NEWS LIMITED

Incorporated In South Australia
ACN 007 871 178

A SUBMISSION

TO THE

PRODUCTIVITY COMMISSION INQUIRY

INTO

AUSTRALIA'S BROADCASTING LEGISLATION

MAY 1999

EXECUTIVE SUMMARY

This inquiry into broadcasting legislation by the Productivity Commission comes at a crucial time in the development of this country's media and communications. The digital revolution, the rapid growth of on-line services and the impact of converging distribution paths combine to create exciting opportunities for Australia at home and on the global stage.

If we are to share in the benefits flowing from these opportunities we must be prepared to face the challenges thrown up along the way with enthusiasm and daring, not seek to hide behind walls of protectionist regulation. Otherwise we face the real danger of being left in a communications backwater.

For Australia to compete effectively in this environment the following changes need to be made to current policy:

- **Cross media and foreign ownership restrictions are inappropriate and irrelevant and should be removed. Generic laws which affect all industry are sufficient to regulate media;**

- **The restrictions which prohibit new free-to-air television entrants before 2007 and limit the application of digital technology are anti-competitive and should be removed.**

The enclosed paper by News Limited supports this position.

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1. OVERVIEW

The current media legislation reflects a fear of change and ignores the benefits of open competition. It places the growth of the media industry in a regulatory straitjacket, it discourages foreign investment and, at the same time, creates an artificial comfort zone for the existing broadcasting cartel at the expense of the consumer. Not only are incumbent broadcasters cosseted from competition but are further protected from other media companies entering the broadcasting field by cross-media and foreign media ownership rules. This is an uncompetitive position, rightfully not afforded *any* other Australian industry.

News Limited has been consistent in its publicly stated opposition to over-regulation of the media industry. Regulatory barriers to entry and regulatory interventions create an artificial environment, which is not determined by open competition or true market forces. It creates an industry which cannot respond quickly to change of any kind, one which does not need to respond quickly or fully to consumer needs, or taste and one which cannot compete on an international basis.

Convergence is not a theoretical issue: it is a reality which is blurring the lines between the delivery platforms of the media industry, making it counter-productive for government to attempt to create artificial barriers or distinctions between these traditional segments. Its initial impacts are already being seen as television and newspapers begin to re-engineer their industries to compete with new forms of information and entertainment supplied from the Internet and new industries. Today, more than ever, media companies have to re-examine how they compete for the attention of the consumers' time.

Content is now interweaving between newspapers, television, magazines, the Internet, radio, telephones and back. No one group dominates - or can hope to dominate - all pathways to the public.

To continue to restrict a participant in one segment of the media from making its knowledge, capital and skill available to another serves no purpose. The only effect of such action would be to inhibit Australians from participating with the rest of the world in the benefits which the new technology brings; creating an environment which cannot integrate with fast-developing international economies.

Globalisation allows the rest of the world to come to Australia and Australia to go to the rest of the world. It is characterised by the development of industries across numerous territories. Foreign ownership restrictions are anomalous in this context. Realising the maximum potential of new technologies requires excess capital: much more than is available in Australia on an isolated basis. Foreign ownership restrictions prevent the Australian industry from having access to global companies which have capital not otherwise available here, as well as to knowledge and expertise not yet cultivated in Australia.

These restrictions are detrimental to the development of the Australian media industry. Similarly, restrictions as to ownership based on reach prevent participants from benefiting from economies of scale which might free up capital for quality programming and other consumer benefits of competition.

Media specific regulations, such as those contained in the *Broadcasting Services Act* and the foreign investment policies formulated by the Government should be removed. Generic laws that apply to all industries would apply to the media industry to ensure there is no anti-competitive behaviour, such as decreasing diversity.

Convergence will ensure there is continued, if not increased, diversity of sources of information. It will result in a more competitive industry (nationally and internationally) which operates with far greater efficiency. The market will determine its structure; participants will have to compete in an open market where the quality of product and range of choice will improve. Industry self-regulation can protect and foster the important social objectives such as protection of children, the portrayal of violence and local content obligations.

News Limited has operated in Australia for more than 70 years. In that time it has grown into The News Corporation Limited which employs some 10,000 people in Australia and more than 30,000 people globally, satisfying an ever-increasing demand for choice and diversity of information and entertainment through newspapers, television, films, music, books and the Internet. In the last few years we have committed more that $2 billion to help build Australia's media and entertainment industries.

Tough competition has always been a way of life for News Limited. We don't complain about this - or look for protection against it. Indeed we have always been prepared to take risks to develop our business. An illustration of this was in 1964 when the company dared to launch Australia's first national daily newspaper, *The Australian*, to provide a broader coverage of local, national and international news and cultural events. We did this in a market dominated by two publishers: the Herald & Weekly Times and Fairfax, bringing more competition and choice to the market.

Experience demonstrates that the challenge of competition makes industry perform better and offers the widest possible choice to the consumer at the most attractive price.

Australia needs to encourage investment if it is to benefit from globalisation. The existing restrictive media laws retard the industry. At present we have an environment which, rather than fostering competition and quality programming, protects current participants from competition. We need an environment which makes diversity, competition and investment its cornerstones.

This country has always been proud of its leading-edge development of media but current regulation is placing us well behind international state of the art. An open conversion to digital of the VHF/UHF spectrum would give us the opportunity to demonstrate Australia's unique ability to lead by example where we can produce a dynamic new paradigm of integrated broadcasting.

If our regulators look for an open progressive approach, broadcasting is set to change and dramatically improve the way we live.

2. CHANGING NATURE OF BROADCASTING CONVERGENCE

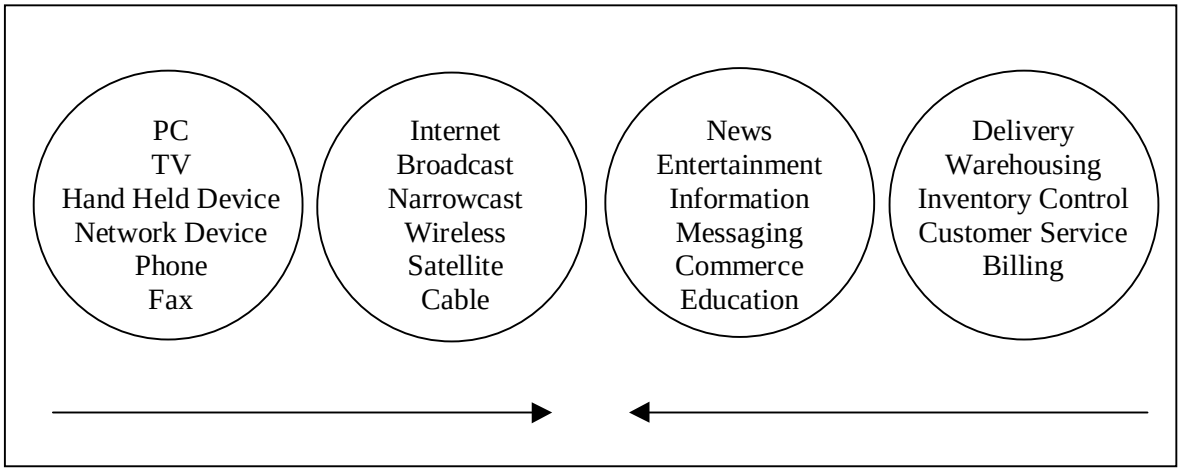
2.1. What is convergence?

Convergence is facilitated by the change from analogue to digital format. It is commonly expressed as:

- the ability of different network platforms to carry essentially similar kinds of services, or
- the coming together of consumer devices such as the telephone, television and personal computer.

The latter expression of convergence is the one most often cited. However, the phenomenon of digital convergence is broader than either definition. It covers the entire spectrum of commercial activity associated with the telecoms, media, IT and the information economy. Convergence is not restricted to the merging of devices, platforms and delivery products we know today. Beyond this it will create a range of new products specifically designed for effective and efficient single and two-way distribution of information and entertainment as illustrated in Figure 1.

Figure 1: The digital convergence phenomenon.



2.2. What is the immediate effect of convergence?

Digitisation is the process by which information or data - text, graphics, audio or video - is reduced to a single common denominator (described as a bit) which can be transmitted and received by a variety of appliances. The evolution to a digital format is creating profound differences in the way consumers use communications and information technology. For example:

- Many long-standing distinctions between telephones, televisions, computers and other consumer electronic devices no longer apply. Before digitisation, devices based on analogue technologies were often limited to performing only one function. Now computer technology allows these familiar devices to perform more than their traditional functions - people can now make telephone calls over a computer instead of a telephone.

- Digitisation lessens the relevance of geographic boundaries to define markets. Now that information can be made available easily, quickly and in multiple forms, products and services traditionally offered to a limited region can be offered to new and broad markets. For consumers, the benefits of electronic commerce create far-reaching opportunities in all countries. For producers, niche markets expanded globally have the potential to become larger and more profitable.

- Digitisation increasingly allows information (*content*) to be broadcast or delivered in many forms (*video, audio, and text*) by multiple pipelines (*terrestrial, copper wire, cable, satellite, MMDS*) to multiple consumer and business appliances (*televisions, PCs, personal digital assistants etc*.). Increasingly, consumer preference, provider ingenuity and cost, rather than technology alone, dictates the format and delivery method.

The effect of convergence is already beginning to be seen across a number of different functions in the value chain leading from the origination of content through to the consumer. Examples are:

- ***Reduced production costs:*** Production equipment, which can be made available to the mass-market, is tending to lower entry costs. Where multi-skilling is possible, convergence is providing economies of scale and scope which is also lowering on-going production process costs.

- ***Relief from capacity constraints:*** With more distribution capacity transmission costs will fall, encouraging more service providers into the market. With all broadcasters offering enhanced features (eg. interactivity)

- ***Cross-Platform Leverage:*** The reduced costs of production and transmission will encourage many new entrants into the market. In the near-term the particular types of content which currently drives mass-market demand will continue to be distributed on television, rather than the PC. The increasing competition between the broadcast networks will substantially strengthen the bargaining power of premium rights holders.

Overall, the near-term supply-side effect of convergence is considerable. However, the demand-side characteristics are unlikely to converge to the same degree in the near future because tastes, preferences and market behaviour are determined by individuals and communities, not by technology.

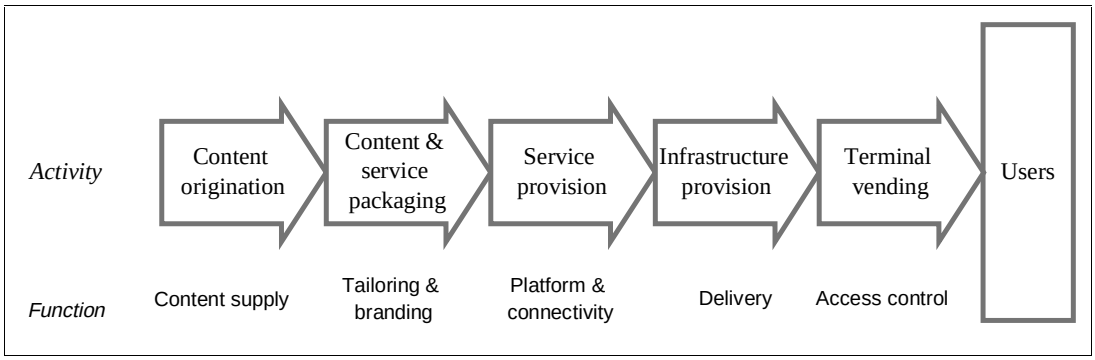
There is certain to be a spectrum of demand, for the foreseeable future, characterised at one end by the consumer, leaning back and receiving services and at the other, leaning forward, interacting with them. However, free-to-air broadcasting services are likely to continue to be an important, but diminishing, source of entertainment and information.

2.3. What does convergence mean for the media industry?

The structure of the media industry is changing from a series of vertically separate sectors (reflecting both regulation and delivery platforms), each with its own separate value chain, to a vertically integrated, but horizontally converging market, in which the barriers between the former sectors will disappear.

In 1997 the European Commission commissioned Squires Sanders Dempsy LLP and Analysis Ltd. to develop a model for the new value chain. This is set out in Figure 2.

Figure 2: The emerging value chain in the multimedia market



Infrastructure provision and, to a lesser extent, service provision are becoming the most concentrated segments of the value chain. (*e.g. MCI/Worldcom/OzEmail)*. Margins are becoming low in these areas because of the decreased cost of providing basic infrastructure and connectivity. Conversely, content provision and packaging are providing the highest margins and many firms are trying to enter these areas. Barriers to entry for content and packaging will initially be low (*eg. Amazon.com*) and very small players may co-exist with large ones.

Within this framework, electronic media operators are increasingly likely to try to move up the value chain. However, this migration may constrain the growth of the industry if incumbent operators are allowed to abuse their monopoly or oligopoly power in infrastructure provision to prevent competition in service provision or packaging. An example of this is the Australian free-to-air broadcaster's attempt to prevent new entrants to the broadcast spectrum.

The success of open networks and delivery channels such as the Internet is enabling content providers, packagers and service providers to access customers directly without any intermediaries. This means flows of money in the future multimedia industry will be fundamentally different. Once this occurs, the inadequacy of current regulations will become even more apparent.

2.4. Globalisation

Because of the ever-expanding free flow of information across the media industry Australia needs policies which encourage consumers, producers (artists, writers, software designers, film-makers and so on) as well as distributors, to participate and benefit to the maximum extent in this global economy. This is not so at the moment.

More and more media products are truly international in their scope. Cross-border cultural co-operation is not the result of regulation, but of market forces. It is the freedom to move capital, technology and talent around the world which adds value, invigorates ailing markets and creates new ones. Australia needs policies to ensure the availability of these freedoms and encourage their use. Consequently, Australian consumers as well as the production and distribution sectors would be able to participate to the maximum extent possible in this burgeoning global economy. This is not the case and if policies do not change we will find ourselves increasingly marginalised from the developing international industry.

2.5. Technological Change has created a problem

The issues facing today's broadcasting industry are not accommodated in the current regulatory framework, namely, the consequences of convergence of technologies in an increasingly globalised economy. Because no-one knows where this technology will take us the current regulatory environment, conceived to address issues of a past era, is no longer relevant or appropriate in this ever-changing context.

It addition, today's regulatory framework tries to be prescriptive, yet is unclear in many central issues: It establishes an uneven playing field (in itself, anti-competitive) and applies different regulation to the same content.

The basis of the current regulatory framework is to distinguish between different delivery platforms and delivery formats regardless of the content being the same. It also creates considerable confusion and uncertainty.

Consider the following examples where change outpaces regulation:

- The difficulties the regulations pose for a person who wants to establish a daily news service on the Internet. Is this a newspaper for the purposes of the *Broadcasting Services Act?* If so, there are cross-media restrictions to consider. Is it a newspaper for the purposes of the Government's foreign investment policy? If it is not a newspaper for these purposes, this clearly gives that Internet publisher a competitive advantage in providing the same service as traditional newspaper publishers.

- Datacasters wishing to use broadcasting spectrum for delivery of their services will be subject to regulation (at least in relation to spectrum allocation) under the *Broadcasting Services Act*, while datacasters utilising satellite technology to provide direct to home services will not be subject to that same regulation.

- The webcasting of a current radio program by streaming vision and audio through a cable (or telephone) modem on a point-to-point demand basis. The program can be watched in high quality on television; however it is not subject to ABA or TV regulation that would restrict it from the 1600-1800 children's television time zone. It is not covered by narrowcasting regulation nor is it subject to pay television regulation.

More basically, it is still not clear where the distinction lies between broadcasting and datacasting for the purposes of the legislation. Caught in the middle are potential datacasters who are trying to create business plans in a vacuum.

Additional problems for industry participants and those wishing to compete against the incumbent players are created by the fact that the industry is regulated by both media-specific regulation (such as the *Broadcasting Services Act*) and generic regulation (such as the *Trade Practices Act*). There are many regulatory barriers to entry which are sometimes unnecessarily complex to grasp and to integrate. For example, there are eight different access regimes which apply to telecommunications companies in the digital environment. This is the infrastructure which new entrant broadcasters and datacasters may need to rely on.

Realisation of the potential for the media industry afforded by convergence, digitisation and globalisation requires more capital and knowledge than exists in Australia. We need a pro-investment policy which will encourage a flow of capital skills into the Australian market. A vital source for this is global companies.

Digitisation is creating new and more efficient products and services. It is putting national and international resources at consumers' fingertips and making innumerable activities possible from the home or office. It is speeding transactions, reducing costs and opening up new sources for business by fostering new trading relationships.

These benefits are far from being fully realised in Australia and until change occurs and these problems are addressed, Australia will not benefit from the value of digital convergence. Without change, Australia will foster a consumer-poor electronic media industry that will continue to promote anti-competitive behaviour.

3. BROADCASTING POLICY OBJECTIVES
–What are they & what should they be?

3.1. General

Simply, the regulatory objectives of the *Broadcasting Services Act* are being made increasingly irrelevant by the speed of change in the communications environment. It is important to remember the regulatory environment can - and does - include a degree of self-regulation. That, combined with commercial realities, can meet any regulatory objectives still relevant and desirable today.

3.2. Social objectives

3.2.1 Diversity and plurality

Implicit in a number of the current objectives of the *Broadcasting Services Act* is the social objective of ensuring diversity and plurality of opinion. This is not brought about through restrictions on ownership. In practice it is achieved through market forces, as commercial reality requires a diversity of views needs to be presented in order to create a commercially successful product. Examples can be found in major newspapers every day.

In this age of digital convergence, the promotion of diversity of services will only be achieved by encouraging full competition and the adoption of technological advances. If the barriers that segregate industries and markets and shelter incumbents and markets from new entrants are removed, convergence will both increase the information available to all consumers and increase delivery options.

Conventional wisdom suggests that numerous, independent media outlets, competing vigorously and providing a diversity of views, foster the political and cultural health of a society. The rationale is that if the distribution function is highly concentrated then the public's access to important information or viewpoints could be restricted. The danger media concentration would pose is sometimes identified as a loss of diversity.

Yet the connection is demonstrably wrong. A highly concentrated market has a few dominant firms, accounting for most of the output. Diversity, on the other hand, refers both to the number of independent media companies, regardless of their size (source diversity), and to the variety of viewpoints expressed in the media (content diversity).

Accordingly, an unconcentrated media industry may nevertheless exhibit little content diversity - thousands of media voices each saying much the same thing and attracting similar audiences. And a concentrated media market may, nevertheless, exhibit great diversity, independent voices exhibiting every

possible political hue and cultural view, with a few capturing most of the public's attention.

There is little to suggest media in Australia is currently lacking in diversity. Newsstands overflow with the more than 380 newspapers (covering metropolitan, regional, country and suburban areas) and more than 120 ethnic newspapers published domestically as well as more than 1,500 magazines, representing many interests. In addition to the 48 commercial TV stations and two public broadcasters (ABC and SBS) three subscription TV operators offer 57 channels ranging from general interest, all-news formats, music and children's channels, to more than 950,000 viewers. Nine community TV licences have been issued, with six currently trialing services.

Radio is flourishing, with over 219 commercial stations and 126 narrowcasters operating, as well as the five ABC and two SBS national networks. In comparison there were 139 commercial radio stations in 1986. There are more than 200 community radio stations operating, including those on temporary licences. In 1986 there were 58. Cinema screens continue to expand with more than 1,500 screens across Australia. Fox Studios will open another 16 screens later this year. In 1997 around 282 films attracted an estimated 76 million movie-goers.

In the light of this, it is clear there is already considerable diversity in Australian media. Under a regulatory regime which encourages convergence and broad ownership it would be even greater.

3.2.2 Innovative programming

The promotion of high quality and innovative programming is not being achieved effectively under the *Broadcasting Services Act*. Indeed, current program content regulations have created an environment in which the major commercial networks have created a sameness of program line-ups, leaving little choice for consumers. Experimentation with new programming styles is not necessary, as without the threat of new entrant competition, incumbents can succeed by running with a tried and true format.

Investment in drama production (deemed by ABA regulation to be the most important television content) by the current broadcasters is perceived to be high. However, it is the independent production companies that raise the majority of funding. It is not uncommon for Australian commercial broadcasters to offer only a 25% licence fee together with 25% investment against a back-end return on international sales. Because of the strength of our production community the networks' real outlay for Australian drama can actually be a profit.

3.2.3 Industry self-regulation

A new self-regulatory compliance agreement should be instituted, adopting the current ABA operational and content regulations as well as the Federation of

Australian Commercial Broadcasters (FACTS) *Commercial Television Industry Code of Practice* (published in April 1999).

The current ABA regulation and the FACTS codes of practice must be reviewed to embrace a converging industry. The ABA would administer and approve the revised industry code of practice.
Broadcasters would continue to:

- meet appropriate community standards;
- addresses matters of community concern;
- are fair and accurate;
- meet the needs of Australian children;
- meet the needs of community and business groups; and
- have appropriate complaint mechanisms.

The free-to-air broadcasting industry is not the only Australian industry to have effective self-regulation. The advertising, medical, legal, accounting telecommunication, and print industries also have effective self-regulation schemes.

3.2.4 Australian control

In this age of digital convergence it is no longer practical to ensure there is effective Australian control of what were once more influential services. There is nothing to suggest foreign media proprietors would be more likely than local proprietors to influence the views being expressed in the media. The only issue relevant to the Australian aspect of our media worthy of being regulated is the protection and propagation of Australian identity and culture.

3.3. Australian identity & culture

Before addressing the maintenance of Australian identity and cultural diversity it is necessary to determine what defines it. We believe that, in broadcasting terms, Australian identity is largely defined by the broadcasting of Australian drama, music, local news and sport, current affairs, children's programmes, comedy, information and education. This identity is maintained by local Australian demand. The competitive reality is: no Australian broadcaster would survive if it did not show Australian and local news, sport, drama etc. The popularity of recent shows such as *Water Rats, Stingers* and *Blue Heelers* bears testament to this, as does any list of top rating programmes in recent years.

The nationality of the owners of a broadcaster does not affect the maintenance of local identity and cultural diversity.

The current Australian regulatory policy basically equates local drama television production with Australian identity. This is very narrow as it

ignores the effect of other local content including news and sport which is culturally significant. It also does not recognise many avenues of Australian culture which are not broadcast – newspapers, books, magazines, theatre, concerts. . .the list is endless.

3.4. Economic Aspects of Policy Objectives

3.4.1 Structure of industry

The regulation of the broadcasting industry has determined an artificial environment for incumbent broadcasters, in which there is no need for concern about the entry of new competitors, be they traditional broadcasters or users of new technology (e.g. datacasters). This is clearly demonstrated by the extent to which current regulation favours incumbent broadcasters and protects them from real competition. One example is the anti-siphoning requirements (**See Annex 1**) which protect the commercial broadcasters from uninhibited competition from subscription broadcasters.

Another example is the amendments to the *Broadcasting Services Act* embodied in the *Television Broadcasting Services (Digital Conversion) Act 1998*. Again this regulation greatly favoured incumbent commercial broadcasters – consider, by way of example only, that they are now assured of a continued oligopoly until at least 2007 and they are the only companies assured of having sufficient spectrum with which to carry out datacasting (others will have to compete to acquire that spectrum). This is in addition to their existing advantages of incumbency which include the reach of their established brands and affiliates and their relationships with advertisers.

3.4.2 Programming

Convergence will result in more types of media, which means more product will be required. As a competitive necessity each type of new media will need local content. This can only mean the production of more Australian content. Furthermore, as this will be created in a creatively richer and more competitive environment, the quality of output should be higher with greater production values.

4. CURRENT BROADCASTING REGULATION

4.1. Principles of regulation

Australia's broadcasting legislation has largely been aimed at regulating the product directed at individual households. It has been predicated on certain views of what constitute markets relevant to broadcasting and on degrees of influence of various forms of media. As far as competition is concerned, newspapers, as well as radio and television, have been singled out for attention with a focus on achieving plurality and diversity for consumers.

