulatory approach.

The implications of separating regulation of content and carriage (and the implied changes in market boundaries and industry restructuring) are complex and require a wide ranging review of the BSA and a long period of consultation with all stakeholders. The implications of changing the existing regime is significant and affects all broadcasters, not just radio but television as well.

Commercial radio broadcasters submit that expectations of Australians and the objects of the BSA will be best promoted through the full conversion approach identified in the Issues Paper. Commercial Radio Australia’s submission is that the cultural, social and economic objectives in the BSA remain paramount policy considerations.

The other options outlined in the issues paper would result in a decline in the reception of broadcasting services or a diminution in the quality, range and level of Australian content on those services. We have no doubt that the Australian community (which considers it has a right to continue to receive the existing level of free-to-air broadcasting services) would consider these outcomes to be unacceptable.

A market based approach can also stifle the potential of the new medium of digital radio. In the UK, commercial services were implemented on a broadly market based approach. This has resulted in a number of new services, but all commercial services are contractually tied to low bit rate. None of them has the flexibility to use the technology’s full potential to allow new and innovative uses of the medium. By contrast, the BBC was given a “full conversion” capability, with the benefit of allowing a few new add on or value add services to the existing analog broadcasting services.

This has resulted in:

- new content that attracts listeners,
- the ability to cross promote that new content on existing mass market broadcast platforms to encourage receiver take up ; and
- the BBC is probably the only broadcaster in the world to use digital radio’s full potential in swapping bit-rates between programmes several times a day as required by the content and programming decisions thus demonstrating how digital radio can use a scarce resource to benefit the consumer.

Planning criteria

In the event that a market based approach was adopted, the planning criteria that is applied to spectrum allocation under the digital radio platform must reflect section 23 of the BSA.

Under section 23, the ABA is to promote the objects of the BSA including the economic and efficient use of the radiofrequency spectrum, and also have regard to factors such as demographics, the social and economic characteristics of licence areas, the demand for new broadcasting services within licence areas, developments in technology and technical restraints relating to the delivery or reception of broadcasting services.

As explained in the ABA's *General Approach to Analog Planning*, this requires the ABA to balance objects including the economic and efficient use of the spectrum, the promotion of the availability to audiences of a diverse range of radio and television services, the promotion of high quality and innovative programming, the encouragement of appropriate coverage of matters of local significance, and the facilitation of the development of a broadcasting industry that is efficient, competitive and responsive to audience needs.

Commercial Radio Australia submits that these factors must also be considered if new "digital only" services are planned (although as noted, our strong view is that they should not be), and that the existing services in each licence area would need to be taken into account when issues such as "demand" were assessed.

The Issues Paper suggests that the relevant planning objectives under a market-based approach to spectrum allocation would be principally economic and are solely concerned with the efficient use and allocation of the spectrum, however that approach would be contrary to the foundations upon which broadcasting regulation has been based and upon which investments in broadcasting assets have been made by operators across the entire industry.

Broadcasting **planning** is a fundamental element of the scheme for broadcasting regulation, as planning effectively determines the style of content provided to audiences (depending on whether a national, commercial, community or narrowcasting service is planned), and where and how audiences can receive that content. On this basis, there are a range of statutory objectives which are relevant, going beyond narrow economic objectives.

As a separate issue, it cannot be assumed that allowing effectively unregulated use of digital spectrum and auctioning off digital spectrum to the highest bidder will result in an "efficient use" of that spectrum. It also cannot be assumed that if spectrum allocation is left to market forces that this will always result in a "public benefit".

A lesson learnt from the dramatic downturn in the new economy/technology sector in the late 1990s (colloquially known as the "tech wreck") is that the auctioning of spectrum does not guarantee that the spectrum will be used. After spectrum auctions in both Australia and New Zealand, auctioned spectrum has been left idle, even where the previous user of the spectrum was forced to relocate in order to allow the auction and the re-allocation of spectrum to proceed.

In these instances, the pursuit of revenue from spectrum sales has not maximised the overall public benefit, in that the public are not receiving any new services, and the spectrum cannot be put to its previous use.⁸

⁸ It is also worth noting that in the United States, the Federal Communications Commission (FCC) is considering releasing telecommunications carriers from their obligations to pay for spectrum licences they bid for at auction, as the auction process has been challenged in the Supreme Court, and the right to use the spectrum has not been

The submission of Commercial Radio Australia is that it is imperative that spectrum planning focus on how to maximise the overall public benefit derived from the use of the relevant spectrum. When spectrum is planned for broadcasting use under the BSA a broad range of public interest objectives must be taken into account.

Costs of digital

With spectrum availability not guaranteed and prices to be determined by market forces, a market based approach to digital radio conversion will also be the most expensive way to convert to digital.

Having made significant investments in the current analog regime, not all commercial radio broadcasters will be able to bid for digital radio spectrum. (There are also non-commercial radio broadcasters in the same position). As a result, these services may cease to exist after new digital-only services are established under the market based approach.

A serious concern for commercial radio broadcasters is that the requirement to bid for spectrum under such an approach would also result in the devaluation of existing commercial radio licences.

Now is not the time to introduce additional digital only services. Digital radio requires large initial investments which will not be recouped for a long time. The Government will be better served in the long run by giving the incumbent in band broadcasters access to digital spectrum together with an appropriate time to migrate their services to digital.

Copyright costs

There could also be issues related to copyright. Simulcasting of a copyrighted audio recording may result in additional copyright payments even though few or no additional listeners are involved. There is already a copyright cost imposed on analog material, imposing another cost in terms of access to a multiplex would create financial problems for commercial radio broadcasters. This may add to the financial/cost burden of broadcasters during the digital migration period, unless rights holders offer appropriate terms for simulcasts of analog and digital by broadcasters where migration is the aim. Copyright licences currently held by analog broadcasters may also need to be amended to facilitate modifications or enrichment of digital broadcasts and related data services

Apart from the network roll out, site access issues and potential for increased copyright costs, other costs associated with digital include:

- Digital content development – repurposing existing content within radio stations and adapting sources of audio, text and visual content;
- Upskilling production and programming staff;
- Development of the consumer market;
- Retailer education and promotion;
- Receiver development and take up;
- Advertiser awareness and content development;
- Customs, duties and freight; and
- Software development.

delivered to the successful bidders. In the meantime, the relevant spectrum lies idle. This is another instance of how auction processes do not guarantee that the spectrum will be used promptly or at all. See at <http://www.msnbc.com/news/807060.asp?0si=-&cp1=1#BODY>

As noted above, commercial radio broadcasters recognise that these costs are investments that need to be made in order to introduce digital radio, and so that radio does not fall behind other media and communications sectors.

However, many commercial broadcasters could not contemplate meeting these costs in an environment where they were also expected to bid for digital spectrum on the open market.

MANAGED INTRODUCTION

As has been demonstrated in the Sydney digital radio trial, the entire commercial radio broadcasting industry is committed to the conversion to digital. Under the managed introduction approach (outlined in the Issues Paper), there would not be a consistent approach to the introduction of digital, and advances would be made on only an ad hoc basis. A managed introduction would only result in a slow uptake of digital radio (as Australian audiences wait for more commercial radio broadcasting services to transfer to digital before they purchase digital receivers).

This uncertainty would impact upon broadcasters, manufacturers and audiences alike. It certainly would not assist the rapid implementation of digital radio in Australia and will erode radio's ability to reach a mass audience which remains an important requirement, particularly for distribution of emergency information.

Commercial Radio Australia does not agree that commercial in band radio broadcasters should be required to bid for spectrum for the right to early access of spectrum, nor do we agree with having to choose to wait for more spectrum to be identified. The prospect of a managed introduction approach is not one which inspires enthusiasm about a digital radio future.

As we have stated previously, having placed significant investments in the current regime, not all commercial radio broadcasters will be well placed to bid for digital radio spectrum. In this case those who cannot afford it initially will be left behind. This is discussed in more detail below.

Industry fragmentation

Commercial radio broadcasters are mindful of the fact that certain radio broadcasters (for example, regional commercial radio broadcasters,) would not be in a financial position to bid on digital spectrum that is made available under an auction process.

Under the *managed introduction* approach, some commercial radio broadcast services would be left on analog and some would progress to digital which would create two classes of radio services, with the analog stations becoming 'second-class' broadcasters. We are also mindful that spectrum prices might change over time, further putting digital spectrum out of reach to those who could not afford it in the first place.

Commercial radio broadcasters do not support a "managed introduction" of services in the manner suggested by the Issues Paper.

Having two separate platforms would also create distortions in competition. With commercial digital radio broadcasters able to offer value add services, these broadcasters would be likely to gain a larger share of revenue over commercial radio broadcasters still broadcasting in analog. This in turn puts commercial digital radio stations further out in front and leaves commercial analog stations further behind. Managed introduction would also slow down the process of conversion and ultimately the vacating of spectrum.

The implications of either the “managed introduction” or “market-based” approach are significant departures from the current regulatory policy of the BSA and if such changes are to be introduced, it is our opinion that this would necessitate a more thorough and wide-ranging review than that set out in this Issues Paper.

2.3 Threshold Issue 3: Spectrum availability and performance

The radio industry has proven in its Sydney trials (one of the most problematic markets from a technical planning perspective), that it is possible to locate three DAB ensembles on Channel 9A between two analog TV services and cause no interference to either analog or digital television services.

This demonstrates that a properly designed digital radio service can co-exist with television.

As noted in the section above VHF Band III single frequency networks (SFN) are the preferred mode of operation for commercial broadcasters in all population centres and will provide the best and most robust coverage with a much lower number of transmitters than would be needed for L-Band coverage.

However, it would be possible to develop a VHF Band III / L-Band hybrid solution until sufficient analog spectrum is cleared of analog television services to allow VHF Band III.

Careful attention will need to be paid to digital radio network planning. Practical experience in the UK is suggesting that the planning field strengths may be as much as 11dB lower than required to reach pocket radio receivers inside urban buildings. Even allowing for the fact of achievable improvements in receiver design reducing this figure to 6 dB in the near future, this still leaves a 6 dB shortfall that will have to be made by increasing transmitter numbers and/or powers, with all the attendant issues in spectrum coordination that will entail.

VHF Band III and L-Band spectrum should be quarantined immediately for digital radio rollout for terrestrial “in-band”⁹ broadcasters.

VHF Band III Spectrum Availability

Discussion in the DRSG Report and Issues Paper on the availability of VHF Band III spectrum seems to focus on VHF spectrum being available for metropolitan areas and not for regional areas.

Commercial radio broadcasters are strongly of the view that VHF Band III spectrum must be made available for regional areas as well as for metropolitan areas, in order for commercial radio broadcasters to be able to replicate adequate coverage of their analog services.

Commercial Radio Australia’s spectrum studies show that with planning for digital television largely completed for regional Australia, except in a very few cases, there is still VHF Band III capacity available for digital radio services.

This capacity should be reserved and used for the introduction of digital radio throughout metropolitan and regional Australia. Appendix A provides a national overview of available spectrum as at November 2004.

⁹ As noted, in-band is any commercial, national or community radio service operating in the AM broadcasting band, 535 to 1605 kHz, or the FM broadcasting band, 88 to 108 MHz.

Most regional commercial radio licence areas are quite large (often larger than metropolitan radio licence areas). Coverage using L-Band transmissions only will be difficult. Infrastructure costs will be high because of the number of L-Band coverage extension transmitters required to cover the area.

With the current state of planning for digital television services, there is adequate VHF spectrum available in most regional markets to introduce digital radio using VHF spectrum.

