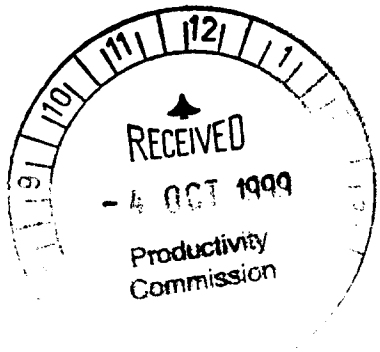

SUBMISSION TO THE PRODUCTIVITY COMMISSION

by

AUSTEREO PTY LTD

Digital Radio Broadcasting

As is noted in the Treasurer's Terms of Reference for the Productivity Commission's Inquiry into Broadcasting, the Broadcasting Services Act 1992 'seeks to provide a regulatory environment that varies according to the degree of influence of certain services upon society and which facilitates the development of an efficient and competitive market that is responsive to audience needs and *technological developments*' (emphasis added).

The Terms of Reference go on to require the Commission to 'have due regard to the phenomenon of *technological convergence* to the extent that it may impact upon broadcasting markets' (emphasis added).

Clearly, the Productivity Commission will be paying close attention to technological developments in broadcasting.

But the Commission's Issues Paper, when dealing with digital conversion (the most significant technological development that has faced the broadcasting industries of the world for many years), confines itself to the field of television.

This is entirely understandable, given that Parliament has only recently provided a comprehensive legislative framework for digital television conversion, and has not yet been asked to consider digital radio issues.

But, looking forward, the introduction of digital radio broadcasting will certainly need to be accompanied by extensive amendments to the BSA. These amendments will, in terms of their bulk, be something on a par with those made to facilitate digital television conversion.

However, digital radio laws will not be a mirror image of digital television laws. This is because digital radio issues are even more complex than those affecting television. Austereo's submission will deal with some of these complexities.

In Austereo's opinion it will be highly desirable for the Productivity Commission's draft report, proposed for publication in a few weeks time, to deal at some length

with digital radio conversion issues and their implications for the Broadcasting Services Act.

Features of Digital Radio

The Final Report of the Digital Radio Advisory Committee (August 1997) contains a useful description of digital radio and an account of its features. It says

> *Digital radio broadcasting (DRB) is a new method of assembling, broadcasting and receiving communications services using the same digital technology now common in many products and services – such as computers, compact discs (CDs) and telecommunications.*
>
> *DRB systems use advanced digital techniques to convert an audio signal to a digital signal which is then compressed, along with other signals, before being broadcast from a transmitter. The receiver converts the digital transmissions back to sound (or text, graphics etc). A fundamental difference between analog and digital broadcasting is that the latter involves the delivery of digital bit streams that can be used not only for sound broadcasting but all manner of multimedia services. DRB can:*
>
> - *provide for better reception of radio services than current amplitude modulation (AM) and frequency modulation (FM) radio broadcasts;*
> - *deliver higher quality sound than current AM and FM radio broadcasts to fixed, portable and mobile receivers;*
> - *carry ancillary services – in the form of audio, images, data and text – providing information associated with the station and its audio programs (such as station name, song title, artist's name and record label, as well as news, weather, time, traffic and other information) and other services (eg paging and global satellite positioning); and*
> - *reconfigure capacity allocations to provide different kinds of services (eg change from a single stereo music program in one time slot to two mono talk programs in another).*

DRB delivers CD-quality sound - which is a clear improvement over the sound quality of FM services, and a much more marked improvement over the sound quality of AM services. However, it is generally conceded that these improvements, while certain to be welcomed by audiences, will not by themselves be as compelling for radio audiences as HDTV will be for television audiences.

It is the datacasting or ancillary service capability that digital provides that will provide the additional necessary attraction for audiences, .and commercial radio will be very dependent on the development of this ancillary (or datacasting) innovation to convert audiences from analog to digital services and to justify the very substantial investment it will be required to make.

And, as well as national and commercial broadcasters, the radio bands contain community broadcasters and open narrowcasters,. The costs of a digital transition for them will also be very high.

Finally, the Productivity Commission should note that, unlike television, radio receivers will not be able to be upgraded to receive converted digital transmissions.

There is therefore no installed base of radio receivers in this country capable of receiving digital services of one kind or another. Every Australian AM/FM radio receiver will need to be replaced by a digital-capable receiver, whether that is a radio incorporated in a hi-fi system, a portable radio or a car radio.

Australians have a deserved reputation for readily adopting new technologies and, if sufficient innovation is allowed and new digital services are developed, early demand for new, sophisticated digital-capable receivers is likely to be quite high.