The *Broadcasting Services Act* explicitly contains *principles of regulation* including that regulation should be linked to the degree of influence of each form of media in shaping community views in Australia. It is not possible to measure the degree of influence different types of broadcasting services are able to exert. There are simply too many types of services, too much niche marketing of content, too many other sources of influence. The blurring effect of convergence means it is no longer practical for the regulatory environment to distinguish between different delivery platforms.

As has been alluded to, convergence is making the distinctions between various delivery platforms and delivery formats anomalous. For example, newspapers are different from television broadcasts, which in turn are different from Internet products. This separation has been the focus of the *Broadcasting Services Act*. It needs to be updated in light of the effect of convergence and digitisation. In an age of convergence, diversity in the media simply rules out any need for the broadcasting industry to be treated any differently from other industries where promoting international competition and investment are key Australian policy objectives

4.2. Ownership and control

Existing ownership restrictions are inappropriate in light of the changing environment of the broadcasting industry: They create artificial competition. They also impede the ability of the industry to reach its full potential via emerging technologies. Clearly, this restricts benefits which might otherwise flow to consumers, both in choice of content offerings and quality of offerings and, perhaps, price. The market, as regulated by generic regulation, can determine the number of players. More particularly, in relation to foreign ownership restrictions, it is important to note foreign owners are no more or less likely to exert influence over editorial policy or content than local owners.

In addition, the foreign ownership restrictions considerably limit the amount of capital and available to local content producers. The ownership restrictions impede the ability of local producers to produce content which is of exportable quality when they cannot take advantage of economies of scale. This puts

them at a competitive disadvantage to global competitors who do not face similar restrictions and who have larger markets on which to base their operations.

Global media companies make investment decisions across several markets all the time. It is no longer clear how to identify the nationality of a company in an economy now so international. Nor is it any longer possible to say a company's nationality is the important issue when considering its ability to tap into a global network to the benefit of the host country.

However, Australia should take into account that a global company is subject to Australian corporate and competition law. When subjecting global companies wishing to invest in Australia to additional hurdles, such as foreign investment regulations, consideration needs to be given to that company's existing investment in Australia. In particular the level of its local employment and training commitment and the extent to which its products reflect Australian skills and voices.

4.3. Digital conversion

The regulatory regime introduced into the *Broadcasting Services Act* by the *Television Broadcasting Services (Digital Conversion) Act 1998* is a perfect example of the pitfalls of a prescriptive regulatory regime. Already it is clear the regime will restrict competition and inhibit the full benefits of digitisation from being passed on to consumers. Instead the legislation will give incumbent broadcasters a distinct advantage over any other potential broadcasters or datacasters wishing to utilise the terrestrial broadcasting spectrum. The *Digital Conversion Act* will perpetuate barriers to entry, some of which are described below:

- *Definition barriers:* Definition of products and services into narrow categories for any regulatory purpose limits consumer choice. An example of a definition barrier can be found in the artificial segregation between broadcasting and datacasting.

- *Barriers to constrain new technologies:* Applying pre-existing regulatory thinking to digital products and services can limit the usefulness or availability to consumers of new technologies. An example of barriers to constrain new technologies can be found in the *Broadcasting Services (Digital Conversion) Act's* mandating of HDTV and the associated prohibition on multi-channelling.

  HDTV is a production, transmission and reception standard. The need to mandate it is related to the rationale behind the decision to provide each of the free-to-air broadcasters with 7 MHz of "adjacent channel" broadcasting spectrum at no cost, as a loan, for the period of simulcast. This rationale was that a full 7 MHz

spectrum allocation was needed to enable HDTV to be broadcast, thereby providing a quantum improvement in viewing experience with "cinema quality" pictures and surround sound. The free-to-air broadcasters claimed that this was essential to ensure a commercially acceptable uptake for digital television in Australia. Already they are indicating that limited local content, production equipment, reception equipment and market demand is making HDTV a questionable proposition even though excessive bandwidth has been given to them free of charge.

The mandating of HDTV is unique to Australia. Currently the only place in the world that its broadcast is seriously being contemplated is in North America. And there the regulatory situation provides flexibility. Indeed, the scope to offer new innovative data-based services that is provided by digitisation is revolutionising broadcasting in the US where television is evolving into an interactive experience.

- *The barrier of false scarcity:* Historically, scarcity of resources, such as radio spectrum, has been the linchpin of certain regulations in Australia. Scarcity has led to a complex framework of government licenses for operators and service providers. New technological developments, such as digital compression and single frequency networking, allow this scarce resource to be used more efficiently and effectively. Scarcity, therefore need not be a significant barrier to entry if the regulatory system is reformed. In the absence of such reform the market power of incumbents will increase dramatically.

Most of the uniquely Australian, anti-competitive and technology-limiting restrictions contained in the amendments of the *Broadcasting Services Act* by the *Television Broadcasting Services (Digital Conversion) Act 1998* already need to be reformed. These restrictions include the prohibition on new entrant broadcasting competition before 31 December 2006; the distinctions between broadcasting, enhanced programming and datacasting, the restriction on multi-channelling and its associated mandating of High Definition Television (HDTV).

News Limited has made submissions to the various committees considering these issues. Please see Attachments 1 - 7

4.4. International guidance

Others are already addressing the same challenges being faced by Australia. The US Government's April 1998 report *"The Emerging Digital Economy"* concludes that:
"Greater competition in telecommunications and broadcast industries should be encouraged so that high-bandwidth services are brought to the homes and offices around the world and so that the new converged market place of broadcast, telephony and the Internet operates based on laws of competition and consumer choice rather than those of government regulation."

In December 1997, the European Commission published a *Green Paper* which advanced five principles for future regulatory policy in the sectors affected by convergence. In a highly summarised form these are that:

- Regulation should be limited to what is strictly necessary to achieve clearly identified objectives;
- Future regulatory approaches should respond to the needs of users;
- Regulatory decisions should be guided by a need for a clear and predictable framework;
- Full participation should be ensured in a converged environment;
- Independent and effective regulators will be central to a converging environment.

The response from the member nations has been generally most supportive of this approach.

It is important that we remain mindful of the regulatory environments being implemented internationally so that we can ensure Australia does not devise a strategy which will see us marginalised from this rapidly developing industry. Australia needs to be able to participate fully in the global economy *and* play a leading role in it.

In this context, though, it is important to realise that Australia is not in the same position as nations like the USA and the UK. Those countries have large pools of resources including capital, experience, knowledge and skill. Australia does not have the same degree of options to a large extent because it does not have the population base to have cultivated them to a comparable level. In order to be competitive with those countries which do have the resources at their fingertips, Australia may need to adopt a different approach. This is why, for example, the fact that other nations continue to have cross-media or other ownership restrictions is not a justification for Australia to do the same.

5. GENERIC LAWS SHOULD APPLY

The media industry should be regulated only by generic laws which affect all industry in Australia, particularly, the *Foreign Acquisitions and Takeovers Act*, the *Trade Practices Act* and the *Corporations Law*.

5.1. Media specific laws and policies are anti-competitive

The current media specific regulation is, without doubt, anti-competitive favouring the incumbent industry participants, particularly the incumbent free-to-air broadcasters. The benefits of these regulations are far outweighed by the costs namely poorer quality product and narrower product and service choice. These costs will only increase as possible benefits of convergence and globalisation are inhibited by the application of current regulations.

Clearly, therefore, the media specific regulation is not justifiable and should be removed from Australia's regulatory environment

5.2. Competition policy and diversity

We have stated diversity is already present in the Australian media industry and that this can only increase with the effect of convergence and digitisation. However, this does not dispose of the question of whether the media market is concentrated - that is, whether a few companies dominate the market.

In their competition for the public's attention, some media products are inevitably more successful than others. Moreover, it is common, here as well as abroad, for some corporations to have multiple media holdings. Other companies choose to specialise in a particular media segment, whether it be newspapers, television, radio, or one of the emerging "new media" forms.

Because media companies often have multiple holdings and some media products are far more popular than others, the great diversity characterising the media does not rule out the possibility of some market concentration. Moreover the availability of a broad range of media products, as characterised by subject matter and viewpoint, does not guarantee each will obtain a significant audience. If some compete more successfully than others for the public's attention, then, despite diversity, some concentration may occur.

However, concentration co-existing with media diversity would not necessarily constitute a problem, let alone create a problem that could be solved by regulatory intervention. It is one thing if media concentration is the consequence of restrictions preventing the entry of new media players, and quite another if it is the outcome of consumer choice in a free and open market. But even when concentration is the outcome of some companies'

superior ability to satisfy public tastes, a concern is sometimes expressed that those companies might wield excessive influence.

Many media companies are vertically integrated producing much of the material they disseminate. In this regard, broadcasters generally exhibit a mix of internally produced programming and material produced by others. The dual role of operating as distributors as well as producers raises the question as to which activity should be used in gauging the influence of media enterprises.

As most concerns expressed about media influence relate to the distribution function, it would seem more appropriate to gauge concentration at the distributor rather than the producer level. Moreover, the structure of the industry is such that, if there is a concentration problem, it is far less likely to occur in the upstream stage of creating content than at the distribution stage, where economies of scale and scope may encourage the formulation of large enterprises. Accordingly, we believe the gauging of concentration at the distribution level is more relevant than at the production stage.

The irony is that the anti-competitive restrictions of the Broadcasting *Services Act* have encouraged a situation where distribution stage concentration is more likely to occur than if a free market were to prevail, where the extent of any concentration would be limited by competition.

5.3. Generic regulation will achieve the objectives

5.3.1 Economic efficiency

Economic inefficiencies are a basic characteristic of any artificial market. If the media industry is opened to competition, without media specific regulation to shackle its growth and development, a thriving efficient industry can develop. The market will determine the structure of the industry and who are the successful participants and which are the most successful products.

5.3.2 Local content

Localisation is one of the most important issues in popular media. The Australian television local content regulations are complex but well regarded internationally. These ABA administered standards are an adequate and appropriate base to move over to industry self regulation, provided they are revised to embrace convergence and new industries soon to enter the broadcast services band.

5.3.3 Diversity

Diversity of opinions is a commercial necessity to produce a packaged product of content which has respectability in the market and which has sufficient consumer appeal to achieve critical mass in its audience market share to support a commercial venture.

Diversity of sources, that is, diversity of product, is assured by the impact of new technologies, provided convergence is permitted to run its course unfettered. One small example is the impact of multi-channeling on the number of different products which would be available.

Diversity would be further protected by the implementation of competition laws.

5.3.4 Quality of content

Quality of content will improve for a number of reasons, not least of which is that there would be more capital available for local content production. The media industry as a whole would be more robust and better able to support a larger, more thriving content production industry. In addition, consumers become more selective as there are more options available to them and the products which they chose will be the more successful competitors.

5.3.5 Protection of children

It would be difficult to create a product which is commercially viable in Australia which did not comply with Australian morals. Regardless, this is an issue easily and appropriately dealt with under industry self-regulation.

6. SUMMARY

The regulatory framework, while it may have had merit in a bygone era is now anachronistic and no longer serves a useful purpose or public benefit. The intended benefits would be abundantly provided by a deregulated market.

Australia is being held back from achieving its true potential. It must compete to survive and should no longer have to suffer the shackles and cost of media-specific regulation. The regulatory environment should consist of generic regulation such as is contained in the *Trade Practices Act* and the *Foreign Acquisitions and Takeovers Act*. Those laws are designed to foster Australian industries and, only in specific cases, analyse and respond flexibly to the dangers of increased concentration balanced against the efficiency gains and public benefit which might be achieved.

It is time Australia accepted the considerations facing this nation are different from those of other nations, such as the US and the UK; they are richer in capital, skills and knowledge and have larger populations which can support economies of scale. In order to compete in a global economy we need to take different steps to foster our industry and this can only be achieved in a freer market.

The application of these generic laws will allow the market to determine the appropriate industry structure, allow Australia to source capital and knowledge from wherever it requires, allow the industry to move with the rapid and numerous technological changes which are having direct impact on it and enhance and protect Australian culture.

News Limited recognises it is proposing a radically different regulatory regime. Change to media is inevitable, therefore Australia *must* be proactive, not reactive. The implementation of this proposal requires careful planning and a staged introduction.

It is no longer a question of *should* Australia change media regulation but a matter of *how.*

Annex 1

THE ANTI-SIPHONING SCHEME

The subsidiary of News Limited, FOX Sports, produces two subscription Sports channels for the FOXTEL and Austar Pay TV platforms.

1. INTRODUCTION

News Limited suggests the anti-siphoning scheme established under the Broadcasting Services Act is anti-competitive, and should be abolished, or fundamentally reformed. We believe the rules do not meet the test outlined in the Competition Principles Agreement because the cost of the anti-competitive effects of the scheme outweigh any alleged benefits to the community. These benefits could be achieved by alternative methods of regulation, which would improve competition and efficiency in broadcasting services.

2. THE ANTI-SIPHONING LIST

2.1 The anti-siphoning list was conceived because of fears there would be a migration of major television events from free-to-air (FTA) to pay television. Irrespective of the merits of this argument, due to the way the rules were drawn up, the scheme goes further and prevents the acquisition and exercise of both free-to-air TV rights and pay TV rights, not merely the former.

2.2 This list was originally drawn up in 1994 when pay TV had not yet started in Australia. The list was put in place despite misgivings by many sporting organisations and the then Trade Practices Commission which was concerned about its possible anti-competitive effects. These concerns were highlighted by the Australian Broadcasting Authority in its 1994 report to the Minister for Communications and the Arts before the list was finalised. (For details of the Trade Practices Commission and sporting bodies concerns, see the ABA report *Pay TV Siphoning Investigation* Report to the Minister for Communications and the Arts, 13 May 1994).

2.3 The list has been in effect since July, 1994 and despite much technological and regulatory change since then, is set to continue until December 31,2004.

2.4 The full anti-siphoning list is included as attachment 1 to this submission for the commission's reference.

3. Problems with the Anti-siphoning Scheme and its anti-competitive effects

3.1 The first major flaw of the scheme is its basic assumption that all listed events would be shown on free-to-air television due to their wide appeal. This has proved incorrect. Many events are not shown at all or are shown in a very abridged form.

Logically, for siphoning to occur, a pay TV operator must acquire, or prevent the acquisition of, the free-to-air rights to a particular event which has previously been shown on FTA television, ie the event is siphoned from FTA television to pay television. The fact that not all events are shown on FTA television illustrates that the scheme is inefficient and should be amended.

3.2 The second, related, flaw: the list is too broad. It encompasses 13 separate sports, 31 different categories of sporting events and more than 2,400 separate events, each of which is "protected". The list therefore includes vast amounts of material never shown by the free-to-air networks. For example:

- each one-day cricket match played by the Australian national team is on the list, including those played on tour matches against provincial or invitational sides.
- every NRL rugby league match is on the list although the free-to-air broadcaster, the Nine Network, only elects to show two out of eight matches in each round.
- each match held during the Australian Open Tennis Championships is caught by the list, including all men's and women's doubles, mixed doubles and senior and junior matches! Obviously, not all matches are shown on FTA television.

As currently formulated, if FTA broadcasters did broadcast each separate event on the list, the total time spent on these telecast would amount to more than 5,000 hours. Each FTA broadcaster only has a total of 8,760 hours of total programming available each year and must split this programming between drama, news, current affairs, children's programming and general entertainment - as well as sport.

FTA broadcasters admit they show only a small amount of material on the list. The CEO of the Ten Network, John McAlpine, representing the Federation of Australian Commercial Television Stations, in a recent submission to the Environment Communications Information Technology and the Arts Legislation Committee stated that:

> *"in 1996 to 1998 something like 700-odd hours of live sporting events went to air [by the commercial broadcasters], 86% of that sport went to air live".*

Research carried out by the subscription TV industry confirms the lack of programming time allocated to listed events by FTA broadcasters. Its 1997 analysis (which was generous to FTA broadcasters because it was based on the

number of hours available to broadcast an event, not on the total events covered by the list) showed less than 40% of the total amount of listed material available for telecast was being broadcast live by FTA broadcasters (A summary of this analysis is included as Attachment 2). If the analysis had been based on the percentage of total number of listed events televised (eg each match at Wimbledon), the percentage of listed events being broadcast live by FTA broadcasters would have dropped to less than 25%.

3.3 The third problem: the scheme skews the competitive bargaining position of broadcasters in favour of entrenched FTA broadcasters. This is because FTA broadcasters effectively have a "first-in" advantage in relation to the acquisition of rights, with no corresponding requirement to broadcast. Unless and until a FTA broadcaster has acquired the free-to-air rights, there can be no exploitation of the rights on pay TV. This means, in practical terms, pay TV is placed in a position of dependency with regard to free-to-air television.

This "first-in" advantage creates a statutory competitive advantage for FTA broadcasters because it allows them to delay their own final acquisition and programming decisions which in turn prevents the acquisition of the pay TV rights to a listed event and the subsequent marketing of those rights by subscription TV operators. This has substantial competitive ramifications because the pay TV industry relies heavily on sport - both as a subscription driver and to maintain its relationship with subscribers.

3.4 The final problem: the scheme restricts FTA television and pay TV competition because it prevents the acquisition of both the free-to-air TV rights and the pay TV rights to an event, not merely the free-to-air rights.

The inability to freely acquire pay TV rights to listed events independently of free-to-air rights means the free-to-air broadcasters can significantly affect the marketing, strategic and programming plans of pay TV channels such as FOX Sports. This restriction also operates as an unreasonable fetter on sporting organisations ability to sell TV rights to events they control because it means they must do so within a regulated and structured framework.

4. Reform Proposals

News Limited believes the current system is not sustainable on the policy grounds of ensuring events are available for free-to-air television both because the costs of this regulation outweigh any supposed benefits and because alternative methods of regulation are available to achieve similar ends.

4.1 News Limited believes there is no reason for the current anti-siphoning list to be maintained. Pay TV is about choice and consumers should be free to choose the form of television entertainment they watch without legislative impediments hindering one sector at the expense of others.

In the absence of a positive obligation on FTA broadcasters to broadcast an event, there should be no restrictions on who can acquire the rights to an event or to broadcast it on television. The public policy grounds underpinning siphoning can only truly work if each of the events **are** and **must** be shown on terrestrial television.

Ultimately, if the list were abolished, the question of what rights to licence and to whom, would be left to each sport's governing body, as the custodian of that sport. Each organisation is the best judge of what rights to sell and for ensuring a balanced "mix" of free-to-air TV and subscription TV is achieved. In our view, they should be free to determine this outcome, without a statutory scheme which inhibits their ability to maximise television coverage and which prevents large amounts of sporting material from appearing on television at all.

4.2 If a list is to be maintained, the condition imposed on subscription television licensees under the Act restricting acquisition of rights should be confined to a restriction on acquiring free-to-air TV rights to listed events. This would ensure free-to-air networks are able to have the first opportunity to acquire free-to-air rights but would allow pay television operators to freely acquire pay television rights (a "dual rights" approach").

The commercial FTA networks have argued this "dual rights" concept would reduce the attractiveness of sporting events to them and would lead to these events disappearing from free-to-air television. With respect, this view is nonsense. Simultaneous broadcasts on pay television and free-to-air television of listed events are already occurring, eg simultaneous broadcasts of the FA Cup Final, World Cup Cricket, World Cup Rugby, and various rugby league matches including the NRL grand final.

There is no evidence to support FTA broadcasters' contention that they are refraining from buying rights and telecasting events in circumstances where these events are available for simultaneous transmission by both free-to-air and pay television.

4.3 As an extension of this previous alternative, News Limited proposes that if an anti-siphoning list is to be maintained, one way to cure any potential migration of events from FTA television is to balance the interests of each broadcaster by preventing FTA broadcasters from acquiring subscription television rights to listed events and preventing pay TV operators from acquiring free-to-air television rights to listed events. This splitting of rights regime would ensure each strand of television could acquire, that form of television rights applicable to it without interfering with the exercise or acquisition of rights applicable to the other strand.

This would maintain the community benefit sought to be achieved under the current scheme, but would require an extra layer of regulation under the Act, than that which is currently imposed.

4.4 Irrespective of which option is pursued, if the list is maintained, it needs to be shortened. At its most extreme, it should include only events shown live and in full by the FTA broadcasters. At the other end of the scale, it should only include events of truly national and cultural significance.

In this regard, we note the UK has a limited list of events covered by "anti-siphoning" rules and there is no anti-siphoning list in the US. Both markets have vigorous and vibrant broadcasting sectors, terrestrial coverage of all major sporting events, and a high degree of competition amongst industry participants.

5. Summary and Conclusion

5.1 The anti-siphoning scheme operating in Australia is anti-competitive because it imposes a regulatory barrier on one sector of the broadcasting industry (pay TV) not imposed on any other sector.

5.2. In News Limited's view, the anti-siphoning scheme should be abolished because it is a clear restriction on competition – first, as between the pay TV industry and free-to-air television industry and secondly, because it affects the ability of sporting organisations to freely determine how television rights to events they control should be licensed.

5.3. Notwithstanding our clear preference that the anti-siphoning scheme be abolished, if the Commission takes the view the scheme should be maintained in order to ensure availability of rights for free-to-air television, then the current scheme should be amended by reducing the breadth of the current list, and by amending the law so that:

- pay TV licensees are only prevented from acquiring free-to-air rights to listed events, thereby allowing them to freely acquire and exploit pay TV rights to these events; or

- FTA broadcasters are prevented from acquiring subscription television rights to listed events and pay TV operators are prevented from acquiring free-to-air television rights to listed events.

ATTACHMENT 1

Anti-Siphoning List

1. The following horse racing events conducted during the period commencing at the commencement of this notice, and ending at the end of 31 December 2004:

   1.1 each running of the Melbourne Cup organised by the Victoria Racing Club.

2. The following events conducted by or for the Australian Football League during the period commencing at the commencement of this notice and ending at the end of 31 December 2004:

   2.1 each match in the Australian Football League Premiership competition;

   2.2 each match in the Finals Series of the Australian Football League Premiership competition;

   2.3 each Australian Football League State of Origin match.

3. The following events conducted by or for the New South Wales or the Australian Rugby League (as the case may be) during the period commencing at the commencement of this notice and ending at the end of 31 December 2004:

   3.1 each match in the New South Wales Rugby League Premiership (Winfield Cup)competition;

   3.2 each match in the New South Wales Rugby League Finals Series:

   3.3 each match in the Australian Rugby League National Premiership Finals Series;

   3.5 each match in the New South Wales Rugby League State of Origin Series;

   3.6 each match in the Australian Rugby League State of Origin Series;

   3.7 each international rugby league 'test" match involving the senior Australian representative team selected by the New South Wales or Australian Rugby League (as the case may be), whether played in Australia or overseas.

3A. The following events conducted in the period from the beginning of 1 January 1996 to the end of 31 December 2004 by or for Super League Pty Ltd, Star League Pty Ltd or a body corporate that, under section 50 of the corporations Law, is related to either of those bodies:

   3A.1 each match, whether played in Australia or overseas, in the competition that is promoted as the Australasian Super League, involving the senior team of each participant in that competition;

   3A.2 each match, whether played in Australia or overseas, in the Finals Series of the Australasian Super League, involving the senior team of each participant in that competition;

   3A.3 each match, whether played in Australia or overseas, in the competition that is promoted as the Super League Tri-Series Tournament, involving the senior team of each participant in that competition;

   3A.4 each match, whether played in Australia or overseas, in the competition that is promoted as the World Club Championship;

   3A.5 each match, whether played in Australia or overseas, in the competition that is promoted as the Super League World Cup;

   3A.6 any other match, whether played in Australia or overseas, involving the senior Australian representative team selected by a body corporate that is specified, or to which reference is otherwise made, in this clause.