The discussion paper focuses on using VHF channel 9A for digital radio services in regional areas. It is not necessary to use, specifically, VHF channel 9A for digital radio everywhere.

Alternative VHF channels can be used and should be reserved immediately for the introduction of digital radio.

In some regional television markets, a “spare Digital Television (DTV) channel” has been planned and reserved in the Digital Television Channel Plan. In markets where this is the only remaining VHF channel, this channel should be reserved for digital radio.

In regional areas close to metropolitan television licence areas where channel 9A cannot be used, digital radio network planners should at least consider the use a VHF channel that is used by analog television in the metropolitan area.

This is particularly true where metropolitan television viewers have been provided with UHF analog television translators.

Trial digital radio transmissions should be conducted in order to confirm the technical operating parameters under which sharing between analog television and digital radio can operate in geographically close licence areas.

Digital radio trials in Sydney have proven that digital radio can operate in a VHF channel with analog television in adjacent channels above and below the digital radio test channel (ch. 9A).

The results of these trials can be translated to other vacant VHF Band III channels in regional areas, which have analog television services operating on adjacent VHF channels.

In areas where there is an adjacent VHF analog or digital television service, and the level of received television signals is below the planned adjacent channel protection ratio, operation of a VHF digital radio Single Frequency Network (SFN) is recognised to be impractical.

These are the areas where an L-Band coverage extension SFN can operate to provide improved digital radio coverage, at least until such time as additional VHF capacity becomes available.

Co-siting Digital Radio Services with Television Services

Co-siting VHF digital radio service transmissions with analog and digital television transmissions where necessary, is seen as a logical outcome in many cases. It is not seen as a reason to deny VHF Band III spectrum for digital radio use.

Wherever a VHF digital radio transmitter is co-sited with VHF television transmitters, it is expected that an L-Band coverage extension transmitter will be required to be co-located with the relevant UHF television translator. In such cases, the digital radio coverage extension transmitter would have to operate on an L-Band channel. Where multiple L-Band coverage extension digital radio transmitters are necessary, they will operate in an SFN.

L-Band Digital Radio

It is only where adequate VHF capacity is not available (or cannot be made available) in any commercial radio licence area for digital radio that L-Band should be considered for the primary transmissions of a commercial digital radio broadcasting service.

As such L-Band spectrum for the conversion of commercial radio broadcasters to digital radio is a second choice, it should be used for coverage extension transmitters (normally operating in an SFN) to improve coverage of the primary VHF commercial digital radio service, or to protect reception of VHF television services in low television signal areas that do not have UHF television translators.

Clearance of Existing Licensees from L-Band.

In its report on spectrum availability for digital radio, the *“Report of the Spectrum Requirements Working Party of the Australian Broadcasting Authority Digital Radio Broadcasting Task Force, October 1996”* identified that enough spectrum is available to introduce digital radio in most parts of Australia.

That report also showed that some L-Band spectrum clearance would be required if L-Band was to become the primary spectrum used for digital radio delivery, so that all existing (in 1996) commercial, national and community “in-band” radio broadcasters could provide digital radio services throughout Australia.

Unfortunately, no further substantial work has been done since this report was released and there are now more in-band radio broadcasters who will be looking for VHF and L-Band spectrum for digital radio broadcasting.

It is clear that some clearance of the L-Band (and ultimately of VHF Band III spectrum) will be required. Spectrum occupancy studies are urgently needed to determine how much L-Band spectrum is immediately available for digital radio. Once digital radio implementation plans are clearer, it will be necessary to determine how much L-Band spectrum clearance is required.

Use of VHF Band III spectrum for the primary delivery of digital radio with L-Band coverage extension transmitters will minimise the degree of disruption to existing services operating in the required L-Band (1452 to 1492 MHz).

There are precedents where existing services have been required to relocate to alternative spectrum (Studio to Transmitter links used by broadcasters were relocated to make way for cellular mobile telephone services, manufacturers of Pay-TV Set-top boxes, VCRs, and Wireless Microphones were required to change their equipment specifications so that digital television services could operate on any VHF or UHF television channel, UHF television channel 69 has restrictions on it to allow Trunked Land Mobile Radio Services to operate in certain areas, etc.).

Commercial Radio Australia has not identified any compelling reason why existing services operating in parts of the L-Band required for digital radio should not be asked to relocate to alternative spectrum within a reasonable time-frame.

3. PART B – REGULATORY ISSUES

3.1 Regulatory Issue 1: Multiplex Operation and Regulation

Commercial radio broadcaster consortiums in each licence area, along with the national broadcasters, should be allocated a carriage/spectrum (or multiplex) licence for at least one digital radio channel in VHF Band III and, where necessary, additional L-Band spectrum. These channels should consist of the bandwidth of the ensemble plus an appropriate guard bandwidth on each side.

Economic Implications arising from licensing a Third-Party Multiplex Operator

For any commercial radio station in a given market to become a service provider on a DAB multiplex owned and operated by a non-broadcaster (i.e. a third-party), it must obtain access to the multiplex. If a station does get access, then there are questions about how much capacity (Kbit/s) is assigned and on what basis. In other words, the striking of commercial arrangements will invariably involve negotiations of the terms and conditions of carriage capacity (bit rates).

While the *Trade Practices Act 1974* will presumably apply to the conduct of the multiplex operator, there are a number of access issues that need to be addressed:

- the access price – what is it going to cost a station to ‘buy’ capacity in the multiplex; should this price be left to negotiations between the parties or should it be regulated;
- once the multiplex is full, it cannot physically carry any more stations unless another broadcaster leaves the market. But unlike flow of gas molecules or electrons, any impediments to the flow of digital signals have implications for the diffusion and content of programs.

In short, the introduction of multiplex licensing would need to be accompanied by a complex access regime that has economic as well as social provisions. The experience with third party access regulation that focuses primarily on economic matters like pricing (as provided under Part IIIA or Part XIC of the *Trade Practices Act* or the *National Electricity Code*, and *National Gas Code*) has been mixed, as evidenced by recent reviews by the Productivity Commission.

Some have argued that the access price regulation has a chilling effect on facility investments, and others have argued that access regulation adds an unnecessarily layer of complexity and contention to what is essentially a straightforward monopoly pricing problem.

Given the economic as well as social dimensions of access to a radio broadcasting multiplex, access regulation of the multiplex is likely to be more complicated and intrusive than any of the existing industry specific access regimes.

As noted earlier, a third-party multiplex operator is superfluous if existing broadcasters are allowed to enter into commercially-based multiplex sharing arrangements. In the broadcaster consortium approach, each incumbent in band commercial radio broadcaster and the current national analog broadcast stations would have an entitlement to one fifth of a multiplex.

Such arrangements could – if necessary – be subject to periodic reviews to ensure that new entrants (after the no-new entrants’ period and successful full conversion to DAB) are not foreclosed from the market, and that access is provided to other categories of broadcasters who have a capacity to pay.

Collective benefits vs. party-specific costs

The Government's decision to implement DAB is, presumably, based on the recognition that there are benefits to society as a whole (i.e. collective benefits) from migrating to digital. Nonetheless there is an expectation that the cost of migration and eventual implementation will need to be borne by the commercial radio industry. Such costs are clearly not shared collectively.

This means that the industry is required to take on and manage the commercial risks in each part of the DAB value chain. From an economic perspective, the best way of managing such risks is the use of co-ordination mechanisms, including the sharing and operation of the multiplex, to ensure proper migration and conversion.

To add another cost layer is to unnecessarily burden existing in-band broadcasters at a time of increased cost with no increase in revenue.

Bit rate allocation

In recognition of the investment by current in band commercial radio broadcasters through both purchase of spectrum licences and spectrum licence fees paid over the years, a full digital service (content) licence is expected to be allocated to each commercial radio broadcaster in a broadcast consortium.

That is, all commercial radio broadcasters will require a full 1/5 of a multiplex in order to offer a full range of value add services to listeners.

Overseas experience has shown that exposing the technology to market forces leads to many low bit rate services crammed into a multiplex, resulting in marginal audio quality, and denying the commercial radio broadcasters the flexibility to use the additional benefits that the technology makes available.

Commercial radio broadcasters should have the choice to use their bandwidth to provide high quality audio services, or to split their bandwidth to provide additional audio streams complementing the main audio stream and associated data services.

To legislate otherwise will be to deny Australian commercial radio broadcasters the ability to fully use the features of this broadcast medium, and thus to compete with other entertainment sources in the twenty first century.

Examples of how this is happening now in Sydney can be heard by anyone with a digital radio. ABC Classic is broadcasting a high quality audio service at 224 Kbit/s, 2KY, 2GB and 2MMM periodically split their bandwidth to broadcast additional audio streams of content related to their main service. Broadcasting of websites and data channels is also underway. Fuller discussion of these value added services can be found under 3.5.2 Audio Services and Simulcasting.

The UK's market forces decision has led to commercial pressures forcing majority of digital stations to be limited to a low bit rates at or below 128 Kbit/s.

Rather than increasing audio quality, the move to digital radio has decreased it, as 128 Kbit/s DAB will sound poor compared to a perfect FM signal. In addition, by allowing third party multiplex operators to tie a specific and restrictive bit rate to a long term contract means that the UK model has largely failed to exploit the most compelling feature of DAB, its ability to dynamically reconfigure bit-rate allocation across the day to offer listeners more variety and value.

The Australian model being proposed by the Commercial Radio industry aims to make bit rate flexibility within a commercial radio station's one fifth of a multiplex a cornerstone of the digital radio proposition. This flexibility allows broadcasters to drive digital take up by offering listeners a dynamic programming schedule across the day.

Instead of commercial digital radio offering listeners (and advertisers) only more of the same, (additional audio services), the Australian model allows broadcasters to incorporate quality audio and scrolling text, with secondary layers of programming which will surpass the listener's expectations of what radio is.

By building in bit-rate capacity which allows for additional layers of programming, with audio and data components, commercial radio is able to redefine itself and meet the listeners' needs by offering localism, special events or simultaneous/time shifted programming such as news, sport, entertainment and information on demand.

In the industry's view it is vital to the successful take up of digital radio, that legislation builds in this ability for commercial radio broadcasters to exploit this key difference between analog and digital transmission and use it as the key platform on which commercial radio stations compete and as the driver for compelling, dynamic programming which meets the audience needs.

One of the key technological advantages of digital transmission over analog is its flexibility; allowing programmers to quickly and dynamically change program content as required.

If unrestricted, this flexibility will allow commercial radio programmers to choose a high quality audio service or a combination of lower quality audio services with some data at different times of the day or week depending on content and programming decisions and value-adds being offered to listeners

Constraints on channel availability, while analog TV services occupy VHF Band III spectrum, can be accommodated by use of L-Band supplementation.

In addition, it is the view of commercial radio broadcasters that conditions and restrictions on existing in-band broadcasting licences should be replicated in terms of conditions, capacity, power and "spirit" in the conversion to digital and allocation of digital service (content) licences.

Therefore commercial radio broadcasters should be given the option of a full 1/5 of a multiplex with no restrictions on use for main programming and program associated data and multi-layering.

While licensees who have restricted licences (eg narrowcasters and not for profit licensees such as community stations) may also seek access to multiplexes, the access provided should reflect the characteristics of their service licences and may also reflect their capacity to pay (eg a more limited bit rate may be provided).

However, the commercial radio industry is willing to provide tangible assistance to community broadcasters in respect of access to commercial broadcaster consortium multiplexes with any such assistance tied to the policy positions and guarantees put at the beginning and throughout this paper.

