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5 May 2005

The Secretary
Standing Committee on Communications, Information Technology and the Arts
House of Representatives
Parliament House
CANBERRA ACT 2600

Email: cita.reps@aph.gov.au

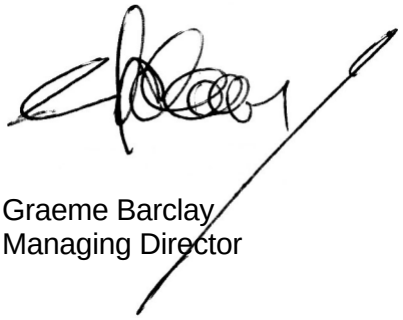
Dear Sir/Madam

Please find attached a submission by Broadcast Australia in response to the House of Representatives Standing Committee on Communications, Information Technology and the Arts Inquiry into the Uptake of Digital Television in Australia.

Should the Committee require any further explanation of the concepts included in this submission, Broadcast Australia would be very happy to appear at the public hearings.

Should you have any queries in relation to this submission please don't hesitate to contact myself on 02 8425 4602 or email Graeme.Barclay@broadcastaustralia.com.au or Linda Andersen on 02 8425 4654 or email Linda.Andersen@broadcastaustralia.com.au on this matter.

Yours sincerely



Graeme Barclay
Managing Director

A Submission

By

Broadcast Australia Pty Limited

In response to the

House of Representatives Standing Committee on Communications, Information and the Arts Inquiry into the Uptake of Digital Television in Australia

May 2005

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Executive Summary

Broadcast Australia (BA) welcomes the opportunity to respond to this Inquiry and outline its position on the current state and future direction of digital terrestrial television (DTV).

BA is strongly committed to the establishment of a sustainable, vibrant digital terrestrial free-to-air (FTA) television industry providing a range of services on an equitable, national basis. In demonstration of this commitment, BA has made substantial capital investment not only in digital television equipment and infrastructure around Australia to serve its key national broadcaster customers but also in its datacasting trial in Sydney.

We also believe that it is essential that DTV succeed from a public interest perspective given the level of investment by both government and the commercial broadcasting sector in digital television technology and infrastructure.

In BA's view, an increased range of innovative DTV services is probably the single most important factor that could contribute to an accelerated take-up of DTV by Australian consumers. The basic proposition should be 'existing services plus'. This means that consumers would receive existing analogue services **plus** attractive new services that justify their investment in additional reception equipment (i.e. set-top box or digital TV). Based on its understanding of international developments, both in terms of global content production trends and the initiatives being undertaken by broadcasters, BA believes that High Definition (HD) will be a critical differentiator for the terrestrial DTV industry in Australia (i.e. vis a vis pay television services). That said, BA is also firmly of the view that multichannelling is a critical element in order to attract increased take-up.

BA believes there is a strong public interest argument for the development of further innovative DTV services that will spur consumer interest in DTV. The most significant opportunity in this regard is the allocation of the two unassigned national digital channels identified by the ABA for datacasting but currently unlicensed. BA supports the permanent allocation (on a merit basis) of these two digital-only channels by the Government for the purpose of additional free-to-air (FTA) broadcasting, and/or datacasting and/or other innovative services (e.g. digital broadcasting to handheld devices, 'DVB-H'). The allocation of these channels would provide a new range of services (and, in the case of datacasting, an expanded range of permissible content under the *Broadcasting Services Act* from 2007) and provide a driver for the take-up of DTV.

BA believes there are a number of additional proposals that should be examined to further encourage the take-up of DTV:

- **Choice.** BA supports policy initiatives that will lead to an expanded range of services being offered on the digital FTA terrestrial platform. Beyond the proposal to allocate further DTV spectrum for FTA broadcasting, datacasting and/or other innovative purposes, BA believes that provision of additional flexibility to broadcasters in relation to multichannelling and High Definition (HDTV) requirements could also be a significant factor in motivating consumers to transition from analogue to digital.

- **Ongoing consumer education.** BA believes the government and broadcasting industry should be doing more to inform consumers of the benefits associated

with DTV. One idea worth exploring may be a joint consumer marketing initiative funded by government and the industry (including broadcasters, equipment manufacturers and service providers).

- **DTV tuner mandation.** BA recommends that further consideration be given to mandation over the medium- to long-term of DTV tuners in new televisions (and television reception equipment – e.g. "combos") sold in Australia. The US experience in this regard demonstrates that this is likely to be effective in driving consumer take-up.

- **Raising of Consumer Confidence in DTV Equipment.** Australian industry efforts over recent years to agree key DTV standards and other industry issues have been slow and disjointed. This has led to the development of DTV receivers which can respond erratically to technical issues and has significantly hampered and unnecessarily delayed a co-ordinated introduction of interactive (iTV) services. BA believes that there would be overall industry and community benefit in the establishment of an independent national 'Testing and Conformance Centre' for DTV equipment to provide assurance to consumers that the DTV equipment they purchase will perform as specified. A decision to mandate DTV tuners would make a Testing and Conformance Centre even more relevant.

- **Potential for deploying next-generation. DTV compression technologies.** DTV is based on the MPEG 2 standard that enables the content capacity of a television channel to be significantly enhanced (vis a vis analogue television technology). Since it was first introduced, there have been substantial improvements in compression technology - the advent of MPEG 4 technology effectively doubles the content capacity of a DTV channel and presents interesting opportunities for Australia. Given the relatively small number of MPEG 2 receivers sold in Australia to date, BA believes that the government should seriously consider moving to MPEG 4 technology.

1. Introduction

Broadcast Australia (BA) welcomes the opportunity to respond to this inquiry into the Take-up of DTV in Australia.

1.1 Background Information

Broadcast Australia (BA) is Australia's leading broadcast transmission provider and plays a critical role in the Australian free-to-air (FTA) sector. Our core business is the provision of services for the transmission of television and radio broadcasts to audiences across Australia. BA has over 70 years broadcast transmission experience, covering both analogue and digital broadcasting services and aims to provide world class broadcasting solutions to its customers, both now and in the future.

BA was created from the Commonwealth Government's sale of the 'National Transmission Network' in 1999. BA is a wholly-owned business of Macquarie Communications Infrastructure Group (MCIG), an entity listed on the Australian Stock Exchange (ASX code: MCG). MCIG's major shareholders include a broad range of institutional and retail investors.

In December 2004, MCIG announced that it had acquired a 54% interest in ntl Broadcast in the UK. ntl Broadcast is the minority shareholder (GWR is the major shareholder) in Digital One, the UK's commercial digital radio multiplex with a licence to broadcast nationally.

BA's aim is to harness the full benefits of new digital communications technology to provide its customers with world class broadcasting solutions, both now and in the future.

BA owns and operates the most extensive broadcast transmission infrastructure network in Australia. The company provides transmission services from approximately 600 strategically located transmission sites across metropolitan, regional and rural Australia and reaches over 99% of the country's population.

BA's principal customers are the ABC and SBS: BA delivers the vast majority of the national broadcasters' television and radio managed transmission services. The company also provides services and/or co-hosting for commercial FTA broadcasters, the community broadcasting sector, telecommunications companies and radio-communications users (such as emergency services organisations).

BA's key areas of operation include the provision of:

- **Analogue Television**. Transmission of ABC and SBS television services across Australia, including ABC television to population centres down to 200 people and, with the recent significant expansion of SBS television, SBS TV is delivered to population centres exceeding 5,000. BA's infrastructure also serves a number of community television providers and BA accommodates, on a subsidised basis, a large number of self-help community organisations in rural areas;

- **Digital Television**. BA is contracted to roll-out ABC digital services nationally, and is engaged in the roll-out of all SBS digital television services that have been undertaken to date.

- **Analogue Radio**. Transmission for all ABC radio services including Local Radio, Radio National, ABC Classic FM, Triple J and News Radio in Australia, as well as the short-wave Radio Australia service into South-East Asia. For SBS, BA transmits three multicultural and multilingual national services and also provides transmission services to a number of commercial and community radio broadcasters in various parts of Australia.