Manufacturers will however need assurances about the features of Australia's technological and legal framework for DRB before such receivers can be designed, developed and introduced to the Australian market.

And the prospects of achieving a very high level of digital-capable receivers in motor vehicles needs to be measured against the fact that there could be a considerable lead-time involved in having such receivers installed in new cars. While analog-to-digital conversions will obviously also be available to Australian car owners, only a fairly low proportion of conversions is likely.

Key Submission

As the Federation of Australian Radio Broadcasters – of which Austereo is a member - suggests in its submission to the Commission

- Commercial radio wants to move to the next stage in the technological development of radio broadcasting with a seamless transition of its audience and advertisers

Clearly, Austereo agrees with FARB's key submission.

But it wishes to add the following key submissions

- A technology-neutral legislative framework for the introduction of digital radio broadcasting in Australia is now required
- This legislative framework should include a discrete authorisation for commercial radio operators to engage in commercial datacasting activities
- The framework should also provide processes for dealing with a number of important threshold issues, including
  - The selection of a technical transmission standard for the delivery of digital radio broadcasting services
  - The preparation of frequency allotment plans, and
  - Radio conversion and implementation schemes
- The term of the simulcast period for the transmission of both analog and digital radio services should, unlike that for television, be left for determination by an appropriate authority after coverage and penetration benchmarks have been reached
- Radio broadcasters should be allowed complete programming flexibility during the simulcast period, so that innovation in digital services will be given the maximum encouragement
- All commercial radio incumbents in the AM and FM bands should be guaranteed a seamless transition from analog to digital mode of operations
- The introduction of digital radio should not be seen as a catalyst for the simultaneous introduction of additional competition in commercial radio operations – the issue of further licence area planning (for all services other than national services) after digital conversion should remain with the Australian Broadcasting Authority, but no new services should be introduced during the digital introductory period

Background

In recent years there have been two significant reports prepared on digital radio broadcasting. Each has contained suggestions for its implementation.

The first report *Developing Digital Radio Broadcasting for Australia* was a report of the Digital Radio Broadcasting Task Force of the Australian Broadcasting Authority.

This report, which is quite comprehensive, was a counterpart report to the ABA's Specalist Group report on Digital Terrestrial Television Broadcasting – a report which led directly to the development and implementation of a legislative framework (found in the Television Broadcasting Services (Digital Conversion) Act 1998) for the introduction of digital terrestrial television into Australia.

The second report *Digital Radio Broadcasting in Australia* was the final report of the Digital Radio Broadcasting Advisory Committee (aka DRAC) established by the Minister for Communications.

Both the Task Force and the Advisory Committee contained very broad representation, including commercial and national broadcasters, manufacturers, industry associations, telecommunications companies, the National Transmission Agency, and regulators.

The work of the Task Force, which included a considerable amount of work on technical possibilities and spectrum possibilities, became an important part of the materials used by the Advisory Committee.

DRAC did not attempt to emulate the Task Force work in the technical and spectrum fields.

It should be noted that the terms of reference for the Task Force constrained its studies to broadcasting requirements for use of the L Band.

DRAC was not similarly constrained but did not, in fact, attempt any substantive technical assessments of its own. However, it did review and summarise a number of DRB technical trials undertaken in Australia (at Appendix 4 to the report).

Technology Neutrality

The recommendations of DRAC about the Australian choice of system reflect some obvious ambivalence about a range of technical solutions that will need to be found before DRB can eventually proceed in Australia.

Major questions need to be answered, for example, about the choice of transmission system and spectrum allocations to DRB.

Nevertheless, it should be borne in mind that in relation to digital terrestrial television, technical issues were not determined by the legislative framework provided by the Parliament. Rather, the framework provided procedures and devices for the determination of these issues over time.

These technical and spectrum issues for television included

- Digital channel planning and the general technical assumptions underpinning it
- Broadcast transmission standards, including standards for HDTV, captioning, datacasting
- Transmitter sites/towers access regime, including ACCC access Code
- Transmitter licensing and datacasting charge determination (by the ACA)
- The development of an industry action agenda and a regional equalisation scheme (the Minister)

The digital television framework is just that – a framework which facilitates the development of a number of complex, technical tasks, the finalisation of all of which will eventually lead to the introduction of digital television services.

And one of its additional features is that public and other consultation attending on the development of most important technical issues provides reassurance about transparency.

Austereo suggests the same approach in principle be taken with the introduction of DRB in Australia.