Multiplex Licensing and Spectrum Allocation

Once a spectrum (multiplex) licence is allocated to the LAP based broadcaster consortium, the operation of the multiplex will be a matter for the consortium, not the Government. Of course, this assumes that all digital services that are provided will comply with the conditions of the relevant BSA service licence.

Any spectrum (multiplex) licence model that allows non-broadcasters or non-specific BSB broadcasters (ie that have not been identified in a licence area plan) to hold the key to broadcast services band spectrum will be vigorously opposed by the commercial radio industry.

It is vital that commercial radio broadcasters retain control over spectrum access and multiplexing equipment. A licensing regime which licences third party multiplex operators to remove or restrict this level of flexibility must not be entertained.

The model suggested by Commercial Radio Australia would allow Australian commercial radio broadcasters to be world leaders in using the full capabilities and more importantly the flexibility of digital.

In relation to any national multiplex that the Government may consider for ABC and SBS national services, commercial radio broadcasters believe that the multiplex (spectrum) licence must be allocated to the national broadcasters. How the ABC/SBS decides to acquire, access, operate and/or service the multiplex and transmission equipment is a funding/business decision for those broadcasters.

The licence to access the spectrum/the right to operate a multiplex must in all cases be allocated to broadcasters; not to a third party.

3.2 Regulatory Issue 2: National and Community Broadcasters

The non-commercial broadcast sector is playing a significant role overseas, as stated in the Issues Paper, as in most countries the radio (and TV) sectors are dominated by the Government broadcasters and they also have the greatest share of listeners.

This is not the case in Australia where the Government needs the commercial radio industry to bring about a relatively swift conversion of listeners and the industry as a whole.

Commercial broadcasters have already signalled willingness to establish infrastructure over a short period of time and on a shared basis with ABC and SBS and to provide tangible assistance to community broadcasters in respect of access to commercial broadcaster consortium multiplexes linked directly to agreement on loaned spectrum for commercial broadcasters, an adequate moratorium period and assistance for regional broadcasters.

It may be that there will be economies of scale for ABC and SBS to negotiate nationally for implementation and/or operation of their *national* services on a single multiplex.

However, as already noted, for any *national* multiplex for the public broadcasters the multiplex (spectrum) licence **must** be allocated to the national broadcasters. Once again, there does not need to be a spectrum gatekeeper inserted between the ABC/SBS and the digital spectrum.

Under current analog arrangements, ABC and SBS, just as for commercial radio broadcasters, are the *broadcasters* and have been allocated specific frequencies for each of their services. They “own” the right to broadcast on these frequencies but instead of operating their own transmission equipment, have opted to outsource their transmission equipment, operations and servicing to a third party provider; BUT, the third party transmission supplier/manager is *not* a broadcaster and does *not* have the right to broadcast on, or, to access or allocate spectrum to broadcasters as it sees fit.

There is no reason for this to change in digital migration or to hand over this right for either commercial or public broadcasters in a digital regime. The licence to *access the spectrum/the right to operate a multiplex* must in all cases be allocated to broadcasters; not to a third party.

Simulcasting Requirements of ABC and SBS

It should also be noted that the commercial radio industry is of the firm view that all broadcasters migrating to digital should be required to simulcast existing services.

The introduction of completely new audio services for any class of broadcaster must be strictly prohibited. That is, any additional audio or text information streams must be related to the main program offering in some way. In the case of ABC, the ABC must not be permitted, in the simulcast period, to offer new digital audio services that do not enhance or value-add to their 5 mandated services. To apply different rules to the ABC is to disadvantage all other incumbent in band broadcasters.

Regional Area Models

In regional areas, where local services need to be accommodated there are at least two options that could be considered:

- In all areas, the broadcaster consortium is made up of local commercial radio broadcaster/s and the ABC and SBS with start-up costs equally shared, (as has been the case for the Sydney digital radio trial), but then no on-going access costs other than recouping operating expenses. ;
- Where the ABC and SBS choose not to carry the costs of set-up, they may negotiate (or the Government may negotiate on behalf of them) a fair rate for access to the commercial radio broadcaster owned multiplex.

In either case it would be the broadcaster consortium’s commercial decision as to the provision and operation of their shared transmission facilities and equipment.

Remote Area Licences

It has been previously noted that for wide area coverage, DRM is likely to be the best most efficient and least cost option. With this in mind, the model for remote areas may be slightly different to that in other licence areas. That is, remote area licensees may be issued with a single DRM licence to allow coverage of current remote area licence areas.

Third Party Operator Objectivity

There is no guarantee, as some have suggested, that a third party operating a multiplex in a regional area would be any more objective than a commercial broadcaster consortium which had, say, entered into access arrangements with the Government in respect of either community of public broadcasters. It is recommended that rather than mandate a third party to provide “objectivity” in the running of the multiplex, efficiency is best served by licensing the broadcasters to access the spectrum and allowing broadcasters themselves to determine the model of ownership and operation of the multiplex.

Infrastructure

It has also been suggested that third party transmission providers, particularly those already in existence, may argue that they already have infrastructure set up that would accommodate broadcasters in regional areas and expedite the rollout of digital radio technology.

This is both wrong, and, an invalid reason for the insertion of an extra cost layer in the digital broadcast value chain.

It also does not take into account the need for a new access regime of some form, (based either on the essential facility or common carrier concept), that will not only add to the transaction costs of existing broadcasters seeking access but also the regulatory costs of the entire industry.

In all but a very few licence areas, there is also broadcaster owned infrastructure (ie towers and transmission sites) that could equally well accommodate DAB rollout quickly and efficiently. The addition of a third party operator to the cost chain on this basis would be flawed and add unnecessary ongoing costs for all broadcasters.

The commercial radio industry should not be expected to subsidise a privatised tower operator who may have paid too much for its transmission infrastructure.

3.3 Drivers of Take-Up and Content Regulation

Consumers will buy radios if new and exciting features are available. These features will include better quality audio and additional layered content, as well as data services.

It is worth noting the experience in the UK in this context:

- prices for digital receivers have come down dramatically – with digital radios available for under £50 (Equivalent to \$125);
- the range of digital radios has grown, with more than 150 different products now available;
- 2004/05 sees the arrival of several new brands to the market – notably Sony, Philips, Sanyo and Panasonic;
- in-car radio took a big leap forwards with DAB digital radio now being offered as a standard feature on some Astra and Vectra cars;
- for the first time ever, pause/rewind functionality is available on radio, together with the ability to record and download to SD/MMC cards.

An analysis of what is expected to drive take up of digital radio in Australia is outlined below.

3.3.1 Consumer Interest in Digital Radio

Given that Australian radio audiences are already well serviced by full commercial, public, community and niche narrowcast in band broadcasters (some 2600 in band services for 21 million Australians), the same drivers for niche and new services are not present in the Australian market as in markets dominated by Government broadcasters overseas.

Australia is one of the most competitive radio markets in the world. The Federal Government recognised this with its announcement in late 2003 of a 5 year moratorium on new analog commercial radio services after the final planned commercial licence was auctioned in each licence area.

Overseas experience has shown that consumers will buy digital receivers if they are available at low prices and innovative content is being broadcast. DAB is the only technology currently offering affordable receivers for sale. Australia's existing in band commercial radio broadcasters can, and will, provide the new and innovative free to air content to make digital radio work.

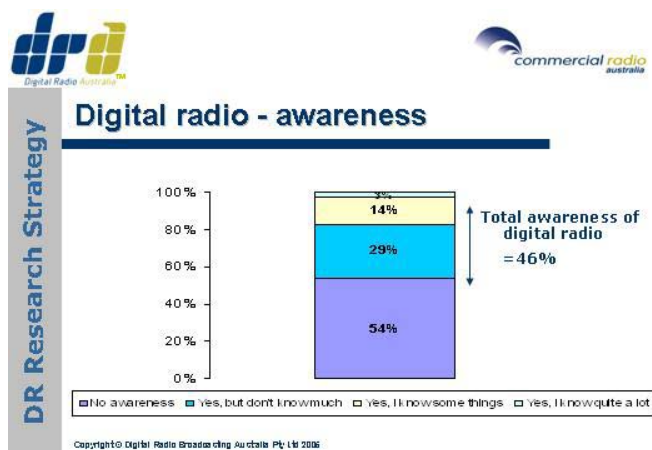
From a commercial radio broadcaster perspective, and this is being borne out by current consumer research in Sydney, new and value-add services, enhanced and more reliable audio signals and additional news, information services are of most interest to listeners.

We strongly disagree that the drivers in overseas markets which are "government (or public service) broadcaster dominated" can be applied to this market.

Current Consumer Research In Sydney

Consumers are not only aware but interested in digital radio. From nation-wide research conducted through Colmar Brunton's fixed panel of 33,000 Australians, nearly half of all Australians are aware of digital radio.

Figure One: Digital Radio Awareness



Source: Colmar Brunton Omnibus research, September 2004

Further, over half of Australians surveyed would be interested in purchasing a digital radio, priced within their budget. This is before receivers are even on-sale, or consumers have seen the latest models of digital radios – the underlying interest is present among Australian consumers.

Consumer response

In the digital trials being conducted in Sydney, ninety (90) consumers across Sydney testing a range of different digital radio models.

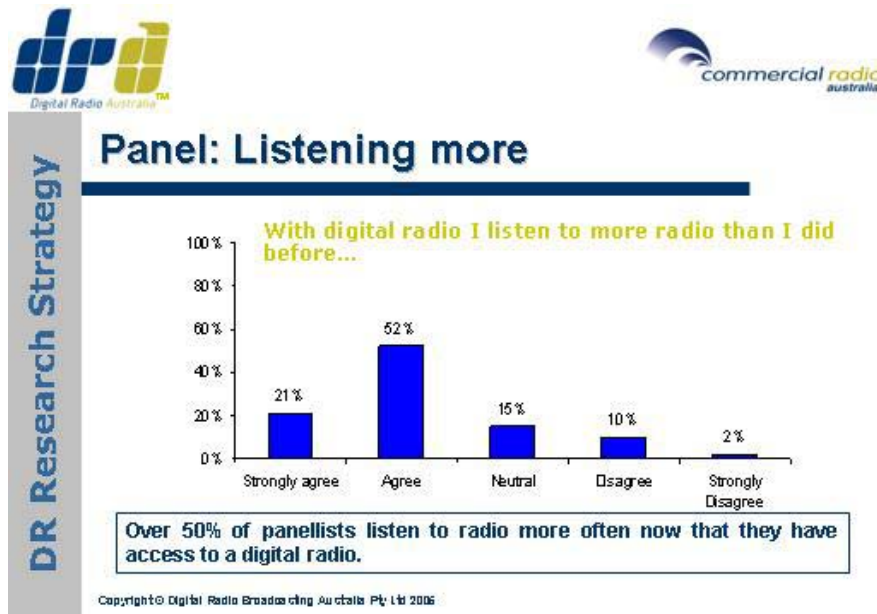
The following sub-panels have been established:

- car panel,
- hi-fi tuner panel,
- portable receiver panels, and
- PCI card panel.

Panellists are providing regular and detailed feedback on their experiences. Formal feedback is being gathered via the use of ongoing surveys and focus group research.