2. Rollout Process

2.1 BA Digital TV Operations

BA is a strong advocate of the potential benefits offered by digital broadcasting services, and has made a substantial capital investment in DTV equipment and infrastructure to establish nationwide services for the ABC and SBS. The DTV rollout process for ABC and SBS is well underway and nearing completion with ABC digital television services now reaching over 96% of Australia's population and the staged roll-out of over 107 SBS digital television services since 2001.

In addition to BA's DTV activities, it has established and funded two key digital broadcasting trials: DIGITAL **FORTY FOUR** datacasting in Sydney and Digital Radio Broadcasting in the Melbourne metropolitan area.

BA's DIGITAL **FORTY FOUR** trial service provides a mixture of programming including:

- The first industry-based FTA video programme guide (i.e. program information on **all** Sydney television and datacasting channels in the one place, channel 4);
- Federal Parliament – seven simultaneous live audio channels, including the House of Representatives and Senate and Committee rooms;
- NSW Government – health information; water restrictions; traffic conditions (including traffic cameras on major routes); 'What's on at The Rocks and Darling Harbour'; coastal conditions (including surf cameras); cameras showing ski conditions in major resorts;
- News, Weather and Sport headlines (provided by ABC) with live election results provided during the last Federal election;
- Home shopping;
- Sports betting odds (this section of the trial completed December 2004);
- Financial markets round-up; and
- Religious instruction/education channel.

Further information on these services is provided at Appendix 1.

At present the DIGITAL **FORTY FOUR** datacasting service trial is in Phase 1 providing information via traditional "one-way" broadcasting. Phase 2 of the trial is planned to commence in June 2005 when BA introduces interactive (iTV) content to its DIGITAL **FORTY FOUR** service which will significantly improve the attractiveness of datacasting to the viewer by allowing for the viewer to "self select" information via an interactive process. iTV will allow the consumer to interface with the television set by using menus to select those topics of interest. This will make more dense or 'hard' information (eg. timetables, contact details, road arrangements, legal information, education material, fire alerts etc.) available which is currently not suited to the limited video 'carousel' arrangements available in Phase 1 and through the non-interactive set-top box (STB). BA believes that the move to iTV in datacasting will substantially enhance the value of the datacasting service to the viewing public. BA and its content partners are currently in the process of commissioning market research to obtain an independent assessment of the public's reaction to the DIGITAL **FORTY FOUR** service as currently constituted and post the introduction of iTV.

BA's broad range of activities highlights its long-term commitment to the sector and interest in the further development of digital broadcasting services in general. BA is keen to build on its current range of digital broadcasting services and pursue new opportunities as they become available.

BA's wholly owned subsidiary, The Bridge Networks, has obtained in-principle approval to trial DVB-H, the provision of audio-visual and other services to handheld devices using digital broadcasting technology. DVB-H is part of the DTV set of standards which was developed to facilitate the delivery of pictures to mobile devices such as 'Palm Pilots" and mobile phones. BA, in partnership with Telstra is conducting a trial of DVB-H in the Sydney market in order to understand the technical issues and commercial viability of the product. The trial is expected to commence in the 3rd quarter 2005.

2.2 Future Rollout Opportunities - Two Unused National Digital Channels

There are two national channels that have been identified by the Australian Broadcasting Authority (ABA) (in its Digital Channel Planning process) for digital terrestrial datacasting services, which are currently almost totally unutilised (i.e. with the exception of BA's current (temporary) datacasting trial in Sydney). BA supports the permanent allocation, on a merit basis (see 2.2.1 further below), of these two digital-only channels. To the extent that one or both of the available channels are not allocated post-2006 as additional commercial FTA broadcasting licences, it is BA's view that these should be made available on a permanent basis for datacasting and, potentially, other innovative broadcasting-related services (e.g. provision of audio-visual content to hand-held devices).

We believe that it is in the public interest for both planned digital channels to be permanently allocated in the short- to medium-term for the provision of additional digital-only services to consumers. BA proposes that the starting point for Government consideration of the future use of these two national digital channels should favour their allocation in some form. In other words, the 'default' position should be to allocate the spectrum, rather than the situation to date where these channels have effectively been mothballed. In BA's view the onus should be on those who oppose allocation of spectrum to establish an overwhelming case that allocation is not in the public interest.

In relation to timing, BA believes that the Government can and should now commence deliberations on the allocation of these two national digital channels, as a central component of the next phase of Australia's digital conversion process, which will be driven by key policy changes resulting from the current government policy reviews on the key issues impacting DTV.

2.2.1 Merit Basis for Spectrum Allocation

In BA's view, allocation of the two digital terrestrial channels to new entrant operators should be on the same "merit" basis as those for incumbent FTA broadcasters (i.e. based on demonstrated capacity to provide the required services). Payment for spectrum should be based on the same revenue-based model as currently applies to commercial FTA broadcasters.

BA strongly contends that any allocation method which requires a high up-front payment (eg. through a spectrum auction process with a high reserve price) would

severely limit the level of market interest in, and capacity for, success of new services and, consequently, the desired take-up impact on DTV receivers. A revenue-based licence allocation model is also appropriate in a context where the current penetration of DTV receivers and, therefore, the business case for new entrants is by definition highly speculative.

2.2.2 New Entrants

BA also believes that there are sound competition policy reasons for the owners of these datacasting channels to be entities that in an ownership sense are either wholly or predominantly new entrants. A new entrant operating new digital-only services such as datacasting, whose business case depends on accelerating the success of the FTA digital terrestrial medium, will be highly focused on delivering a suite of innovative, attractive services that consumers will embrace. These imperatives may not exist to the same extent should allocation be made to incumbent broadcasters.

2.2.3 Datacasting and Other Potential Digital-Only Services

As stated above, in the event that one or more of the available digital channels are not allocated by Government as additional commercial FTA licences, it is our view that the spectrum that has been planned by the ABA should be made available on a permanent basis for datacasting and, potentially, other innovative purposes (eg. DVB-H). The current trial of datacasting in the Sydney market by BA (DIGITAL **FORTY FOUR**) has demonstrated a viable level of demand for the medium, with all available bandwidth already in use or committed. BA has also committed to further investment to provide capacity for additional services. The demand should significantly increase once BA has moved to iTV over the DIGITAL **FORTY FOUR** service which more fully exploits the full potential of datacasting.

BA recognises that the viability of datacasting and the issue of what proportion of unused spectrum should be dedicated to datacasting will be substantially influenced by the outcome of the Sydney trial which has been operating since December 2003 and is due to end in October 2006. As BA has noted previously, a key factor in determining the viability of a datacasting channel will be the cost of spectrum, particularly if such a channel were to be predominantly based on government information. Depending on the results of the Sydney datacasting trial, the Government may conclude that there is a need for some limited relaxation of the current datacasting genre conditions in Schedule 6 of the *Broadcasting Services Act 1992* (BSA).

3. Options for Encouraging Consumer Interest in the Uptake of Digital

BA believes the basic consumer proposition for DTV should be 'existing services plus', which means consumers will need to be convinced that they will receive existing analogue programming plus attractive new services. It is our view that there are at least three drivers that can be pursued to achieve this outcome and provide further encouragement for the take-up of DTV:

1. expand the range of services on offer;
2. provide ongoing consumer education; and
3. consider the introduction of gradual DTV tuner mandation.