Since the production of the DRAC Report, and the formation of the Planning and Steering Committee chaired by the Department of Communications, Information Technology and the Arts, and notwithstanding that Committee's efforts, which have been very much appreciated by the radio industry, little substantive work of the kind now being done in relation to digital terrestrial television has been done in relation to DRB.

It is clear that a better framework now needs to be adopted for DRB introduction.

Further delay in the commencement of work on a DRB legislative framework could lead to DRB developments that are uncoordinated and fragmented.

Better then to establish a framework that empowers relevant government agencies, like the ABA and the ACA, and the industry itself, to approach DRB planning in a coordinated, cohesive and public fashion. Such an approach is much more likely to produce outcomes that are in the interest of the Australian community.

Technical issues that have been hitherto thought to be threshold issues for the introduction of DRB – particularly issues associated with the choice of transmission system and spectrum allocation – will require a prompt and concentrated focus on their resolution.

A Legislative Framework for DRB in Australia

A legislative framework for the Australian introduction of DRB should contain processes for dealing with a number of important threshold issues. These include

- *Any necessary licensing provisions*

The Eureka 147 DRB system, if it is to be chosen as Australia's DRB system, has in common with many other digital transmission systems the ability to carry a number of separate program streams in the same transmission channel or frequency allocation.

Shared multiple transmit sites, and single frequency network techniques, are likely to be fundamental to the achievement of the required grades of service and spectrum efficiency for all coverage areas.

If part of Australia's implementation of DRB, these matters are bound to have implications for the terms of the BSA.

Clearly, if, as is likely, the legislative framework is unable to be specific about matters such as multiplex and single frequency network licensing, no prescriptive rules about these matters should be incorporated into law.

It could well be that the legislative framework may itself require phased implementation, with a first phase devoted to the establishment of processes for the determination of important technological matters, and the second phase devoted to establishing settled law for rights and responsibilities of various parties.

- *The selection of a technical transmission standard for the delivery of DRB services.*

At the time of the ABA Task Force report (October 1996) the Eureka 147 standard – fully specified under the European Telecommunications Standards Institute (ETSI) and recommended by the International Telecommunications Union (ITU) as a candidate for a terrestrial and satellite DRB world standard – was the only standard which was, in the view of the Task Force, a sufficiently mature technology to consider for implementation in Australia.

During the development of DRB technology the National Association of Broadcasters (NAB) in the USA promoted the In-Band terrestrial system as a means of delivering enhanced sound and data services without changing the broadcasting industry status quo.

The Eureka 147 standard, on the other hand, is designated for application in new radio broadcasting spectrum – the internationally designated L Band (1452MHz – 1492MHz).

DRAC recommended unequivocally that *'Australia should adopt the Eureka 147 technology to provide DRB services'*.

- *The selection of appropriate spectrum for the delivery of DRB services*

DRAC recommended that detailed planning for developing DRB in the existing L band frequency allocation should proceed, but that the possible advantages of using VHF spectrum for DRB should also be further investigated.

Although Eureka 147 is, as was noted earlier, designated for application in new radio broadcasting spectrum, the implementation of DRB in VHF spectrum remains a clear option.

Demand for VHF spectrum for other uses is high, particularly in metropolitan areas, but the commercial radio industry remains very interested in exploiting such spectrum for DRB purposes.

And there are compelling environmental reasons why VHF implementation for DRB should be preferred to L band implementation.

DRB implementation on L band will require many more transmission towers to be built in metropolitan areas, employing transmission power levels that will dwarf those employed in mobile phone towers.

For example, coverage of the Sydney area might require seven very large tower assemblies, broadcasting at 100 times the power levels of mobile phone towers. Obtaining the necessary approvals to build these towers will be a difficult process.

The use of VHF spectrum would require many less towers to be built – such towers need only be 80 kilometres apart, whereas L band towers need to be as close as 20 kilometres.

And VHF spectrum provides higher penetrative qualities. The radio signal easily penetrates walls and building structures, and audiences will receive a much better and accessible service indoors via VHF spectrum.

Even if insufficient VHF spectrum is available for the migration of all incumbent analog radio services to digital, Austereo can see no reason why the commercial radio industry – as the industry sector most capable of and most in need of attracting audiences to digital services – should not be allowed to use that spectrum for DRB implementation.

Continuing assessment of the relative merits of these spectrum options,leading to the making of a final and binding decision, is obviously warranted.

Austereo suggests that the ABA be designated by Parliament or directed by the Minister to convene a review of these options until the point is reached at which it and the industry is in a position to recommend a clear preference.

Criteria to guide the review should be incorporated in the framework.