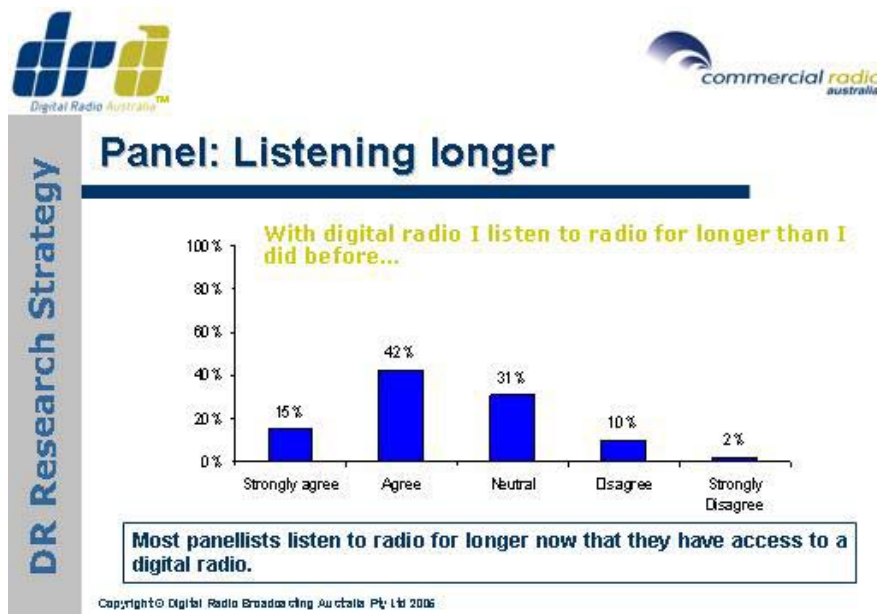
All panellists report enjoyment of digital radio, and satisfaction with developing and new attractive features to keep them listening to more radio on digital, as well as listening for longer periods of time.

Figure Two: Panel members are listening to more radio on digital



Source: Digital Radio Consumer Panel Research

Figure Three: Panel members are listening to radio for longer on digital.



Source: Digital Radio Consumer Panel Research

The panellists have also noticed big differences in the quality of audio they are receiving, especially on AM. Nearly nine of out ten panellists are satisfied or higher with the audio quality they are receiving on their digital radios.

The additional features which have captured their interest include being able to view scrolling text messages on their receivers, and the ability to pause and rewind live radio. This is a standard feature of one of the more popular models, The Bug, made by Pure.

Consumer research focus

Scrolling text (Dynamic Label Segment)

Research into scrolling text has tested the transmission and the reception of the scrolling text messages, and the content contained within them. This includes the digital receivers' capabilities in displaying scrolling text messages: how quickly they can be displayed, how long consumers want messages to be. There has also been a focus on the type of content consumers are interested in receiving, as well as the content that stations, advertisers and other content providers are able to supply. In this area of research, consumers are extremely excited about the possibilities of the scrolling text display.

Panellists have been extremely positive to the following developments in content:

- the addition of dynamically updating AAP news headlines on a number of stations, which refresh a number of times each hour;
- the ability to view live NRL scores, statistics, and behind the scenes information on 2GB;
- the introduction of themed weeks (news, entertainment, sports) which have varied the nature of messages being received on their receivers;
- promotional activities in which panellists have been able to have personal messages to friends displayed on Australia Day and Valentines Day.

Our research has specifically asked what types of content consumers are interested in receiving on the scrolling text. They have stated a clear preference for news information, traffic and weather details, as well as current radio program information.

More specifically, the type of news information consumers are interested in receiving includes:

- Breaking news stories
- Local news stories
- News review/analysis

The elements of traffic and weather which consumers' most desire include:

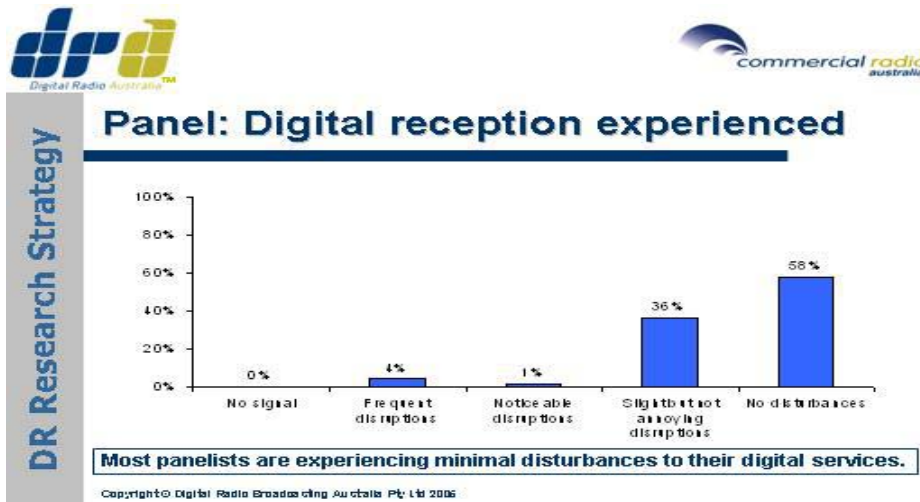
- Storm warnings
- Road closures
- Accident information
- Four-day weather forecasts.

All of this is useful, if not vital, information, which consumers can access, free to air, on commercial free to air digital radio simply by tuning into their favourite stations. Best of all, this type of information can be obtained at no-cost by consumers, simply by tuning into commercial free-to-air digital radio station.

Spectrum propagation and mobile/in-building reception

A key objective the consumer and technical research is to assess the strength of the digital signal. The consumer panellists have been asked to move their receivers around their main listening locations with the majority of panellists experienced only slight or no disruptions to their audio reception.

Figure Four: Digital reception experienced.



Source: Digital Radio Consumer Panel Research

Receiver design and function

In this consumer trial, receivers are being used which have been designed for overseas markets. A goal has been to establish the aspects of functionality and design which are most important to Australian consumers, in order to push manufacturers to develop products acceptable to the Australian market.

An extensive number of receivers are being trialled. These include, pictured below, the Bug, Ministry of Sound handheld and the Revo in-car radio.



The exploration of functionality has been in terms of the capability of the individual receivers. That is, their ability to decode high bit-rate transmissions; the speed and style of scrolling text displays; the ease of tuning and switching between multiplexes and frequency band; the upgradeability of the receiver software. The issue of design relates to the receivers' styling and the 'convergence' factor: what other consumer electronics features and devices are incorporated within it, and what other devices can the receiver be linked to. The type of products into which consumers are already interested in seeing DAB technology incorporated include MP3 players, mobile phones, and existing stereo systems.

Key Drivers To Take Up.

The members of the consumer panels continue to express their interest in digital radio, and their desire to see agreement reached with Government to enable it to be rolled out more quickly.

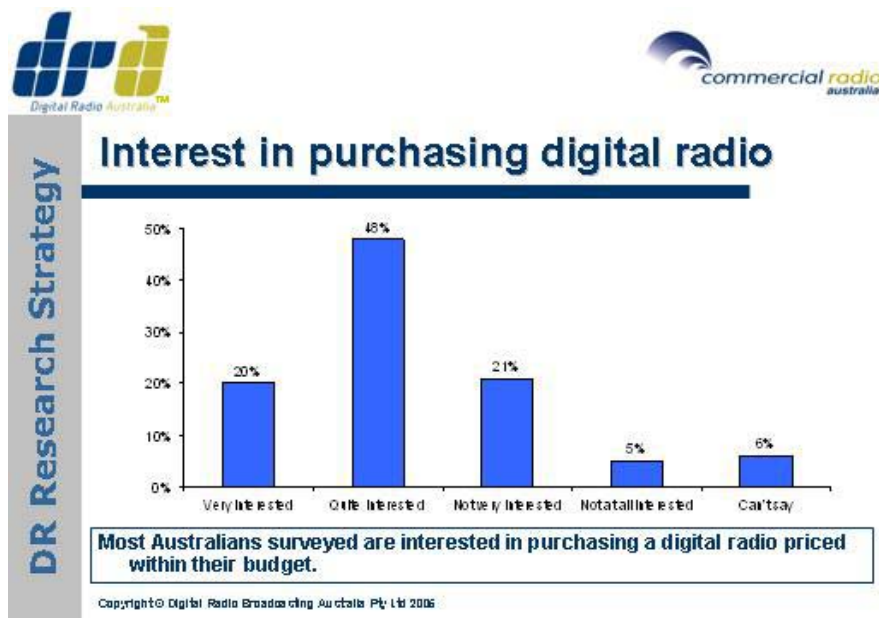
Panellists have remarked on the “brilliant quality!” of digital radio. Of the “crisper sound, better depth” that they experience. “It is definitely a clearer sound,” one panel member said “with no disturbances from other electrical devices and mobile phones.” The improvement in sound has been appreciated by listeners, especially on the AM stations: “Sound quality is excellent. I mainly listen to AM so it is very noticeable.”

This type of comment has been also echoed by dedicated FM listeners. As one panellist stated: “The quality of the sound is much richer and clear, and there is no background hiss as I have observed on some of the FM stations.”

The scrolling text is also a key focal point for consumer interest. It is a very important point of difference between digital and analog; one which gives consumers the opportunity to access all manner of important information at no-cost, bar the initial investment in a digital receiver. “It provides useful information that is not provided with standard radio,” one panel member said, “normal radio does not have it.”

In a broader sense, as revealed in Colmar Brunton Omnibus surveys, Australians are interested in purchasing digital radios priced within their budget. There is a base level, of not just awareness, but interest which provides a positive and receptive base audience ready to adopt digital radio.

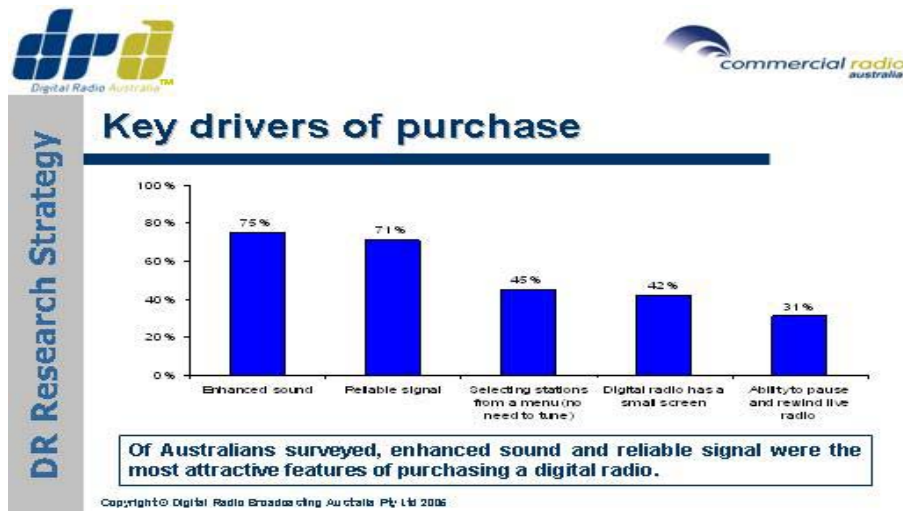
Figure Five: Interest in purchasing a digital radio.



Source: Colmar Brunton Omnibus research, May 2004. (n = 1516.)

The key features Australians are looking for in digital radios are enhanced sound and more reliable signal. This breaks down as follows.