3.1 Choice

BA believes that choice is the single most significant driver for the take-up of DTV. In recognition of this view, BA supports policy initiatives that will lead to an expanded range of services being offered on the digital FTA terrestrial platform. The UK experience with 'Freeview' digital terrestrial services over the last two years provides strong evidence of a linkage between content choice and strong viewer take-up/satisfaction. (See Appendix 2 for further information on the Freeview model). BA believes there are several policy options that can be pursued to expand the range of services and content on offer to consumers in Australia. These include:

- **Permanent allocation of the two unused national digital channels**. As discussed above, BA supports the release of the two national digital channels that are currently unused;

- **HDTV**. BA believes that the HD conversion model selected by Australia is ultimately going to prove the correct choice for consumers and also provide a unique differentiator for the FTA platform (i.e. compared to pay TV). The success of DVD technology (including HD-DVD products) and its high uptake within Australia has set a de-facto standard in the minds of many consumers for quality in a digital television context. Further, the steadily increasing global availability of HD content, particularly programming sourced from the US, may ultimately mean that nations which have opted for Standard Definition DTV will need to undertake a further transition to HD. In light of the impact of DVDs on the public's expectations in relation to quality and our analysis of international developments in recent years, BA strongly supports the current BSA requirement for FTA broadcasters to provide a minimum 20 hours of HDTV content per week. This requirement reflects the cornerstone position of HD in Australia's digital conversion process and provides the certainty within the industry and marketplace (broadcasters, consumers and manufacturers) necessary to facilitate investment;

- **Multichannelling** – Opening up the possibility of FTA multichannelling is another option BA considers will encourage new service innovation and consumer choice. It is BA's view that there should be no restrictions imposed on the number of multichannels to be provided by FTA broadcasters except to the extent imposed by technical quality and ongoing compliance with the minimum requirements for HDTV as outlined above. Decisions around the amount of multichannelling and the HDTV standard to be transmitted should be left to the individual broadcaster, who is best-placed to determine the optimal programming line–up they wish to offer to viewers. The possibilities that arise for consumer innovation are

substantial and highly desirable – staggering/time shifting of key programming, simultaneous broadcasting of live events, 'channels' targeted for particular audience segments etc.

BA's view is that multichannelling content should not be unduly constrained by artificial genre rules and should be a choice for the individual broadcaster. Any new policy should provide the ability for broadcasters to transmit third-party content on their multi-channels as currently available to the Pay TV sector and datacasters. It would seem appropriate that FTA multi-channels be required to comply with existing Australian content and closed captioning requirements, although these might be phased-in over time to reduce the up-front burden on FTA broadcasters. BA also supports the removal of the current restrictions on multichannelling by national broadcasters – there does not appear to be any strong public policy reason to support more restrictive treatment of national broadcasters on this issue. However, it is BA's view that this multichannelling should be free-to-air and not subscription based which would subvert the objective of new services in the free-to-air environment.

3.2 Consumer Education

BA believes that ongoing, substantial consumer marketing of DTV is clearly essential to increasing take-up. It is a simple common sense proposition that consumers will not invest in something that they do not understand or where they cannot see adequate benefit. While acknowledging that commercial FTA broadcasters have undertaken some ad hoc consumer marketing campaigns over the last four years and that there is increasing promotion at the retailer level, BA does not believe that the efforts to date have been sufficient. It is interesting to note, by contrast, the very substantial consumer marketing initiative that has accompanied the commencement of digital pay TV services – in terms of the sophistication and regularity of the marketing campaign. Austar has reported that it now has 75% digital subscribers among its customer base. In this regard, BA recommends the government and non-government stakeholders consider funding an ongoing joint government-industry DTV marketing initiative. Mandating of receivers (discussed below) would give focus to such a campaign.

3.3 Mandation of Integrated Digital Televisions

It remains the view of BA that there is a general lack of consumer awareness that DTV will one day replace the analogue service (nominally at the end of the currently legislated simulcast period). This, combined with the aforementioned limitations on the value proposition that consumers currently see in DTV (i.e. lack of differentiation with the analogue product), influences the slow rate of take-up of digital receivers.

BA recommends that further consideration be given to mandation of integrated DTV receivers. In the US, the Federal Communications Commission (FCC) has taken this approach and introduced a requirement that equipment manufacturers progressively incorporate a digital receiver in new television sets above certain sizes beyond certain dates (i.e. starting at the largest set sizes and working down). The FCC has ordered all TV sets 13-inches and larger, and other products that normally carry TV tuners, to include ATSC terrestrial (DTV) tuners, by July 1, 2007. The mandate outlines a phased-in approach over five years starting with larger screen sets.

The mandate calls for 100% of other devices that include TV receivers - such as VCRs and personal video recorders (PVRs) - to include DTV tuners by July 1, 2007. The FCC order also says that combinations of DTV monitors and set-top DTV tuners, if marketed together at one price, qualify as integrated sets.

BA notes that such a proposal was also contemplated in the UK, but difficulties have arisen in relation to EU policy and regulatory requirements. BA's latest advice is that this issue is again under consideration with viewers likely to be encouraged to upgrade to new digital equipment by ensuring all new sets have a "sell by label," warning buyers that the set will become obsolete within a given period of time.

4. Technical Issues

4.1 Standards

BA has a longstanding concern relating to the efficiency and effectiveness of DTV standards in Australia. Current industry processes and structures have resulted in either inordinate delay or failure to set key standards which are required to drive the development of DTV in Australia. The non-resolution of these standards issues has had a direct impact on the ability to roll-out innovative new (e.g. interactive) services to consumers and, therefore, on the incentive for consumers to procure digital reception devices. It is BA's view that the current approach, which relies on consensus between commercial entities who are understandably motivated to protect their respective incumbent competitive positions, cannot succeed in a timely or comprehensive fashion.

In this regard, BA recommends the establishment of a committee to be led by the ABA and with membership drawn from FTA broadcasters, BA and DTV equipment manufacturers to examine and resolve key standards issues. In the event that a decision cannot be reached on a particular matter, it would then become the ABA's responsibility to recommend a standard for inclusion in the regulations (refer Schedule 4, Part 4, Division 4 Clause 39 of the *Broadcasting Services Act 1992*). In due course, for instance, this approach could be extended to the selection of the appropriate standard for second generation compression technology (i.e. MPEG-4 or Microsoft Windows 9), which in coming years will be essential to ensure that the most efficient use of spectrum is achieved from the conversion to digital technology.

4.2 Testing and Conformance

A complementary issue to the introduction of an effective standards-setting process is the need for the establishment of an industry-wide testing and conformance centre (TCC) which has the capability to undertake:

- DTV transport stream testing;
- DTV receiver testing (i.e. to provide assurance to consumers that the equipment will buy operates in accordance with their current and future expectations);
- DTV over-the-air software download testing (recognising that, in the future, many or all DTV receivers will be upgradeable via software that is delivered 'over-the-air');
- Other DTV technical investigations.

The proposed TCC would provide a clear framework for the Australian DTV industry to grow and evolve. It would be the central element of the industry's plans for the creation of a testing and conformance regime for digital television receivers introduced to the market. The TCC would also play an important co-ordination role acting as a central point for the testing of broadcaster transport streams and digital television receivers. This will become even more essential upon the introduction of interactive services (to ensure stability of product and to maximise consumer confidence) and the introduction of digital radio where similar issues will need to be resolved. These activities will ensure that current and future technical issues experienced in the digital terrestrial television market are effectively resolved in order

to limit the impact on consumers and viewers. The TCC is an important proposal that should be jointly supported and encouraged by the industry and government. As receiver numbers grow it is an initiative that is increasingly urgent to ensure significant legacy issues are minimised.

4.3 Spectrum Use

An important premise underpinning the public policy debate in relation to broadcasting in recent years has been the scarcity of broadcasting services bands (BSB) spectrum and, therefore, the need to plan and utilise this resource as efficiently as possible. Over the medium- to long-term, it is entirely possible that this scarcity issue will significantly diminish for two principal reasons:

1. The emergence and widespread adoption of advanced DTV compression technologies (see 4.4, below); and
2. The release for re-allocation of analogue television and radio channels currently used by incumbent broadcasters.