3B. Any event, conducted in the period from the commencement of this item to the end of 31 December 2004, that is a match in a competition;

   a) between the senior teams of participants in the competition; and

b) organised by or for a body mentioned in item 3 or 3A; and

c) intended to supplement or replace the competition mentioned in item 3 or 3A (whether or not the new competition uses the name of the other competition).

3C. Any event, conducted in the period from the commencement of this item to the end of 31 December 2004, that is a match in a competition:

a) between the senior teams of participants in the competition; and

b) playing rugby league football (whether described as rugby league, super league or by another name); and

c) whose teams:

i) represent, or are associated with, a country, State, Territory, city, town or suburb or a region of a country, State, Territory, city, town or suburb; and

ii) are not all located in one State or Territory; and

d) that does not require the members of its senior teams to be:

i) school students; or

ii) below an age of 21 or less; or

iii) above an age of 30 or more.

4. The following events conduced by or for the Australian Rugby Union during the period commencing at the commencement of this notice and ending at the end of 31 December 2004:

4.1 each international rugby union "test" match involving the senior Australian representative team selected by the Australian Rugby Union, whether played in Australia or overseas;

4.2 each match in the Rugby World Cup Tournament;

4.3 each match in the Hong Kong Sevens Tournament, other than a match of that kind played in 1998 or 1999.

5. The following cricket events conducted during the period commencing at the commencement of this notice and ending at the end of 31 December 2004:

5.1 each "test" cricket match involving the senior Australian representative team selected by the Australian Cricket Board, whether played in Australia or overseas, other than a match of that kind played in India in March 1998;

5.2 each one day cricket match (including World Series Cricket matches) involving the senior Australian representative team selected by the Australian Cricket Board, whether played in Australia or overseas, other than a match of that kind played in India in April 1998 and a match of that kind played in the United Arab Emirates in April 1998;

5.3 each World Cup one day cricket match.

6. The following soccer events conducted during the period commencing at the commencement of this notice and ending at the end of 31 December 2004:

6.1 each finals match in the Ericsson Cup competition organised by the Australian Soccer League;

6.2 the English Football Association Cup Final;

6.3 each match in the federation of International Football Associations World Cup Tournament.

7. The following tennis events conducted during the period commencing at the commencement of this notice and ending at the end of 31 December 2004:

7.1 each match in the Australian Open tennis tournament;

7.2 each match in Wimbledon (the Lawn Tennis Championships) tournament;

7.3 each match in the French Open tennis tournament;

7.4 each match in the United States Open tennis tournament;

7.5 each match in the Australian Men's Hardcourt Championships tennis tournament held in Adelaide;

7.6 each match in the Australian Women's Hardcourt Championships tennis tournament held in Brisbane;

7.7 each match in The Peters International tennis tournament;

7.8 each match in each tie in the Davis Cup tennis tournament when an Australian representative team is involved.

8. The following netball events conducted during the period commencing at the commencement of this notice and ending at the end of 31 December 2004:

8.1 each international netball match involving the senior Australian representative team selected by the All Australia Netball Association, whether played in Australia or overseas.

9. The following basketball events conducted during the period commencing at the commencement of this notice and ending at the end of 31 December 2004:

9.1 each match in the Australian National Basketball League playoffs.

10. The following golf events conducted during the period commencing at the commencement of this notice and ending at the end of 31 December 2004:

10.1 each round of the Australian Masters tournament;

10.2 each round of the Australian Open tournament;

10.3 each round of the United States Masters tournament;

10.4 each round of the united States Open tournament;

10.5 each round of the United States Professional Golf Association Championship tournament;

10.6 each round of the British Open tournament.

11. The following motor sports events conducted during the period commencing at the commencement of this notice and ending at the end of 31 December 2004:

11.1 each race in the Federation Internationale de l'Automobile Formula 1 World Championship (Grand Prix);

11.2 each race in the International Federation of Motor cycling World 500cc Motorcycle Championship;

11.3 each race in the Australian Touring Car Championship;

11.4 each Bathurst 1000 race (currently known as the 1994 Tooheys 1000);

11.5 each race in the Australian IndyCar Grand Prix.

ATTACHMENT 2

FTA SUMMARY

1996 COVERAGE (EXCEPT WHERE INDICATED)

Antisiphoning Event	FTA Broadcaster	Total Hrs Avail for Live Broadcast (as caught by list)	Live Coverage by FTA	Live Coverage as % of Avail Hrs	Delayed or Highlight Coverage by FTA	Total Hrs Broadcast by FTA	Note No.
Melbourne Cup	TEN10	0.1	0.1	100.00%	6.9	7.0	1
AFL Premiership Comp	ATN7	528.0	131.9	24.98%	35.6	167.5	2
AFL Premiership Finals	ATN7	27.0	19.5	72.22%	6.5	26.0	3
AFL State of Origin	ATN7	3.0	3.0	100.00%	0.0	3.0	4
NSW RL - Optus Cup	TCN9	330.0	68.0	20.61%	70.3	138.3	5
NSW Rugby League Finals	TCN9	21.2	6.2	29.25%	15.0	21.2	6
ARL State of Origin	TCN9	8.0	8.0	100.00%	0.0	8.0	7
Int'l Rugby League "Test"	TCN9	4.3	0.0	0.00%	2.3	2.3	8
Australasian Super League	TCN9/ABC	180	0.0	0.00%	72.0	72.0	9
Super League Finals	TCN9	12	2	16.67%	10.0	12.0	10
Super League Tri-Series	TCN9	8	2	25.00%	6.0	8.0	11
Super League World Cup Cham.	TCN9	136	2	1.47%	20.0	22.0	12
Super League World Cup	TCN9	N/A	N/A	0.00%	N/A	0.0	13
Super League Test Matches	TCN9	10	10	100.00%	0.0	10.0	14
Int'l Rugby Union "Test"	ATN7	24	24	100.00%	0.0	24.0	15
Rugby World Cup Tourn. '95	TEN10	64	62.4	97.50%	33.7	96.1	16
Rugby Union HK Sevens	TCN9	20.0	0.0	0.00%	0.0	0.0	17
Test Cricket	TCN9	146.7	87.0	59.30%	13.0	100.0	18
One Day Cricket	TCN9	195.0	71.0	36.41%	13.0	84.0	19
World Cup One Day Cricket	TCN9	281.3	97.1	34.51%	22.0	119.1	20
Ericsson Cup	SBS	18.0	2.0	11.11%	3.5	5.5	21
FA Cup	SBS	2.0	2.0	100.00%	1.0	3.0	22
World Cup Soccer '94	SBS	104.0	50.0	48.08%	52.0	102.0	23

1996 COVERAGE (EXCEPT WHERE INDICATED)

Antisiphoning Event	FTA Broadcaster	Total Hrs Avail for Live Broadcast (as caught by list)	Live Coverage by FTA	Live Coverage as % of Avail Hrs	Delayed or Highlight Coverage By FTA	Total Hrs Broadcast by FTA	Note No.
Australian Open Tennis	ATN7	140.00	131.0	93.57%	0.0	131.0	24
Wimbledon	TCN9	140.00	72.3	51.61%	11.0	83.3	25
NSW Open	ATN7	70.00	44.0	62.86%	0.0	44.0	26
French Open	TCN9	140.00	18.7	13.33%	0.0	18.7	27
US Open	TCN9	140.00	81.3	58.04%	0.0	81.3	28
Aust Men's Hardcourt Tennis	SBS	43.0	17.0	39.53%	0.0	17.0	29
Aust Women's Hardcourt Tennis		0.0	0.0	0.00%	0.0	0.0	30
Davis Cup - Australia	ATN7	30.0	0.0	0.00%	0.0	0.0	31
Netball - Australia Matches	ABN2	12.3	7.8	63.01%	0.0	7.8	32
NBL Finals	TEN10	42.0	6.0	14.29%	0.0	6.0	33
Australian Golf Masters	ATN7	32.0	20.0	62.5%	0.0	20.0	34
Australian Open	TCN9	32.0	20.0	62.5%	0.0	20.0	35
US Masters	TCN9	32.0	11.8	36.97%	0.0	11.8	36
US Open	TCN9	32.0	16.0	50.00%	0.0	16.0	37
US PGA	TCN9	32.0	18.6	58.13%	0.0	18.6	38
British Open	TCN9	32.0	21.5	67.19%	1.10	22.6	39
Formula One Grand Prix	TCN9	36.0	21.0	58.33%	17.75	38.8	40
World 500cc	TCN9	30.0	2.5	8.33%	20.75	23.3	41
Australian Touring Car	ATN7	20.0	15.0	75.00%	0.00	15.0	42
Bathurst 1000	ATN7	7.0	7.0	100.00%	5.00	12.0	43
Indycar Grand Prix	TEN10	2.0	2.0	100.00%	4.00	6.0	44
		3166.9	1181.5	37.31%	442.4	1623.9	

NEWS LIMITED

Incorporated In South Australia
ACN 007 871 178

ATTACHMENTS

TO THE SUBMISSION TO THE PRODUCTIVITY COMMISSION INQUIRY INTO AUSTRALIA'S BROADCASTING LEGISLATION

May, 1999

OTHER REVIEW SUBMISSIONS

There are currently a number of Australian planning activities and reviews on topics that are covered in our submission. Those to which News has made a submission, either on its own part or as a member of Digital Convergence Australia, are:

- Department of Communications, Information Technology and the Arts (DOCITA) Review into the Scope of Datacasting (Attachment 1);
- DOCITA Review into Enhanced Programming (Attachment 2);
- DOCITA Review into Digital Television Format Standards (High Definition Television) (Attachment 3);
- DOCITA Review into Multi-channelling by the National Broadcasters (Attachment 4);
- ABA Consultative Group on Digital Channel Planning (Attachment 5);
- Standards Australia Group on Digital Television – Terrestrial Broadcasting Transmission Standards (Attachment 6);
- Standards Australia Group on Digital Television – Terrestrial Broadcasting Receiver Standards (Attachment 7)

DOCITA is also required to hold a review into the convergence of broadcasting and non-broadcasting technologies. When this is called we will be making a submission and a copy of this will be provided to the Commission.

Attachment 1

REVIEW INTO THE SCOPE

OF

DATACASTING SERVICES

News Limited **December 1998**

INDEX

OVERVIEW

Digital datacasting is an emerging service that must be viewed in the wider context of the information society. In accordance with Parliament's wishes its regulation should be approached from the perspective of how it can be fostered. It should not be constrained and limited by the historic perspective of the *Broadcasting Services Act*. To do so would be to attempt to define the future in terms of the past.

Only time will tell the nature of what will constitute a successful datacasting service, the likely demand for such services or the extent that these may involve dynamic integration with traditional television services. However what is clear is that it would be a folly for Australia to adopt a unique and predeterminist approach to what will be allowed to constitute datacasting.

Such an approach would stultify innovation and limit flexibility. It would ignore the reality that there is no intrinsic technological difference between datacasting and broadcasting. It would also potentially open Australia to the ridicule of denying its citizens access to new technologies that were proving successful in the evolving global information society.

Given that the *Digital Conversion Act* currently requires a distinction between datacasting and broadcasting, it is proposed that the distinction be simply based on whether it is the bit stream originator or the customer who has control over the timing of participating in the multimedia experience at the reception device. This provides a clear distinction as it recognises the essential experiential difference between datacasting and broadcasting. Moreover it meets the objective of providing the flexibility to encourage innovation and international best-practice service compatibility.

If circumstances arise which require clarification because a specific datacasting service is challenged as impinging on the more narrowly defined broadcasting services, then it is proposed that an ex post facto review would be undertaken. The purpose of this review would be to determine why it was not in the public interest to provide the required clarification by creating a further specific exception to the definition of broadcasting services in the *Broadcasting Services Act*.

This proposal would place the fewest possible burdens on the market. Moreover it should not be of concern to the free-to-air broadcasters, as they would be able to use some of their spectrum for datacasting by paying the appropriate charge, provided they met their HDTV and other legislative obligations. However if experience demonstrates that additional regulation were required, this could then be formulated against the background of a known situation and at a time when datacasting had developed into a more mature service.

REVIEW INTO THE SCOPE OF DATACASTING SERVICES

INTRODUCTION – Consistency of Approach

News Limited welcomes the opportunity to make a submission to this review. It is part of a review process called for under Schedule 4 of the *Broadcasting Services Act 1992* into, among other things, *"whether any amendments of the laws of the Commonwealth should be made to deal with the scope of services that are categorised as datacasting services"*.

At the outset we reiterate our consistently enunciated public view that regulatory intervention in the industry is counter productive to its efficient growth, to encouraging competition and to the circulation of the widest possible spread of information and opinions through the community.

This was stated clearly to the House of Representatives Select Committee on the Print Media in 1991 and in our November 1996 response to the Government's Issues Paper on Cross-Media Ownership. It was restated in our submission to the May 1998 Senate inquiry into the Television Services Bill (Digital Conversion) Bill 1998 and the Datacasting Charge (Imposition) Bill 1998.

BACKGROUND – Datacasting in the Wider Context of the Information Society

The dawn of the 21st century will be marked by the digitally facilitated technological convergence of hitherto separate pieces of broadcasting, communications and information infrastructure. We believe that this holds the promise of dramatic change in the way people use technology to accomplish commercial, educational, social, governmental and personal goals. However we are concerned that the full benefits of this era will not be realised in Australia until action is taken to address the many areas of industry policy and regulation that digital convergence is fast making obsolete.

A separate submission, outlining the policy issues and arguments that support this belief insofar as they relate to Australia's introduction of digital terrestrial television broadcasting, will be made to the Statutory Convergence Review that is to take place, at a later date, as part of this process. All that we will say at this time is that the policy perspective that will be advanced in that review is largely consistent with the Government's approach to the information society and the reform agenda adopted by the Government in other industries, including telecommunications. Regrettably it is at odds with much of the thrust of the digital broadcasting policy contained in the legislation that is relevant to the wider topic.

Having said this, we accept that this review has sought comment on the scope of datacasting services and is not primarily a forum to debate the broader policy issues incumbent in Australia's digital broadcasting policy. Accordingly, the remainder of this submission focuses on the preferred approach to classifying datacasting services in the *Television Broadcasting Services (Digital Conversion) Act 1998* ("the Digital

Conversion Act") and the five specific topics on which comments were sought in the issues paper that canvassed matters for consideration in this review.

CLASSIFYING DATACASTING SERVICES – Providing Scope for Innovation

The *Digital Conversion Act* defines datacasting in three parameters. Namely that it:

- is a service other than a broadcasting service;
- delivers information (whether in the form of data, text, speech, images, or on any other form) to persons having equipment appropriate to receiving that information;
- uses the broadcasting services bands to deliver the service.

This means that any services, which are not defined as broadcasting services, are datacasting services if they are delivered using the broadcasting services bands.

From the customer's perspective broadcasting is a passive activity with interactivity limited to the changing of channels or stations. In formal terms "broadcasting services" are defined in the *Broadcasting Services Act 1992* as services that "*deliver television programs to persons having equipment appropriate to receiving that service, whether the delivery uses the radiofrequency spectrum, cable, optical fibre, satellite or any other means or a combination of those means.*" This Act specifically excludes from its definition services that:

- provide no more than data, or no more than text (with or without associated images); or
- make programs available on demand on a point-to-point basis, including dial up services; or
- are of a class of service that the Minister determines, by notice in the Gazette, not to fall within this definition.

In this respect "programs" are defined to be either "*matter the primary purpose of which is to entertain, to educate or to inform an audience*" or advertising or sponsorship matter.

Any reading of the parliamentary debate that preceded the passage of the Digital Conversion Act leads to the conclusion that the intent was to define datacasting services as broadly as possible, viz as services that can be "*in the form of data, text, speech, images, or on any other form*". To the extent that this encompasses services that might be confined by the specified exceptions to the definition of broadcasting services, we believe that it was intended that the Minister use his discretionary power to further define services which fall outside of the definition of broadcasting.

Indeed the issues paper that canvassed comments for consideration in this review states that "*It is reasonable to infer from the provisions of the Digital Conversion Act that the Parliament wishes to encourage the development of digital datacasting services. Therefore, the general issue of regulation of datacasting services should be approached from the perspective of how can such services be fostered, within*

appropriate regulatory boundaries, rather than how can such services be constrained and limited."

Against this background we believe that the Government should not take a predeterminist approach to defining, in advance, what constitutes a datacasting service. Rather, datacasting service providers should be free to experiment with the introduction of new and innovative services. This would be in the knowledge that, if such services are challenged as impinging on the more narrowly defined broadcasting services, than an ex post facto review would be undertaken to determine why it is not in the public interest for the Minister to create a further exception to the definition of broadcasting services.

EMERGING DATACASTING SERVICES – Only Time Will Tell

Comments have been sought on ***"****the kinds of technologies which are emerging, both nationally and internationally, for the delivery of datacasting services using the broadcasting services bands, the kinds of services being developed, and the likely demand from business and consumers.****"***

Although it is early days, there are already a number of technologies emerging for the delivery of datacasting services. These include NDC's Data Broadcasting Network (DBN™), Microsoft's WebTV™, Network Computer Inc.'s Enhanced TV™ and the Advanced Television Enhancement Forum's (ATVEF) Hypertext Markup Language (HTML) based television protocols. To a greater or lesser extent all of these datacasting service platform products offer a television-based interactive service somewhat equivalent to that available through an Internet service provider.

At this time it is simply not possible to predict either the nature of what will constitute a successful datacasting service, the likely demand for such services, or the extent that these may involve dynamic integration with traditional television services. However what is becoming increasingly clear is that it would be a folly for Australia to adopt a unique and predeterminist approach to what will be allowed to constitute datacasting.

ISSUES – Bit Streams Don't Discriminate Between Broadcasting and Datacasting

Comments have been sought on *"the differences between datacasting and broadcasting, and on the types of boundary issues [involved]"*.

There is no intrinsic technological difference between datacasting and broadcasting. Indeed it could be argued that digital television and radio broadcasting are no more than artificially defined subsets of datacasting. The reason for Australia attempting to distinguish between broadcasting and datacasting lies in the decisions to:

- protect the metropolitan free-to-air broadcasters from new entrant competition until 31 December 2006; and to

- allow others to access the broadcast services band to provide services that are not currently available on television.

We believe that these decisions are flawed: The first flies in the face of national competition policy. The second is an attempt to mitigate the first by endeavouring to ensure that the free-to-air broadcasters do not automatically become the gatekeepers to the convergence device that may become the people's pathway to the information society of the 21st Century. If the broadcasting spectrum were managed with efficiency as a key criteria (like the rest of the spectrum) and it were contestable with access based on both economic and competitive criteria, then there would be no need to create any artificial, limiting and potentially irrational distinction between broadcasting and datacasting.

However, given that the *Digital Conversion Act* currently requires such a distinction, we would see it as being based on the experiential difference between broadcasting and datacasting: namely on who has control over the timing of viewing. The time of viewing of broadcasting services is determined by the broadcaster adhering to a published schedule of programming. However the nature of datacasting is such that it is the user of the service that determines the time of participation in the multimedia experience.

In terms of the examples raised in the issues paper, this would mean that interactive Internet-type services are datacasting services, as are video-on-demand type services. This should not be of any concern to the free-to-air broadcasters as they are able to use their spectrum for datacasting by paying the appropriate charge, provided they meet their HDTV and other legislative obligations.

OPTIONS FOR DATACASTING REGULATION – Flexibility is the Key

Recognising that, as it stands, the *Digital Conversion Act* requires that some practical way of distinguishing datacasting and broadcasting be determined, views have been sought on:

- *"whether the definition of datacasting services in the Digital Conversion Act is appropriate, and if not, how it might be modified;*

- *the three options [outlined in the issues paper]and whether they provide adequate ways of determining the scope of datacasting services, either singly or in some combination;*

- *alternative options for distinguishing between datacasting and broadcasting services."*

If the distinction between broadcasting and datacasting is based, as suggested above, on who has control over the timing of participating in the multimedia experience, then the definition of datacasting services in the Digital Conversion Act would seem to be appropriate.

We believe that the three options outlined in the issues paper do not provide, singly or in combination, an appropriate practical way of distinguishing between broadcasting and datacasting. They suffer from many shortcomings including that they would require the ABA to:

- make a case by case assessment of each proposed service on the basis of the Digital Conversion and Broadcast services Acts;

- identify services as falling in advance within predetermined classifications;

- construct an irrefutable definition based on technical parameters or "look and feel".

This would stultify innovation and limit flexibility. Moreover it ignores the reality that there is no intrinsic technological difference between datacasting and broadcasting. Furthermore it would also potentially open Australia to ridicule by denying its citizens access to new technologies that were proving successful in the evolving global information society.

The alternative we propose is simply to distinguish between broadcasting and datacasting services according to whether it is the bit stream originator or the customer who has control over the timing of participation at the reception device. This should provide a clear distinction as it recognises the essential experiential difference between datacasting and broadcasting. Moreover it meets the objective of providing the flexibility to encourage innovation and international best-practice service compatibility.

If circumstances arose which required clarification because a specific datacasting service was challenged as impinging on the more narrowly defined broadcasting services, then we would propose that the Government would undertake an ex post facto review. The purpose of this review would be to determine why it was not in the public interest for the Minister to provide clarification by creating a further specific exception to the definition of broadcasting services. The specific service in question would continue to be available until such time as the review determined otherwise.

OTHER REGULATION – Place the Fewest Possible Burdens on the Market

Comments have been sought on the following issues:

- "*Should datacasting services be regulated in ways which are consistent with broadcasting services, or online communications services, or according to some other approach?*

- *Should all datacasting services be regulated in the same way?*

- *Should datacasting services offered by free-to-air broadcasters, using spare capacity in their digital channels, be regulated in the same ways as datacasting services offered by non-broadcasters?*

- *Should there be regulations regarding the type and nature of content available on datacasting services?*

- *Should regulations specify particular proportions of Australian content in datacasting services?"*

In order to address these questions it is necessary to first address the broader topic of what should be the concept of regulation of datacasting in the information society. In

this regard we believe that it is now clear that rapidly developing technology and media markets are hampered by slowly changing laws and regulations. These thwart new products and services. Accordingly we believe that the regulation of datacasting should be sufficiently flexible to cope with future technological arrangements and should not be so burdensome as to adversely affect the development of innovation and technology.

In particular, given the speed, dynamism and power of innovation of the datacasting sector, we believe that approaches which lead to over-regulation, or which simply seek to extend existing rules in the telecommunications and media sectors to areas and activities which are largely unregulated today should be avoided. This means that governments should strive to impose the fewest possible burdens on the market and should err on the side of regulations that are the least intrusive and offer consumers the greatest choice and protection. Prescriptive government policies should be reserved for circumstances in which the need for intervention is clear.

We believe that such new regulations as are deemed necessary should respond to the needs of users. Accordingly, the key priority of any new regulation should be to seek to meet the needs of users in terms of offering them more choice, improving levels of service and lower prices, whilst fully guaranteeing consumer rights and the general public interest. Such an approach is fully consistent with the Government's wider policy goals that recognise the important potential role of the datacasting sector in bringing the information society into citizens' everyday lives. This means that regulation should encourage a marketplace in which consumers, rather than regulators, direct the availability of a host on new and developing applications.

In accordance with the foregoing, our view is that the approach to the regulation of datacasting services should initially place the fewest possible burdens on the market. If experience demonstrates that additional regulation is required, this can then be formulated against the background of a known situation. We believe that until such time as datacasting develops into a mature service:

- datacasting services should be regulated as on-line communications services;

- all datacasting services should be regulated in the same way;

- datacasting services offered by free-to-air services should be regulated in the same way as services offered by non-broadcasters unless they are integrated into broadcasting services, in which case they should be regulated as broadcasting services;

- there should not be regulations over the type and nature of datacasting services;

- proportions of Australian content should not be specified for datacasting services. In reality the provision of relevant and compelling local content will be an important determinant of success for any datacasting service.