The ABA should be obliged to consult widely and publicly on the issues, and it would be expected that other regulatory agencies, such as the ACA, would be invited to participate in this work, as well as all affected parties, including national, community and narrowcast broadcasters, and potential datacasters.

The ABA should report the findings of the review to the Minister, who should presumably be authorised by the legislative framework to make any necessary spectrum reference under Section 31 of the Radiocommunications Act 1992.

- *The preparation of frequency allocation plans.*

The ABA would presumably be authorised by the framework to prepare channel plans or frequency allotment plans.

These plans would allocate frequencies to categories of service.

- *Transition for frequency incumbents.*

Whether or not technical determinations were made requiring services to be allocated in new broadcasting services band spectrum, such as the L Band, or within the present broadcasting services bands, incumbent commercial broadcasters would obviously wish to be assured that there will be a seamless transition of their services from the AM and FM bands to new digital-capable frequencies.

Austereo is strongly of the view that this principle should be incorporated in the legislative framework. Austereo could not support a legislative framework that did not incorporate such a transition.

It is obviously in the interests of the listening public that the introduction of DRB not be the cause of any interruption to the provision of the services presently provided by way of analog technology.

The ABA should be required to give consideration to a simulcast period which is expressed not in terms of time but in terms of receiver penetration levels within

the Australian community, eg, simulcasting might continue until, say, 80% of Australian households have acquired DRB-capable receivers, before a review is conducted to determine a future date, say five years hence, when simulcasting will cease. A receiver penetration level for motor vehicles might also be incorporated in the ABA's criteria.

Austereo is of the view that simulcast spectrum, in no matter which band, must be provided free of charge to commercial radio broadcasters. The legislative framework should make unambiguously clear that simulcast spectrum is to be made freely available to incumbent commercial radio broadcasting licensees.

- *Radio Conversion Schemes*

As does the digital television legislative framework, a similar, though not identical, framework for radio broadcasters should provide for the development of radio conversion schemes.

A Commercial Radio Conversion Scheme would be required to deal with matters including the following

- Distinct requirements for metropolitan, regional and remote broadcasting services
- Authorisations for digital transmissions, including any additional ACA-administered transmitter licences for simulcasting
- Coverage obligations and reception quality
- Site/tower access schemes (for broadcasters and datacasters)
- Licensees' entitlements to datacast
- Channel bandwidth determinations, and general technical assumptions re transmissions
- Test transmissions
- Dates for the submission of Implementation Plans by broadcasters

The ABA could be required to take into account, in developing such Schemes, issues such as spectrum use efficiency and costs.

- *Implementation Plans*

These plans should be submitted by licensees for ABA approval consequent upon the finalisation of digital channel plans. Such plans should deal with matters such as emission characteristics, the likelihood of interference to other services, consultations about any co-location of transmission facilities, site/tower approvals and simulcast proposals.

The failure of the ABA to approve an Implementation Plan should be reviewable by the AAT.

The approval of such a plan will require the issue or variation of any necessary transmitter licences by the ACA, on conditions, if any, determined by the ABA.

An approved Implementation Plan would become a licence condition under the BSA.

- *The introduction of new commercial radio licences during the digital introductory period*

The ABA is presently engaged in the finalisation of an Australia-wide planning process for new analog broadcasting services. Hundreds of new radio and television services have been introduced to Australian markets over the past few years. The ABA is now dealing with the planning of new radio services in metropolitan markets – it has recently released its draft licence area plan for Sydney and proposes in that plan to introduce two new commercial radio services into the Sydney market.

DRB implementation is likely to follow closely on the heels of the current planning round.

Austereo is of the view that, during the DRB introductory period, no new commercial radio licence area planning should be undertaken in relation to other than incumbent analog services being planned for operation in digital mode.

The commercial radio sector will bear very considerable costs during DRB implementation and simulcasting, while the prospect of additional revenues is only hypothecated.

The commercial radio sector should not be obliged to entertain an increase in the number of services competing for audiences during this period.

Given the dimensions of the receiver conversion issue alone, Austereo is of the view that, for a period of as long as ten years or more, new commercial services should not be allowed to enter commercial radio markets.

A very significant proportion of commercial radio's audience is a mobile audience, commuting to and from work of a morning and evening in motor vehicles. We mentioned earlier the need for a realistic allowance to be made for converting Australian motor vehicles to digital. This will be a lengthy process, dominated by conversions made at the point of vehicle manufacture rather than by after-sale conversion. The conversion process is likely to take many years.

While Austereo accordingly feels that many years should pass before fresh commercial competition is allowed in the digital radio environment, Austereo at this stage supports FARB's suggestion of a six year development phase for DRB, with no new commercial services to be planned during that time.