Whatever the longer-term reality, it is BA's view that public policy at the present time should ensure the efficient use of spectrum in the years ahead, given technology improvements already being experienced. Relevant principles include:

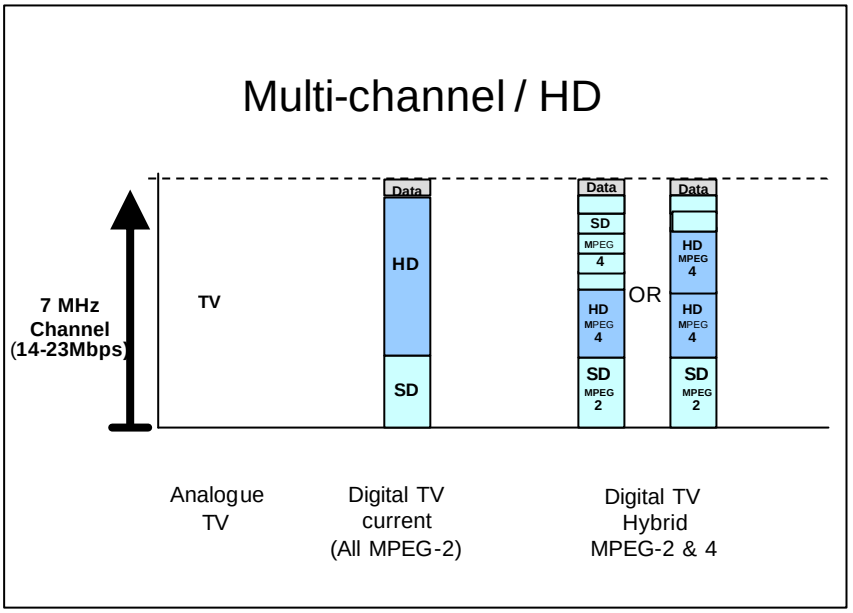
- The merit-based (rather than price-based) allocation of spectrum;
- Anti-hoarding policies such as "use it or lose it" requirements on licensees;
- Planning now for the adoption of advanced DTV compression technology once it becomes widely available;
- Maintain existing quality of BSB spectrum by limiting permitted uses and managing potential interference issues through thorough planning. BA believes it is important to maintain the current "clean" environment and does not support the FCC position of widespread secondary allocation of BSB spectrum to non-broadcasting services (eg. WiMax - one of the 802.16 suite of wireless broadband standards);
- Use of single frequency networks (SFNs) where possible to ensure maximum use of available channels; and
- Good quality high power channels should not be squandered or used for translator services which could otherwise be serviced by a SFN.

4.4 Emergence of Advanced Compression Technologies

BA considers the emergence of second-generation DTV compression technology as a highly important technical issue (and opportunity) that requires consideration by government and industry stakeholders. The current standard is known as MPEG-2. This allows the operation of 4-6 SDTV multi-channel services on a standard 19.3-23Mbps (depending on the guard interval used) digital channel. More advanced second generation technology (MPEG-4 or WM9) is rapidly emerging, however, that offers considerable encoding efficiencies over the current MPEG-2 standard and, therefore, the ability to provide a significantly increased number of SDTV and/or HDTV services within the terrestrial Transport Stream.

MPEG-4 is an advanced open compression technology which allows for the provision of SD and HD television services utilising less bandwidth (i.e. more services per digital channel or 'multiplex'). The additional capacity could also be used for the introduction of interactive services. Its encoding is typically 50% or more efficient

than MPEG-2. The development of MPEG-4, Windows Media 9 (a competing proprietary technology) and other applications allows for the running of more simultaneous program streams within a standard 7 MHz channel, as illustrated in the diagram below.:



The number and make-up of channels used in an MPEG-4 environment will depend on choices made by broadcasters relating to standards, quality, programme format and bandwidth allocation – but in any case could clearly represent the opportunity for there to be a quantum leap in the diversity and innovation of programming offered to consumers. The above diagram demonstrates there is a range of choices available to broadcasters – for instance to deliver a large number of SDTV sub-channels or to deliver a mixture of SDTV and HDTV channels or to deliver only HDTV channels (once the must-carry obligation in SD format ends).

The MPEG-4 standard is now well-established and tested in the international DTB forum and is gaining greater industry acceptance in Europe and the US particularly for distribution and delivery of video services across telecommunications networks. BA understands that MPEG-4-based terrestrial receivers are expected to become available in significant numbers from the second half of 2005. Early versions of MPEG-4 based terrestrial receivers are already available in small numbers.

BA acknowledges that the introduction of MPEG-4 in Australia would result in legacy issues with current reception devices (albeit that the population of these devices is reasonably small). While we realise that such a move will take time, we strongly believe that:

- It is critical that Australian government and industry stakeholders are aware of the rapid emergence of second-generation compression technology and that its development and ramifications start to be considered now for future implementation, particularly given the context of the government's reviews relating to the introduction of DTV into Australia;

- There will come a point in the relatively near future (approximately 12-18 months from now) when an important standards-related decision will need to be taken by Australia on this issue (eg. whether or not to adopt an advanced compression technology standard and if so, whether to implement MPEG-4, WM9 H.263 or

H.264 or some other standard). This decision point will be driven by the increased adoption of these advanced compression technologies in the world's leading DTV jurisdictions and the mass availability of (affordable) consumer reception devices;

- Working on this premise, government should be prepared to take a leadership position on this key standards issue, otherwise there is a real risk of deadlock amongst existing operators leading to inertia (i.e. as recently occurred in relation to the API standard for DTV). While acknowledging the understandable reluctance by government to unilaterally mandate technical standards, this leadership could take the form of an ABA-chaired working group that seeks to define a process and milestones for resolution of this issue, with the option of more direct government involvement in the event of failure by industry to make substantial progress by predetermined dates;

- The later that Australia leaves the consideration (and selection) of an advanced compression technology standard, the more difficult the size of the receiver legacy issue will be to manage.

BA believes it is critical for Australia to position itself with policy settings today to ensure the benefits of substantially improving technology and compression are available for future generations of users of these services.

Obviously, the introduction of an alternative standard will create a legacy situation, however, it is important that Australia adopts a standard (or range of standards) that will serve the needs of the public and provide efficient use of wireless spectrum for many decades to come.

The introduction of interactive television and the development of advanced or second-generation compression technology will impact substantially on how the consumer utilises the television programmes and will expand the capacity of the spectrum to provide additional services. Planning now for future public policy in the digital broadcasting area should take account of these developments.

5. Future policy directions

BA acknowledges there are considerable public policy challenges at the current time with the transition to DTV. The challenges include the convergence of telecommunications and broadcasting functions, prospect of commercially available consumer equipment incorporating second generation compression technology and the emergence of reception devices capable of receiving multiple content streams. Increasingly the potential for digital technologies appears constrained by imposed regulation. In light of this, BA proposes the Government consider the following principles as the basis for future policy:

- Adopt a less interventionist approach which only mandates key strategic directions;

- Create an environment which promotes a viable and sustainable FTA industry for the future in the digital terrestrial environment;

- Utilise existing cost-efficient infrastructure which provides high quality broadcasting services at minimum cost to the consumer (i.e. the terrestrial delivery platform in those parts of Australia currently served by terrestrial platforms – thereby optimising economic efficiency and facilitating widespread consumer access at the lowest incremental cost per household);

- Deliver equality of services between regional and metropolitan markets to the maximum extent possible;

- Accommodate the new service and business opportunities resulting from convergence and technological advances that will emerge over the next 5-10 years;

- Ensure that analogue spectrum is available at the conclusion of the simulcast period for alternative uses and is allocated through an open, competitive process; and

- Prescribe market entry arrangements for the utilisation of available (and planned) digital spectrum in order to support the development of the industry.

BA believes that the adoption of a comprehensive policy framework should be based on an approach that facilitates an expansion of the range of services and content on offer. This is essential to maximise the likelihood of sound capital investment and incentives for the industry and consumer.