LICENCE ARRANGEMENTS FOR DATACASTING - A Minimalist Regime

Comments have been sought on:

- *"Whether datacasters should be licensed;*
- *If so, what conditions should apply to those licenses;*
- *Whether datacasters should be licensed individually, or operate under a class licence;*
- *Whether the regulatory regime for datacasting, including datacasting licenses, should be administered by the Australian Broadcasting Authority or the Australian Communications Authority."*

At this early stage in the evolution of datacasting we believe that it would be counterproductive to impose a detailed licensing regime on datacasting services. Despite this we accept that the issues paper makes a valid argument for the licensing of datacasting services. Accordingly a minimalist approach is suggested in which:

- datacasting licence holders would be required to meet those conditions deemed necessary to ensure an orderly transition to digital television broadcasting;
- a class licence would apply;
- regulation and licensing would be administered by the Australian Communications Authority.

Attachment 2

REVIEW OF

ENHANCED PROGRAMMING

News Limited **December 1998**

INDEX

OVERVIEW

Enhanced programming services are a digitally facilitated extension of traditional analogue broadcasting services. Parliament's intention when passing the *Digital Conversion Act* was to define them as narrowly as possible, viz as services that must be "*incidental and directly linked to a program that is broadcast simultaneously*". Regulation of them should therefore be approached from the perspective of how can such services be constrained and limited.

It will be important to encourage the development of a diversity of digital services that are beneficial to consumers, in order to exploit the advantages of digital technologies and to encourage viewers to convert to digital technology. It is to this end that Parliament wishes to encourage the development of digital datacasting services.

This will not unduly constrain the free-to-air broadcasters as they are able, on payment of an as yet to be determined fee, to be datacasters subject to other requirements such as those relating to the High Definition Television quota.

The Explanatory Memorandum relating to *Digital Conversion Act* defines:

- the term "incidental" in connection with a simulcast program is intended to mean something happening or likely to happen " in fortuitous or subordinate conjunction with" the program; and

- the words "directly linked" in conjunction with "incidental" are intended to emphasise the direct relationship between the simulcast program and the incidental program.

Enhanced digital services can therefore only provide material that is directly linked to the program appearing at that same point in time on the analogue service that is being simulcast digitally. While this will permit innovations such as multi-view broadcasting, it does not enable the enhanced digital service to be directly linked to material that is appearing on the analogue program at another point of time. In this respect, multi-view broadcasting means broadcasting the live action that is being simulcast digitally from any vantagepoint. Any broader definition would constitute multichanneling, which was specifically prohibited by the Parliament.

REVIEW OF ENHANCED PROGRAMMING

INTRODUCTION – Part of a Package

News Limited welcomes the opportunity to make a submission to this review. It is part of a review process called for under Schedule 4 of the *Broadcasting Services Act 1992* into, among other things:

> *"whether any amendments of the laws of the Commonwealth should be made in order to allow a commercial television licensee to broadcast a television program in digital mode during the simulcast period for a license area, where the program is incidental and directly linked to a program that is broadcast simultaneously by the licensee in both analog mode and digital mode in that area; and*
>
> *whether any amendments of the laws of the Commonwealth should be made in order to allow a national broadcaster to broadcast a television program in digital mode during the simulcast period for a coverage area, where the program is incidental and directly linked to a program that is broadcast simultaneously by the national broadcaster in both analog mode and digital mode in that area".*

This submission is complementary to our submission to the review into the scope of datacasting services. It will be augmented by our submission to the yet to be called review into the convergence between broadcasting services and other services. Accordingly it focuses on the preferred approach to the classification of enhanced services in the *Television Broadcasting Services (Digital Conversion) Act 1998* ("the Digital Conversion Act") and the two specific topics on which comments were sought in the issues paper that canvassed matters for consideration in this review.

BACKGROUND – Limiting the Scope

"Broadcasting services" are defined in the *Broadcasting Services Act 1992* as services that *"deliver television programs to persons having equipment appropriate to receiving that service, whether the delivery uses the radiofrequency spectrum, cable, optical fibre, satellite or any other means or a combination of those means."* In this respect "programs" are defined to be either "*matter the primary purpose of which is to entertain, to educate or to inform an audience"* or advertising or sponsorship matter.

From the viewer's perspective broadcasting is a passive activity with interactivity limited to the changing of channels or stations to chose between programs that are offered in accordance with a published schedule.

Any reading of the Parliamentary debate that preceded the passage of the *Digital Conversion Act* leads to the conclusion that the intent was to define enhanced programming services as narrowly as possible, viz as services that must be *"incidental and directly linked to a program that is broadcast simultaneously"*.

Indeed it is reasonable to infer from the provisions of the Digital Conversion Act that the Parliament wishes to restrict the extent of enhanced programming. Therefore, the general issue of regulation of enhanced programming should be approached from the perspective of how can such services be constrained and limited, as being incidental and directly linked to television programs, rather than how can such services be fostered.

ISSUES – Enhanced Services and Datacasting

Comments were sought on *"the relationship between datacasting services and programs which are incidental and directly linked to simulcast programs, including whether some kinds of data services should be regarded as incidental and directly linked programs rather than datacasting services."*

For enhanced services to be incidental and directly linked to a television program in digital mode can only mean that such services are broadcasting services. They cannot be datacasting services as, by definition, such services are not broadcasting services. This in of itself restricts the scope of enhanced services.

It has been acknowledged that it will be important to encourage the development of a diversity of digital services of benefit to consumers, in order to exploit the benefits of digital technologies and to encourage viewers to convert to digital technology. It is to this end that Parliament wishes to encourage the development of digital datacasting services.

This will not constrain the free-to-air broadcasters as they are able, on payment of an as yet to be determined fee, to be datacasters. All that it means is that the broadcasters will have to pay for the spectrum they use when providing material that can be linked as an augmentation to their digital broadcasts. Indeed, unless an access regime is introduced, broadcasters will have a powerful advantage over datacasters in that they will be uniquely able to link their broadcasting and datacasting streams.

Accordingly, we believe that datacasting services are separate from enhanced programming services i.e. from programs which are incidental and directly linked to simulcast programs. Conversely we believe that no data services should be regarded as incidental and directly linked programs: all should be regarded as datacasting services.

SCOPE OF INCIDENTAL AND DIRECTLY LINKED – Narrow & Time Specific

Comments were sought on *"ways in which incidental and directly linked programs can be distinguished from multichanneling, including:*

- *ways in which the content of the incidental and directly linked material should relate to the main simulcast program;*

- *the types of program material which should be allowed as incidental and directly linked programs;*

- *the proportions of programs which should be broadcast during a day which have an associated incidental and directly linked service;*

- *the timing of incidental and directly linked services in relation to the main simulcast programs;*

- *the number of separate services which should be provided simultaneously; and any other relevant matters."*

As enunciated in the Explanatory Memorandum relating to *Digital Conversion Act*:

- the term "incidental" in connection with a simulcast program is intended to mean something happening or likely to happen " in fortuitous or subordinate conjunction with" the program; and

- the words "directly linked" in conjunction with "incidental" are intended to emphasise the direct relationship between the simulcast program and the incidental program.

We believe this means that at any point in time, the enhanced digital service can only provide material that is directly linked to the program appearing at that same point in time on the analogue service that is being simulcast digitally. While this will permit innovations such as multi-view broadcasting, it does not enable the enhanced digital service to be directly linked to material that is appearing on the analogue program at another point of time. In this regard multi-view broadcasting means broadcasting the live action that is being simulcast digitally from any vantagepoint. Any broader definition would constitute multichanneling, which is specifically prohibited by the legislation.

This means that if a swimming event is being broadcast at a point in time as part of the Olympics analogue coverage, only material which is in fortuitous or subordinate conjunction with that swimming event would qualify as an enhanced service at that point in time. Similarly if the Germany v Brazil game is being broadcast at a point in time as part of the World Cup analogue coverage, only material which is in fortuitous or subordinate conjunction with the Germany v Brazil game would qualify as an enhanced service at that time. Other events or games, or material that is in fortuitous or subordinate conjunction with other events or games, would not qualify as enhanced programming at that point in time.

This approach would enable enhanced programming to be offered on a continuous basis throughout the day, subject to other requirements such as those relating to the High Definition Television quota. It would also not limit the number of enhanced programs that could be provided at any one time.

It would enable local Toyota advertisements to be broadcast at the same time as a Toyota advertisement was broadcast in the main analogue broadcast. However it would not enable local news bulletins to be offered as enhanced programming.

In accordance with the foregoing, our views on the ways in which incidental and directly linked programs can be distinguished from multichanneling, include:

- a strict and limited framework which defines when the content of the incidental and directly linked material relates to the main simulcast program;

- that time-qualifying program material such as multi-view broadcasting and locally tailored advertising would be allowed as incidental and directly linked programs;

- within the time and material defined framework, the proportion of programs which could be broadcast during a day which have an associated incidental and directly linked service would only be limited by other legislative requirements such as those relating to the High Definition Television quota;

- the timing of incidental and directly linked services in relation to the main simulcast programs would essentially be simultaneous;

- there would be no limit on the number of separate services which could be provided simultaneously, provided they conformed with the foregoing time and material defined parameters.

Attachment 3

REVIEW OF

DIGITAL TELEVISION

FORMAT STANDARDS

(HDTV)

News Limited

February 1999

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OVERVIEW

Australia needs to define High Definition Television (HDTV) in legislation, as a transmission standard, because of the rationale behind the decision to provide each of the free-to-air broadcasters with 7 MHz of "adjacent channel" broadcasting spectrum at no cost, as a loan, for the period of simulcast. This was that a full 7 MHz spectrum allocation was needed to enable HDTV to be broadcast, thereby providing a quantum improvement in viewing experience with "cinema quality" pictures and surround sound. The free-to-air broadcasters claimed that this was essential to ensure a commercially acceptable uptake for digital television in Australia.

The four definitional options outlined in the Issues Paper all suffer from the problem of potentially placing Australia in the position of adopting its own unique definition of HDTV. This problem could be overcome if an international industry standard definition were adopted.

In the MPEG 2 compression standards, main profile at main level (MP@ML) is capable of handling the needs of Standard and Enhanced Definition Television, while main profile at high level (MP@HL) is needed for an HDTV service. Accordingly, the definition of HDTV could therefore include any mode in excess of that able to be supported by MP@ML. This approach is preferred because it is based on the DVB standard for HDTV, which specifies MP@HL. This would mean that transmissions should be able to be decoded by any HDTV enabled receiver or set top box that is compliant with the DVB standards.

In this regard it is clear that the cost of introducing HDTV will be minimised for broadcasters, consumers, equipment manufactures and the production industry, if Australia adopts HDTV transmission formats that are fully compliant with the global DVB standards. This is because the economies of scale and scope associated with the manufacture and distribution of digital equipment components generally make the cost of customisation for a small market like Australia prohibitively high.

Now that Australia has adopted the DVB package of standards, it is not necessary to determine format standards in which television programs can be transmitted in digital mode, other than for HDTV. Any format that is DVB compliant should be acceptable.

HDTV should commence in metropolitan areas with the formal commencement of digital transmissions. This is because the earliest possible availability of HDTV will be critical to the penetration of digital television into the important "early adopter" market segment. The introduction of digital television by regional broadcasters is at a later date for the metropolitan areas. Accordingly, it is this later date that should be mandated for the commencement of regional HDTV broadcasts. Despite this it would be inappropriate to make decisions regarding the access of remote viewers to HDTV outside of the wider context of the Government's provision of services to remote areas.

A minimum of five hours of HDTV programming should be required to be provided each day by each metropolitan broadcaster from the commencement of HDTV transmission. This should increase by one hour a day each year thereafter, until it reaches an ultimate target of twelve hours a day. Within this target there should be a requirement that 80% of all Australian drama, diversity, children's and documentary content be produced and broadcast in HDTV.

Because the interplay between HDTV targets and Australian Content Standards that apply to prime time programming by commercial broadcasters need to be considered, there should be an initial prime time HDTV target of three hours a day. This should grow to five hours a day within three years from the introduction of digital television.

As it is important that broadcasters' commercial judgement be the main determinant of their own programming mix within the framework of the legislation, certain types of programs should not be required to be in HDTV, except as required to comply with the proportional and prime time targets outlined above. However, given that HDTV will be a key driver of market penetration for the new technology, it will be vital that most local sport be broadcast in HDTV. This is because sport has a unique ability to showcase the advantages of HDTV.

The National Broadcasters should proportionally play their part in making the introduction of digital broadcasting and HDTV a success in Australia. Accordingly, the same HDTV targets that apply to commercial broadcasters should also apply to them.

Despite much of the legislative package being framed around it, at this time it is difficult to accurately foreshadow the extent to which HDTV will become a vital component of the digital broadcasting mix. Indeed there are a number of forecasts that the demand for HDTV will be very low. If these prove correct, Australia's digital television legislation may ultimately need to be revised because one of its central tenets (the demand for HDTV) will have been proved invalid. Accordingly, given that other reviews are to take place before December 31 2005, i.e. a year prior to the expiry of the moratorium on new competition, it would seem appropriate to conduct a further review into HDTV regulations at that time.

REVIEW OF DIGITAL TELEVISION FORMAT STANDARDS (HDTV)

INTRODUCTION - Part of a Package

News Limited welcomes the opportunity to make a submission to this review. It is part of a review process called for under Schedule 4 of the *Broadcasting Services Act 1992* (BSA) into, among other things:

> *"whether any amendments of Part 4 of this Schedule should be made".*

Part 4 of Schedule 4 to the BSA relates to regulations determining standards for digital television formats, captioning for the deaf and hearing impaired, technical standards for digital transmission of television broadcasting standards and datacasting standards. This submission relates to the review of digital television formats, including high definition television (HDTV) detailed in clause 37 of Schedule 4 to the BSA.

In our submission to the 1998 Senate Digital Broadcasting Enquiry we put the case for a sensible competitive digital television policy framework that did not entrench the monopoly of the free-to-air broadcasters at a time of record profitability in the industry. This view was not reflected in the *Television Broadcasting Services (Digital Conversion) Act 1998* ("the Digital Conversion Act") because the Government accepted counter arguments from the free-to-air broadcasters, central to which were the perceived benefits from them broadcasting HDTV as a single channel. It is against this background that this submission is made in respect of HDTV.

This submission is complementary to our submissions to the reviews into the scope of datacasting services and enhanced programming. It will be augmented by our submission to the yet to be called review into the convergence between broadcasting services and other services. Accordingly, it focuses on the preferred approach to the definition of HDTV in the Digital Conversion Act and the numerous topics on which comments were sought in the December 1998 Issues Paper that canvassed matters for consideration in this review.

BACKGROUND - Why HDTV was Specified in the Digital Conversion Act

The reason for Australia needing to define HDTV lies in the rationale behind the decision to provide each of the free-to-air broadcasters with 7 MHz of "adjacent channel" broadcasting spectrum at no cost, as a loan, for the period of simulcast. Proposals to provide less free spectrum for each broadcaster by establishing one or more shared multiplexes, or for charging a fee for any spectrum above that required to simulcast existing programming in standard definition were rejected. The reason for

rejecting those proposals was the Parliament's acceptance of the free-to-air industry's claims that:

- a full 7 MHz allocation was needed to enable HDTV to be broadcast; and that

- the costs of introducing HDTV were so significant that the added impost of any charge for the loaned spectrum would make its introduction uneconomic and that there should be a moratorium on new competition.

The free-to-air industry argued that HDTV represented such a significant advance over analogue television and indeed over digital formats with a lower picture resolution or format (vertical lines x pixels per line) and aspect ratio (width to height), that its facilitation should be a key provision of the legislation. The quantum improvement provided by HDTV was said to offer "cinema quality" pictures with surround sound and was held to be essential to ensure a commercially acceptable uptake of digital television.

In order to ensure that these much-heralded advances are actually achieved, the legislation provides for specification of:

- the definition of high definition television; and

- the goals or targets that should be set in relation to its provision.

It is these key issues that form the focus of this submission.

WHAT IS HDTV? – A Flexible Global DVB Transmission Standard

Comments have been sought on: *"the preferred format or formats for HDTV to be set in regulations, and whether the format should specify a minimum bit rate for HDTV transmissions."*

Before defining HDTV it is first necessary to distinguish between HDTV as a display standard and HDTV as a transmission standard. Digital televisions and set top boxes are capable of processing the transmitted signal before it is displayed on the receiver's screen. This processing capability enables the transmitted signal to be displayed as received, down-converted to a lower format that matches the receiver's display limit, or up-converted to a higher format that the receiver is capable of displaying.

As the loan of a full 7 MHz of spectrum was predicated on its need to enable HDTV to be broadcast, any legislative or regulatory specification of HDTV must be as a transmission standard. To do otherwise would be to undermine much of the rationale on which the *Digital Conversion Act* was based.

Two qualitative standards of digital television are being promoted to consumers. These are Standard Definition Television (SDTV) and High Definition Television (HDTV). However, in reality, there is a range of transmission options intermediate between SDTV and HDTV. These are generally referred to as Enhanced Definition Television (EDTV).

SDTV has the same aspect ratio and similar definition to the PAL analogue pictures that are currently broadcast in Australia. However some quality improvement is clearly evident when digital processing is maintained from origination to the home receiver, avoiding any analogue PAL encoding/decoding stages.

In technical terms SDTV covers the following specifications:

Aspect ratio:	4:3	
Picture format:	576 vertical lines x 544, 480 or 352 pixels per line	
Scan Rate:	Interlace @ 50 fields per second	(same as PAL)
	Progressive @ 25 frames per second	

The data rate for pictures encoded with the MPEG 2 main profile at main level standard (MP@ML) will generally range from 2.5 to 6 Mb/s with an average rate of 4 Mb/s. This would effectively enable five digital channels of SDTV to be incorporated within a single 7 MHz multiplex.

HDTV has cinema like definition pictures compared to analogue PAL broadcasts and has a wide-screen aspect ratio (actually the quality falls somewhat short of film). The order of quality improvement is dependent on maintaining digital processing from origination to the home receiver, avoiding any analogue PAL encoding/decoding stages, with absolute quality improvement dependent on the quality of the original programme material. Initially this will generally be a film format such as 35mm, because of the limited HDTV videotape material currently available.

In technical terms HDTV covers the following specifications:

Aspect ratio:	16:9	
Picture format:	1080 vertical lines x 1920 or 1440 pixels per line	
Scan Rate:	Interlace @ 50 fields per second	(same as PAL)
	Progressive @ 25 frames per second	
OR		
Picture format:	720 vertical lines x 1280 pixels per line	
Scan Rate:	Progressive @ 25 and 50 frames per second	

The data rate for pictures encoded with the MPEG 2 main profile at high level standard (MP@HL) will generally range from 16 to 24 Mb/s with an average rate of 20 Mb/s. This effectively fully occupies a single 7 MHz multiplex.

The EDTV range of transmission options between SDTV and HDTV either has more horizontal pixels or uses progressive scanning. This provides improved definition pictures compared to analogue PAL broadcasts. The order of quality improvement is dependent on maintaining digital processing from origination to the home receiver, avoiding any analogue PAL encoding/decoding stages. In technical terms EDTV covers the following specifications:

Aspect ratio:	4:3	
Picture format:	576 vertical lines x 720 or 544 pixels per line	
Scan Rate:	Interlace @ 50 fields per second	(same as PAL)
	Progressive @ 25 or 50 frames per second	

The data rate for pictures encoded with the MPEG 2 main profile at main level standard (MP@ML) will generally range from 4 to 8 Mb/s with an average rate of 6 Mb/s. This would effectively enable three digital channels of EDTV to be incorporated within a single 7 MHz multiplex.

The Issues Paper outlines four broad options for specifying HDTV formats:

1. Specification of a single transmission format;

2. Specification of a small number of specific formats;

3. Specification of a minimum format; and

4. Either option 1, 2, or 3, but also with specification of a minimum transmission bit rate.

We believe that Option 1 is too inflexible as it would lock broadcasters, and potentially datacasters, into a particular format at a time when the standards are still evolving and consumer demand is uncertain. Importantly, it would not provide for both interlaced and progressive scanning.

Option 2 would be acceptable if limited to the technical specifications for HDTV outlined above, which effectively fully occupy a single 7 MHz multiplex. All of these are likely to be global decoding standards for incorporation in HDTV receiver chip sets. However, this option may also suffer from being too inflexible and prescriptive.

If Option 3 were preferred, we believe the minimum format should specify an aspect ratio of 16:9, a picture format of 720 vertical lines x 1280 pixels per line with a progressive scan rate @ 50 frames per second. This effectively fully occupies a single 7 MHz multiplex with pictures that have an acceptable level of flicker (25 frames per second would flicker too much). However, again this may also suffer from being too inflexible and prescriptive.

We believe that Option 4 adds further legislative complexity and thereby compounds the possible inflexible and prescriptive difficulties that may be inherent in Options 1 to 3.

All of these options suffer from the problem of potentially placing Australia in the position of adopting its own unique definition of HDTV. This problem could be overcome if an international industry standard definition were adopted.

In the MPEG 2 compression standards, main profile at main level (MP@ML) is capable of handling the needs of SDTV and EDTV, while main profile at high level (MP@HL) is needed for HDTV service. Accordingly, the definition of HDTV could therefore include any mode in excess of that able to be supported by MP@ML. While MP@ML can handle transmitted bit rates of up to 15 Mb/s, it is actually defined in the MPEG standards by a range of capabilities, including the maximum bit rate and picture size.

This approach would be our preference, as it is based on the DVB standard for HDTV, which specifies MP@HL. This means that it should be able to be decoded by any HDTV enabled receiver or set top box that is compliant with the DVB standards. Moreover it does not suffer from the possible inflexible and prescriptive difficulties that may be inherent in Options 1 to 4.

Views have also been solicited on "*whether there are any technical and/or cost implications from specifying one or more HDTV formats for:*

- *Broadcasters;*
- *Consumers;*
- *Receiver and other equipment manufacturers;*
- *The production industry."*

While the equipment manufacturing industry can best address this topic, we believe that it is clear that the cost of introducing HDTV will be minimised for broadcasters, consumers, equipment manufactures and the production industry, if Australia adopts HDTV formats that are fully compliant with the global DVB standards. This is because the economies of scale and scope associated with the manufacturing and distribution of digital equipment components generally make the cost of customisation for a small market like Australia prohibitively high. This approach will also ensure that Australia's system is compatible with those of the major DVB markets and that terrestrial HDTV transmission is compatible with satellite and cable HDTV transmission.

Comments have also been sought on "*the appropriate method for establishing HDTV format/s in legislation and/or regulations."*

Because the provision of HDTV was central to the Parliament's rationale in passing the *Digital Conversion Act*, we believe that the Definitions section (Clause 2 of new Schedule 4) should specify its definition. If HDTV were only defined in regulations we believe that the original intent of Parliament on this critical matter could subsequently be more easily subverted.

GOALS OR TARGETS - Some Flexibility is Desirable

The review solicited responses that address the series of goal or target related issues that were raised in the Issues Paper. Specifically:

Date of Commencement

In this regard responses to three questions have been sought. "*Should HDTV commence on the formal commencement date of digital transmissions? If not, when should they commence? Should different broadcasters be treated differently in this regard?"*

Given the centrality of the quantum improvement in picture and sound quality that HDTV represents over SDTV to Parliament's decision to provide the free-to-air broadcasters a full 7 MHz of spectrum, we believe that HDTV should commence on

the formal commencement of digital transmissions. If the reasoning advocated by the free-to-air broadcasters is correct, then the earliest possible availability of HDTV will be critical to the penetration of digital television into the important "early adopter" market segment.

The largest relative cost burden associated with the introduction of digital television will fall on the regional and remote broadcasters. This is because of their lower audience to studio and transmission cost ratio: a fact that has already been given some recognition in the later timing required for the non-metropolitan rollout of digital television. Moreover, as the introduction of digital television by these broadcasters is likely to be subsidised under an "Equalisation Scheme", we believe that this later date should be mandated for the commencement of regional HDTV broadcasts.