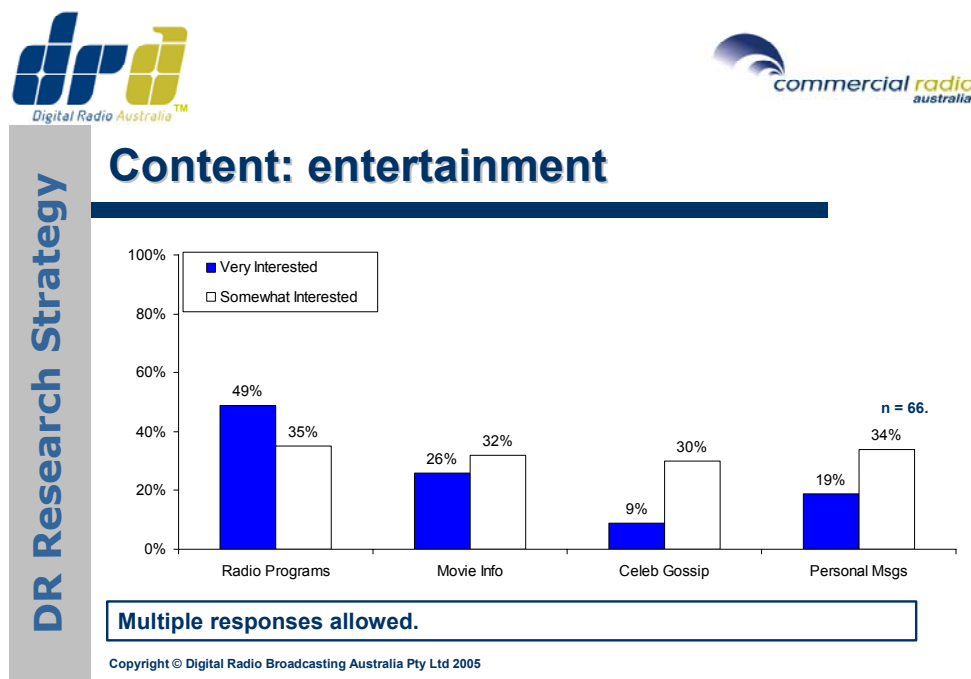
Figure Six: General Drivers of Purchase of Digital Radio Receivers



Source: Colmar Brunton Omnibus research, May 2004

With **entertainment related** content, more detail on radio programs is most important to consumers.

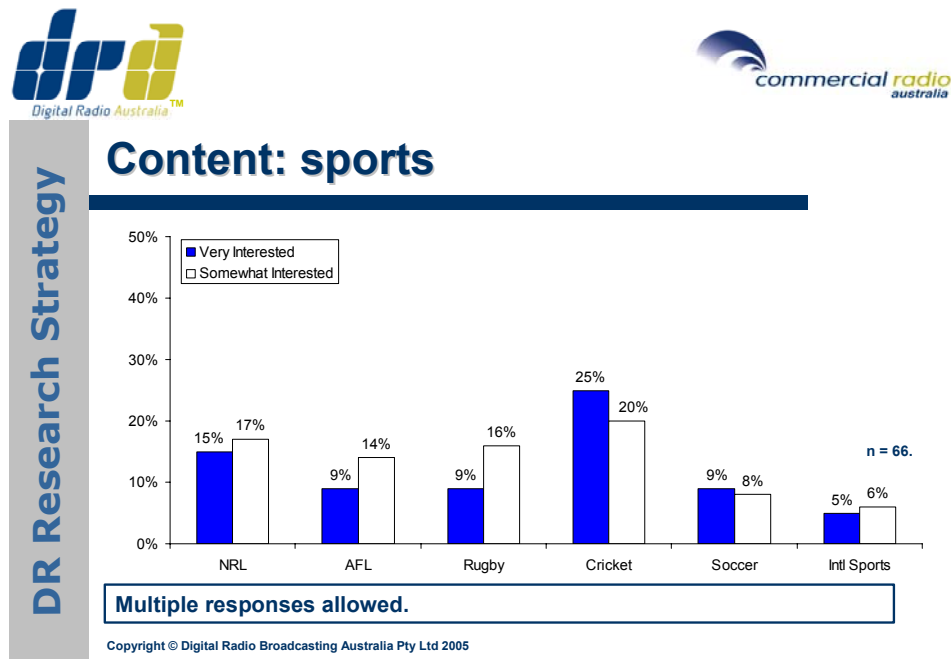
Figure Seven: Entertainment Content of Interest to Consumers



Source: Digital radio consumer panels 2004

Sports information is also important to panel members.

Figure: Sports Content of Interest to Consumers



Source: Digital radio consumer panels 2004/05

Members of the consumer panels have consistently emphasised the need for content to be immediate, relevant and fresh.

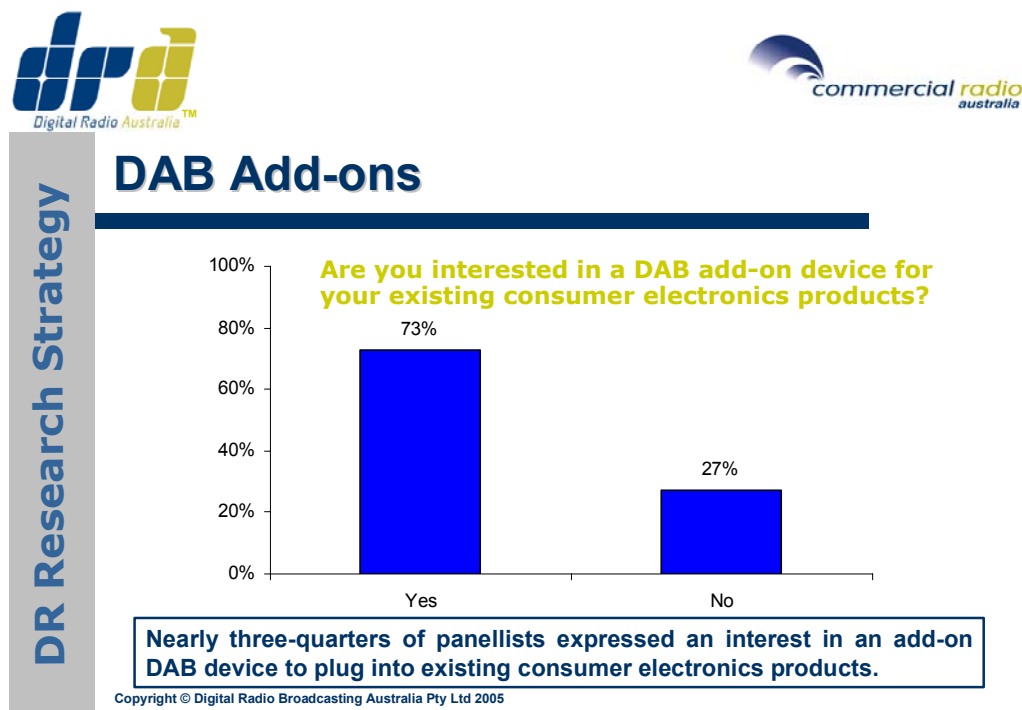
That is, it has to relate to what is happening now; for instance a restaurant promotion around lunchtime, details of the topics being discussed by currently on-air announcers; next song to be played; source of special offers.

Another element of 'fresh' content is the ability to add sub-channels to the broadcasts of existing stations. This is especially relevant for the provision local news and information in a localised and regional context.

On digital, a commercial radio broadcaster will be able to broadcast additional channels of a local and supplementary nature to general programming, eg, sporting schedules and scores, details of community events, and emergency information specific to a certain area or region.

Consumers are also looking for digital radio to be incorporated within existing consumer electronic devices.

Figure Eight: DAB as an add-on to existing consumer electronics.



Source: Digital radio consumer panels – 2004/05

The types of products consumers are interested in DAB being added to include:

- PDAs/Palm Pilots
- iPods/ MP3 players
- Digital set-top boxes
- Mobile phones
- MD players
- Analog radios.

3.3.2 Audio Services and Simulcasting

In order to move listeners to the new technology, simulcasting for a lengthy period of time will be necessary, if only to allow for the replacement of analog radios by Australian audiences.

Given the number and diversity of free to air radio services currently available to Australian listeners from within the BSB, Commercial Radio Australia considers that it will be better audio quality and value-add services (eg layering, and an ability to replay songs) that will drive the commercial proposition in the first instance in Australia.

There should therefore be no limitations on commercial radio broadcasters' use of digital service (content) licences for innovative value add services and enhancements to program streams ;and/or for data transfer services when possible.

Supplementary or restricted licence holders (community and narrowcast) in the analog space should be allowed to offer audio services and limited value adds to the main program streams in the conversion to digital broadcasting.

There should be no new “digital only” audio services during the simulcast and no new entrants’ period – this should also apply to ABC and SBS, as noted above, who should be required in the first instance to simulcast their mandated analog audio services.



There are a vast number of ways during a simulcast period in which commercial radio stations can add value to their existing audio services using the full suite of transmission and reception capabilities offered by DAB digital radio.


To meet audience needs, stations will need to simulcast their audio programming until such a time as most analog receivers in the car, home and workplace have been replaced. It will be in the industry’s interest to offer compelling content on digital radio, and offer a radio experience which is not available on analog if consumers are to be convinced of the need to replace their existing receivers.

Just as the deregulation and digitisation of telephones has added SMS and MMS to traditional voice communications, the data capabilities of digital radio will, if not restricted, allow commercial radio broadcasters to redefine traditional free to air commercial radio and compete with new and changing technologies in a digital world.

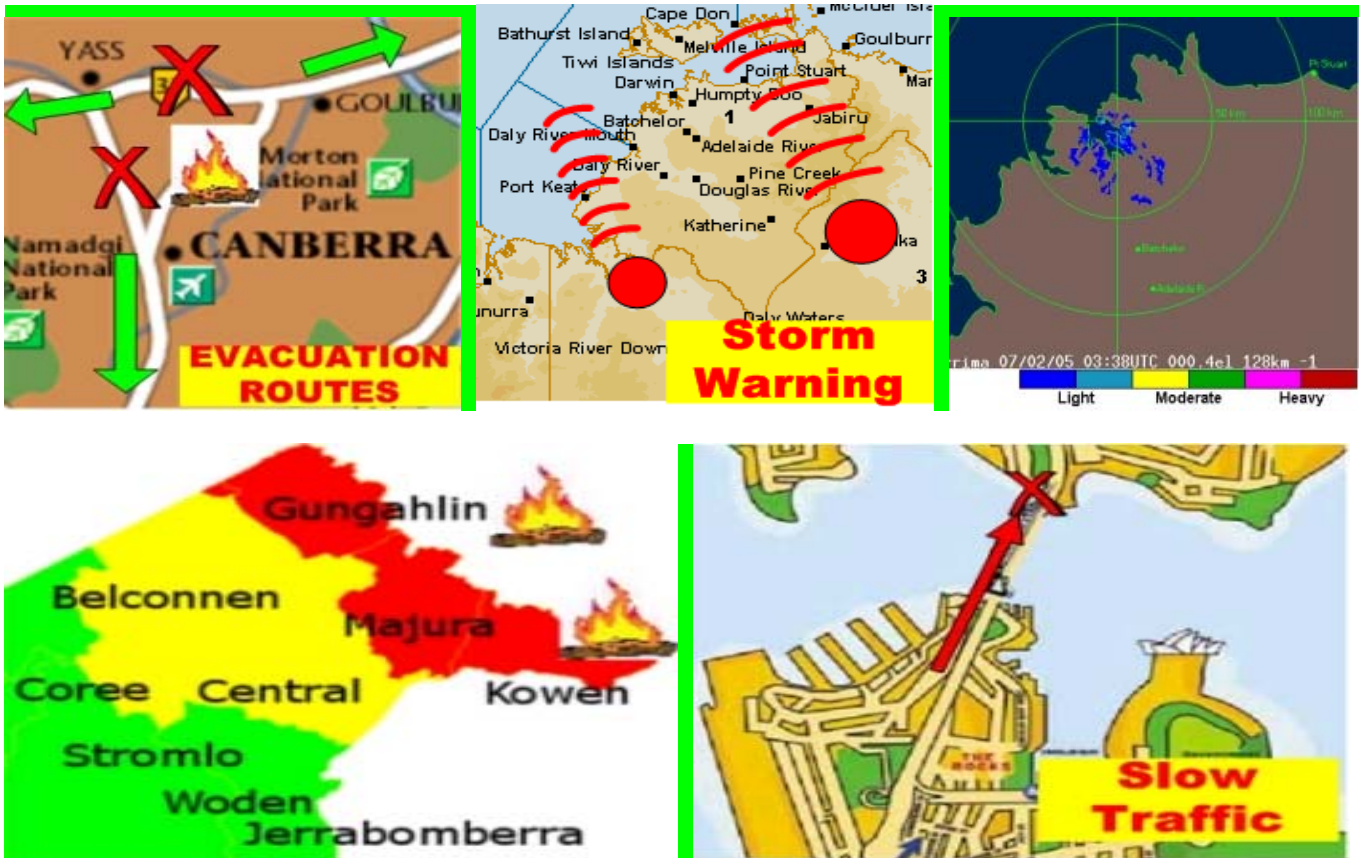
Overseas, digital radio is focussing on the offering of new services – but in practice, the experience is one of “more of the same”.