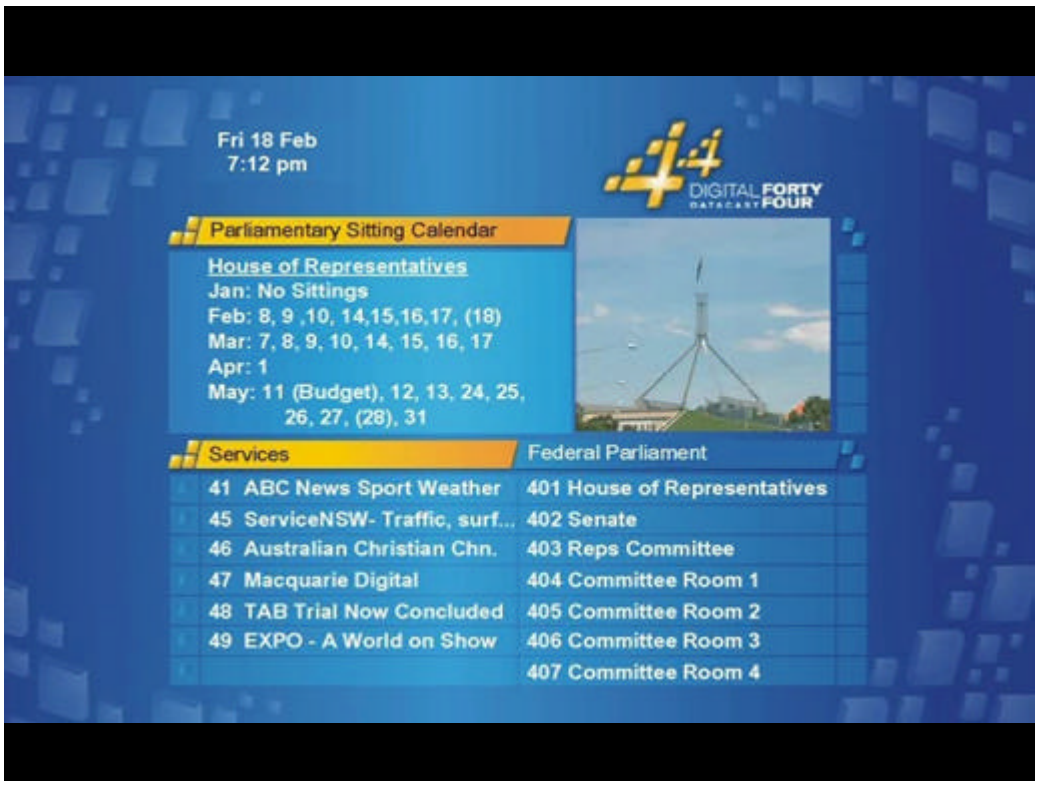
5.1 Switch-Over Period

BA recognises that it is too early to enunciate a switch-over date for analogue television. Whenever this switch-over is to occur, BA believes that it is important from a public interest perspective that:

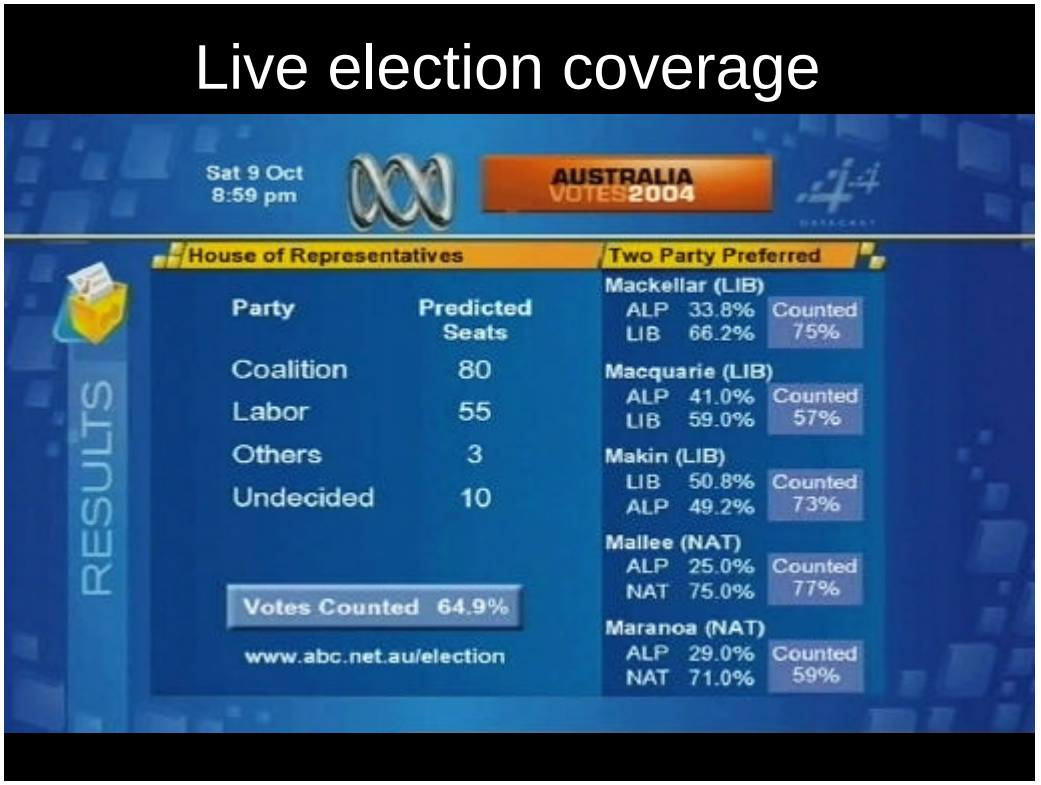
1. it is planned and communicated to consumers, service providers, manufacturers an broadcasters with a long transition period; and
2. existing analogue spectrum be re-allocated through a transparent market-based process.