Proportions

In this regard responses to four questions have been sought. *"What will be the costs to broadcasters of the production, programming purchase and up-conversion of HDTV product? What levels of domestic and international programming will be available initially? Over time? What is the likely take up of reception equipment capable of displaying in full HDTV?"*

Given these, and any other relevant issues, comments were then canvassed on *"What proportion of HDTV programs should be provided at the commencement of the HDTV transmissions? Should this proportion change over time during the simulcast period? What should be the ultimate target? Over what time period should the required HDTV proportion be achieved (e.g. a daily target, or weekly target)?"*

If HDTV is to be a key driver of successful market penetration, then it will be important for its transmission to be at as high a rate as can be supported by the available programming. When seen in this context, we believe that the incremental costs of purchasing HDTV product will be relatively low. Accordingly, while it is too early to accurately estimate the costs to broadcasters of the production, programming purchase and up-conversion of HDTV product, those costs will not be significant in the overall scheme of things associated with successfully introducing this new technology into Australia.

Given the enthusiasm reportedly displayed by some US networks for HDTV and the later start date for its introduction to Australia, the initial availability of international programming should amount to several hours a day for each Australian broadcaster. As to the availability domestic programming, this will largely be in the hands of the five local networks and the Australian production industry. However, again, given their enthusiasm to date, this should be initially in excess of five or six hours per day of first release true HDTV material. In this context true HDTV material is that which is produced fully in HDTV format and not a mixture of HDTV production material with up-converted material of a lower original format as may occur in a news or current affairs broadcast.

In consideration of all of the foregoing, and to ensure that HDTV does not fail in Australia due to a lack of broadcast material, we believe that a minimum of five hours of true HDTV programming should be required to be provided each day by each

broadcaster from the commencement of HDTV transmission, assuming that is in January 2001, for metropolitan broadcasters. We also believe that this should increase by one hour a day each year thereafter, until it reaches an ultimate target of twelve hours a day. Within this target we believe there should be a requirement that 80% of all Australian drama, diversity, children's and documentary content be true HDTV.

There is a range of different views on the take up rate for reception equipment capable of displaying full HDTV. Ultimately consumers making the trade off between cost and perceived benefit will determine it.

In its proprietary November 1998 report *"HDTV Dreams, SDTV Realities"* the respected US based Forrester Group concludes that the take up rate for digital television receivers will be negligible until 2001 when it will commence to grow geometrically, reaching 60.2% of US households in 2008. Of these, it forecasts 6.1% will have set top box converters for analogue TVs, 46.6% will have SDTVs but only 7.5% will have HDTVs. In terms of numbers of sets this represents 8.44m, 56.71m and 7.62m respectively. The proponents of HDTV forecast a similar growth pattern, but with a far greater penetration by HDTV.

The November 1998 report *"Digital Broadcasting – Australian Industry Options for the New Millennium"* that Digital Business Consulting Pty Ltd made to the Australian Digital Broadcasting Agenda Working Group forecasts that, by 2005, there will be a 15% penetration for converters, 9% for SDTVs and 1% for HDTVs. In terms of numbers this represents 1.05m, 0.63m and 0.02m respectively.

If these forecasts are correct, Australia's digital television legislation may ultimately need to be revised because one of it's central tenets (the demand for HDTV) will have been proved invalid. The ideal time for contemplating such a revision would seem to be one year prior to the expiry of the moratorium on new entrant competition.

Prime Time Television

Comments have been sought on whether a proportion of HDTV should *"be specified during prime time, in addition to an overall target."*

It is desirable that a significant degree of flexibility be available to broadcasters, as it is their various judgements that will largely determine the commercial success of the introduction of digital television. However the interplay between HDTV targets and Australian Content Standards that apply to prime time programming by commercial broadcasters must also be considered.

We believe an appropriate balance between these considerations would be achieved through an initial prime time true HDTV target of three hours a day. We believe that this should grow to five hours a day within three years from the introduction of digital television.

Types of Programs

Comments have been sought on whether certain programs should *"be required to be in HDTV format."*

It is important that the commercial judgement of the broadcasters be given as free a hand as possible in determining their own mix of programming within the framework of the legislation. For this flexibility is required. Accordingly, we do not believe that certain types of programs should be required to be in HDTV, except as required to comply with the proportional and prime time targets outlined above. However, given that HDTV will be a key driver of market penetration for the new technology, it will be vital that most local sport be broadcast in HDTV. This is because sport has a unique ability to showcase the advantages of HDTV.

Regional Broadcasters

In this regard responses to three questions have been sought. *"What additional costs or technical difficulties are there for regional broadcasters in the provision of HDTV transmission, compared with metropolitan broadcasters? Should regional television broadcasters be subject to the same requirements as their metropolitan counterparts in relation to HDTV, in terms of matters such as proportions of programs and timing of HDTV programs? If not, what different approach should be adopted?"*

The cost of introducing digital television will be relatively higher for regional stations than for their metropolitan counterparts. This is because of their lower audience to broadcast infrastructure cost ratio. Providing additional time to reach HDTV targets could mitigate this because the cost of digital studio production equipment and transmission infrastructure should reduce significantly over time.

HDTV target requirements will have implications for the Regional Equalisation Plan as well as for the outcomes of the review into the provision of additional services in under-served areas. As many of these implications will be at a cost to the public purse, some deferment of the timing of regional targets would seem appropriate.

In light of the foregoing, we believe that regional broadcasters should not be subject to the same requirements as their metropolitan counterparts in relation to HDTV in terms of matters such as proportions of programs and the timing of HDTV programming. In particular, we believe that regional stations should not be subject to these criteria for a period of three years after they apply to the metropolitan stations.

Different Approaches for National and Commercial Broadcasters

In this regard responses to three questions have been sought. *"Should different targets for HDTV be specified in respect of commercial and national broadcasters?, Why? What should those targets be?"*

The successful introduction of digital broadcasting and HDTV is ultimately the industry's responsibility. In this regard the National Broadcasters, in concert with the

commercial broadcasters, argued for the provision of sufficient spectrum to enable HDTV broadcasting.

We believe that they should proportionally play their part in making the introduction of digital broadcasting and HDTV a success in Australia. Accordingly, we believe that the same HDTV targets that apply to commercial broadcasters should also apply to the National Broadcasters.

Further Reviews

Comments have been sought on *whether it would "be appropriate to conduct a further review into HDTV regulations once digital transmissions have commenced to consider the required levels."*

Despite much of the legislative package being framed around it, at this time it is difficult to accurately foreshadow the extent to which HDTV will become a vital component of the digital broadcasting mix. In this regard, the interplay between broadcasting and datacasting could also have a far-reaching impact. Accordingly, given that other reviews are to take place before December 31 2005, i.e. a year prior to the expiry of the moratorium on new competition, we believe that it would be appropriate to conduct a further review into HDTV regulations at that time.

HDTV STANDARDS IN REMOTE AREAS - Should be Seen in a Wider Context

Comments have been invited on *"the timing of any requirement for HDTV broadcasting services to remote communities, the technical and other constraints which apply to providing such services and possible options for providing HDTV to such communities."*

The desirability of remote viewers having access to HDTV will need to be balanced against the costs to remote broadcasters, viewers, communities and the government in the provision of such services. This will also need to be considered in the context of the costs and benefits of providing other services to these remote areas. Other practicalities raised in the Information Paper, such as those concerning satellite delivered services, will also need to be considered.

In this regard it is noted that the ABA is yet to develop its draft Digital Conversion Scheme for remote license areas. Accordingly, we believe that it would be inappropriate to make decisions regarding the access of remote viewers to HDTV prior to these matters being considered in the wider context of government provision of services to remote areas.

NON HDTV FORMATS - Only DVB Compatibility Should be Required

Comments have been invited on *"whether regulations should be determined to specify formats other than HDTV formats for transmission of television programs in digital mode."*

The development of regulations to determine the format standards for HDTV constitutes an integral part of the legislative package. Now that Australia has adopted the DVB package of standards, we do not believe that it is necessary to determine other format standards in which television programs can be transmitted in digital mode. Any format which is DVB compliant should be acceptable.

If this is not the case, then Australia may suffer from the application of unique and constraining limitations on the provision of SDTV and EDTV. We do not believe that would be a desirable outcome.

Attachment 4

REVIEW INTO MULTI-CHANNELLING

BY THE

NATIONAL BROADCASTERS

News Limited **February 1999**

INDEX

OVERVIEW

Australia's digital television legislation was framed to protect the viability of the current free-to-air broadcasters. However it prevented them from multi-channelling in recognition of the adverse impact that this would have on the country's emergent subscription television broadcasting industry. This limitation had the caveat that a review would be undertaken as to whether, during the simulcast period, the national broadcasters should be allowed to use multi-channel transmission capacity to broadcast television programs in digital mode.

If the national broadcasters are to be permitted to multi-channel, then it will be necessary to define the concept of multi-channelling. Moreover, there is a range of related policy issues that is dealt with in other reviews that must, for the sake of consistency, be integrated with the outcome of this review. In simple terms, the policy issues that form part of this review cannot be considered in isolation, rather they must form part of an overall response to Parliament on the introduction of digital television broadcasting.

The ABC is required to take into account its responsibility, as the provider of an independent national broadcasting service, to provide a balance between broadcasting programs of wide appeal and specialised broadcasting programs. A similar requirement applies to the SBS. It is only in the area of specialised broadcasting programming that there is currently a case for the ABC and SBS to be permitted to multi-channel. When this restriction on the provision of specialised programming is applied to the range of examples that were provided by the ABC and SBS as to how they would propose to use multi-channelling, little would be excluded.

The adoption of such an ABA-administered restriction on the extent of multi-channelling by the national broadcasters will minimise any adverse impact on the development of the subscription television and commercial free-to-air television sectors. Moreover, if the ABA manages this requirement in an open and consultative manner, any future concerns of the subscription television and commercial free-to-air television sectors should be able to be rapidly overcome.

The issue of parity of treatment between all free-to-air broadcasters does not arise under this restriction because of the fundamentally different considerations that apply to the national broadcasters. Furthermore, with appropriate ABA oversight of the envisaged regime, a range of program based, time based or location based legislative mechanisms would not be necessary to minimise any adverse impact on the subscription TV and/or commercial free to air broadcasting sectors.

However, the application of the anti-siphoning regime in the *Broadcasting Services Act* to the televising of events which are not simulcast on the main ABC or SBS television channel is a relevant issue. In this regard, and despite the fact that the type of multi-channelling that would be permissible under the envisaged regime would be unlikely to be on the anti-siphoning list, this is a matter that needs to be addressed by excluding multi-channelling by the national broadcasters from satisfying this criteria.

REVIEW INTO MULTI-CHANNELLING BY THE NATIONAL BROADCASTERS

INTRODUCTION – Part of a Package

News Limited welcomes the opportunity to make a submission to this review. It is part of a review process called for under Clause 59 of Schedule 4 of the *Broadcasting Services Act 1992* into, among other things, "*the extent to which any amendments of laws of the Commonwealth are required to be made in order to allow a national broadcaster, during the simulcast period for a coverage area, to use multi-channel transmission capacity to broadcast television programs in digital mode in that area, where:*

> *(i) the programs are in addition to programs that are broadcast simultaneously by the national broadcaster in both analog mode and digital mode in that area; and*
>
> *(ii) the broadcast of the programs is in accordance with the charter of the national broadcaster".*

This submission is complementary to our submissions to the reviews into the scope of datacasting services, enhanced programming and digital television format standards (HDTV). It will be augmented by our submission to the yet to be called review into the convergence between broadcasting services and other services. Accordingly, it focuses on what we believe should be the preferred approach to multi-channelling by the national broadcasters. In doing this, it also addresses the numerous topics on which comments were sought in the Issues Paper that canvassed matters for consideration in this review.

BACKGROUND – Why Multi-channelling was Prohibited in the Digital TV Act

In our submission to the 1998 Senate Digital Broadcasting Enquiry, we put the case for a sensible competitive digital television policy framework that did not entrench the oligopoly of the free-to-air broadcasters at a time of record profitability in the industry. This view was not reflected in the *Television Broadcasting Services (Digital Conversion) Act 1998* ("the Digital Conversion Act") because the Government accepted counter arguments from the free-to-air broadcasters. This Act also specifically excludes subscription television broadcasting via a terrestrial digital broadcasting service.

The *Digital Conversion Act* was, however, framed to prevent the free-to-air broadcasters from multi-channelling. This was in recognition of the adverse impact that this would have on Australia's emergent subscription television broadcasting industry. This requirement had the caveat that a review would be undertaken as to whether, during the simulcast period, national broadcasters should be allowed to use multi-channel transmission capacity to broadcast television programs in digital mode.

STATUTORY ISSUES – Consistency of Approach

Comments have been sought on *"the issues identified at paragraphs 8 to 14 [concerning simulcast, HDTV, a multi-channelling definition and the targeting of* a *multi-channel service to a special interest group or by providing programs of limited appeal] of the Issues Paper and any other issues relevant to determining legislative amendments required to permit the national broadcasters to transmit multi-channel programming"*.

Subclause 35(1) of Schedule 4 to the *Broadcasting Services Act* prohibits the national television broadcasters from transmitting television programs in digital mode during the simulcast period unless the programs are transmitted simultaneously in analogue mode. This prohibition, which came into effect when the *Digital Conversion Act* received Royal Assent, has the practical effect of both imposing a simulcast obligation and prohibiting multi-channelling.

Any legislative amendments to remove the national broadcasters multi-channelling prohibition therefore need to be drafted in a way that maintains the simulcast obligation. Accordingly, any provisions authorising the national broadcasters to multi-channel would need to be subject to the national broadcasters' HDTV obligations.

If the national broadcasters are to be permitted to multi-channel then it will be necessary to define the concept of multi-channelling. In this regard we believe that:

- it would not be sufficient for legislation to define this concept at the end of the simulcast period (when it will no longer be possible to regulate multi-channelling simply by reference to the programs which are being simulcast in both analog and digital mode);

- legislative distinctions should be made between multi-channel programming and any provisions which authorise the national and commercial free to air television broadcasters to transmit programming which is incidental and directly linked to programs that are simulcast in both analog and digital mode;

- a legislative distinction should be made between the free to airs multi-channel programming and the definition of their "datacasting" services.

Clause 35 of Schedule 4 to the *Broadcasting Services Act 1992* prohibits digital television transmitters from being used to provide open (free to air) or subscription narrowcasting services. This prohibition is intended to ensure that the ban on subscription television and multi-channelling cannot be circumvented by the provision of multi-channel services that would otherwise fall within the broad statutory definition of a "narrowcasting" service and be authorised under the class licence scheme in the *Broadcasting Services Act*.

A national broadcaster multi-channel service, which was "targeted to a special interest group" or provided programs of "limited appeal", would fall within the definition of an open narrowcasting service. Accordingly, we believe that the lifting the ban on national broadcaster multi-channelling in Clause 35 of Schedule 4 would require consequential amendments to Clause 36. This is necessary to ensure that multi-

channel programming by the ABC and the SBS is taken to be part of their national broadcasting service and does not breach the open narrowcasting prohibition.

Simply removing the prohibition in Clause 36 on the use of the national broadcasters' digital television transmitters to provide narrowcasting services could also allow the ABC and the SBS to lease residual transmission capacity to third parties that could be authorised under a class licence to provide narrowcasting services. Accordingly, we also believe that any consequential amendments to Clause 36 would therefore need to distinguish between narrowcasting services provided by the national broadcasters and narrowcasting services provided by third parties.

LINKAGES TO OTHER REVIEWS – This Cannot be Avoided

Comments have been sought on *"the linkages between the national broadcaster multi-channelling review and the other statutory reviews, in particular, the extent to which the multi-channelling review will need to take into account the statutory reviews into:*

- *HDTV program format standards;*
- *whether the national and commercial free to air television broadcasters should be permitted to transmit "incidental and directly linked" programming;*
- *the scope of "datacasting" services"*.

The national broadcasters will be prevented from transmitting multi-channel programming during any periods when they are required to transmit their simulcast programs in HDTV format. Accordingly, we believe that it will be necessary to ensure that any legislative amendments that enable them to multi-channel are consistent with the outcomes of the review into digital television format standards (HDTV).

We also believe that this review will need to take into account the outcomes of the review into whether the national and commercial television free to air broadcasters should be permitted to transmit programming which is "incidental and directly linked" to programs simulcast in both analog and digital mode. In this regard we believe that if the national broadcasters are permitted to transmit multi-channel programming, it will be necessary to clearly distinguish between legislative concepts, should the commercial free to air television broadcasters be permitted to transmit incidental and directly linked programming.

In a similar vein, we believe that this review will also need to take into account the outcomes of the review into the scope of datacasting services. In this regard it will also be necessary to clearly distinguish between these legislative concepts.

USE OF MULTI-CHANNELLING CAPACITY – Specialisation Within Charters

Comments have been sought on *"the benefits of ABC and SBS multi-channelling, either generally or to specific groups and the types of multi-channel programming*

which would promote particular Charter functions or meet identified community needs".

The ABC is required by its Charter to provide innovative and comprehensive broadcasting services, including programs of an educational nature and programs that contribute to a sense of national identity and inform and entertain, and reflect the cultural diversity of the Australian community. The ABC is also required to take into account its responsibility, as the provider of an independent national broadcasting service, to provide a balance between broadcasting programs of wide appeal and specialised broadcasting programs.

It is only in the area of specialised broadcasting programs that we believe a case can currently be made for the ABC to be permitted to multi-channel. In this regard the focus would be to allow the ABC to provide television programming to better meet specialised contemporary audience needs with deeper and more penetrating layers of program content. This should enable the ABC to give greater attention to the convenience, means of access, local relevance and reach of its specialised services.

When this view is applied to the range of examples provided by the ABC as to how it may use multi-channelling, only the time-shifting of popular programs and the production of mass appeal broadcasting services which target the needs and interests of local audiences, would be excluded. Specifically, our suggestion would allow the ABC to:

- produce broadcasting services which target the specialist needs and interests of local audiences, particularly in rural and regional Australia;

- cover special public events and festivals, major conferences and forums on issues of public significance, and important parliamentary debates and committee hearings (at both State and Federal level);

- provide specialist local news and information programs;

- offer specialist educational services combining audio, vision, text and on-line material; and

- provide sporadic theme programming (eg national science or literacy week schedule) to allow additional programs to be scheduled relating to specific themes or events.

The SBS Charter requires it to provide multilingual and multicultural radio and television services that reflect Australia's multicultural society. In providing these services, the SBS is required to reflect the changing nature of Australian society, while at the same time assisting retention and continuing development of language and other cultural skills, as well as increasing awareness of and promoting acceptance of Australia as a culturally, linguistically and ethnically diverse society.

When our view on the provision of specialised programming through multi-channelling is applied to the range of examples provided by the SBS as to how it may use multi-channelling, little would be excluded. Our suggestion would specifically allow the SBS to provide program streams including, but not limited to:

- a separate multilingual news and language services program stream, building on its *WorldWatch* programming and utilising the experience of its multilingual radio broadcasters; and a

- multicultural arts and community stream, aimed at giving a medium of expression for the myriad of cultural activities undertaken by Australia's ethnic and indigenous communities.

We also believe that within the constraints of program rights and finances, multi-channelling by the national broadcasters may actually encourage the take-up of digital services by audiences across Australia. However, given the likelihood of continued public sector budgetary constraints on the national broadcasters and the relatively large initial cost associated with the commencement of digital broadcasting, we believe that any multi-channelling would be very modest in the early years.

OTHER USES OF THE SPECTRUM – A Public Sector decision

Comments were sought on *"the most appropriate use of the national broadcasters digital channels once the simulcast obligation and any legislative HDTV targets have been met"*.

The national broadcasters will be required to meet whatever HDTV targets are set for them and, if the multi-channelling prohibition on them is lifted, the legislation will permit multi-channelling only when they are not required to operate in HDTV format. In this regard, our views on the goals and targets that should be set in relation to the provision of HDTV for all free-to-air broadcasters, have already been made to the review that addressed that topic.

All free-to-air broadcasters will be allowed to provide datacasting services using any residual capacity in their digital television channels, but will have to pay a charge for doing so. Our views on this matter have already been made to the review that addressed the topic. However, at this stage, it is not known what level of demand there will be for datacasting services, how much spectrum will be available for new datacasting services, or the extent to which the national broadcasters will provide datacasting services. In this latter regard we would wish to highlight the fact that it may not be appropriate for the national broadcasters to use government funding to compete with commercial datacasters.

Against this background, and given the specific charters of the national broadcasters, we believe that the mix of programming within these legislative constraints should be left to the judgement of the two national broadcasters. In making this comment we have assumed that our suggestions regarding the limiting of multi-channelling to specialist programming are accepted and that any datacasting activity undertaken by the national broadcasters will be within their charter and on a non-subsidised basis.

IMPLICATIONS FOR THE PAY TV AND COMMERCIAL FREE TO AIR TELEVISION SECTORS – Limiting any Adverse Commercial Impact

Comments were sought on:

- *"the extent to which the national broadcasters transmitting multi-channel programming is likely to impact on the pay TV and commercial free to air broadcasting sectors;*

- *whether particular kinds of national broadcaster multi-channel television programming are more likely than others to impact on these sectors; and*

- *the extent to which it is desirable to seek parity of treatment between the national broadcasters and the commercial television broadcasters in relation to multi-channelling"*.

We believe that the adoption of our suggestion that the National Broadcasters only be permitted to multi-channel within the non popular appeal and specialised broadcasting categories of their charters, should minimise any adverse impact on the development of the subscription television and commercial free to air television sectors. If the ABA manages such a policy in an open and consultative manner, we believe that the theoretical concerns of the subscription television and commercial free to air television sectors that were raised in the Issues Paper should be able to be overcome.

In addressing the issue of parity of treatment between all free to air broadcasters, we believe that, provided our views on what the National Broadcasters will be allowed to multi-channel are adopted, different considerations can apply to the national broadcasters. This is particularly so given their need to meet public interest policy objectives and the fact that they do not operate for commercial gain.

LEVEL AND NATURE OF MULTI-CHANNELLING – Limit to Specialist Role

Comments were sought on:

- *"the extent to which the national broadcasters should be permitted to multi-channel;*

- *whether restrictions should be applied to particular kinds of programming, and if so, which ones; and*

- *whether there should be any further regulatory restrictions for national broadcaster multi-channelling (eg for events on the anti-siphoning list)"*.

As stated before in this submission, we believe that restrictions should be imposed with the objective of maximising the public benefits of national broadcaster multi-channel television programming, having regard to their specialist broadcasting charter responsibilities. This would effectively limit the types of multi-channel programming to those that generally do not have significant mass-market appeal and therefore compete for the same audience as either subscription television or the commercial networks.

We would see such restrictions being covered in the legislation and administered by the ABA. Accordingly, under the scheme that we envisage, the national broadcasters could effectively remain independent in programming matters, with the responsibility for decisions about programming resting with their respective Boards.

With appropriate ABA oversight of the scheme we envisage, we do not believe that a range of time or location based legislative mechanisms would be necessary to minimise any adverse impact on the subscription TV and/or commercial free to air broadcasting sectors. This is because what we are proposing would inherently restrict the national broadcasters to providing programs or program categories other than those considered to be the main drivers for the commercial free to air and Pay TV sectors.

However, we do believe that the application of the anti-siphoning regime in the *Broadcasting Services Act* to the televising of events which are not simulcast on the main ABC or SBS television channel is a relevant issue. In this regard, and despite the fact that the type of multi-channelling that would be permissible under the regime that we envisage would be unlikely to be on the anti-siphoning list, we believe that this matter should be addressed by excluding multi-channelling by the national broadcasters from satisfying this criteria. This is for a number of reasons, including that:

- the policy objectives of the anti-siphoning regime would not be met if events on the anti-siphoning list are not widely available to the general public. This would be unlikely early in the simulcast period when only a small proportion of viewers will have digital television receivers;

- it would further restrict the availability of programming to the subscription television sector.

RELATED POLICY ISSUES – Consistency is Necessary

Comments were sought on "*the extent to which policy issues addressed as part of the other statutory reviews will need to be taken into account in determining the outcomes of the national broadcaster multi-channelling policy review*".

As stated earlier in this submission, we believe that there is a range of related policy issues in other reviews that must, for the sake of consistency, be integrated with the outcome of this review. In simple terms, the policy issues that form part of this review cannot be considered in isolation. Rather they must form part of an overall response to Parliament on the introduction of digital television broadcasting.

Attachment 5

Digital Convergence Australia

SPECTRUM ALLOCATION PROPOSAL

MARCH 1999

Digital Convergence Australia

Spectrum Allocation Proposal
17 March 1999

Preamble

The members of Digital Convergence Australia (DCA) have become increasingly concerned that the outcome of the current intensive planning process for the allocation of spectrum for digital television and datacasting services will fall short of the legislated requirements and indeed will stifle the commercial development of new datacasting or broadcasting services. Australia's transition to digital TV provides a once only opportunity to introduce entirely new services which at this stage are just beginning to be glimpsed in a variety of markets around the globe.

Any such outcome which falls short of the possibilities and fails to provide sufficient useful spectrum for new services would leave Australia well behind other nations in the emergence of the new digital economy and its services. This would lead to consumer uncertainty and disappointment resulting in a reluctance to spend on digital products with Australian households then lagging behind the communications revolution. It would also close off opportunities for employment exports for our communications and information technology industries.

It is imperative that spectrum planning be undertaken in such a way as to maximise the usefulness of this public asset for the provision of large quantities of data and new services to all Australians and not limit simply to the continued supply of television programming. There is a clear opportunity for Australia to rapidly develop an export industry that will enjoy great demand in Asia, India and many other parts of the world.

DCA members understand all too well the time pressures for existing analogue broadcasters to plan, order and install necessary digital infrastructure so that digital broadcasting can commence on 1 January, 2001 and do not wish to cause any delay in achieving that goal. In fact, DCA members expect to make many of the same purchasing decisions as the television networks and are keen to start their businesses. In this regard we believe that it is entirely practical to adopt a strategy for a phased rollout which meets the digital start date for the majority of the population and rapidly extends this to provide equal coverage with analogue "as soon as practicable".

Importantly such an approach will avoid unfortunate planning choices, which would forever restrict the opportunities for new services, being made on the basis of inadequate time or information. It will also secure a sound base for harnessing the communications opportunities that will arise in the decades ahead and ensure households, and particularly young Australians, have access to a user friendly system in the lounge room offering real choice.

To this end DCA has engaged the company BCL as a consultant with a view to developing a concrete proposal through which the multiple goals of matching existing analogue broadcasting

coverage, meeting tight time constraints and producing channel allocations which admit as many new services as possible. The BCL report to DCA is attached to this proposal. Our brief to BCL was to:

- Comment on the ABA Digital Planning Handbook in the light of BCL planning and broadcast network operation experience and knowledge;

- Estimate the possible benefits in terms of the number of 7 MHz channels for digital services which might be achieved by utilising the latest planning approaches;

- Provide a recommendation including outline of method, costing and time scales for a planning approach which can meet the goals.

Comments on Planning Status and Planning Handbook

The BCL findings are broadly consistent with the DCA members' views. These have been encapsulated in several other submissions to the ABA spectrum planning processes.

It must be emphasised that guidelines and criteria for any planning process are critically important in determining the final outcome. This is particularly the case for complex issues such as spectrum planning. Guidelines and planning criteria must not be left to clean up after the allocations have been completed.

The key issues are as follows:

1. The current handbook does not adequately reflect the increased emphasis on interference between services as the factor which ultimately limits the number and quality of services which can be supported in each area. It is important to recognise the ultimate measure of planned service allocation is whether that service interferes with any other planned service whether inside or outside the license area.

2. The handbook focuses on the quality of coverage within a license area as a key determining feature in the planning. The case can be made that it is in the individual broadcaster's best interest to improve the quality of service within their license area rather than the regulator.

3. Software planning tools (propagation modelling, coverage and interference estimation, population coverage statistics, etc) are essential components of a planning process which aims for efficient use of the spectrum together with high quality service delivery. In contrast, direct measurement is only realistically able to provide spot checks due to the vast number of measurements necessary to fully delineate service coverage.

4. The reality of TV propagation, in particular, digital TV propagation, is one of multiple interacting statistical factors. The design for worst case in all parameters leads to a safe but very conservative and inefficient set of allocations.

5. The are a variety of methods to achieve the desired coverage within each licence area. Of these, allocation of separate channels to translator sites is the least attractive in terms of spectrum efficiency. Single frequency networks and even judicious increase in central transmitter power or radiation pattern should prove much more effective as a means to improve coverage within the license area.

A further issue which has not yet been properly addressed is that of requiring both existing and new broadcasters and datacasters to take reasonable steps to ensure effective use of the spectrum. The FTA broadcast spectrum licensees are in a privileged position in having access to this spectrum. This would effectively become a power of veto if transmission infrastructure improvements that were necessary to allow new paying entrants were to be refused. Examples might be the insistence on the use of adjacent channels or the refusal to install new transmit antennas to provide coverage better tailored to new digital requirements. The ABA must have the power to intervene in such situations.

Proposed Allocations and Allocation Process

The following outline proposal is based closely on the attached BCL proposal and is also consistent in broad structure with an earlier News Ltd proposal to the ABA Digital television Channel Planning Consultative Group. We believe the proposed BCL planning project addresses the concerns of all stakeholders and sets out an achievable process which at a price of approximately $1.5 million can be potentially funded many times over by the sale of a single channel of the additional spectrum which will be made available.

The proposal in its current form is dictated by statements from some parties that the lead time for ordering and installing transmission equipment is 18 months. Recent information would suggest that this period reflects the time required for upgrading a few worst case transmission sites. A considerably shorter period would apply for most sites which could provide further flexibility in the planning process.

The important stages of the project are:

Stage 0: Update planning handbook and agree on changes to planning guidelines with all stakeholders. Much of this work has already been addressed by the ABA. Some 2-3 months are available to finalise this aspect.

Stage 1: Allocate the main transmission channel for each of the five major metropolitan area licenses along with an initial transmitter power. Of these allocations, only Melbourne currently is open to debate. The allocations should be made as soon as possible so that transmitter equipment can be ordered (1 July). Estimates of the population coverage will also be necessary to determine the initial transmitter power.

Stage 2: In parallel with stage 0, produce new allocations or adopt the current allocations for the main transmission channels in the remaining 10 major license areas and verify that these are consistent with guidelines for interference. Revised power levels and population coverage estimates for these main transmitter allocations would then also be produced. The time to

complete this phase is approximately 5 months although allocations will be available progressively during this period.

Stage 3: Extend the main transmitter allocations to the remaining license areas. This will use the same methods and provide estimates of maximum power levels and population coverage. This phase should take an extra 5 months with again the allocations becoming available progressively.

In stages 1 to 3 above nominal solutions will be provided to maximise the population coverage in each license area through the use of on-channel SFN, dual channel SFN, etc extender transmission sites. If any broadcaster can demonstrate compliance with requirements to limit interference to other services then other solutions may be employed.

The benefits of this proposal are considerable. Firstly, there is no delay in providing a digital television service to the bulk of the population in the major population centres. Other major license areas are brought in with potentially little or no delay in the actual start date. The remaining license areas not required to start on 1 Jan 2001.

The coverage within each license area can be improved “as soon as practicable” which may mean in practice as little as a few months after the switch on date should any broadcaster so wish (US experience suggests the number of additional viewers with digital TV receivers so reached may be very small).

The second benefit is that allocations can be made with a high degree of confidence that efficient planning guidelines are met. This should, on the basis of digital planning experience elsewhere, lead to 3 or more new 7 MHz digital channel allocations being available throughout Australia.

TVNZ (AUSTRALIA) PTY LIMITED
ACN 062 953 940

Digital TV Spectrum Planning

A Report for Digital Convergence Australia

March 1999

Researched and Compiled by Ian Gair and Mike Fouhy

Introduction

It is in the interests of all players - broadcasters, datacasters, viewers, and the government - that DTTB be a successful product. This can only happen if there is a good uptake of receivers by the public. But this could be in doubt if receiver costs are too high, and if inefficient spectrum planning reduces the number of services that DTTB will provide - particularly in the face of competition from satellite and cable.

It is therefore essential that DTTB look for ways of providing added value to the end user.

Ease of Reception

One of these ways is *ease of reception*. The ability for a viewer to buy a receiver, plug it in, and get perfect reception:

- without needing an antenna installation,
- without having to employ a serviceman, and
- without requiring the viewer to undertake complicated tuning procedures

is a strong selling point.

Number of Services

Another feature of DTTB is the *number of services* possible. The more services that are transmitted, the more attractive the product. Data services can assist in this.

But to provide a good range of services it is essential that spectrum planning result in a large number of 7MHz channels.

Expectation for Australia

Tabulated below is the comparison with the UK and NZ.

	Channels available	Services planned for	Services
Australia	57	13	5 analogue + 8 DTTB mooted
New Zealand	49	24	13 analogue + 11 DTTB mooted
United Kingdom	47	11	5 analogue + 6 in operation

Noting the above and after examining spectrum availability in Australia one could reasonably expect there to be greater than 10 DTTB channels available in most areas of Australia. In some areas there will be more and a few areas with less than 10.

Of course after the simultcast period there will be many (ex analogue) frequencies available.

Approach to Spectrum Planning to Maximise Spectrum Efficiency

Modern practice for spectrum planning now revolves around computer prediction of the transmitted signal rather than test transmissions. Test transmissions might be helpful to prove coverage but are pointless to predict interference (which is present only for short periods of time) and interference is what drives a spectrum plan.

Spectrum planning now days is determined by interference to adjacent areas rather than coverage of the areas near to the transmitter.

Interference is statistical in nature and can only be engineered by mathematical models. This type of approach is used extensively in mobile phone cellular planning by the telecommunication industry and in fact managing a cellular network without computerised spectrum planning tools would be almost impossible.

Population counting (based on Census information) to optimise the spectrum plan while minimising disruption to the viewing public is now easily achieved using computer software.

Regulated transmitter power levels of the new services should be limited only by the levels of interference. In practice the maximum power level will be restricted by cost of infrastructure and perhaps EMR levels and therefore should be determined by the broadcaster not by regulation based on achieving equivalent coverage to analogue. (Many of the analogue coverage specifications need to be reviewed due to shifting populations).

Need for Translators

Many of the in-fill analogue translators will not need to be duplicated for digital TV if there is sufficient transmitter power. This will assist spectrum efficiency. Because of the nature of the DVB-T signal, analogue coverage black spots due to ghosting will not be digital TV pockets. This helps to make the computer prediction of coverage more accurate for digital services than for analogue services. Accurate prediction of ghosting pockets for analogue is difficult and time consuming.

A digital system set up in Auckland using a simple Single Frequency Network (SFN) provides adequate coverage that in the analogue domain requires 9 analogue translator sites to cover adequately.

Single Frequency Networks

Single Frequency Networks (SFN's) are practical and realisable in the cases where pockets of low signal strength still exist. BCL has successfully implemented a SFN in its Auckland trial.

SFNs should be considered as a prime tool of the spectrum planner to maximise coverage and efficient use of spectrum. The variants generally available to the digital spectrum planner (in order of application) are : site selection, channel and polarity allocation, power and radiation pattern determination, use of SFN's and finally use of translators.

A Way Forward

To assist the ABA and industry to achieve a workable and spectrum efficient plan BCL is pleased to make the attached offer of professional services, detailed in Appendix 3. The cost of the proposal is in the order of $1.4 million and puts ABA staff in a partnership with BCL experienced spectrum planners. This is likely to have a long term benefit to the ABA in the development of digital planning expertise.

The following milestones are quite realisable and will mean that the broadcasters in the Metropolitan markets will be able to have their installations complete well before September 2000.

Milestone	**Date achievable**
Contract Start Date	1 April 1999
Guidelines completed	1 May 1999
Details of existing services obtained	1 May 1999
Capital City Plan Complete	1 July 1999
Major Regional Plan Complete	1 Aug 1999
Regional Cities Plan Complete	1 Dec 1999
Minor Regional Sites Complete	1 April 2000
Final Documentation	1 June 2000
Contract Completion	1 June 2000

Appendix 1 - Evaluation of the ABA's draft "DTTB Handbook" version 13.0

(The handbook's full title is the Australian Broadcasting Planning Handbook for Digital Terrestrial Television Broadcasting, dated 9 October 1998.)

Introduction

BCL has been asked by Digital Convergence Australia (DCA) to make a technical evaluation of the ABA draft document and provide advice on digital spectrum planning. The purpose is to highlight any errors or technical deficiencies that may be apparent from a independent review of the proposals especially where the guidelines may restrict spectrum efficiency.

The conversion of television transmission to digital is something new in the world scene, and there are few precedents for many of the decisions that have to be made. In addition, Australia's proposed transmission system and the regulatory structure that it will operate under have some features that are unique in the world.

Summary/Overall observations

We make the following main observations:

- The planning guidelines restrict the number of DTTB services that can be implemented, thereby threatening the viability of DTTB.
- There is a lack of appreciation of one of the main benefits of DTTB - the ability for viewers to avoid the use of receiving antennas provided reasonable power is transmitted.
- The approach lacks the use of modern planning techniques that will maximise spectrum efficiency such as through the use of Single Frequency Networks (SFN's) and interference minimisation rather than reliance on minimum field strengths.

These and other observations will now be discussed in detail.

1 Restriction of New Channels Available for New Services

The technical prescriptions detailed in the draft handbook can, in most cases, be justified by the technical circumstances and by the requirements of Australia's regulatory regime. However, this rigid prescription is likely to lead to the implementation of a small number of DTTB services that are considered 'very safe', whereas a much greater number of services, still adequately 'safe', could have been provided if a less-restrictive approach had been followed.

The overall result is that Australia could get out of step with other countries in terms of efficient utilization of DTTB spectrum.

The various restrictions will be discussed later. At the present point it is only necessary to note that each restriction *by itself* can be justified with respect to the technical facts, and that all of the restrictions might be considered reasonable in isolation. However, the *total* effect is likely to be an desirable limitation of the number of new channels available for new services.

2 Some overseas examples

2.1 New Zealand

As one example of DTTB spectrum utilization, initial planning in New Zealand indicates that, in the UHF bands, there is capacity for 11 nationwide DTTB multiplexes. These digital services would coexist with 9 nationwide analogue services in the same band (6 of which are already in use).

The UHF spectrum in New Zealand comprises 38 channels. In addition there are 11 VHF channels that provide 4 free-to-air services. Translators use both the VHF and UHF bands.

In comparison, Australia has 42 UHF channels and 15 VHF channels. There are 4 free-to-air services in the VHF bands and one in the UHF band. Again, translators use both bands.

In spite of having more available frequencies than New Zealand (57 versus 49), and fewer existing services to accommodate (5 versus 13), the suggestions are that Australia may achieve fewer DTTB services.

(The detailed planning has not been carried out in either country, but there is talk of 8 digital channels in Australia versus the 11 in New Zealand).

In summary, the NZ comparison with Australia is:

NZ:	49 channels	24 services (ie, 13 analogue + 11 DTTB mooted)
Australia:	57 channels	13 services (ie, 5 analogue + 8 DTTB mooted)

We freely acknowledge that New Zealand and Australia are very different in topography and population distribution. In particular, New Zealand's hills restrict interference while Australia's reasonably-flat coastal plains encourage it. Nevertheless, there is at least an indication that Australian planning techniques may be too restrictive.

2.2 United Kingdom

In the UK there are 5 analogue services and 6 digital, all contained in 47 UHF channels. The interference problems in the UK are vastly greater than in Australia, not only because of the UK's 2-dimensional population distribution, compared with Australia's largely linear coastal strip, but also because of the severe effect of continental Europe.

The UK comparison with Australia is:

UK:	47 channels	11 services (ie, 5 analogue + 6 DTTB)
Australia:	57 channels	13 services (ie, 5 analogue + 8 DTTB mooted)

Again, taking into account the comparatively easy interference environment in Australia, there is an indication that Australia should be able to provide significantly more than 8 DTTB multiplexes.

2.3 Expectation for Australia

Tabulated below is the comparison with the UK and NZ.

	Channels available	Services planned for	Services
Australia	57	13	5 analogue + 8 DTTB mooted
New Zealand	49	24	13 analogue + 11 DTTB mooted
United Kingdom	47	11	5 analogue + 6 DTTB in operation

Noting the above and after examining spectrum availability in Australia one could reasonably expect there to be greater than 10 DTTB channels available in most areas of Australia. In some areas there will be more and a few areas less than 10.

Of course after the simultcast period there will be many (ex analogue) frequencies available.

3 One of the Main Benefits of DTTB Ignored

DTTB is conceived as a new type of free-to-air television broadcasting, and it therefore requires viewers to buy their own receivers (as opposed to having them provided by a PayTV operator).

This means that the DTTB broadcasters have a huge problem in persuading 6 million home-owners to buy new receivers. One of few attractions that the new receivers have is the ability to provide perfect pictures with minimal effort. In fact, DVB-T is a true 'plug-and-play' medium - the homeowner just buys a set and turns it on. The set self-tunes to all the channels (both VHF and UHF, and to all operators), and it does not require a serviceman to visit, or an antenna to be installed. (These details assume a likely implementation based on UK precedent. In the UK, however, PayTV services were included in the DTTB offering from the outset and this requires an authorisation procedure in addition to 'plug-and-play'.)

The plug-and-play aspect of DTTB is a very significant advantage over satellite, cable, or ADSL methods of television delivery. The latter have the ability to attract viewers by providing a large number of programmes, but terrestrial broadcasters are constrained in this area. Therefore the broadcasters need to make full use of any natural advantage that their medium has.

To make use of this plug-and-play advantage, all that the broadcaster needs to do is transmit sufficient power. In fact, it is advantageous to transmit as much power as possible without causing interference. (It should be noted that this is not a feature of the American ATSC system that Australia rejected. The ATSC system is susceptible to multipath problems and increasing the fieldstrength has no effect.)

However, the draft DTTB Handbook (page 6) recommends powers that are 25 - 30dB below the levels that would make indoor reception an attractive feature of DTTB.

This is shown by Table 1 of the draft Handbook, where urban-area target field strengths of 48dBµV/m to 58 dBµV/m are given. These fields are very low, particularly as they are specified at 10 metres above ground level.

The EBU planning guidelines (BPN 005 Second Issue, July 1997) give the following figures for indoor reception:

	Band III	Band IV	Band V	ABA Band V
95% location probability	74	90	94	58
70% location probability	67	80	84	52

The difference between the last two columns is 36dB and 32dB.

We freely acknowledge that aspects of this comparison are unfair. For example, the ABA will be assuming that viewers closer-in will achieve higher field strengths than the table gives, and will therefore be able to use indoor reception. Also, it is not reasonable to plan for 95% location probability for portable reception (70% is more appropriate).

Nevertheless, the figures suggest that the ABA is applying a somewhat-outdated type of analogue thinking ("minimum field strength is what matters") rather than modern digital thinking ("provision of competitive services in the marketplace is what matters").

We also note that FM broadcast services can only be justified at about 54 dBµV/m, on a theoretical basis. That is, the C/N requirement and other FM characteristics, including the use of good receiving antennas, require that a field strength of only 54 dBµV/m be provided. Yet the practicality is that FM broadcasters, to be successful in the marketplace, need to provide in excess of 80 dBµV/m. The reality is that DTTB has a high chance of failure through insufficient take-up by viewers, particularly when satellite and cable offer a much higher number of services.

We suggest that boosting the technical attractiveness of DTTB - by making the broadcasts easy to receive, and by providing as many services as possible - should be addressed and given a higher priority in the planning.

4 Fortuitous use of existing antennas

Much of the preliminary channel planning for DTTB has focused on giving the existing broadcasters a DTTB channel in the VHF band, possibly adjacent to the broadcaster's existing channel. The draft Handbook (page 8) quotes the EBU in support of this policy.

We suggest that this and any similar constraints be deleted (if the circumstances permit).

The reality is that a viewer will buy a DTTB receiver and neither she nor the receiver will care about which bands the DTTB broadcasts are on. The receiver will conduct an automatic tuning-scan at switch-on, receive any multiplex, read the Service Information (SI) carried by all multiplexes, and then know exactly how to tune to all carriers - regardless of the band.

Furthermore, the receiver will not care what antenna it is connected to. If the antenna is a VHF-only model, but the wanted broadcast is on the UHF band, a perfect signal is still likely to be received (provided sufficient power is being broadcast).

As indicated earlier, this "couldn't-care-less" approach to antenna use is a feature of DVB-T. The system inherently sorts out multipath reflections (and even makes constructive use of such reflections), so the only practical limitation is signal strength.

(Co-channel interference from a PAL signal would be another limitation, but, as indicated in Figure 2 in the ABA document, digital is 49dB more immune to this than analogue. Therefore it should not be a limiting factor. The 49dB is the 'co-channel' difference, 52dB - 3dB.)

A VHF antenna, or a half-broken antenna of any sort, may be 10 or 15 dB down in gain compared with a correct UHF antenna, but if there is a 30 dB margin (to allow a significant proportion of viewers to use indoor antennas), a 15 dB reduction in gain could be negligible.

If higher power results in coverage exceeding that of existing analogue services (as is likely), then fewer frequencies will be needed for translators leaving more frequencies for additional services.

5 *Field Strength Prediction Models*

The draft Handbook says that "the ABA may assign some interim channels in advance for the purpose of testing".

We think that the best approach to spectrum planning is to rely on computer modeling. Field testing should only be used if the modeling suggests that it is necessary in a particular case.

Not only is field testing less comprehensive (and hence less accurate), but it takes extra time to accomplish. (Computer modeling is required regardless of field tests.) The assignment of temporary channels could also result in a lot of transmitter re-work when the real ones are allocated.

Although it is important that the coverage prediction tools be accurate, we caution against an excessive reliance on computer results at the expense of an intelligent interpretation of them.

As indicated in the next section, we are in favour of coverage planning which provides a large signal strength margin, even if this results in strong signals beyond the licenced area so long as interference is avoided. We believe that the appropriate control of reception outside licenced areas is via software. Interference (digital to digital) is unlikely to be an issue.

The transmitter power should not be restricted by regulation just because there is fortuitous reception opportunities outside the licence area. There are software tools available in the DTTB system to prevent unauthorised reception, and these are preferable to field strength restrictions. The key point is that outside the licence area, the only limiting factor should be interference. The interference levels needs to be specified in the planning document and then applied as part of the spectrum plan.

If this strategy is accepted, there is no need for planners to tailor signal roll-off so that it falls precisely on the boundary of a licenced area. Instead it allows planners to concentrate on providing as much signal as possible to all areas, hopefully eliminating all pockets within the licenced region. It also reduces the planning constraints mainly to a matter of avoiding interference to PAL in the simultcast period.

6 Maximum field strength beyond the licence area

The draft Handbook specifies that the field strength "shall not" exceed the values in Table 1 for populated localities outside the licenced area. Since the values in Table 1 are very low (eg, 42 dBµV/m for Band III), and these are quoted at a height of 10m above ground level, this could be an onerous requirement. A significant constraint on channel planning could result.

(For example, the figure of 42 dBµV/m would be obtained from a 10 kW transmitter 560 km distant. This assumes a radiated power of 50 dBW and 30 dB of transmission losses in addition to normal free-space losses.)

The draft Handbook does not give any reason for this requirement, but there is a suggestion that it is a regulatory matter.

If it is indeed a regulatory requirement, we suggest that it be deleted and replaced by 'software' regulation. In Britain, this is done by authorising receivers to receive only certain broadcasts (even when all the broadcasts are free). Authorisation information for the viewer's receiver is sent to the viewer based on their street address or telephone code. It is not a fool-proof method, but if it satisfies rights-owners in the rest of the world it should be satisfactory for Australian commercial operators too. (The authorisation might take the form of a code number that the viewer inputs via their remote control. It does not necessarily require a conditional access card.)

The problem should be a minor one because the viewer's receiver will normally lock onto the local transmitter and ignore broadcasts that are not referenced in the SI of that transmitter. It might only be an issue if the viewer deliberately maximises reception from the 'wrong' transmitter and forces a re-tune.

7 Field strength targets

(1) The ABA draft Handbook derives the following figures in Table 4 of Appendix 2:

Band III	38.6 dBµV/m
Band IV	44.6 dBµV/m
Band V	48.6 dBµV/m

These figures are also repeated in Table 1 of the draft Discussion Paper.

The point about these figures is that they are the absolute minimum field strengths that have to be present in the vicinity of a viewer's antenna for them to get a picture. There is no margin in these figures. If the antenna gain is not 8dB above a dipole (in the case of Band III), the viewer will not get a picture.

These figures have been derived from first principles and appear to be correct (although we think the assumed antenna gains are rather too high for this day and age).

(2) Also in Appendix 2 of the draft Handbook, Table 5, are the following 'location correction factors':

50% location probability 0 dB
70% location probability 3 dB
80% location probability 5 dB
95% location probability 9 dB

By convention, computer programmes calculate the field strength required so that 50% of the people in a given small area can receive the service. For penetration higher than 50%, we need to increase the theoretical field strength. The figures are the required increases.

These figures (which are independent of frequency) have presumably been measured from the topography of Australia.

(3) Table 1 in the draft Handbook shows the effect of adding the figures in (2) above to the figures in (1) above.

(4) In the draft Discussion Paper, Table 2 shows the minimum field strengths for *analogue* TV services. Points about this table:
- the figures are for 50% of locations (not 80% or 95%, even for 'urban')
- they are 'minimum' values
- they are the minimum values to protect against interference - not the minimum values to make the receiver work

- the figures have generous margins (eg 20 dB)
- the figures would be even higher for 95% of locations
- the table is not justified by calculations or by reference to international standards. (In other words it is Australian historical practice. New Zealand has similar 'local practice'.)

(5) Table 5 in the draft Discussion Paper it seems that the authors have taken the raw data from (1) above and increased the figures for a location probability more than 50%, and a time probability more than 50%.

(6) In the discussion following this table (ie, section 6), the authors focus on 50% location and 90% time. These figures are probably not suitable for a DTTB service. As indicated elsewhere, a digital service has to be available for more than 99% of the time, because the consequences of missing the target are a complete loss of signal - not just a bit of impairment as with analogue.

Similarly, the location figure has to be higher than analogue because of the 'cliff edge effect' in the case of digital.

So the best comparison with analogue (although still deficient) is the bottom row.

(7) But the main problem with Section 6 of the draft Discussion Paper ("Effective Radiated Power") is that the digital table is based on calculations *without any margins* but is being compared with an analogue table where the margins are 20 dB (even higher if one converts the analogue figures from 50/50 values to 90/90 values)

Clearly, if analogue includes generous margins, the digital replacement should too.

8 Modulation

The draft Handbook, page 9, makes comments on HDTV under the heading of 'modulation'. Our view is that HDTV versus SDTV is only indirectly connected with modulation, and should not have an impact on frequency planning, provided that the quality of the HDTV - which has not yet been specified - is not mandated too high.

As the ABA notes, the choice of modulation parameters affects the useful bit-rate in the transport stream. However even bit-rates as low as 12 Mbit/s can provide HDTV. At issue is the *quality* of the HDTV. If an HDTV service of very high quality is mandated, this could require nearly 20 Mbit/s.

9 Hierarchical modulation

This modulation technique allows distant viewers to get a reduced-bit-rate version of the service, rather than no service at all. Alternatively, it allows viewers close to the transmitter to use portable or mobile reception.

Our view is that this technique is an not necessary. It wastes resources by broadcasting two copies of the information thereby reducing the amount of data in the transport stream. For the situation where QPSK is broadcast in conjunction with 64QAM, the data rate (for a 7 MHz channel) is about 6 Mbit/s for the rugged stream and 13 Mbit/s for the normal stream. If the rugged stream is a subset of the normal stream, the total effective data rate is 13 Mbit/s.

A more efficient approach is to utilize the full channel with a conventional high bit-rate service (ie, 20 Mbit/s), transmitted at a higher power. This can achieve portable reception for close viewers (but probably not *mobile* reception), while distant viewers will still receive the full service if they use receiving antennas.

If *mobile* reception is required, the whole channel could be changed from 64QAM to 16QAM, as was done for the mobile broadcasts in Amsterdam last September. This would give 13 Mbit/s to *all* viewers, including the mobile ones. Of interest is the fact that the required C/N in this case is similar to that for the QPSK case.

10 Interference

The draft Handbook describes interference effects in traditional analogue terms. As an example: "For small percentages of time a higher level of interference can be tolerated than would be acceptable on a continuous basis."

While this is true in the analogue world, for DTTB the interference that the viewer will see is loss of picture (perhaps a freezing of the last information). If the interference is stronger, the effect on the picture will not change, but the outages will occur more often. Therefore the real issue is what percentage of time the service is unavailable, not the strength of the interference.

The acceptability of a service that goes on and off all the time is also doubtful. If interference causes outages for 30 seconds in an hour, which is less than 1%, this could still be an unacceptable service. This would particularly be the case if the 30 seconds were divided into, say, 1 outage every 5 seconds. The truth is that digital television, just like data transmission, requires a much higher standard of reliability than analogue television. In the case of data links, the availability of the service is often specified in the 99.99% region. This is one of the reasons that the DVB group have adopted a target of 1 bit-error per hour, or 10^{-11} reliability (after Reed-Solomon correction has been applied).

These considerations suggest that a difference in thinking is required between analogue and digital applications. This difference is not reflected in the draft Handbook's treatment of interference.

Again if the digital field strength is kept as high as possible (ie, by transmitting higher power) to provide better protection against such interference (vehicle ignitions and industrial processes in particular).

11 IF image interference, etc

The draft Handbook implies that IF images should be taken into account when developing the Digital Channel Plan.

We suggest that, in order to free up the channel planning and allow greater spectrum utilization, image interference be dropped from consideration entirely.

Our opinion is based on the improvements to television tuners that have been made over the last 30 years. Additional factors are:

- interference *to DTTB* (if implemented at reasonable power) is unlikely to occur because of the relaxed C/N requirement of DTTB compared with analogue (20dB versus 40dB+); and

- interference *to PAL* is relatively benign due to the noise-like character of DTTB transmissions.

In the latter case, the image interference may cause a slightly noisy analogue picture, but the viewer (if they notice anything at all) is just as likely to blame their antenna for providing a weak signal as the DTTB transmission. This is not the case when the interference comes from an analogue transmission. In that case the effect on the picture is 'patterning' which is more annoying and clearly somebody else's fault.
Also note that the analogue transmissions are marked to die eventually.

We suggest that considerations of oscillator interference be dropped too. In New Zealand, the oscillator falls 5 channels above the channel tuned to. This would nominally rule out the channel combinations (4,9), (5,10), and (6,11). However, these precise combinations are in use in four cities (Auckland, Napier/Hastings, Christchurch, and Dunedin). In three of these areas, the 'taboo' channel combination occurs at the same site. In the other area (Napier/Hastings), the combination occurs at different sites serving the same region. But in spite of this 'taboo', interference does not occur in practice.

12 Definition of digital power

The draft Handbook (under 'ERP') gives a definition of 'effective radiated power' but leaves open the definition of 'power'.

In the case of analogue television, the convention is that power is defined as the RMS power during the time that the tip of a sync pulse is present.

In the case of digital television (DVB-T), the convention is that power is defined as the mean power of the carrier ensemble.

The latter definition means that a transmitter has to be linear up to a power some 8 or 10 dB above the rated power of the DTTB transmission. For example, if the transmission has a power of 5 kW, the transmitter needs to be linear up to 30 or 50 kW.

(In non-DTTB situations, this would normally be referred to as a 30 or 50 kW transmitter operated with 8 or 10 dB 'back-off'. However, the convention with DTTB transmitter manufacturers is to rate the transmitter at 5 kW in DTTB service with 8 or 10 dB 'headroom' understood. The headroom is to allow for the peaks that occur above the mean.)

13 Maximum field strength to prevent receiver overload

The draft Handbook suggests that this is a factor to be taken into account.

We do not agree that this should be a factor used to restrict power levels or prevent the allocation of extra spectrum. If a viewer puts up a high gain antenna and experiences receiver overload, that is the viewer's problem and the solution is in their hands (as the ABA acknowledges). Otherwise it may be a manufacturer's problem - but it should not be a regulatory problem.

In our experience (in Wellington, for example, where there are thousands of people within 2km of a site with 10 and 20 kW transmitters - a situation that would be prohibited by the proposed rules), receiver overload is not a problem in practice.

We suggest that the ABA eliminate this requirement and let transmitter siting be determined by the usual environmental factors (radiation exposure, aesthetics, etc). Hopefully this will allow higher powers and a consequent reduction in the need for frequencies to be reserved for translators.

Whether overload of a television distribution system will occur depends mainly on how the installer of the distribution system has set things up (eg, gain setting). It also depends on the quality of the amplifier, how much antenna gain precedes it, and how close the viewer is to the transmitter.

Overload occurs in the output stage of the amplifier. This is due to the amplified signal reaching the non-linear part of the transfer curve, or going beyond this region and clipping at the supply voltage.

In the case of analogue television, intermodulation first appears through operation on the non-linear portion of the transfer curve, causing 'boiling porridge' effects on the picture.

In the case of digital television, intermodulation is caused by the very occasional peaks of the digital signal going right through the non-linear region and clipping at the rail voltage. When this happens the amplifier effectively shuts down, causing a brief hole in all signals that are passing through it. The digital signal is unlikely to be affected itself, due to error correction, but any analogue signals present will experience white 'sparklies' on the picture. These have an unusual appearance comparable with normal impulse noise or truncation effects in FM systems.

DTTB transmitters are likely to be truncated at 8 dB above the mean power (ie, they have 8 dB of headroom). This truncation is done in the exciter, not in the power amplifier. The truncation means that a 5 kW DTTB transmitter will produce spikes reaching 30 kW, but will not exceed this level. Depending on how often 'sparklies' can be tolerated on the analogue picture, the figure of 30 kW is approximately the power that needs to be incorporated in overload calculations (for a 5 kW DTTB transmitter).

Example1:
30 kW analogue transmitter
5 kW DTTB transmitter (-8 dB relative to analogue)

As indicated above, the effective power of the DTTB signal is 30 kW ie, the same as the analogue signal. For two equal signals going through a distribution amplifier the combined effect is +6 dB. (ie, a doubling of the loading causes a 6 dB effect). If the distribution amplifier had been set up with this amount of headroom prior to the addition of the DTTB service, no problems would occur when the DTTB service was added.

Example2:
30 kW analogue transmitter
1 kW DTTB transmitter (-15 dB relative to analogue)

In this case the DTTB transmitter is approximately 6 kW peak. A 30 kW signal and a 6 kW signal going through the amplifier would have a combined effect of +3.2 dB. Therefore if the mast-head amplifier had 3.2 dB of head-room before the DTTB service was added, no sparklies would occur.

Example3:
Four 20 kW analogue transmitters
1 x 5 kW DTTB transmitter (-6 dB)
Headroom required to add DTTB transmitter (30 kW peak): 2.3 dB

Example4:
Four 20 kW analogue transmitters
10 x 1 kW DTTB transmitters (-13 dB relative to analogue) (6 kW peak)
Headroom required to add DTTB transmitters: 1.1 dB for the first DTTB transmitter, unknown for the next 9 transmitters. The power does not reach the peak level very often (8 dB corresponds to 2.5 standard deviations or about 1% of the time). So, for multiple DTTB transmitters, it is not valid to treat their peaks as occurring at the

same time. If the peaks *were* simultaneous (in this 10-transmitter example), the headroom required to add the 10 transmitters would be 7.5 dB. This would be the extreme value. A more likely figure would be, say, 3 dB.

In the case of multiple DTTB transmitters, the truncation of the DTTB signal (in the exciter) is a significant complicating factor in working out the headroom requirements. The fact that the peak power of the analogue signals only occurs during sync pulses should also be taken into account. (It is not usual to take this into account if all the signals are analogue. This is because the signals often come from the same sync source, causing the peak power of the transmissions to occur at the same time. Even if they come from different sources, the syncs will gradually drift through each other and can remain coincident for a part of the time.)

Research and questions that still need to be answered are :

- what is the combined effect of several (truncated) DTTB signals passing through the same amplifier
- what amount of time can 'sparklies' on the analogue picture be tolerated
- what is the experience in the UK, where 6 new signals have been added to their terrestrial system.

Even if a system has been set too close to the limit, the addition of a DTTB service about 10 dB below the strongest existing analogue picture is not expected to result in an 'unwatchable' picture, but only some random 'noise' caused by occasional peaks of the signal. The digital signal might not be affected itself.

14 Electromagnetic compatibility (EMC)

The draft Handbook suggests that EMC is a matter of *emissions*, and talks about such things as transmitter filters and spectrum masks.

However, in our experience interference is overwhelmingly caused by *receivers.* That is, receivers respond to fields that they should not respond to.

It is relatively easy to implement a transmitter that does not radiate outside its intended spectrum, but it is more difficult to make cheap receivers that respond only to their intended service.

We suggest that the Handbook reflect the reality that receivers cause interference more than transmitters.

15 Protection ratios

The main protection ratios are those where DTTB interferes with PAL (where existing services need to be protected). Apart from dropping the image requirement, we accept the DTTB→PAL values in Figure 2.

Note : The communications lab on behalf of the ABA have been working a revisions to the DTTB to PAL co-channel interference (in lower field strength PAL reception areas the noise created by the low field strength masks the DTTB interference). This could reduce the protection ratio requirement to 35dB in areas.

The question is: should the protection ratios be legalistically applied to all viewers?

In some circumstances, the most reasonable course of action might be to infringe the requirements if only a few viewers are affected. For example, the provision of a new channel at a main station may be denied if it results in a protection ratio of, say, 35 dB for some viewers of a translator, instead of the required value of 41 dB.

However the best action could still be to go ahead with the new service at the main station, This would particularly be the case if the affected viewers would also benefit from the new service. Since the new DTTB

service will have a greater coverage ability (if implemented at a reasonable power), there is a chance that it will reach the viewers in the deficient area, even though the analogue services do not.

We suggest that some phrase such as "reasonable in the circumstances" be incorporated in the regulatory framework. This would help avoid outcomes that are clearly undesirable but are required by the letter of the law.

16 Single Frequency Networks (SFNs)

The draft Handbook does not address SFNs, but some BCL experience in this area may be of interest.

Our Auckland tests of a full power DTTB service showed that SFNs work as expected, in particular that the guard interval, when translated to a line on the map, is a rigid barrier. (eg, it is not permissible to go 20% over the barrier.)

Whereas Auckland has 9 central translator sites for analogue VHF services (and 2 translator sites for UHF services), we believe that a single DTTB frequency, with simple SFN use, can serve the entire area. That is, frequencies do not have to be reserved for translators.

The main finding, however, was that increased power from the main transmitter site was beneficial in reducing the pocket sizes. The DTTB power was 13 dB below the VHF power (1kW instead of 20kW), but higher DTTB power would have been useful. (The ratio with respect to the analogue UHF services was -7dB.)

We also recommend that the '8K' type of receiver be introduced, as this greatly facilitates SFNs (particularly with the 1/8th guard interval being suggested for Australia.)

There has been some industry speculation that SFNs will not work because they will cause interference to PAL services on a adjacent channel where there is no similar PAL translator service (That is a high field strength close to an SFN repeater will interfere with reception of a distant PAL signal).

Our experience is that "adjacent-channel" in-fill stations of this nature do work and that the risk of interference is generally overstated.

The SFN repeater is usually cross polarised to the main service (PAL) and in conjunction with the lower power of the DTTB repeaters, there is likely to be good protection for most residents. (Noting that we are referring to adjacent channel interference rather than co-channel).
The only viewers who might be affected are those closest to the SFN site. These will be small in number and any problems will be manageable on a case by case basis.

Appendix 2 – Profile of BCL and TVNZ (Australia)

1 Background

TVNZ (Australia) is part of the Television New Zealand group of companies, which in turn is a State Owned Enterprise of the New Zealand Government.

A divisions TVNZ (Australia) is BCL which specialises in the provision of turnkey RF solutions for broadcasters and telecommunications providers.

TVNZ (Australia) is "vendor neutral" and seeks to supply solutions to the client that best suits their requirements without being tied to any particular supplier.

2 RF Communications Experience

BCL has considerable world-wide experience in the design, implementation, operation and maintenance of broadcast transmission systems plus mobile and fixed radio network systems.

BCL specialises in the provision of fixed price turnkey RF solutions to clients.

Our expertise includes:

- Overall system design
- Equipment procurement
- Coverage prediction
- Frequency planning
- Path analysis
- Project management
- Radio systems installation
- Antenna rigging services
- Tower and mast design services
- Structural analysis of existing towers
- Network management
- Operations and maintenance services

This experience has been gained initially from the development of our own 550 site transmission network in New Zealand that provides specialist services to all of New Zealand's television and radio broadcasters as well as new fixed and mobile telecommunications service providers.

3 Australian Experience

In 1992 BCL established a presence in Australia which has now evolved to be TVNZ (Australia) Pty Ltd reflecting the corporate name of its parent company and headquartered in Sydney. In Australia BCL continues as an operating division of TVNZ (Australia) concentrating on the provision of RF engineering expertise. In this relatively short period our resources in Australia have grown to include 45 staff based in Sydney, Brisbane and Adelaide as well as operations and maintenance sub-contractors throughout regional Queensland, New South Wales and Victoria. The bulk of our staff are RF technicians and engineers undertaking operations and

maintenance services and design and build projects for Australia's leading television and radio broadcasters. Our installation teams are experienced in working throughout Australia in all conditions.

During the above period TVNZ (Australia) has secured transmission infrastructure projects in excess of $30,000,000 and operations and maintenance contracts in excess of $60,000,000.

We are therefore a very responsive and dynamic company.

In New Zealand our sister company, Broadcast Communications Limited, provides additional specialist and peak resource support with it's 220 specialist RF engineers, technicians and riggers.

Appendix 3 – Proposal for Production of the Digital Spectrum Plan

1. SUMMARY - DIGITAL SPECTRUM PLAN

BCL is pleased to offer the following Consultancy Services to the Australian Broadcasting Authority in preparing the Spectrum Plan for future Broadcast services in Australia.

BCL has undertaken digital TV spectrum planning and implementation in New Zealand, Malaysia, Macau and Singapore. The project implementation division of BCL has been active in designing solutions and setting up trial digital transmission in Singapore, Malaysia and New Zealand.

Using computerised modeling tools, calibrated through extensive field testing, has enabled BCL to undertake spectrum planning for authorities in many countries and to engineer system designs for Broadcasters. For spectrum planning, BCL uses five main modeling tools:

- Three dimensional antenna radiation patterns
- Coverage predictions for Analogue and Digital broadcasting
- Interference Prediction Mapping
- Audit Mapping
- Coverage Population Analysis using census data

The coverage predictions use digital topographical terrain data and population census information to provide detailed information.

The consultancy would be undertaken in four phases:

1. Develop with ABA planning guidelines for new digital services, requiring briefing papers, workshops and preparation of guidelines.

2. Detail existing coverage and interference to enable available spectrum to be identified.

3. Spectrum planning to accommodate new services using a top down planning process conforming to the agreed guidelines. Coverage & interference predictions and audit mapping to test the proposed allocations.

4. Detailed report and presentation of the spectrum plan with licence HRP specifications to enable the ABA to licence new services.

The proposed consultancy would be undertaken over a period of approximately eighteen months

BCL recognises the immense detail required in undertaking a national Spectrum Planning exercise and would require close working contact with ABA staff to progress the planning. It is expected that ABA engineering staff would be assigned to the project team on either a full time or part time basis. BCL has allowed for ABA staff being involved when preparing our pricing.

BCL will establish a Project Review Board comprising senior ABA and BCL management to provide a high level review mechanism for the project.

BCL Australia has built a strong relationships with Broadcasters and network operators with it professional services, covering all facets of the Broadcasting and telecommunications industry. We would welcome the opportunity to work closely with the Australian Broadcasting Authority.

As requested BCL has prepared pricing on an hourly and weekly rate. In addition we have undertaken an initial scoping of the project and have identified a budgetary price of **$1,420,000** for the scope of works. Once we have a better understanding of the requirements of the ABA we will be in a better position to review this price and commit to a fixed quotation.

A project time line and list of project deliverables is attached for your information.

2. PROJECT MANAGEMENT - DIGITAL SPECTRUM PLAN

Due to the complexity and importance of the project BCL proposes to instigate a Project Review Board to oversee and review progress on the project. We suggest the Board consist of the following people:

ABA Director of Planning
ABA Project Manager
BCL Engineering Manager
BCL Project Manager

The Project Review Board would meet monthly alternating between Canberra and Wellington.

Regular contact between the BCL and ABA specialists is recognised as being critical to the success of the project. This contact will be enabled through a number of methods, including:

- the ABA working alongside the BCL specialists;
- regular meetings between ABA and BCL specialists;
- ongoing contact between the ABA's and BCL's Project Managers;
- regular updates and progress reports;
- high level review by the Project Review Board.

3. SCOPE OF CONSULTANCY - DIGITAL SPECTRUM PLAN

The consultancy work is a combination of elements to plan for future broadcast services while maximising the use of the available spectrum. The planning will encompass the spectrum use for television bands; I, III, IV and V.
The proposal is divided into four phases:

1. Spectrum Planning Guidelines

2. Detailing existing Coverage & Interference

3. Spectrum Planning for new Services
   Phase 3A - Metropolitan markets and capital city sites
   Phase 3B -Regional sites

4. Spectrum plan and HRPs preparation

3.1 PHASE ONE - SPECTRUM PLANNING GUIDELINES

Prior to the commencement of Spectrum Planning to accommodate new services in the designated Television VHF & UHF bands, it is important that the methods and planning standards for Australian digital television planning work is agreed. The ABA may require industry consultation to finalise all planning assumptions that affect the spectrum planning.

It is envisaged that the digital television planning guidelines would be developed before significant digital television planning is undertaken, anticipating that these would be similar to the Australian Broadcasting Authority's existing Interim Australian Broadcast Planning Handbook. BCL would assist the Australian Broadcasting Authority prepare a series of seminars/ workshops with all interested parties to develop the spectrum guidelines. It will be necessary to concentrate on the guidelines that will directly affect spectrum planning (eg. protection ratios), so that the spectrum planning phases can begin at the earliest.

The consultancy would include:

- Briefing papers
- Consultation by specialists
- Assisting workshops
- Scripting guidelines

3.2 PHASE TWO - DETAILING EXISTING COVERAGE & INTERFERENCE

Detailing the existing sites and plotting the existing broadcast coverage of the VHF and UHF transmissions is necessary in understanding the existing services, coverage and interference mechanisms prior to embarking on accommodating new services into the limited spectrum resource.

Identifying spectrum and regulatory issues are fundamental to establishing a platform for future planning and this will quickly identify existing services, perhaps transposers, that are obstructing clear spare channelling.

Obtain information on existing and planned broadcast services including:

- Licence details
- Transmission restrictions
- Transmission details, HRP, ERP

It is expected that the ABA will assist in providing full antenna information, HRPs and system parameters.

BCL will compile the information collected into spectrum planning configuration sheets which will allow possible spare spectrum to be tested in the following phase for the restrictions that must be applied to it to ensure a 'non interference' basis to introduce new services.

The consultancy report would include:

- Coverage predictions for approximately 400 existing broadcast services
- Interference predictions for approximately 200 existing broadcast services
- Discussion on the licence HRPs verses actual
- HRP planning restriction sheets
- Details of population served by each transmission
- Composite population analysis for major centres

3.3 PHASE THREE - SPECTRUM PLANNING FOR NEW SERVICES

Using a top down planning technique it is envisaged that the consultancy would be undertaken in two phases:

- Phase I - Metropolitan Markets, Capital Cities and Major Regional Sites
  This would involve 80 sites covering the main regional centres and capital cities

- Phase II - Minor Regional Sites
  This would involve some 450 lower powered sites with many being transposers serving lower population areas.

Note that although a top down planning technique is used, all services are considered in each planning phase. While major sites are concentrated on in phase I, all other aspects, such as regional sites, translators, IRD's, VCR's etc, will be considered.

BCL will undertake the digital television spectrum planning work in accordance with the Australian Broadcasting Authority's objectives:

- minimising interference to existing analogue television channels
- providing one digital television channel for each of the two national and three free-to-air existing analogue television broadcaster's channels, with equivalent or better coverage to the existing analogue service
- reservation of a set of digital television channels for a future fourth free-to-air broadcaster
- maximising the remaining spectrum for future services (eg datacasting)

BCL will begin the planning work by protecting the existing analogue television services. The available spectrum from each of the designated sites will have to be assessed for their suitability as digital television channels, at all times considering the ABA requirements and specifications.

Using different transmitter powers and antenna arrays it will be possible to determine the influential reach into neighbouring coverage areas which in-turn enables detailed planning of new services.

Since the spectrum planning will consider the total television spectrum, it is conceivable that services may be identified that could be re-channeled to result in a simplified or more efficient spectrum plan. Such recommendations would be dependent on the Australian Broadcasting Authority's policy on service rechannelling as part of the digital television spectrum plan development.

A digital television spectrum plan for Australia would also use population analysis within each broadcaster's service licence area (as defined by the Australian Broadcasting Authority) to compare a potential digital

television service against the population already covered by an existing service. Population analysis is a method to ensure that a broadcaster's existing coverage is matched. [Guidelines are important as the criteria for assessing "matched" coverage have to be defined for digital]

Preliminary channel plans will be milestone events to be delivered throughout the consultancy.

The feasibility of using Single Frequency Networks (SFNs) or translators to fill in coverage deficiencies will be examined as part of the detailed plan when the minor transmission sites are considered.

The consultancy report would include:

- Coverage & Interference predictions for Phase I - 80 existing broadcast sites
- Coverage & Interference predictions for Phase II - 300 existing broadcast sites
- Discussion on coverage from each site
- HRP planning restriction sheets
- Details of population served by each transmission.
- Composite population analysis for major centres

3.4 PHASE FOUR - DETAILING LICENCE HRP SPECIFICATIONS

Licence HRP specifications will be produced for the Australian Broadcasting Authority to include in their licences. These specifications will be based on all of the work done in determining the maximum powers that can be transmitted without interfering with the existing analogue, or future digital, services.

While a full migration to digital is a long term evolution and will not suffer the same interference problems it is necessary to identify the options so that the full use of the spectrum can be understand. It is easier to plan for today if the direction for tomorrow is known. The final spectrum plan would consider the situation when all analogue services have been discontinued.

The consultancy report would include:

- Audit coverage maps to test the spectrum planning
- Licence HRP specifications
- Documented planning considerations
- Migration plan
- Presentation material.
- Reports in volumes based on site by site details and planning results as well as a general volume detailing the methodology and overview.

3.5 OUT OF SCOPE WORKS

When undertaking a consultancy it is important to have provision for additional services should the requirement change beyond the scope. BCL is able to provide such services on either contract rate for each job, hourly rate or in a longer ongoing contractual manner.

Similarly beyond the proposed consultancy it is essential to have an ongoing contractual arrangement whereby the ABA is able to gain access to planning and modelling at an agreed rate with a defined response time.

4. PRICING - DIGITAL SPECTRUM PLAN

As requested BCL's rates (in Australian dollars) for engineering staff are outlined below:

	Hourly Rate		Weekly Rate	
	Based in Wellington/ Sydney	Based in Canberra	Based in Wellington/ Sydney	Based in Canberra
RF Engineer	$90	$90	$4,500	$4,500
RF Specialist	$120	$120	$6,000	$6,000
Coverage Engineer	$90	$90	$4,500	$4,500
Coverage Specialist	$120	$120	$6,000	$6,000

Weekly rates are based upon a ten hour working day.

In addition to the Canberra based labour rates travel related expenditure will also be charged on the following basis:

Travel	cost plus 10%
Accommodation	$120 per day
Meals and incidentals	$50 per day

Taking into account the travel and accommodation costs a two week assignment in Canberra would cost approximately $11,800 for an engineer and $14,800 for a specialist.

Based upon the proposed scope of works and the rates outlined above BCL has prepared the following budgetary estimate for the project:

	Price
Phase One	$168,000
Phase Two	$390,000
Phase Three	$715,000
Phase Four	$147,000
Total	$1,420,000

BCL is pleased to provide a budgetary offer for the Consultancy Services to the Australian Broadcasting Authority of **$A1,420,000**.

The price is based upon BCL's engineering staff being based in Wellington and Sydney. The BCL consultants and design engineers would work with the ABA engineers to detail the existing services and work to the future spectrum requirements. The price also includes the use of population and topographical data already purchased by BCL - additional data may be required and is in addition to the estimate.

For the budgetary price provisions have been made for travel and associated costs for BCL staff. We have not made any allowances for ABA staff travel costs. We have assumed that both the ABA and BCL will provide office facilities at each others premises free of charge for staff visiting the others organisation.

Should the ABA wish BCL to undertake or accompany them on field testing then this may be additional to the budgetary price.

5 Timing

The following milestones are quite realisable and will mean that the broadcasters in the Metropolitan markets will be able to have their installations complete well before September 2000.

Milestone	**Date achievable**
Contract Start Date	1 April 1999
Guidelines completed	1 May 1999
Details of existing services obtained	1 May 1999
Capital City Plan Complete	1 July 1999
Major Regional Plan Complete	1 Aug 1999
Regional Cities Plan Complete	1 Dec 1999
Minor Regional Sites Complete	1 April 2000
Final Documentation	1 June 2000
Contract Completion	1 June 2000

Attachment 6

Digital Convergence Australia

Comments on Draft Digital Television Terrestrial Broadcasting Standard - Part I

30 March 1999

Introduction

The following comments on Part 1 of the Digital Terrestrial Broadcasting standard are of a general nature and address the goals, overall form and role of the standard in defining the future development of digital broadcasting and datacasting in Australia. In making these comments we are aware of the comments on detailed issues in the draft standards that are being made by ASTRA. In the interest of brevity we simply endorse those detailed comments.

We believe that the issues that are addressed in the following comments go to the heart of the successful introduction of a digital broadcasting platform to Australia. Our central theme is that all stakeholders, and in particular Standards Australia, must give considerable thought to the long-term impact of this standard on the development of a diverse range of markets and industries.

The issues that we are raising are not simply engineering issues but are major commercial issues with the potential to affect the future viability of any business involved.

The Customer Proposition

A key question for any business must always be: What is the customer proposition? That is, what is it that will cause sufficient purchases of its product or service to make it a commercial success? In this context we are dealing with a wide range of products and services: set top boxes, TVs, PCs, subscriptions services, advertising supported free to air services etc.

Some of the issues, which have been raised as customer propositions for digital terrestrial broadcasting, are:

- Improved picture quality;
- HDTV - “near cinema quality” pictures with wide screen;

- Surround sound audio;
- Choice of new service offerings;
- Storage (hard disk and personal video recorders);
- Interactivity;
- Datacasting;
- IP telephony;
- e-mail;
- Widespread availability and low cost;
- Improved content, and
- Portable, mobile and cordless reception devices which include TVs as well as information devices such as personal digital assistants (PDAs).

Despite this the draft standard implicitly assumes that the HDTV and surround sound propositions alone will drive the purchase of HDTV receivers, the viewing of digital broadcast material and the generation of new businesses in datacasting and interactive services etc.

We believe that this is a fatally flawed assumption that could undermine the ongoing viability of Australia's emergent digital terrestrial business. It will effectively block or severely delay the ultimate phase out of analogue services.

History is replete with examples of superior technical solutions, which missed out on other more vital aspects of the customer proposition. The Edison phonograph with its superior technology lost out to the Victor system that boasted big name music artists. The Betamax system for video cassette recorders, while arguably technically superior, lost out to the VHS system which was supported by more manufacturers.

Our proposition is that it is vital that much more attention be devoted to achieving a wider range of customer propositions prior to the finalisation of standards for the introduction of digital terrestrial broadcasting into Australia. HDTV and surround sound alone will not be sufficient to develop the potential offered by digital broadcasting. Insistence on the capability to receive HDTV and surround sound transmissions will even have an adverse effect by reducing the scope for low cost portable information devices such as PDAs in the short term.

Consumer Choice and Commercial Viability

The key to a successful launch of digital broadcasting will be the extent to which consumers find the mix of product and service offerings to be compelling and represent real value for money. This assertion is supported by a number of

international studies into the drivers for digital broadcasting. These include "*The Development of Datacasting Technologies and Services*", a February 1999 report, "*Australian Industry: 'Thinking Outside the Box'"*, a January 1999 report, both reports championed by Australia's Minister for Communications, Information Technology and the Arts, "*HDTV Dreams, SDTV Realities*" published by the Forrester group in November 1998 and "*Digital Television '99: Navigating the Transition in the US*" recently published by Price Waterhouse Coopers.

In essence the prime determinant of commercial success will be the rate at which consumers take up the new services. The best commercial option to maximise this take-up is to seek to introduce the lowest price entry point for receivers while providing an evolutionary or phased upgrade path to higher priced higher performance receivers.

Such an approach offers consumer choice while being future proof. However to achieve it within Australia's legislative constraints will require that MP@ML video with MPEG I audio always be transmitted so that low cost receivers continue to operate when an MP@HL HDTV transmission is transmitted.

Fortunately it is possible to do this at negligible incremental cost within the 7 MHz of broadcast spectrum that the free-to-air broadcasters have been loaned, at no charge for the period of digital/analogue simulcast.

Indeed there are compelling public policy arguments that this scarce national resource should be used to provide the public with the choice of a low cost option to enable them to participate in the emerging information society. Furthermore, a rapid take-up will advance the date at which the analogue spectrum can be returned to enable the government to raise more revenue while providing consumers with even greater choice.

Global Standards

A vital component in ensuring that receivers, services and content have widespread availability and low cost is the adoption of global standards and practices. While few would doubt this assertion, it is all too easy to succumb to the temptation of creating local dialects of global standards.

We suggest that as a fundamental principle the DVB family of standards be adopted without change (as indeed a number of our members have already done in the deployment of satellite and cable services). Our proposal is that the good work that has gone into the draft standard should simultaneously be incorporated into one or more Australian amendment or guideline documents. Such additional documents would only contemplate changes to the DVB standards in extreme circumstances. Their main purpose would be to incorporate explanatory or additional material appropriate to the Australian conditions.

The practical advantages of this approach are twofold: First in the minimisation of ongoing effort that would otherwise be required to track the evolving DVB standards. And second in the minimisation of the risk of errors that are almost inevitable when

dealing with large and complex issues such as pertain to the digital broadcasting standards processes.

A further and fundamental advantage lies in the clear separation of responsibility for Australian requirements and global standards setting. The approach that we are suggesting will ensure that any differences that do result will be clearly highlighted.

Finally, the adoption of a family of standards also very effectively recognises that, world-wide, we are dealing with digital broadcasting as an expanding area with great potential and not just with digital terrestrial television in Australia.

Evolution and Legacy Issues

A major factor that will have a key influence on the rate of uptake of digital broadcasting will be the retail price points of receivers. There is considerable evidence that significant consumer barriers exist above around $300 retail. Table 1 shows the cost increments (note that retail price increments may be several times larger) for some important performance options under consideration.

	Display SDTV		**Receive and Display HDTV**
		Receive HDTV Transmissions	
	MP@ML	**MP@HL Decoder[1]**	**HDTV Display**
Mono/Stereo Sound	$0	+$20-$50	+>$2000
Surround Sound Decoder (Receive Surround Sound transmissions)	+$5-$20	+$25-$70	+>$2005-$2020
Surround Sound (Receive and Reproduce Surround Sound)	+$250	+$270-$300	+>$2250

Table 1: Manufactured cost increases for digital TV receivers for different picture and sound options. Note that these cost estimates make no allowance for additional impacts of limited production volumes when compared with units in large volume production. In practice, somewhat larger cost penalties would be expected to result from any deviation from receivers in widespread use (ie the base level receiver or set top box at present).

In Table 1 the base level is equivalent to the standard definition TV set top boxes for satellite and cable in widespread use worldwide. The addition of MP@HL (ie HDTV) decoders and/or surround sound decoders are two basic options which allow

[1] It is difficult to arrive at exact cost increments as a range of cost/performance/power consumption trade-offs are possible. New and more powerful decoder chipsets are also becoming available. The range quoted is a realistic estimate of the extra combined memory and chipset costs for decoding HDTV transmissions to a SDTV display assuming comparable quality of final picture.

reception of higher quality signals but at low display resolution and still with monaural or stereo sound. More expensive options would be to display the higher resolution picture at full resolution or to provide amplifiers to fully render the decoded surround sound with multiple loudspeakers.

Various estimates of market penetration for full HDTV receivers based on the high price points expected have ranged from 1-5% after 5 to 6 years. Only time will tell what penetration of HDTV receivers is achieved. In consideration of the clearly expressed desire of commercial free to air broadcasters to transmit HDTV and the legislated requirement for them to receive a 7 MHz spectrum allocation in order to do so, it is fundamental that HDTV of suitably high quality be included in the standard.

The best option to maximise take up would be to seek to introduce the lowest price entry point for receivers while providing an evolution or progressive upgrade path to higher priced higher performance receivers. To achieve this MP@ML video with MPEG 1 audio would need to be transmitted at all times so that low cost receivers continue to operate even when an MP@HL HDTV transmission is made for reception by more expensive receivers. Thus a fully SDTV-compatible version must accompany all HDTV and/or surround sound transmissions.

From a standards point of view this would be entirely consistent with the DVB family of standards and would be addressed with the use of mandatory requirements or strong recommendations in an Australian guidelines for use of DVB standards document.

Note that this SDTV-simulcast recommendation also addresses a major concern of compatibility with a large installed base of digital satellite receivers. The way is held open for the future single set top box or single receiver with multiple inputs.

The ongoing transmission of MPEG 1 audio with MP@HL video will also better support important markets for mobile and portable TV receivers and information devices such as PDAs for which HDTV is unnecessary from a display size point of view and a serious barrier from a cost and power consumption (battery life) point of view.

The argument is made that support of low level receivers via transmission of MP@ML video with MPEG I audio will create a population of legacy receivers which must be supported into the future. This is true but equally well can be viewed as representing a global reality. There will be a large installed base worldwide of low cost digital set top boxes and receivers. There will be ongoing needs for SDTV performance and cost levels.

The only viable alternative is to accept a long delay until HDTV receivers become widely available at comparable price points to the low cost receivers that are already becoming available.

Transmission and Receiver Standards Separation

The decision to separate the standards effort into transmission standards (Part I) and receiver standards (Part 2) is unfortunate in that the DVB standards are not so

separated. The result is many issues must be separately considered under both headings with potential for inconsistencies and much repeated effort. It would be desirable to address the standards jointly within a framework that matches that of the DVB standards family.

More critically, a number of issues have not yet been sufficiently considered in the transmission standards even though it can be argued from a receiver perspective that relevant standards appropriate to transmission must be present.

These issues include:

- Conditional access (in particular multiple CA services)
- Data broadcasting and interactivity issues
- Possible software download (operating system and applications) issues
- Interoperability with cable, satellite, MDS etc

These issues will be addressed more fully in the response to the Part 2 Draft standards request for public comment.

Interoperability Issues

Interoperability issues have become a major concern for our members because of a number of factors in the standards process to date:

- The decision to not adopt the DVB standards in toto;
- The transmission standard goal limited to terrestrial broadcasting.

It is in the interests of all parties that the goal of interoperability not be diluted. Importantly, the potential for additional cost and confusion for the consumer brought about by multiple services each requiring separate set top boxes or receivers will need to be recognised.

Further work is required to address these issues and we understand it is the intention of CT2 to set up a separate subcommittee with a specific goal of investigating the interoperability issues further. We strongly support this intention.

The ASTRA submission makes comment on a number of details in the use of SI tables etc which are pertinent to interoperability with cable and satellite DVB systems already in use in Australia. We endorse these comments.

Attachment 7

Digital Convergence Australia

Comments on Draft Australian Standard DR99095 - Requirements for digital television receivers

29 April 1999

Introduction

In contrast to the Draft Digital Television Terrestrial Standard – Part 1 (DR99047), which focused on the characteristics of digital terrestrial television transmissions, this second part document (DR99095) is effectively a draft functional specification for digital television receivers. In our response to call for public comment on the Part 1 draft (Attachment 3), we commented, at length, on the apparent lack of recognition of to the customer proposition. It is against this background that we commend the approach taken in this second part of the standard which we believe makes an important step along the path to completing a comprehensive set of Australian digital television standards.

We believe that it is essential for all stakeholders to debate the types of receivers and the basic functionality to be expected in each type, before undertaking the detailed drafting of standards. Our belief is that this debate should focus on the fundamental business issues of consumer choice and commercial viability. It is these issues that will define the parameters for the subsequent consideration of a range of specific engineering issues.

The Broadcasting System

When considering the customer proposition it becomes clear that the transmission and receiver standards documents only partially cover the range of standards-related matters required to define the entire digital broadcasting system. The narrow focus of these documents probably stems from a mindset that originally saw the two draft standards as only being necessary to cover the transmission and the reception of a digital version of the existing analogue television signals. In this regard it is now widely accepted that the terrestrial digital transmission system will carry many new services. Indeed the Chairman of the US Federal Communications Commission recently stated “that data is the killer application” for digital television development.

It also seems that it was not initially recognised that the adoption of DVB transmission standards and the use of COFDM transmission techniques would open

up a new market for portable, cordless and mobile devices. Indeed the overseas experience is that most manufacturers now believe that this market will be much more significant than that for high definition television. Standards for digital terrestrial transmission will therefore need to recognise that these new DVB compatible devices will need different versions of digital transmission than the HDTV standard that has been mandated for fixed television receivers.

The full range of standards-related matters required to define the entire digital broadcasting system will need to cover items such as conditional access, software download, user interface etc which all need to be defined in order for the receiver manufacturer to build a product. Accordingly it is suggested that an additional draft standards document needs to be produced with a functional description of the complete digital broadcasting system. Indeed, since digital television systems are very similar to computer networks, it will be essential for all parts of the system to interface with each other. It will also be essential for the installed working system to be capable of modification, as change is required.

Variety and Cost of Receivers

We believe that the draft standard neatly captures a family of possible receivers. These range from integrated, high-end HDTV receivers through to lower end set top box converters that are also able to receive HDTV transmissions but which are aimed at use with an existing analogue television receiver. However, this family of receivers is limited by its insistence on HDTV with AC-3 Dolby surround sound.

Our members believe that it is vital to leave as much scope as possible for the introduction of different receiver types and options. We are adamant that these options must include receivers and set top boxes that are only capable of receiving SDTV transmissions.

The legislative requirement for the broadcaster to transmit a quota of HDTV can be met without mandating that all digital reception devices must have MP@HL video and Dolby AC3 audio decoding. One way of achieving this would be for broadcasters to:

- transmit a standard definition signal as a part of, or in addition to, their high definition signal; and

- meet the DVB requirement to transmit an MPEG audio channel.

Clearly smaller size screen receivers, standard television sets and the family of new portable and mobile devices necessary to meet different market requirements, will generally have no need for more than MP@ML and MPEG audio decoding. Moreover, if such devices are not mandated out of existence by a uniquely restrictive Australian standard there will be a significant number of receivers that are only able to receive SDTV. If this occurs, we believe that commercial realities will then dictate that a simultaneous SDTV version of HDTV transmissions is also broadcast.

Under the less restrictive regime we favour, the provision of capability to decode HDTV and/or AC-3 or even MPEG-2 surround sound would be an issue of product

differentiation for receiver vendors or manufacturers. It would then be the market that would determine the mix of receiver types. These would range from entry level (SDTV with MPEG) to premium (HDTV with AC3).

A major reason for advocating this position is our perception that a low price entry level set top box is necessary for the digital TV market to succeed in Australia. In this regard, we highlight the fact that the cost (and price) of the end product in consumer electronics is driven in part by factors such as:

- Functionality, which determines silicon chip area, number of chips, manufacturing complexity or level of integration (ie single chip if possible). These fix the design criteria for a particular model or unit; and

- Development costs, which include software development (functionality), chip development costs, manufacturing and tooling costs. All of these must be amortised over the number of units.

The first factor recognises that, at a given point in time, manufacturers must fix on a level of functionality consistent with the consumer's willingness to pay. We believe that, for the immediate future, there is a significant cost penalty for HDTV and AC-3. Current single chip set top box solutions that are in widespread use globally offer MP@ML and MPEG-1 layer II audio capability. Examples of these can be found in Thomson Omega, and NEC Emna chips.

The current global base of largely satellite digital television set top boxes is overwhelmingly SDTV with MPEG-1. The evidence is also growing that the major international volume of DVB digital terrestrial television set top boxes and integrated receivers will also be predominantly SDTV.

A high level integrated chip development will cost the chip supplier several million dollars, and even the costs of a modest reworking of an existing set top box design can be of similar magnitude. Market volumes to the order of millions will therefore be required before development costs become a minor component of overall costs. While such volumes are most unlikely in the small Australian market, they are entirely reasonable on a global basis.

The foregoing illustrates the huge cost advantages to Australian consumers that will result from allowing the use of entry level set top boxes and receivers which are very nearly identical to those already available world-wide.

Entry Level Receiver/Set Top Box Specification

It is against this background that we have felt it necessary to define an entry-level receiver/set top box. The table in Attachment 1 has used the draft standard as a basic framework. However, it includes an additional column "SD-STB" (Standard Definition – Set Top Box) to specify and describe the requirement or otherwise of each feature using the same essential (E), recommended (R), and optional (O) categorisation as the draft standard. In addition a category "X", for not required, has been added.

Items in Attachment 1 are coloured yellow where there is a significant change in the entry-level receiver compared to the lowest level specification in the draft standard (LC-STB). Comments or changes in the text have been added to clarify the reasons for the choices or, in some cases where it is required, to provide greater detail. Before finalising the standard we believe it will be necessary to rationalise the numbering system that has been used in the draft standard.

The inclusion of this column has necessitated some changes to the Forward, Scope and Application, and Requirements sections of the draft standard. These are highlighted in red in Attachment 2.

The guiding principle in constructing this specification has been to define a base level of functionality on the one hand and, where possible, to leave increased functionality as options. While it is expected that, as technology evolves, more and more such options will become commonplace, we believe that it is the base level that will be of fundamental importance in determining the performance of all receivers.

Our major concern centres on the needs of datacasting and interactive services. Despite this, our entry-level specification is predominantly a digital television specification. This is because we recognise that, at this stage, it is likely that entry level receivers will have minimal specialist datacasting features.

The essential datacasting features that we believe should be included are data ports for connection to computers or specialised datacasting boxes, ports providing the ability to connect to modems and ports providing the ability to connect to home networks. However, as standards work for interactive services within DVB matures, we expect that the situation with regard to what constitutes datacasting base level features will change dramatically.

The attachments to this document are available on request.