Given the large number of free to air services already available in Australia, this is not the approach needed here. However, the type of “value-add” services that are made possible with existing digital radio receiver capability to the main program can be demonstrated by work underway in the Sydney trial and possible future services are outlined in the table below

| | |
|---|--|
|  | <p>Scrolling text Programme and host name, current time, temperature and humidity, sponsor’s details, station website and phone number and competition details.</p> <p>2KY Extra - sub-layer Highlights package of the latest race results Dynamic reconfiguration of programming to broadcast several races/track/horse form information simultaneously with main channel.</p> <p>As receiver capability improves Broadcast slideshow, broadcast website and e-coupon associated with programming content.</p> |
|  | <p>Scrolling text Programme and host name, current time, temperature traffic, sponsor’s details, station website and phone number and competition details.</p> <p>2DAY Extra sub-layer Highlights package, entertainment gossip, concert details, mini concerts, artist interviews, promotions, fashion, lifestyle programming.</p> |

| | |
|---|---|
|  | <p>Scrolling text Programme and host name, current time, temperature traffic, news, sponsor's details, station website and phone number and competition details.</p> <p>2WS Extra - sub-layer Highlights package, entertainment gossip, concert details, mini concerts, emergency information to inform Western Sydney audience</p> |
|  | <p>Scrolling text AAP news tickers live NRL Stats allow listeners to see Rugby League statistics to see scores from games, in progress and just completed matches, extra information such as try-scorers, and statistics.</p> <p>2GB Plus – sub layer Highlights from Continuous Call Team, stock market highlights, news review and analysis.</p> |
|  <p>High Quality Audio simulcast</p> | <p>Scrolling text Programme & sponsor's details, current time, temperature and humidity, station website, phone number, competition details, surf reports, traffic info, Nova newsbreaks, last three songs played, coming up next, advertiser info.</p> <p>Nova Extra sub-layer Best of Nova highlights package, high quality concert, low quality "podcast" type content, interviews, Nova 19s locations, comedy segments.</p> |
|  | <p>Scrolling text AAP news tickers to announce breaking news, information about the guest/topic on air; talkback numbers; next caller name and suburb and so on.</p> <p>2UE Extra - sub layer News on demand, news review and fuller analysis of a current issues, stock market, weather and traffic info; sports and gardening features and so on.</p> |
|  | <p>Scrolling text Currently AAP news tickers, station identity and program details, surf/snow reports, traffic weather, track/artist information.</p> <p>Triple M Mini - sub-layer Mini concert currently on air, but any kind of news/sport/entertainment programming could be added.</p> |
|  | <p>Scrolling text 2CH is currently using scrolling text to broadcast track now playing and artist information, program and host name, station identity and contact details. As receiver functionality improves it could use a sub channel to feature a particular artist, or community event, health promotion or to provide news analysis.</p> |
|  | <p>SBS currently limited to 2 services to play one language service at a time. Given their charter to broadcast 39 languages, additional layers can allow more services to be broadcast simultaneously; time shifting programming using the store features allow listeners to hear their language choice at a time that suits. As screens improve text displays could include karaoke, travel tips, cultural and language learning opportunities – allowing the ethnic content to appeal to a broader audience.</p> |
|  | <p>ABC is currently using the DLS for program and host name, station identity and contact details, AAP news tickers, 'track now playing' information with Title, Artist and extended track information about the composer/orchestra. Pause and rewind allow listeners to write down details of music that they like. As screens improve cd covers, album and concert details, Composer's notes, artist's biographies can be broadcast.</p> |

As receiver capability improves broadcast slideshow, broadcast website and e-coupons can be broadcast to complement the audio programming content, provide programming diversity or meet the needs of a more localised listener community.



Commercial digital radio will be about offering better, enriched radio services to redefine the listeners' experience of radio. In this way commercial radio broadcasters will be better placed to compete with digital, (and possibly mobile) television, telecommunications services (including mobile content services and premium services), mobile internet, datacasters and multimedia players in a convergent, multimedia age. It is critical that **all** commercial radio broadcasters be enabled to support a consumer proposition that positions digital radio as a dynamic and contemporary medium which redefines the listeners' expectation of radio. To take a recent example, DVDs would not have replaced videos so rapidly had they simply offered consumers more films. The market was well served with an enormous choice of videos - so choice was not an issue; so the Australian video market was as well served as is the audience in Australia for free to air radio. Enhanced features are what made DVDs such a compelling consumer proposition - features like "directors cuts", "interviews with the actors" and behind the scenes footage. A similar philosophy will drive the adoption of digital radio in Australia.

3.3.3 Data Only services

Data only services by non-broadcasters should not be permitted in the migration to digital radio broadcasting. Such services should be licensed as datacasting services under the scheme in Schedule 6 of the BSA. Non-broadcasters should not be given access to broadcasting services band spectrum or a digital service (content) licence in their own right. However, if radio broadcasters wish to acquire content from data service providers, this should be a matter for commercial negotiation. Further, commercial radio broadcasters should be allowed to broadcast data/information/text streams with no restriction to allow them to fully use all the benefits of digital radio.

4. PART C: DIGITAL AUDIO SERVICES

Available VHF Band III spectrum and L-Band should be reserved/quarantined for the purpose of the planning and conversion/migration of current terrestrial in band radio broadcasters to digital radio broadcasting.

Satellite radio services should not be considered until all in-band radio broadcasters are accommodated and operating in the digital space, and, there should be no rights accorded to non-BSB operators or non-broadcasters in the conversion of the current in band radio industry to digital broadcasting.

It is imperative that all L-Band spectrum is quarantined until DAB network planning has been carried out for all of Australia.

It should also be noted that if satellite broadcasters are allowed to enter at, or during, the time as terrestrial broadcasters are converting to digital, it may create massive confusion in the marketplace for consumers.

Terrestrial commercial radio broadcasters will be actively driving their listeners to take-up digital radio and satellite broadcasters will be attempting to create a market for their product.

The receivers for both technologies are different and there have been no moves anywhere in the world to combine DAB and satellite receivers.

Instead, Commercial Radio Australia suggests that the offering of satellite radio services is already being addressed as a component of subscription satellite services such as those made available by Foxtel and Austar

5. CONCLUSION

Digital radio technology is a replacement technology.

Digital radio is the next evolutionary step for free to air in band commercial radio broadcasters and its introduction is critical to the future of Australian the free to air in band commercial radio broadcast industry. Commercial radio broadcasters should be encouraged to step forward into the digital market alongside other media and communications sectors

The Government should implement a “full conversion” model over time focussed solely on the achievement of migration of the current in-band radio community before allowing access of at any level by non BSB operators or third parties/new entrants of any type.

As outlined in the submission, it is the position of Commercial Radio Australia that commercial radio and national (ABC/SBS) broadcasters should migrate to digital first, followed by community broadcasters, then followed by high powered open narrowcasters

To this end, and as outlined in the Executive Summary, commercial radio broadcasters are seeking clear policy directions from the Government.

To reiterate, Commercial Radio Australia requests that the Government make the following decisions about the implementation of digital radio:

- Eureka 147 (**DAB**) will be the preferred digital radio technology for Australia;
- Digital spectrum will be “loaned” to existing in-band commercial radio broadcasters at no additional cost (similar to the approach adopted in relation to digital television);
- Spectrum (multiplex) licences will be held by consortia of commercial radio broadcasters and national broadcasters ABC and SBS) in each licence area, with each commercial radio broadcaster entitled to access a full one fifth of a multiplex;
- VHF Band III spectrum and L-Band spectrum should be reserved immediately for digital radio rollout for terrestrial in-band radio broadcasters, and should not be planned or allocated for any other purpose;
- Government assistance will be provided to regional commercial radio broadcasters to reflect the cost of infrastructure roll-out; and
- Existing commercial radio broadcasters will be permitted to develop and provide new and innovative “program associated services” including data services and additional “layers” of audio streams. However, no “digital only” services should be permitted.

These policy positions will not only reflect equitable treatment of commercial radio broadcasters to that of commercial TV broadcasters in the digital conversion, but will drive the radio industry forward for the future.

VHF Spectrum Potentially Available in METROPOLITAN AUSTRALIA for DAB Trials - (174 MHz to 240 MHz)

Table 1 - Metropolitan Areas

| | 174-181 MHz (TV ch 6) | 181-188 MHz (TV ch 7) | 188-195 MHz (TV ch 8) | 195-202 MHz (TV ch 9) | 202-209 MHz* TV ch 9A) | 209-216 MHz (TV ch 10) | 216-223 MHz (TV ch 11) | 223-230 MHz (TV ch 12) | 230-240 MHz (Defence) |
|-----------|--------------------------|--------------------------|--------------------------|--------------------------|---------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| Sydney | Seven Digital | Seven | Nine Digital | Nine | DAB Trials | Ten | Ten Digital | ABC Digital | Potential =Y |
| Melbourne | Seven Digital | Seven | Nine Digital | Nine | DAB Trials | Ten | Ten Digital | ABC Digital | Potential =Y |
| Brisbane | Seven Digital | Seven | Nine Digital | Nine | DAB Trials | Ten | Ten Digital | ABC Digital | Potential =Y |
| Adelaide | Seven Digital | Seven | Nine Digital | Nine | DAB Trials | Ten | Ten Digital | ABC Digital | Potential =Y |
| Perth | Seven Digital | Seven | Nine Digital | Nine | DAB Trials | Ten | Ten Digital | ABC Digital | Potential =Y |

* **Only 6 MHz available** - Channel 9A is restricted to 202-208 MHz until analog television services on channel 10 either vacate the channel or shift to the new alignment for channel 10 (209-216 MHz), no later than 31st December 2008.