Appendix 1 DIGITAL FORTY FOUR Services

DIGITAL **FORTY FOUR** Home Page

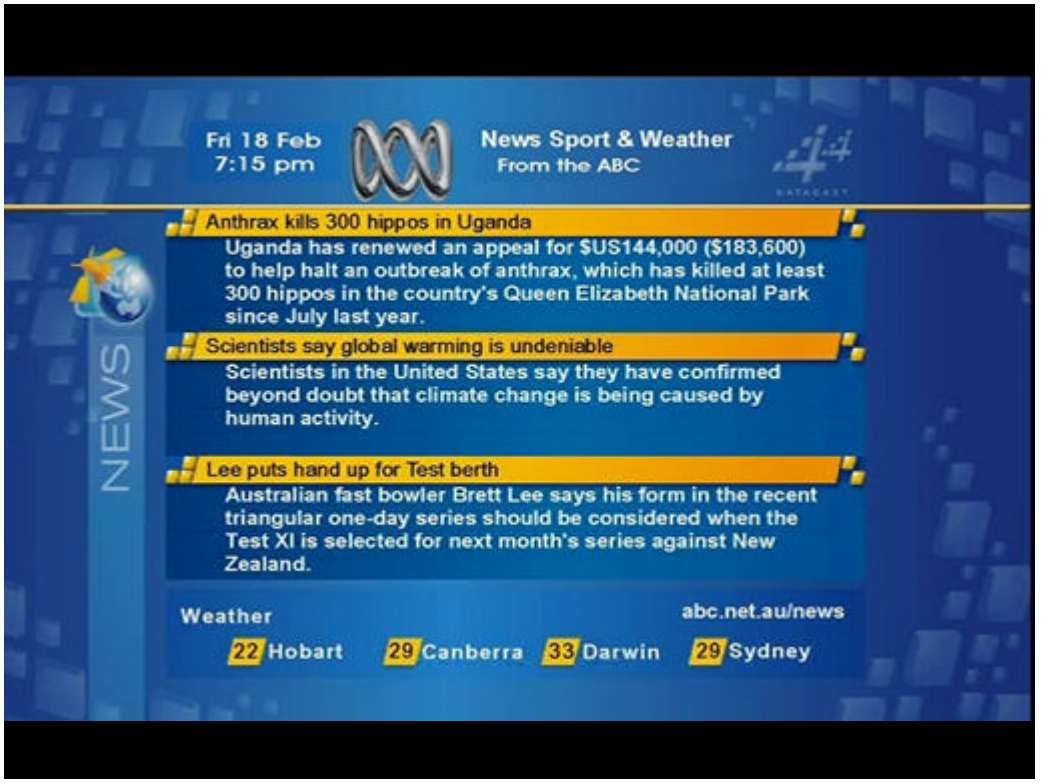


ABC Election Coverage

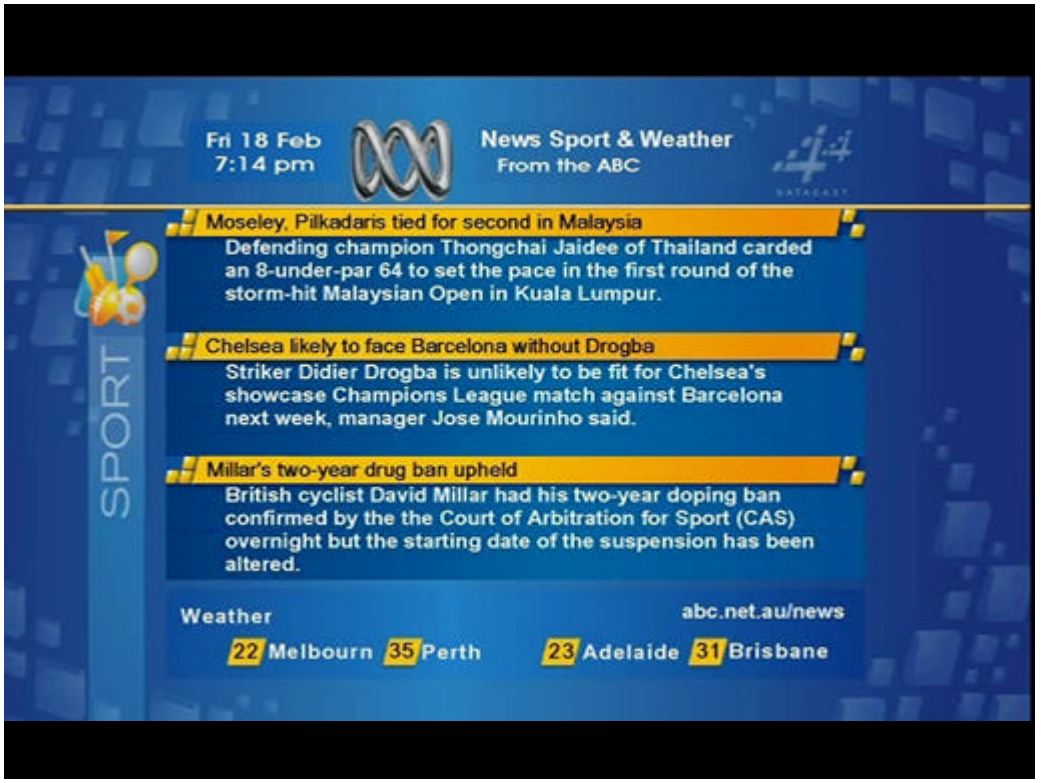


Free to View Program Guide

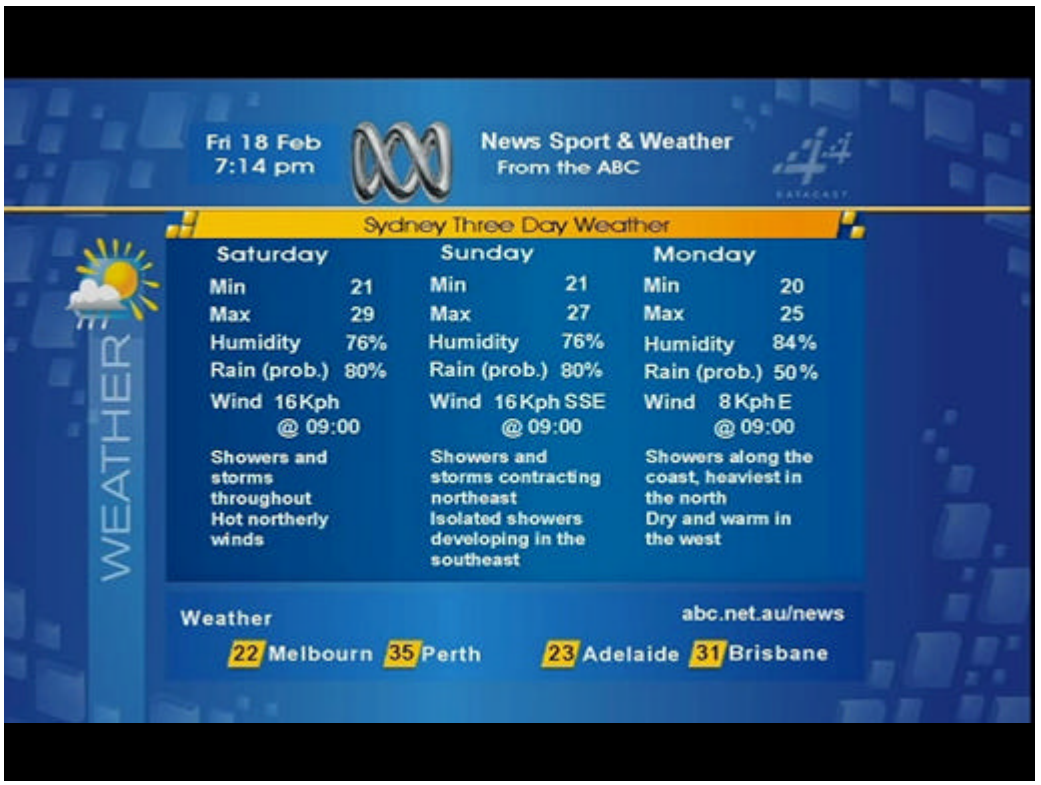
ABC News



ABC Sport

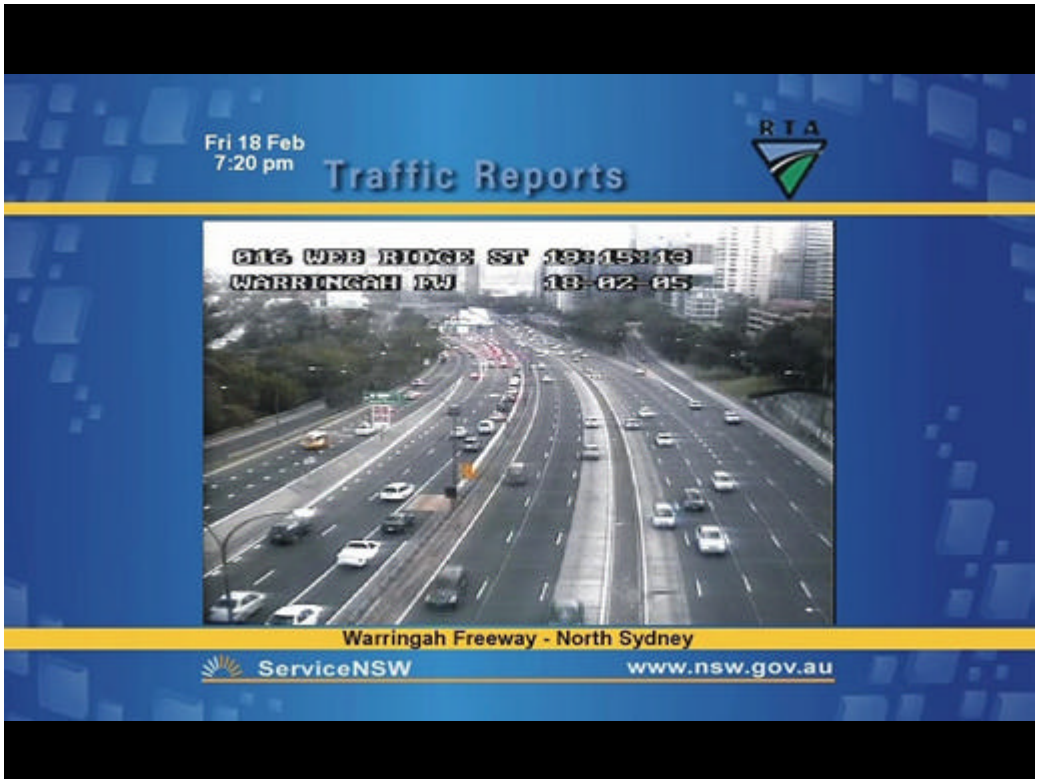


ABC Weather



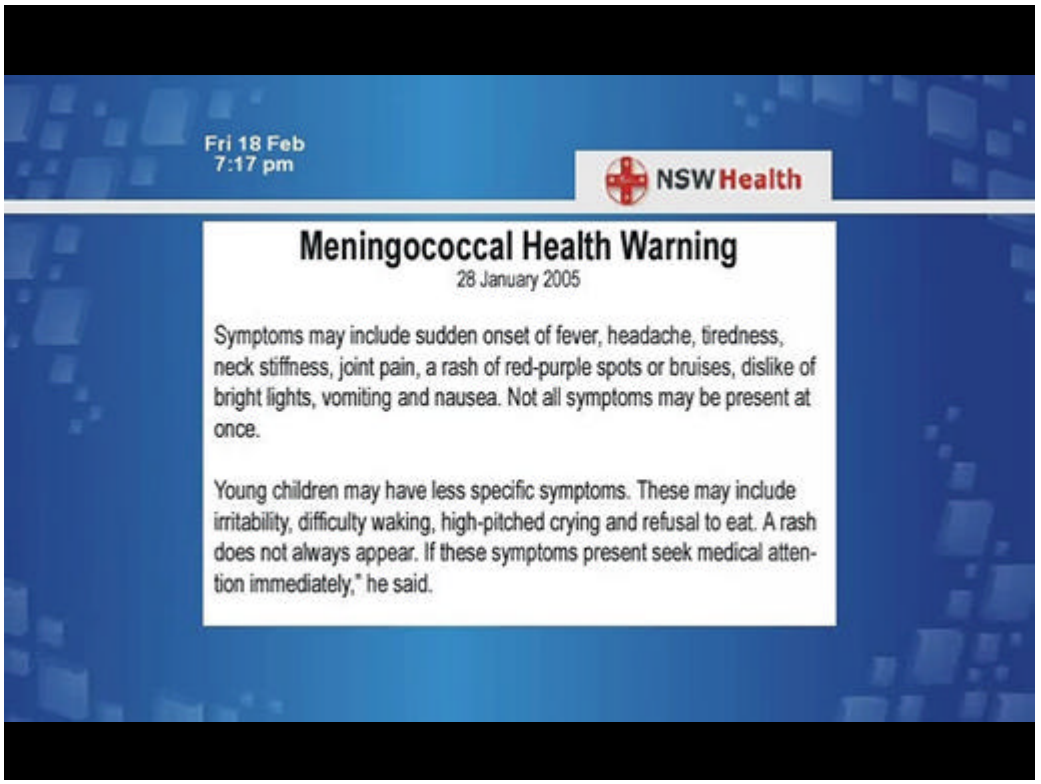
Channel NSW – Coastal Watch

Channel NSW – Traffic Reports



Channel NSW – What's on

Channel NSW – Health Warnings



Channel NSW – Snow Reports

Australian Christian Channel

Macquarie Digital

Macquarie Digital

Expo Channel

Appendix 2 - Freeview – Background and Update

Following the collapse of ITV Digital, a subscription service, the licence for Multiplexes B, C and D was returned to the Independent Television Commission (ITC). The ITC issued licences for these multiplexes to Crown Castle (Multiplexes C and D) and a second multiplex to the BBC (Multiplex B). The strategy, predominantly driven by the BBC, was to rescue the digital terrestrial platform by providing an entirely FTA suite of services. Another key factor in trying to ensure the successful relaunch of digital terrestrial services was to improve the reach of the services.

Therefore with the commencement of the Freeview services (in October 2002), and because of the past reception problems during the ITV Digital period, the operators of Multiplexes B, C and D adopted a modified transmission mode (of 16QAM instead of the previous 64QAM mode) in order to provide more robust reception, albeit with a trade-off of reduced payload capacity (reduced from typically 24Mbps to approximately 18Mbps). The BBC's first multiplex (Multiplex 1) was also converted to 16QAM.

At the time of the ITV Digital collapse estimated take-up of digital STBs was around 600,000 (some put the figure as high as 1 million devices). These STBs were expensive at launch (initially GBP400) and included a 'smartcard' facility.

By the time of the Freeview launch, digital STBs had fallen in price to significantly below GBP200. Price reductions were attributable to production volume benefits as global demand grew for similar devices and due to the technical simplification because the 'smartcard' reader and decryption facility was no longer required. At May 2005, the UK entry level price had fallen to GBP35.

The consumer take-up of free-to-air DTT services continues to go from strength to strength. The Freeview platform has been heralded by many in the UK, including government and UK regulator Ofcom (which assumed the duties of the ITC, BSC, Oftel, RA and RCA in 2003) as a great success. Audience figures published in January 2005 state the take-up as 5m households.

An assessment by the UK government's National Audit Office (NAO) has stated that the BBC had "clear and sound reasons" for investing in Freeview (one third ownership) while contributing significantly to a swift and successful launch of the subscription-free digital terrestrial television (DTT) service. The BBC's digital efforts to date are judged by the NAO to have succeeded in securing a terrestrial service following the demise of ITV Digital and to have launched on schedule.