It would, in Austereo's view, be grossly unfair to allow new commercial operators into the industry between the commencement and the end of simulcasting if those operators were not also required to broadcast in both analog and digital mode. The industry's incumbents will bear the brunt of technological and service innovation and cost, and they would not be prepared to do that if newcomers were to be allowed simply to exploit digital services, avoid simulcasting and reap the rewards of the efforts of others.

Other Services

The Productivity Commission should note that Austereo's submission does not purport to outline how national and community and other services might be dealt with by the DRB legislative framework.

A Commencement Date for DRB in Australia

In March 1998 the Minister for Communications, Information Technology and the Arts announced that planning processes had been put in place which would allow the start up of digital radio services in Australia in the year 2001.

Since that announcement, a number of commercial broadcasters have undertaken their own equipment and receiver tests of digital transmissions, and Austereo has joined a consortium of broadcasters called Digital Radio 2000 (DR2) which is conducting test transmissions in Sydney. A second transmitter site is being prepared in Sydney with a view to undertaking more complex tests, including single frequency network testing. Regulatory agencies are cooperating with industry in these endeavours.

While Austereo supports, and recommends, the introduction into Parliament of a legislative framework for DRB, the Productivity Commission might note it would be opposed to the incorporation in that framework of any arbitrarily selected commencement date for the introduction of DRB services in Australia.

The Television Broadcasting Services (Digital Conversion) Act 1998, nominates 1.1.2001 as the date on and from which television simulcasting must begin in major markets, notwithstanding that a number of important and complex technical issues needed to be determined well before that date. Considerable pressure is being experienced by the television industry because of the need to meet the required date.

Australia's DRB technical and spectrum options are more complex and diverse in range than those associated with digital terrestrial television. There are many more parties with an interest in industry outcomes, and the coalescence of an industry consensus around them will be a complex process.

Some of those options depend upon developments relating to matters outside Australian control. These include continuing work on transmission standards and spectrum requirements, and on receiver manufacturing issues.

A significant amount of further technical work will be necessary before a consensus can be reached on some key issues and the selection of a mandatory commencement date at this stage would be quite inappropriate.

This is not to say though that the steady work now being undertaken by various industry sectors and regulatory bodies will not result in the commencement of transmissions during 2001. But some sectors will be faster than others to make their preparations, and it is fair to say that some will rely on the work of the commercial radio sector to give a lead.

Nevertheless, Austereo would have no objection to the provision within the DRB legislative framework of a device that would permit an 'official' DRB commencement date to be proclaimed.

For example, the Minister could be empowered to proclaim a date for a time not earlier than, say twelve months in the future, but only after having received satisfactory reports from relevant regulatory agencies, and after having consulted with, and obtained the support of, the radio broadcasting industry, including FARB and its members.

The End of Simulcasting

As with the commencement of simulcasting, Austereo sees no need for an arbitrary simulcast period after the expiration of which analog broadcasting should cease.

Commercial broadcasters will wish to be reassured that their investment in digital conversion will not be compromised by a migratory process that diminishes their audiences. This is a particularly crucial factor for commercial radio broadcasters of course, given the importance of audiences to advertising revenues. Any premature ending of simulcasting will affect audience size and broadcaster revenue.

So the maximum flexibility must be extended to broadcasters about when it might be appropriate to end simulcasting. Different categories of broadcaster might, in fact, have different simulcasting term requirements. Commercial broadcasters and open narrowcasters (operating commercially) are likely to require very high levels of receiver penetration – into both the household and motor vehicles – before it would be acceptable to put an end to simulcasting.

When commercial FM radio was first introduced into Australia, the level of receiver penetration **prior** to its introduction was quite high – perhaps two thirds of households had an AM/FM receiver. This will not be the case with DRB - hence the need for great flexibility in the simulcasting area.

Conclusion

The introduction of DRB into Australia will be an expensive and complex process for all radio sectors, but the commercial radio industry has more at stake than any other.

The Parliament will need to give close and careful consideration to the terms of any laws it might enact to facilitate DRB implementation.

But a legislative framework is undoubtedly necessary so that implementation can proceed in an orderly and effective fashion.

Accordingly, the very closest of cooperation is needed between the commercial radio industry, regulatory agencies and the Government in order to ensure that DRB implementation is successful and that Australian audiences come to enjoy the new digital radio and ancillary services.

Austereo, for one, is particularly keen to experiment with digital technology and to offer its audiences more entertaining and engaging programs. A flexible Broadcasting Services Act that facilitates industry innovation in digital radio broadcasting will be very much in the public interest.