Regional Areas - First Tranche

| | 174-181 MHz (TV ch 6) | 181-188 MHz (TV ch 7) | 188-195 MHz (TV ch 8) | 195-202 MHz (TV ch 9) | 202-209 MHz* (TV ch 9A) | 209-216 MHz (TV ch 10) | 216-223 MHz (TV ch 11) | 223-230 MHz (TV ch 12) | 230-240 MHz (Defence) |
|-----------------------------------|--------------------------|------------------------------|--------------------------|-----------------------------|----------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| Canberra | Capital Digital | Capital (TEN) | DAB Trials | ABC TV | ABC Digital | DAB Trials | WIN Digital | Prime Digital | Potential =Y |
| Hobart | Southern Cross | SC Digital | ABC Digital | DAB Trials | SBS Digital | WIN Digital | Spare | Spare (DAB?) | Potential =Y |
| Wollongong | Seven(d) Syd | Seven Sydney ⁴ | Nine(d) Syd | Nine Sydney ⁴ | DAB Trials ¹ | TEN Syd ⁴ | TEN(d) Syd | ABC(d) Syd | Potential =Y |
| Newcastle | Seven(d) Syd | Seven Sydney ⁴ | Nine(d) Syd | Nine Sydney ⁴ | DAB Trials ¹ | TEN Syd ⁴ | TEN(d) Syd | ABC(d) Syd | Potential =Y |
| Gold Coast | Seven(d) Bris | Seven Bris ⁴ | Nine(d) Bris | Nine Bris ⁴ | DAB Trials ² | TEN Bris ⁴ | TEN(d) Bris | ABC(d) Bris | Potential =Y |
| Sunshine Coast - Nambour | Seven(d) Bris | Seven Bris ⁴ | Nine(d) Bris | Nine Bris ⁴ | DAB Trials ² | TEN Bris ⁴ | TEN(d) Bris | ABC(d) Bris | Potential =Y |
| Bunbury | Seven(d) Perth | Seven Perth ⁴ | Nine(d) Perth | Nine Perth ⁴ | DAB Trials ³ | TEN Perth ⁴ | TEN(d) Perth | ABC(d) Perth | Potential =Y |

Notes: * **Only 6 MHz available** - Channel 9A restricted to 202-208 MHz until analog television services on channel 10 either vacate the channel or shift to the new alignment for channel 10 (209-216 MHz), no later than 31st December 2008.

Share spectrum allocation with Sydney.

Share spectrum allocation with Brisbane.

Share spectrum allocation with Perth.

It may be possible to use this spectrum for DAB, subject to confirmation that DAB would not interfere with Sydney, Brisbane or Perth television reception.

APPENDIX A - COMMERCIAL RADIO AUSTRALIA SUBMISSION ON DIGITAL RADIO STUDY GROUP REPORT – APRIL 2005

VHF Spectrum Potentially Available in REGIONAL AUSTRALIA for DAB Trials - (174 MHz to 240 MHz) - [Revised: 8th November 2004]

NB: Yellow highlighted cells indicate recent DCP changes affecting VHF availability for DAB

DTV indicates UHF Analog Service converted to VHF digital service

Shaded Areas indicate new DTV allocations proposed October 2004.

| | 174-181 MHz (TV ch 6) | 181-188 MHz (TV ch 7) | 188-195 MHz (TV ch 8) | 195-202 MHz (TV ch 9) | 202-209 MHz (TV ch 9A) | 209-216 MHz (TV ch 10) | 216-223 MHz (TV ch 11) | 223-230 MHz (TV ch 12) | 230-240 MHz (Defence) |
|-------------------------------------|--|--------------------------|--------------------------|-----------------------------|---------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| ACT | | | | | | | | | |
| Canberra | CTC7(d) | CTC7 | DAB | ABC9 | ABC9(d) | DAB | WIN31(d) | CBN34(d) | 10 |
| NSW | | | | | | | | | |
| Albury (Upper Murray) | --- | SBS30(d) | GLV39(d) | DAB | ABAV1(d) | VTV33(d) | AMV11 | AMV11(d) | 10 |
| Armidale | UHF DTV | (ABUN7) | UHF DTV | (NEN9) | DAB* | NEN10 | UHF DTV | DAB | 10 |
| Batemans Bay | --- | SBS55(d) | --- | ABC9 | ABC9(d) | WIN11(d) | WIN11 | DAB (DTV Spare) | 10 |
| Bathurst (local DTV translators) | ABCN6 | ABC6(d) | DAB?(CBN) | SBS48(d) | CTC49(d) DAB* | CBN11(d) | CBN11 | WIN52(d) DAB | 10 |
| Bega (Bega/Cooma) | WIN6 | SBS55(d) Batemans Bay | ABC8 Bega/Cooma | ABC9 Batemans Bay | ABC9(d) Batemans Bay | WIN11(d) Batemans Bay | WIN11 Batemans Bay | DAB | 10 |
| Broken Hill | --- | BKN7 | --- | BKN7(d)DAB | BKN s38.a | ABL2(d) | DAB | SBS44(d)DAB | 10 |
| Campbelltown | ATN7(d) | ATN7 | TCN9(d) | TCN9 | DAB ¹ | TEN10 | TEN10(d) | ABC2(d) | 10 |
| Coffs Harbour | --- | --- | --- | --- | DAB | DAB | NRN11 | DAB | 10 |
| Cooma | --- | --- | ABC8(Bega) | DAB | DAB? | CTC10 | --- | DAB | 10 |
| Deniliquin | --- | --- | --- | ABGN9 | DAB* | --- | --- | DAB | 10 |
| Dubbo | CBN6 | --- | --- | --- | DAB* | --- | ABC11 | ABC11(d) DAB | 10 |
| Dungog | All UHF DTV | --- | --- | --- | DAB | --- | --- | DAB | |
| Gosford | ATN7(d) | ATN7/DAB? | TCN9(d) | TCN9/DAB? | DAB ¹ | TEN10/DAB? | TEN10(d) | ABC2(d)/DAB? | 10 |
| Goulburn | --- | --- | --- | --- | DAB* | CTC10 | --- | DAB | 10 |
| Gloucester | All DTV UHF (possible exception NEN11) | --- | --- | --- | DAB | NEN11(d) | --- | DAB | |
| Grafton | --- | --- | --- | --- | DAB | DAB | NRN11 | DAB | 10 |
| Griffith | --- | ABGN7 | --- | MTN9 | DAB* | --- | --- | DAB | 10 |
| Gunnedah | --- | ABUN7 | --- | NEN9 | DAB* | --- | --- | DAB | 10 |
| Inverell | --- | (ABUN7) | --- | (NEN9) | DAB* | NEN10 | --- | DAB | 10 |
| Kandos | All UHF DTV | --- | --- | --- | DAB | All UHF DTV | --- | --- | |
| Katoomba | ATN7(d) | ATN7/DAB? | TCN9(d) | TCN9/DAB? | DAB ¹ | TEN10/DAB? | TEN10(d) | ABC2(d) | 10 |
| Kempsey | --- | --- | --- | --- | DAB | --- | --- | DAB | 10 |
| Laurieton | All UHF DTV | --- | --- | --- | DAB | All UHF DTV | --- | --- | |
| Lismore | ABRN6 | --- | NRN8 | --- | DAB | --- | --- | DAB | 10 |
| Lithgow | CBN6 | --- | --- | --- | DAB* | --- | --- | DAB | 10 |
| Moree | --- | ABUN7 | --- | NEN9 | DAB* | --- | --- | DAB | 10 |
| Mudgee | All UHF DTV | --- | --- | CBN9 | DAB* | --- | --- | DAB | 10 |
| Murwillumbah | ABRN6 | --- | NRN8 | --- | DAB | --- | --- | DAB | 10 |
| Musswellbrook | ABN6 | --- | --- | --- | DAB* | --- | --- | DAB | 10 |
| Newcastle | ATN7(d) | ATN7/DAB? | TCN9(d) | TCN9/DAB? | DAB ¹ | TEN10/DAB? | TEN10(d) | ABN2(d)/DAB? | 10 |
| Nowra | ATN(d) | --- | TCN(d) | --- | DAB | --- | TEN10(d) | ABN2(d)/DAB? | 10 |
| Orange | --- | --- | CBN8 | --- | DAB* | --- | --- | DAB | 10 |
| Parkes | CBN6 | --- | --- | --- | DAB* | --- | --- | ABC11(d) DAB | 10 |
| Port Macquarie | ABTN6 | ABTN6(d) | NEN8 | NEN8(d) | SBS59(d) | DAB | DAB | NBN62(d) | 10 |
| Tamworth (Upper Namoi) | --- | ABUN7 | ABUN7(d) | NEN9 | NEN9(d) DAB* | --- | DAB | DAB | 10 |
| Taree (Manning River) | ABTN6 | ABTN6(d) | NEN8 | NEN8(d) | SBS59(d) | DAB | DAB | NBN62(d) | 10 |
| Wagga Wagga | --- | --- | --- | --- | DAB* | --- | --- | DAB | 10 |
| Wollongong | ATN7(d) | ATN7/DAB? | TCN9(d) | TCN9/DAB? | DAB ¹ | TEN10/DAB? | TEN10(d) | ABN2(d)/DAB? | 10 |
| Young | --- | --- | --- | --- | DAB* | --- | --- | DAB | 10 |
| Central Tablelands - DTV | All UHF High Power DTV from Mt Canobolas (no impact on Bathurst or Orange) | | | | | | | | |
| Central West Slopes DTV | All UHF DTV from Mt Cenn Craich, no impact on Dubbo, Mudgee or Parkes radio markets. | | | | | | | | |
| Grafton-Kempsey DTV | All UHF high power DTV, no impact on Grafton, Kempsey or Coffs Harbour radio markets | | | | | | | | |
| Richmond-Tweed DTV | All UHF DTV | except ch 9A | Affects | Lismore and Murwillumbah | DTV spare | | | | |

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| | 174-181 MHz (TV ch 6) | 181-188 MHz (TV ch 7) | 188-195 MHz (TV ch 8) | 195-202 MHz (TV ch 9) | 202-209 MHz (TV ch 9A) | 209-216 MHz (TV ch 10) | 216-223 MHz (TV ch 11) | 223-230 MHz (TV ch 12) | 230-240 MHz (Defence) |
|--|---|--------------------------|--------------------------|--------------------------|---------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| SW Slopes/East Riverina DTV | All UHF High Power DTV from Mt Ulandra, no impact on Deniliquin, Griffith or Wagga Wagga radio markets. | | | | | | | | |
| Upper Hunter (Rossgole Lookout/Aberdeen) | | ABHN56(d) | ABHN8(56) | NBN10(d) | DAB | NBN10 | | DAB | |
| Vacy | All UHF DTV | | | | | | | | |
| VICTORIA | | | | | | | | | |
| Ballarat | VTV6/36 | --- | --- | --- | DAB ⁺ | --- | --- | DAB(?) | 10 |
| Bendigo | --- | --- | BCV8/38 | --- | DAB | --- | --- | DAB | 10 |
| Cann River | --- | --- | --- | --- | GLV9(d) | --- | --- | ABLV11(d) | |
| Colac | --- | --- | --- | --- | DAB | --- | --- | DAB | 10 |
| Geelong (Melbourne) | HSV7(d) | HSV7 | GTV9(d) | GTV9 | DAB ⁺ | ATV10 | ATV10(d) | ABV2(d) | 10 |
| Goulburn (Shepparton) Valley | VTV6 | --- | --- | VTV6(d) | DAB | --- | --- | DAB | |
| Hamilton (Western Vic.) | ABWV5A(d) | SBS28(d) | --- | DAB | BCV31(d) | VTV10(d) | VTV10 | AMV34(d) | 10 |
| Horsham | --- | --- | --- | --- | DAB | --- | --- | DAB | 10 |
| Latrobe Valley | All UHF DCP | | | | | | | | |
| Mildura/Sunraysia | ABMV6 | STV8(d) | STV8 | --- | DAB ⁺ | --- | ABMV6(d) | DABABMV(d) DTV Spare | 10 |
| Murray Valley (Swan Hill) | --- | --- | --- | --- | DAB | BCV10 | --- | DAB | |
| Nhill | --- | VTV7 | --- | ABWV9 | DAB | --- | --- | DAB | 10 |
| Sale (Latrobe Valley) | --- | --- | --- | --- | DAB | --- | --- | DAB | 10 |
| Shepparton (Goulburn Valley) | VTV6 | --- | --- | VTV6(d) | DAB | --- | --- | DAB | 10 |
| Swan (Murray Valley) Hill | --- | --- | --- | --- | DAB | BCV10 | --- | DAB | 10 |
| Wangaratta (Upper Murray) | --- | SBS30(d) | GLV39(d) | DAB | ABAV1(d) | VTV33(d) | AMV11 | AMV11(d) | 10 |
| Warragul (Latrobe Valley) | --- | --- | --- | --- | DAB ⁺ | --- | --- | DAB(?) | 10 |
| Warmambool | --- | --- | --- | VTV9 | DAB | --- | --- | DAB(?) | 10 |
| Wodonga (Upper Murray) | --- | SBS30(d) | GLV39(d) | DAB | ABAV1(d) | VTV33(d) | AMV11 | AMV11(d) | 10 |
| QUEENSLAND | | | | | | | | | |
| Beaudesert | BTQ(d) | BTQ7 | QTQ(d) | QTQ9 | DAB ⁺ | TVQ10 | TVQ(d) | ABQ(d) | 10 |
| Bowen | --- | --- | --- | TNQ1(d) | --- | --- | ABTQ5A(d) | SBS48(d) | |
| Bundaberg | ABWQ6 | STQ8(d) | STQ8 | TNQ33(d) | ABWQ6(d) | RTQ39(d) | --- | DAB | 10 |
| Cairns | TNQ10(d) | DAB | ABNQ9(d) | ABNQ9 | TNQ10(d) DAB | TNQ10- | STQ33(d) | RTQ39(d) | 10 |
| Charleville | --- | SBS7 | --- | ABC9 | DAB | QQQ10 | --- | DAB | 10 |
| Charters Towers | --- | --- | --- | --- | DAB | --- | --- | DAB | 10 |
| Dalby | --- | --- | --- | --- | DAB | --- | --- | DAB | 10 |
| Emerald | RTQ6 | RTQ6(d) | --- | ABEQ11(d) | DAB | --- | ABEQ11 | DAB | 10 |
| Gladstone | ABWQ6 | STQ(d) | STQ8 | TNQ(d) | ABWQ6(d) | RTQ10 | --- | DAB | 10 |
| Gold Coast | BTQ7(d) | DAB(?) | QTQ9(D) | DAB(?) | DAB ⁺ | DAB(?) | TVQ10(d) | ABQ2(d)/DAB? | 10 |
| Gympie (Sunshine Coast) | --- | --- | --- | --- | DAB | --- | --- | DAB | 10 |
| Innisfail | TNQ10(d) | --- | ABNQ9(d) | --- | DAB | --- | --- | RTQ39(d) | 10 |
| Ipswich | BTQ7(d) | BTQ7 | QTQ9(d) | QTQ9 | DAB ⁺ | TVQ10 | TVQ10(d) | ABQ2(d) | 10 |
| Kingaroy | --- | --- | --- | --- | DAB | --- | --- | DAB | 10 |
| Longreach | ABLQ6 | --- | --- | QQQ9 | DAB | --- | --- | DAB | 10 |
| Mackay | STQ6 | --- | ABMQ8 | --- | STQ6(d) | ABMQ8(d) | --- | DAB | 10 |
| Mareeba | TNQ6 | --- | --- | --- | DAB | --- | --- | DAB | 10 |
| Maryborough | ABWQ6 | STQ8(d) | STQ8 | TNQ(d) | ABWQ6(d) | RTQ(d) | --- | DAB | 10 |
| Mount Isa | ABIQ6 | ABIQ6(d) | ITQ8 | ITQ8(d) | DAB SBS29(d) | IMP32(d) | (DTV spare) | DAB | 10 |
| Nambour (Sunshine Coast) | --- | DAB(?) | --- | DAB(?) | DAB ⁺ | DAB(?) | --- | DAB | 10 |

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| | | | | | | | | | |
|--|--|----------|-----------|----------------|------------------|-------------|------------------------|-----------------------|----|
| Rockhampton | --- | RTQ7 | --- | ABRQ9 | DAB | DAB | ABRQ9(d) | RTQ7(d) | 10 |
| Roma | --- | --- | --- | --- | DAB | --- | --- | DAB | 10 |
| Toowoomba | BTQ7(d)- | DAB(?) | QTQ9(d) | DAB(?) | DAB ² | DAB(?) | TVQ10(d) | ABQ2(d)/DAB? | 10 |
| Townsville | --- | TNQ7 | --- | --- | DAB | --- | --- | DAB | 10 |
| Warwick | --- | --- | --- | --- | DAB | --- | --- | DAB | 10 |
| Wide Bay (affects Bundaberg / Maryborough) | ABWQ6 | STQ8(d) | STQ8 | TNQ33(d) | ABWQ6(d) | RTQ39(d) | --- | DAB | 10 |
| Darling Downs DTV | All UHF high power DTV, no impact on Dalby, Toowoomba or Kingaroy radio markets. | | | | | | | | |
| Southern Downs DTV | All UHF high power DTV, no impact on Warwick radio market. | | | | | | | | |
| NORTHERN TERRITORY | | | | | | | | | |
| Darwin | ABD6 | --- | NTD8 | --- | DAB | --- | --- | DAB | 10 |
| Alice Springs | SBS28(d) | ABAD7 | ABAD7(d) | IMP9 | DAB* IMP9(d) | 1.1.1.1.1 C | (DTV spare) | DAB | 10 |
| Katherine | SBS58(d) | ABKD7 | ABKD7(d) | IMP9 | IMP9(d) | QQQ61(d) | (DTV spare) | DAB | |
| SOUTH AUSTRALIA | | | | | | | | | |
| Mt Gambier (SE South Aus) | --- | --- | SES8 | --- | DAB | --- | --- | DAB | 10 |
| Murray Bridge | ADS(d) | ADS7 | NWS(d) | NWS9 | DAB ⁵ | ADS10 | ADS(d) | ABS(d) | 10 |
| Port Augusta (Spencer Gulf) | --- | --- | --- | --- | DAB | --- | --- | DAB | 10 |
| Port Lincoln (Spencer Gulf) | --- | --- | --- | --- | DAB ⁵ | --- | --- | DAB | 10 |
| Pt Pirie/Whyalla (Spencer Gulf) | --- | --- | --- | --- | DAB ⁵ | --- | --- | DAB | 10 |
| Renmark/Loxton (Riverland) | --- | --- | --- | --- | DAB | --- | --- | DAB | 10 |
| WESTERN AUSTRALIA | | | | | | | | | |
| Albany | DAB | ABAW7 | ABAW8(d) | SSW9 (Sthn Ag) | SSW10(d) DAB* | SSW10 | ABAW2(d) (Sthn Ag) | SSW9(d) (Sthn Ag) DAB | 10 |
| Bridgetown | --- | --- | --- | --- | DAB* | --- | --- | DAB | 10 |
| Broome | WOW6 | WOW6(d) | ABW8(d) | ABW9(d) | SBS29(d)-DAB | WAW10(d) | WAW11 | DAB (DTV spare) | 10 |
| Bunbury | --- | --- | --- | --- | DAB ³ | --- | --- | DAB | 10 |
| Carnarvon | ABCNW7(d) | ABCNW7 | WOW9(d) | WOW9 | WAW10(d) DAB* | WAW10 | SBS12(d) | SBS12 DAB | 10 |
| Esperance | --- | VEW7 | --- | SBS29(d) | ABEW10(d) DAB* | ABEW10 | --- | VEW7(d) DAB | 10 |
| Geraldton | ABGW6 | --- | --- | --- | GTW11(d) DAB* | --- | GTW11 | DAB | 10 |
| Kalgoorlie | ABKW6 | SBS28(d) | VEW8 | (DTV spare) | ABKW6(d) DAB* | VEW8(d) | WOW11 | WOW11(d) DAB | 10 |
| Karratha | All UHF DTV, no impact on DAB | | | | DAB* | --- | --- | DAB | 10 |
| Katanning | --- | ABW7 | --- | --- | DAB* | SSW10 | --- | DAB | 10 |
| Mandurah | BTW(d) | BTW7 | STW(d) | STW9 | DAB ³ | TEN10 | TEN(d) | ABW(d) | 10 |
| Merredin | VEW6 | --- | ABW8 | --- | DAB* | --- | --- | DAB | 10 |
| Narrogin | --- | --- | --- | --- | DAB* | --- | --- | DAB | 10 |
| Northam | --- | --- | --- | --- | DAB ³ | --- | --- | DAB(?) | 10 |
| Port Hedland | SBS42(d) | ABPHQ7 | ABPHQ7(d) | (DTV spare) | WOW9A DAB* | WOW9A(d) | WAW11(d) | WOW11(d) DAB | 10 |
| Roebourne | WAW6 | WAW6(d) | --- | ABRW9 | ABRW9(d) | WOW31(d) | (DTV spare) | --- | |
| Southern Agricultural (affects Albany) | --- | --- | --- | SSW9 | --- | --- | ABAW2(d) | SSW9(d) | 10 |
| Wagin (affects Sthn Ag) | SSW6 | --- | ABW8 | --- | --- | --- | --- | --- | 10 |
| TASMANIA | | | | | | | | | |
| Burnie | --- | --- | --- | --- | DAB | --- | DAB | DAB | 10 |
| Devonport | --- | --- | --- | --- | DAB | --- | DAB | DAB | 10 |
| Hobart | TVT6 | TVT(d) | ABC(d) | DAB | SBS(d) | TNT(d) | 3 rd TV DAB | DAB | 10 |
| Launceston | --- | --- | --- | --- | DAB | --- | TNT11 | DAB | 10 |
| Lileah | TNT6 | TNT6(d) | ABNT8 | ABNT8(d) | DAB | --- | --- | DAB | 10 |
| NE Tasmania | --- | --- | --- | TNT9 | DAB | --- | --- | DAB | 10 |
| Queenstown | --- | --- | --- | --- | DAB | --- | DAB | DAB | 10 |
| Scottsdale | --- | --- | --- | TNT9 | DAB | --- | DAB | DAB | 10 |

Channel 9A must be shared with Sydney DAB services.
 Channel 9A must be shared with Brisbane DAB services.
 Channel 9A must be shared with Perth DAB services.

Notes on tables

Channel 9A must be shared with Melbourne DAB services.

Channel 9A must be shared with Adelaide DAB services.

DAB* = Digital TV Channel Plan still to be determined. CRA may wish to seek Channel 9A and/or 12 for DAB services.

DAB? = subject to testing, may be used in the presence of an analog service in an adjacent area, OR

may be used in the presence of a digital ABC service in adjacent metro area where that same service is provided locally on a different channel.

--- = no digital or analog TV services planned for service in this area; DCP completed. Channel could also be used for DAB.

(ABUN7) & (NEN9) refer to translator inputs receiving channel 7 or 9.

The spectrum, 230 to 240 MHz is currently allocated to Defence uses; negotiations are required to have it reallocated to broadcasting (and other) purposes on a shared basis. However, it is unlikely that Defence or the ACMA will agree to this spectrum being shared with Digital Broadcasting