The latest figures from Ofcom, indicate the continuing growth of digital take-up across the UK. The fastest rate of growth has been shown by Freeview, which was up by 17 per cent on the previous quarter (to4Q2004).

A report - *Key Developments in the Digital Television Market* - was published 30 March 2005.

In the report Ofcom says:

By 31 December 2004, digital television penetration was estimated to have increased to 59.4 per cent of UK households, up from 55.9 per cent from the previous quarter. This represents an increase of 3.5 per cent, with an additional 914,980 households

adopting digital television during the quarter, bringing the total number of households to more than 14 million (14,773,881);
A further 3.2 per cent of households subscribed to analogue cable during the quarter, bringing the total number of households receiving some form of multi-channel television to almost 62.6 per cent.;
Sky's UK subscriber base continued to grow, adding 177,000 subscribers to its pay-TV service over the quarter to bring the total number to 7,262,000 million;
Freeview (Digital Terrestrial Television) uptake has increased over the previous quarter, with household numbers estimated to have grown to around 4 million (4,592,920)*;*
Ofcom estimates that 25% of sales of Freeview adapters over the last two quarters were bought for use on second sets by people who already have digital (either Freeview or Sky or cable) on their main set;
The total number of subscribers to cable television (both digital and analogue) remained around 3.3 million. Digital cable now accounts for around 2.5 million with 11,500 additions during 4Q;
Figures for penetration, share of homes and net additions by platform up to the end of 1Q2004, compared with the same period in the previous year are as follows. Note the significant percentage growth in DTT.

	1Q2003	**1Q2004**	**4Q2004**
Digital take-up			
Digital cable	8.7%	9.8%	10.1%
Digital satellite	28.6%	29.1%	30.8%
DTT	6.0%	14.1%	18.5%
ADSL	0.05%	0.04%	0.08%
Total digital	**43.3%**	**53.0%**	**59.4%**
Analogue cable	4.7%	3.7%	3.2%
Total Multi-channel	48.0%	56.7%	62.6%
Share of digital TV market			
Cable	20.0%	18.4%	17.0%
Digital satellite	66.1%	55.0%	51.8%
DTT	13.7%	26.5%	31.1%
ADSL	0.1%	0.1%	0.13%
Share of net additions			
Cable		3.4%	-6.7%
Digital satellite		12.8%	24.0%
DTT		**83.8%**	**75.0%**
ADSL		0.0%	0.9%

A survey (2Q2004), from Zenith Optimedia suggests that the Freeview free-to-air package is set to replace Sky as the UK's favourite way of watching multi-channel television by the end of 2007. Current growth of the Freeview and Sky platforms are:

Freeview expansion at 180,000 receivers per month (quoted at 40k p.w.);
Sky expansion at 22,000 per month.

Freeview has continued to grow its range of service offerings, and is now considered to be at or close to full capacity. It *may* be possible to provide an additional service on each of Multiplexes C and D by exploiting the potential of further (small) improvements in MPEG-2 compression capabilities, but this will have to be balanced

against the impact on the technical quality of the existing services carried on the multiplex.

The success of Freeview in the UK has been attributed by some Australian industry observers to be due significantly to either the funding or subsidisation provided to it from the BBC's substantial annual budget or the contribution of an excessive percentage of BBC content. Our analysis indicates that whilst the BBC's ownership and content contribution is important at approximately 33%, there is a vast demand for access from many viable third party content providers, all of whom are contributing to the marketing and financial success of the DTT platform.

Freeview Services Multiplex Listings

Multiplex 1

EPG	Channel	Details
1	BBC ONE	**BBC One** Broadcast hours: 24 hours
2	BBC TWO	**BBC Two** Broadcast hours: 24 hours
7	BBC THREE	**BBC Three** Broadcast hours: 19:00 - 04:00
30		**CBBC Channel** Broadcast hours: 07:00 - 19:00
40	BBC NEWS 24	**BBC News 24** Broadcast hours: 24 hours
51	BBC i	**BBCi** Broadcast hours: 24 hours
89	BBC RADIO SCOTLAND	**BBC Radio Scotland** Broadcast hours: 24 hours (Scotland only)
89	BBC RADIO ULSTER	**BBC Radio Ulster** Broadcast hours: 24 hours (Northern Ireland only)
89	BBC RADIO WALES	**BBC Radio Wales** Broadcast hours: 24 hours (Wales only)
90	BBC RADIO NAN GAIDHEAL	**BBC Radio nan Gaidheal** Broadcast hours: 24 hours (Scotland only)
90	BBC RADIO FOYLE	**BBC Radio Foyle** Broadcast hours: 24 hours (Northern Ireland only)
90	BBC RADIO CYMRU	**BBC Radio Cymru** Broadcast hours: 24 hours (Wales only)

Multiplex 2

EPG	Channel	Details
3		**ITV1** Broadcast hours: 09:25 - 06:00
3		**GMTV** Broadcast hours: 06:00 - 09:25
4		**Channel 4** Broadcast hours: 24 hours (except Wales)
6		**ITV2** Broadcast hours: 09:25 - 06:00
6		**GMTV2** Broadcast hours: 06:00 - 09:25
8		**Channel 4** Broadcast hours: 24 hours (Wales only)
9		**Teletext** Broadcast hours: 24 hours
14		**E4** Broadcast hours: 16:00 - 04:00
29		**UKTV Food** Broadcast hours: 10:00 - 16:00
34		**ITV3** Broadcast hours: 24 hours
41		**ITV News Channel** Broadcast hours: 24 hours
44		**Bloomberg Television** Broadcast hours: 05:00 - 10:00
50		**Teletext On 4** Broadcast hours: 24 hours
56		**Teletext Cars** Broadcast hours: 24 hours

Multiplex A

EPG	Channel	Details
4	S4C	**S4C Digidol** Broadcast hours: 12:00 - 00:00 (Wales only)
5	five	**Five** Broadcast hours: 24 hours
8	tele g	**Tele G** Broadcast hours: 18:00 - 19:00 (Scotland only)
13	S4C 2	**S4C2** Broadcast hours: 06:00 - 18:00 (Wales only)
15		**ABC1** Broadcast hours: 06:00 - 18:00 (except Wales)
16	QVC	**QVC** Broadcast hours: 24 hours (except Wales)
16	QVC	**QVC** Broadcast hours: 18:00 - 09:00 (Mon - Fri); 24 hours (Sat - Sun) (Wales only)
17	uktv GOLD	**UKTV Gold** Broadcast hours: 12:00 - 05:00
23		**Bid TV** Broadcast hours: 08:00 - 01:00 (except Wales)
23	screenshop	**Screenshop** Broadcast hours: 01:00 - 08:00 (except Wales)
23		**Bid TV** Broadcast hours: 08:00 - 19:00 (Wales only)
23	screenshop	**Screenshop** Broadcast hours: 05:00 - 08:00 (Wales only)
24	price-drop.tv	**price-drop tv** Broadcast hours: 08:00 - 01:00
24	screenshop	**Screenshop** Broadcast hours: 01:00 - 08:00
25	TCM	**TCM** Broadcast hours: 19:00 - 05:00
26	uktv STYLE	**UKTV Style**

		Broadcast hours: 18:00 - 23:00
27		**Discovery Channel** Broadcast hours: 12:00 - 00:00
28		**Home & Leisure** Broadcast hours: 06:00 - 12:00
32		**Cartoon Network** Broadcast hours: 06:00 - 18:00
33		**Boomerang** Broadcast hours: 05:00 - 12:00
36		**Xtraview** Broadcast hours: 06:00 - 23:00
47		**Teachers' TV** Broadcast hours: 00:00 - 06:00
55		**Teletext Holidays** Broadcast hours: 24 hours
60		**Television X** Broadcast hours: 23:00 - 05:00
61		**Red Hot** Broadcast hours:
70		**BBC Radio 1** Broadcast hours: 24 hours
72		**BBC Radio 2** Broadcast hours: 24 hours
73		**BBC Radio 3** Broadcast hours: 24 hours
74		**BBC Radio 4** Broadcast hours: 24 hours
84		**Heat Radio** Broadcast hours: 24 hours
91		**Mojo Radio** Broadcast hours: 24 hours

Multiplex B

EPG	Channel	Details
10	BBC FOUR	**BBC Four** Broadcast hours: 19:00 - 04:00
31	CBeebies	**CBeebies** Broadcast hours: 06:00 - 19:00
45	BBC PARLIAMENT	**BBC Parliament** Broadcast hours: 24 hours
46	Community Channel	**Community Channel** Broadcast hours: 06:00 - 09:00
71	1Xtra	**BBC 1Xtra** Broadcast hours: 24 hours
75	BBC RADIO FIVE LIVE	**BBC Radio Five Live** Broadcast hours: 24 hours
76	BBC FIVE LIVE SPORTS EXTRA	**BBC Radio Five Live Sports Extra** Broadcast hours: varies
77	BBC 6 music	**BBC 6 Music** Broadcast hours: 24 hours
78	BBC 7	**BBC 7** Broadcast hours: 24 hours
79	BBC ASIAN NETWORK	**BBC Asian Network** Broadcast hours: 24 hours
701	BBCi	**BBCi Extra Interactive Video services** Broadcast hours: varies
702	BBCi	**BBCi Extra Interactive Video services** Broadcast hours: varies
703	BBCi	**BBCi Extra Interactive Video services** Broadcast hours: 24 hours

Multiplex C

EPG	Channel	Details
11		**Sky Travel** Broadcast hours: 24 hours
12		**UKTV History** Broadcast hours: 07:00 - 01:00
42		**Sky News** Broadcast hours: 24 hours
43		**Sky Sports News** Broadcast hours: 24 hours
94		**TalkSport** Broadcast hours: 24 hours
95		**3C** Broadcast hours: 24 hours
96		**Premier Christian Radio** Broadcast hours: 24 hours

Multiplex D

EPG	Channel	Details
18		**The Hits!** Broadcast hours: 24 hours
19		**UKTV Bright Ideas** Broadcast hours: 06:00 - 18:00
20		**f tn** Broadcast hours: 20:00 - 06:00
20		**Thomas Cook TV** Broadcast hours: 18:00 - 20:00
21		**The Music Factory** Broadcast hours: 24 hours
22		**Ideal World** Broadcast hours: 24 hours
38		**Men & Motors** Broadcast hours: 11:00 - 04:00
53		**YooPlay** Broadcast hours: 24 hours
80		**BBC World Service** Broadcast hours: 24 hours
81		**The Hits Radio** Broadcast hours: 24 hours
82		**Smash Hits!** Broadcast hours: 24 hours
83		**Kiss 100** Broadcast hours: 24 hours
85		**Magic Radio** Broadcast hours: 24 hours
86		**Q Radio** Broadcast hours: 24 hours
87		**Oneword** Broadcast hours: 24 hours

88	jazz fm 102.2	**Jazz FM** Broadcast hours: 24 hours
92	KERRANG!	**Kerrang!** Broadcast hours: 24 hours
704		**4TV Interactive services** Broadcast hours: