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November 10, 1999

Prof Richard Snape
Chairman
Productivity Commission
LB2 Collins Street East
Melbourne Victoria 8003

Dear Professor Snape

[1] On behalf of John Fairfax Holdings, I wish to commend you and Mr Simson for the interim report issued by the Productivity Commission on October 22, 1999.

[2] The interim report is a serious and valuable contribution to the debate on the shape of Australian media policy. The recommendations on datacasting – particularly the need for a broad definition of datacasting, the advantages of standard definition transmission, and optimal spectrum management – validate the chorus of consensus on the key issues. If embraced by the Government, they would facilitate access by all Australians to the digital television age. The recommendations on repealing the ownership rules, provided there is more open access to broadband capacity, are generally responsive to our concerns about the required sequencing and timing of deregulation.

[3] This letter addresses two issues, in the hope of contributing constructively to your work as the report is finalised next year.

1. Bringing Digital Television To All Australian Households

[4] As the Commission's hearings and deliberations proceeded, we noted with interest the idea that a mechanism might be established to expedite conversion to digital television, and thereby secure earlier release of the spectrum presently used for analogue transmission. The Commission discusses these issues in Section 6.6 of the report.

[5] The advantages of an early handback of the analogue spectrum are clear and compelling:

- [6] Very significant blocks of spectrum would become available for new television and radio services, datacasting, internet, and other telecommunications services.

- [7] The Government could reap significant revenue over the next decade in auction proceeds and ongoing license fees.

- [8] The opportunity is created for greater competition and diversity of media voice in terms of the ownership of media and telecommunications spectrum, facilities and services.

- [9] Australia would have a position of leadership in an important and evolving sector with a new national distribution network, the social benefits of universal access, and the commercial drive from reduced barriers to new business innovation.

[10] What had not yet been determined is whether the tangible economic gains from an early handback of the analogue spectrum clearly outweighs the costs of quickly converting every Australian television set to digital. To assess whether these questions should be pursued further, we commissioned A. T. Kearney to produce a report on preliminary estimates of the costs and benefits of an early release of the analogue spectrum.

[11] The cost was relatively easy to determine. Providing a standard definition digital set top box to every existing television household in Australia – including two boxes where a second set exists – would cost about $3.7 billion. The good news, however, is that the economic value of the early release of spectrum now used for analogue television transmission, was estimated by A. T. Kearney to be as much as $4.3 billion. This estimate [see Section 6 of the A. T. Kearney attachment] assumes value from incremental advertising revenue, and incremental subscription/value added services and transactional revenue. In addition, there are a number of significant social benefits from an early release of analogue spectrum that were not quantified but add to the strength of the economic case.

[12] A.T. Kearney believe that the projections on the potential value from early spectrum release are conservative. In addition, the actual structuring and implementation of such a program can take into account certain social variables that might be desirable. For example, in order to provide a full figure of what the conversion costs would be, A. T. Kearney generated cost figures, which included all first and second sets, including those in upper-income households. Please note we did not add to the cost base of this program the costs already undertaken by television broadcasters to convert to digital. They will be incurred regardless of any action on early spectrum release.

[13] This study therefore concludes that there would be an economic and social gain for the nation to move all Australian televisions to digital immediately, bringing forward the benefits of digital television by several years.

[14] This analysis therefore poses an important policy question, i.e., what set of standards and policies (such as the scope and pacing of spectrum auctions for the spectrum that is released) are required for this benefit to be realised?

[15] This analysis is predicated on a suitable technological standard for digital broadcasting being adopted. The wholesale conversion of the country is feasible and cost-effective if standard definition digital television is the operative transmission standard. The cost-benefit analysis cannot be sustained if the much-more expensive high definition digital television standard is adopted.

[16] We are pleased to share this analysis with the Productivity Commission, and through you, with all interested parties. We hope this contributes to the debate on these issues.

2. *Opening Up Access To Digital Broadband Platforms*

[17] The Commission's interim report, in its discussion of the bifurcation of broadcasting licenses into a transmission license and a content license (Chapter 4), addresses a key concern in our submission from last May: the application of competition policy principles to digital access.

[18] We would welcome a more extended examination in your final report of steps that might be taken to advance this objective with respect to telephone network capacity, the cables utilised by Foxtel and Optus, and satellite capacity. The access regime for cable, for example, is being tested by the Seven Network with respect to Foxtel. The Commission's overall assessment on what might be done to provide greater access to digital broadband capacity would be welcome.

[19] If it would be helpful to the Commission, Fairfax and A.T. Kearney are available to be present at your public hearings in Sydney on December 6, 1999.

We appreciate this opportunity to present these findings to you.

Yours sincerely,

Frederick G. Hilmer

Executive Summary

- [20] Early release of the spectrum allocated to analogue television broadcasting, which is currently planned to be utilised in simulcast alongside digital transmission, would speed up the digitalisation of Australian broadcasting, provide consumers with more choices and produce net economic benefits to the community

- [21] Current planning favours a roll-out of digital transmission technology using High Definition standards, with a simulcast period of at least 8 years subject to review in 2005

- [22] However, discussions are underway regarding the choice of transmission standards between High Definition (HD) and Standard Definition (SD) digital broadcasts, including the dual transmission of HD and SD.

- [23] The choice of HD alone over dual HD/SD transmission is inefficient, as it removes choice and increases costs to the community from HD equipment which are not compensated by significant improvements in the quality of the picture, particularly on existing television sets, or those with smaller screens.

- [24] Furthermore, the adoption of HD alone limits the range of broadcasting choices available to the Australian public, as the number of channels and/or services would be greater with a SD standard

- [25] With consumers facing the prospect of significant price increases attached to HD digital television, unless they also perceive significant benefits the migration to digital will be slow and valuable spectrum will continue to be required for analogue simulcast

- [26] The economics of early release indicate strong benefits to the community:

  - [27] The likely value of the spectrum released ten years early (~$4.3B) would more than compensate for the cash costs ($3.7B) associated with the installation of SD set-top boxes throughout Australia, while uniquely providing Australia with universal digital infrastructure

  - [28] Social benefits from an early release would more than compensate social costs incurred for the roll-out and avoid the potential for pockets of digitally disadvantaged within the community

- [29] Government should therefore actively consider undertaking a program to capture these economic benefits by accelerating the move to digital television by all Australian households.

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Benefits of Early Spectrum Release

Supplementary Submission to the Productivity Commission

November, 1999

ATKEARNEY

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Exhibits

2. Introduction

[30] To convert Australian television broadcasting to digital transmission requires a period of simulcast of transmission in analogue and digital as consumers adopt the new technology. This ties up a large amount of valuable spectrum.

[31] The desirability of minimising the analogue simulcast period has been raised in reports into the broadcasting sector in the U.K., in the U.S. and in Australia during the recent hearings of the Productivity Commission into the Broadcasting Industry. In the U.K., the Independent Review Panel which looked into funding and services of the BBC suggested that, *"(i)t is economically desirable to free-up that part of the spectrum which is currently occupied by the analogue TV channels"* [1]. However, this will only be possible when consumers migrate to the new technology and standards will be a key issue in determining this progress.

[32] For consumers to migrate they must perceive that they will derive significant benefits from the costs involved. High Definition (HD) is very expensive for consumers and, broadcast at the level proposed, does not allow an increase in the number of services. Standard Definition (SD) is cheaper for consumers and has greater utility because it can provide more choices from the same broadcasting capacity. Yet even with these additional benefits natural migration would take many years.

[33] However, broadcast spectrum is so scarce that the value generated from early release of the spectrum to be used for the simulcast could cover the cost of providing universal access to SD. Universal access is not only more efficient, it also lowers the barriers to innovation in an important new industry and creates a new distribution channel with access to every Australian home. At the same time the accessibility of the Digital Terrestrial Broadcasting (DTTB) infrastructure avoids the tendency of disenfranchising certain sections of the community and so adds important social benefits.

[34] This report is divided into the following sections:

- **Background**, describes the context in which the conversion to digital will be managed and the choices we face
- **Spectrum allocation**, shows how spectrum is currently used and how much might be freed up as we migrate to digital services
- **Transmission standards**, presents an argument for increasing the appeal of DTTB by expanding the range of services to promote take-up
- **Benefits of early spectrum release**, demonstrates the value of this spectrum and shows how it could fund a universal open network

[1] Independent Review Panel, "The Future Funding of the BBC", August, 1999, p.16

3. Background

[35] At a time when **cultural and lifestyle changes are driving demand for greater convenience, technology is creating new opportunities** to meet these challenges.

[36] On average, Australians already spend over 60% of their time on social and leisure activities at home, with more than half of this time devoted to screen based media. Alongside this we have seen a trend toward preference for convenience services in everything from prepared food to banking and shopping to compensate for increasingly busy lives. In the few short years between 1992 and 1997 alone our free time fell by over 40%.[2]

[37] Developments in technology have created new communications platforms and there has been a scramble by traditional media companies to provide more convenient and enhanced information and entertainment services. There are very few traditional media companies, publishing either in newspapers or magazines, or producing TV who have not embraced opportunities to migrate their services to the new formats.

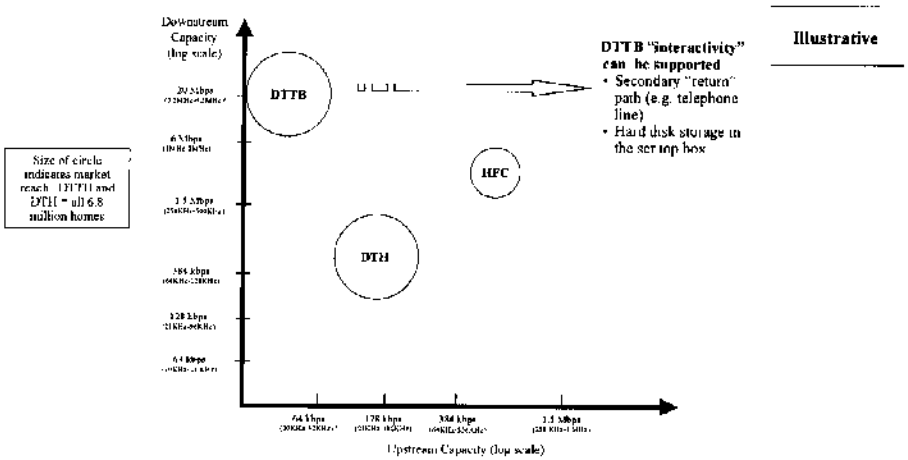
[38] DTTB has been described in the UK as more profound than all the previous developments in broadcasting (radio, mono TV, colour TV) combined.[3] The change extends beyond simply enhancing the traditional broadcast media to the capability for new services such as datacasting, pay TV, internet access, video conferencing, on-line commerce, video retrieval, and sophisticated monitoring of information and direct interaction with information sources such as the share market. Supplier access to transmission capability will drive these services and build the market.

[39] DTTB is a key technology because it has high data capacity and the widest coverage of any other broadband technology. For example, unlike other broadband technologies most of the infrastructure required to reach all Australian households by DTTB is already in place. It also has high data capacity as the same signal width as currently used to transmit analogue TV has greater transmission capacity when used for DTTB and this is competitive with other broadband technology such as Hybrid Fibre Coax (HFC) or Satellite (DTH), and even new generation technology such as the various commercial Digital Subscriber Line (e.g. ADSL) systems.

[40] What DTTB lacks in reply path capacity to support interactivity can be supported with other technology. A connection from the receiver to a telephone line can provide a reply path and hard disk storage can allow retrieval of locally stored data (see Exhibit 1).

[2] Australian Bureau of Statistics, *How Australians Use Their Time*, cat. 4153.0, 1997
[3] Independent Review Panel, *The Future Funding of the BBC*, August, 1999

EXHIBIT 1: Alternative Broadband Platforms



Note: Downstream capability or forward channel speed determines video and data capability
Upstream capacity or reverse channel speed determines interactive capability
Source: A.T Kearney, *Digital TV*, 1998, Literature search

[41] Broadcasting policy will be a key determinant of success. Standards will determine the capabilities of DTTB and the value of these to consumers will determine the market.

[42] In January, 2001 Australia's broadcast television networks will commence digital transmission. This transmission is planned to be simulcast along with an analogue signal for a period of at least 8 years allowing consumers to choose which service they receive.

[43] During the simulcast, consumers will be able to continue using their existing equipment to receive the analogue signal as they have before. To receive this service consumers need do nothing at all. The transmission will be unaffected by the new digital broadcast, however the signal will cease sometime beyond 2009 so these consumers will simply defer their take up of digital services while seeing out the life of their existing equipment.

[44] By purchasing a set top unit (STU) decoder box on its own consumers can receive the digital signal and watch it on their existing analogue TV. This provides a more reliable (less interference prone) signal but with little discernible improvement to the quality of the image compared to an analogue signal with good reception (while for those who currently experience ghosting in their reception there will be tremendous improvement). This option is unlikely to be very attractive unless there are increases in services, either through greater viewing options or interactivity.

[45] A third option is to purchase a full range of new equipment capable of receiving and displaying the digital signal. This provides a more reliable signal, access to any expanded range of services and a better quality image.

[46] Against these alternatives consumers will balance the cost of conversion with the value derived. This balance is critical but the trade-off of choices is very stark given the benefits that flow from different standards. Within the capacity limits of spectrum allocations the benefits which accrue to the higher cost HD option are qualitative while the cheaper SD alternative has a lower capacity requirement and therefore opens the doors to a wider range of services. It is the consumer's view of the value derived from these alternatives which will drive take-up

[47] Without strong take-up there will be significant inefficiencies from poorly utilised digital services and on-going simulcast of the analogue signal. Without a sizeable digital market new services are unlikely to emerge.

4. Spectrum allocation

[48] Although there is increasing demand for broadcasting capacity, suitable spectrum is already congested. However, scarce "broadcasting" spectrum will be liberated when the switch to digital transmission is complete.

[49] Deployment of frequencies for new uses is limited by availability of "broadcasting" spectrum. Use of all spectrum is prescribed by a range of factors including physical limitations and international agreements. Frequencies are divided into broad spectrum bands which are sub-divided and allocated to particular uses. The "broadcasting" service allocations are within the VHF and UHF bands. There is scarcity of capacity on these bands beyond that already planned to be utilised for analogue and digital transmission (see Exhibit 2).

EXHIBIT 2: Frequency Allocations in the VHF and UFH Bands

Service	VHF		UHF		
	MHz	%	MHz	%	
Amateur	6	2	-	-	
Aeronautical mobile	19	7	-	-	
Broadcasting	107	40	300	11	Current analogue services plus claimed DTTV allocation
Earth Exploration Sat.	-	-	37	1	
Fixed	127	47	1,393	52	
Meteorological	-	-	34	1	
Mobile	-	-	58	2	
Radiolocation	-	-	178	7	
Radionavigation	11	4	680	25	
Space and astronomy	1	-	20	1	
Total	270	100	2,700	100	No additional availability

Source: Freehill Hollingdale & Page, ACA

[50] Switching to digital transmission will liberate spectrum currently allocated to analogue simulcast and potentially the need for back-up translators into "black spots".

[51] Each broadcasting network is currently allocated 7 MHz which provides sufficient capacity for analogue transmission of one channel in the PAL standard.[4] The networks are also provided with extra capacity for at least one additional 7 MHz channel in each geographic area for translators to cover "black spots" to ensure that everyone is able to receive a signal. Hence, each channel is transmitted at least twice in analogue and so

[4] Australia and the UK use the PAL standard, while the USA uses NTSC

actually occupies a minimum of 14MHz in any geographic area (this is very conservative as it excludes additional translators and buffers between channels).

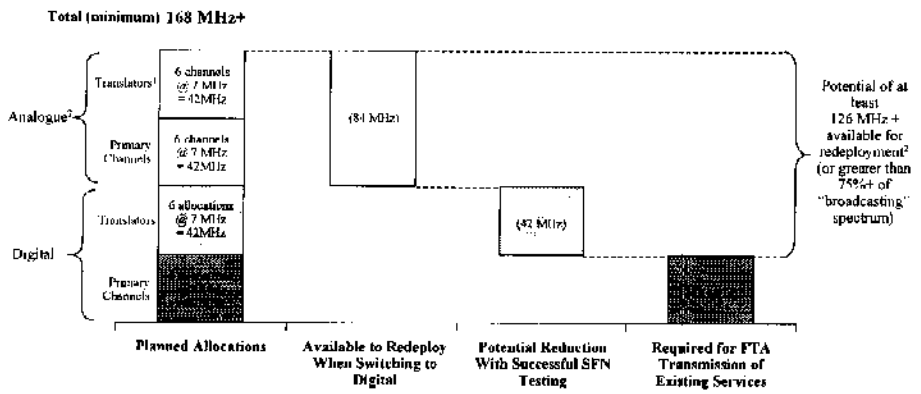
[52] For the conversion to digital, additional spectrum has been provided for each network channel to be transmitted alongside the analogue signal providing viewers with a choice, during the simulcast period, between receiving the digital or the analogue signal. Under current ABA planning, the additional spectrum allocated for digital transmission includes an allowance for the primary digital signal (of 7MHz per channel) and also for back-up digital translators for "black spots" (of 7MHz per channel).

[53] Therefore in total each network will transmit the same channel at least four times: Primary analogue, back-up analogue, primary digital, back-up digital. These transmissions will occupy at least 28MHz of spectrum for each network in each geographic area.

[54] However, it is not yet clear that digital transmission will require additional spectrum for back-up translators, and preliminary tests are underway on using the same frequency for translators. Success in these Single Frequency Network (SFN) tests will free up all the capacity currently reserved for the digital translators.

[55] Therefore, complete conversion to digital will release at least 50% of the spectrum currently allocated to broadcasting which is used for analogue simulcast and up to 75%+ if the SFN tests are successful (see Exhibit 3).

EXHIBIT 3: Spectrum Availability



Note : (1) Conservatively assumes only one translator slot per channel
(2) Excludes any allocation for buffers. The Productivity Commission estimated total spectrum allocated for analogue TV broadcasting to be 350 MHz
Source: Sealock Pty Ltd., Interviews, Productivity Commission, *Broadcasting: Draft Report*, 1999, p 113

5. Transmission Standards

[56] Transmission standards are a key issue because they determine the utility of spectrum to consumers and therefore directly influence adoption. For the average Australian, HD may only deliver limited benefits yet equipment prices are likely to remain very high for some years. The complete conversion to digital could therefore be some time away especially if HD is chosen as the standard.

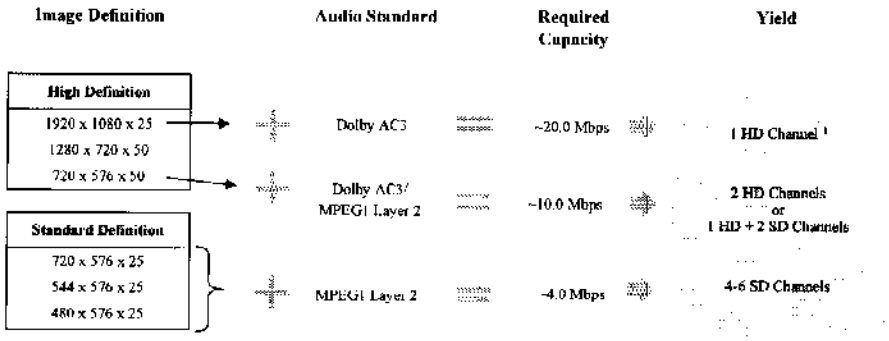
[57] Allocations of spectrum for broadcasting has a variety of service options depending on the broadcast standards. The higher the standard adopted the fewer services at that higher level can be provided from the 7MHz of broadcasting spectrum allocated to each network (which will transmit 20Mbps).

[58] These standards include a number of variables such as Aspect Ratio of the image (16:9 versus 4:3), Main Profile of the image (@HL versus @ML) as well as Scanning (Interlaced versus Progressive) and Sound (Dolby AC3 versus MPEG1 Layer 2) but the primary issue is the level of Definition. The choice between HD and SD will determine the potential yield and the main trade off will be between quality of image and quantity of services.

[59] Transmission of the highest level of HDTV (with Dolby AC3) requires transmission capacity of up to 20Mbps. Transmission of the lower level of HDTV (720x576x50 with Dolby AC3) requires only 10Mbps. Transmission of SDTV requires even less capacity. The highest level of SD (with MPEG1 Layer 2) can be achieved with approximately 4Mbps and so can yield approximately 5 channels with the same 7MHz of spectrum.

[60] The options are then either one HD channel at the highest level or two at the lower HD level (or one HD and two or more SD) or multiple channels or services with SD (see Exhibit 4).

EXHIBIT 4: Yield from 7MHz



Note: (1) With greater compression the required capcity at this level could also allow one SD channel
Source: Sealock Pty. Ltd., Phillips Sound and Vision, *Digital Television: Australia's Options* (Productivity Commission Sub. No. 166), 1999

[61] The complete conversion to digital will be some time away, because take-up of DTTV is likely to be very slow. The scheduled simulcast period will allow consumers to continue using their existing equipment and receive the analogue signal as they have previously. Any new digital service will need to provide value to consumers in excess of the cost of any equipment required to receive those benefits.

[62] Based on turnover of the current installed base of TV sets in Australia, complete replacement would take around twelve years.[5] Without significant additional value from DTTB, migration can be expected to take longer because equipment prices are much higher.

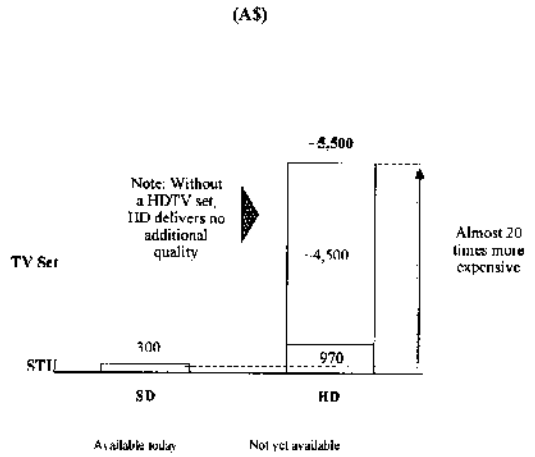
[63] In particular, migration to HDTV may be very slow because HD requires very expensive equipment with only marginal benefits over SD. Currently, there are no screens for sale for the highest level of HD (1920x1080x25i) and as very little content is filmed in HD and television program material is produced in SD the quality benefits will not be readily available regardless of equipment used.[6] Furthermore, on smaller screens, differences in quality are not that great between the highest level of SD and that offered by HD. Therefore to appreciate its quality advantage HD requires large screens (greater than 90cm).

[5] Assumes 6.7m households, 55% having at least two TV sets, and annual sales of 875,967 units.
[6] Phillips Sound and Vision, *Digital Television: Australia's Options* (Productivity Commission Sub. No. 166), 1999

[64] Very few Australians buy large TV sets. Of all sets sold to December 1997 only 3% were larger than 76cm and almost 2/3rd of sales were smaller than 53cm.[7] Assuming that consumers continue to purchase TV sets of the same sizes as before the quality benefits of HD would be limited to very few households.

[65] Against this the cost differences are very large. To gain the benefit of HDTV a viewer needs a new TV set as well as an STU (or an integrated unit). HD sets and STUs together are currently forecast to cost around 20 times more than a SD STU alone with which a viewer could receive multi-channels and other services. These figures are conservative estimates as HD sets at prices as low as A$4,500 are not yet for sale (see Exhibit 5).

EXHIBIT 5: Cost of Digital Access



Note: Assumes AUD/USD 0.67
Source: CEMA DTV Guide, 1999, www.dtvweb.org

[66] These prices in Australia for HDTV equipment are likely to remain high as very few countries have opted for HD and those that do offer a choice between HD and SD (see Exhibit 6). Although some regions in the U.S. offer HD the video decoding standards are not the same as that used in Australia so local prices will not necessarily reflect economies achieved in the U.S.[8]

[67] Therefore, if Australia were to adopt HD it would be establishing a market for HD equipment on its own and could expect little movement in prices over time. Work in the U.K. and the U.S. on elasticity of demand has shown consumers are particularly price

[7] Digital Business Consulting Pty. Ltd., *Digital Broadcasting: Australian Opportunities for the New Millennium*, 1998 (see Appendix A)

[8] Australia has adopted the DVB video decoding standard used in Europe over the ATSC standard used in the U.S.

sensitive to equipment costs[9], and recent data from the U.S. shows that there is very little consumer demand for high priced TV sets.[10]

EXHIBIT 6: Digital Broadcast Standards

Country	HDTV	SDTV
Australia	?	
Singapore	Considering	
India		
New Zealand		
Hong Kong		
United Kingdom		
United States	(1)	(1)
Sweden	Considering	
Spain		
Ireland		
Finland		
Norway		
Netherlands		
France		
Italy		
Germany		
Denmark		

Note: (1) U.S. has not adopted DVB standard
Source: Sealock Pty Ltd, Digitag September 1999 Newsletter

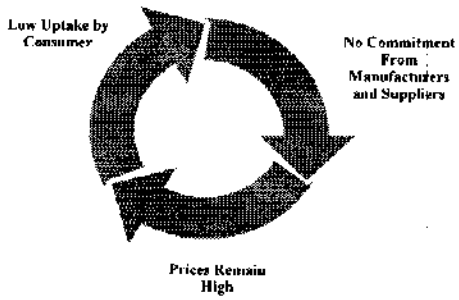
[68] This leads to a self-reinforcing loop. High prices suppress demand which reduces commitment from manufacturers and suppliers, and this in turn ensures that prices remain high (see Exhibit 7).

[9] Financial Times, *The Future of European TV*, 1997; Forrester Research, *Digital TV's Uphill Struggle*, July 1999; London Economics cited in Independent Review Panel, *The Future Funding of the BBC*, August, 1999

[10] Forrester Research, *Digital TV's Uphill Struggle*, July 1999 (see Appendix B)

EXHIBIT 7: Low Uptake Can Reinforce High Prices

Illustrative



Source: Nera/Smith, A Study to Estimate the Economic Impact of Government Policies toward Digital Television, 1998

[69] Experience in the Netherlands with Holland Media Group's conversion from analogue to digital shows that without clear advantages and consumer acceptance, and credible commitment for the change, full conversion to digital is likely to drag on and even result in a stand-off. Despite announcements of the decision, the public did not believe the change would occur and in light of few benefits from the switch did not purchase new equipment.

[70] Finally when the deadline was only weeks away the Dutch Consumer Association took legal action to prevent the cessation of analogue transmission. Only after the legal action was lost did people finally begin the switch to digital equipment.[11]

[71] Work for the BBC has highlighted the importance of credibility and commitment to a firm date for a switch-over from analogue to the take-up rate for digital.[12]

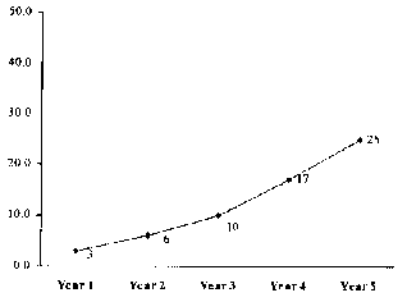
[72] In Australia, even the commercial networks expect the take up of digital TV will remain low for some time only reaching 25% penetration after five years. Other forecasts agree with the commercial networks but anticipate that given the choice only 1% will choose HDTV within this period (see Exhibit 8).

[11] Nera/Smith, *A Study to Estimate the Economic Impact of Government Policies toward Digital Television*, 1998

[12] London Economics cited in Indepenent Review Panel, *The Future Funding of the BBC*, August, 1999

EXHIBIT 8: Forecast DTTV Penetration of Australian Households

FACTS projections
(Percent)



DBC projections

Consumer equipment	Digital TV	Penetration	Homes
Low D-A Converter	60%	15%	1,050,000
Low Mid Range SD	12%	3%	210,000
High Mid Range SD	24%	6%	420,000
High HD	4%	1%	70,000
Total Digital	100%	25%	1,750,000
Total Analog		75%	5,250,000
Homes		100%	7,000,000

Source: Federation of Australian Commercial Television Stations (FACTS), *Submission to AIAL*, 1997;
Digital Business Consulting Pty Ltd, *Digital Broadcasting: Australian Industry Opportunities for the New Millennium*, 1998

6. Benefits of Early Spectrum Release

[73] Consideration of the speed in which critical mass can be built on the digital service and the desirability of reducing the simulcast period prompted the Productivity Commission to question the efficiency of the simulcast period.

[74] There is a cost associated with accessing new digital services, but the value which could be generated from the spectrum tied up for the simulcast of the analogue signal is likely to be much greater. Furthermore, there are important spin off advantages from building a universal open network for both business and the community.

[75] There appears to be sufficient demand for "broadcasting" spectrum to create an "auction" climate. For some years, media organisations have sought new broadcasting licences in Australia and existing broadcasters and Pay TV providers could use spectrum to deliver additional services.

[76] Other media groups such as Fairfax and internet providers such as Ozemail have sought access to spectrum for new services such as datacasting. Telecommunications companies could also use spectrum to offer new services and other industries such as Thoroughbred Horse Racing are interested in utilising spectrum to better service their markets.

[77] An indication of the value of "broadcasting" spectrum is the capitalised value of spectrum currently allocated to the three commercial networks. During the recent hearings of the Productivity Commission representatives of the commercial networks acknowledged that these measures gave realistic estimations of the value of their right to access spectrum for broadcast services.

Professor Snape:	*"...I wonder if you could tell us what a television licence is worth these days, please?"*
Mr McAlpine:	*"What's its worth. It varies, I guess by market capitalisation, Professor. I think the figures for most five city markets is in the order of $2 billion."*[13]
Professor Snape:	*"...when you take account of the whole thing and add it all up the net effect of all that is that all those things you've still got a value at the end of the day which you rate yourself with those licences at $1.3billion."*
Mr Falloon:	*"That is an asset value based on the system that we face and as I say, gets reviewed annually by our board of directors."*[14]

[13] Productivity Commission, *Public Hearing Transcript*, 24 May 1999, p169
[14] Productivity Commission, *Public Hearing Transcript*, 26 May 1999, p300

[78] Comparison of market capitalisation and book value of licences for the commercial networks gives an approximate value of around A$1B on average for the use to which the spectrum is put by each broadcaster.

EXHIBIT 9: Capitalised Value of Broadcasting

(A$Millions)

	Market Capitalisation	Book Value of Licences
Channel 7	1,118	570
Nine Network	1,939(1)	1,318
Ten	772	1,078
Total	3,829	2,966
Average	1,276	989

Notes: (1) Assumes 55% of total capitalisation attributable to broadcasting operators based on market capitalisation as at June 1998 to avoid impact of floss of on-line business
Source: ASX, 1998 Annual Report

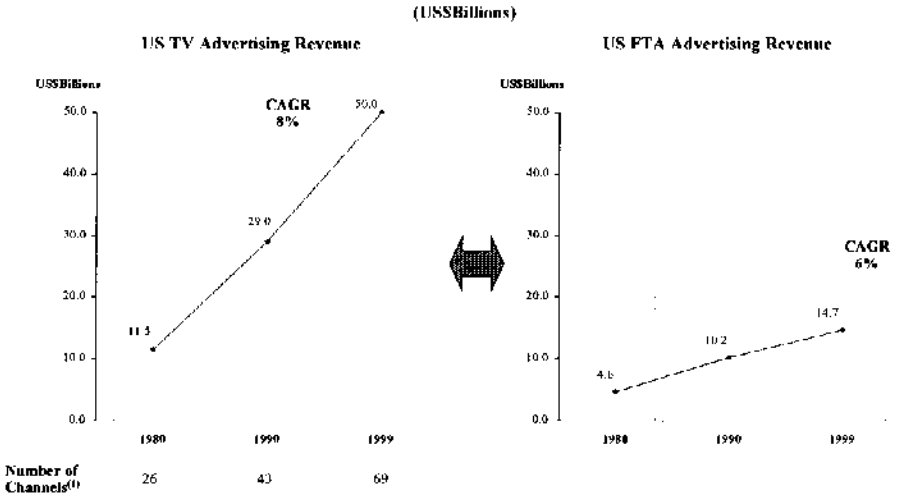
[79] Even if any additional spectrum were to be used to deliver similar services adding to supply, experience suggests that the market could support extra services and maintain the value of the commercial networks. For example, since the introduction of Pay TV and over 60 *new* channels (between Foxtel and Optus Vision) not only has take up of these services been strong, but the market value of the commercial networks has grown faster than the average of the stock market.

[80] U.S. experience illustrates the same point. Since 1980, as new broadcasting channels were introduced, the U.S. TV advertising market grew at a rapid rate and average channel revenue increased. This growth in revenue had no dilution effect on the revenue of the Free-To-Air networks which also experienced constant growth in advertising revenue (see Exhibit 10).

[81] Furthermore, despite growth in subscription based services in the U.S., Forrester Research recently reported that there still exists unmet demand. Their survey found that the average U.S. consumer of paid broadcasting is willing to increase their current Pay TV expenditure by one third for access to 50 more channels.[15]

[15] Forrester Research, *Digital TV's Uphill Struggle,* July 1999

EXHIBIT 10: Growth of U.S. TV Advertising Revenue



Notes: (1) Includes both FTA and cable
(2) Revenue of broadcast networks (CBS, NBC, ABC and Fox) from 1990
Source: Deutsche Bank Alex Brown, *Broadcasting Signals*, June 1999

[82] The Australian advertising market is likely to be driven by similar factors to those in the U.S. following the introduction of new channels. This includes both a growth in advertising and a shift in the advertising mix as new forms of broadcast advertising develop. These new forms are primarily focussed advertising and infotainment.

[83] Assuming that the spectrum allocated for analogue television broadcasting could be released for the provision of new services *ten years early*, and that from these new services Australia experiences an average growth in advertising revenue of 8% p.a. over ten years (10% p.a. over the first five), this would generate value of around A$2.5B over the ten year period.[16]

[84] Furthermore, the released spectrum capacity could be used for interactive and data services generating additional value from subscriptions and transaction fees.

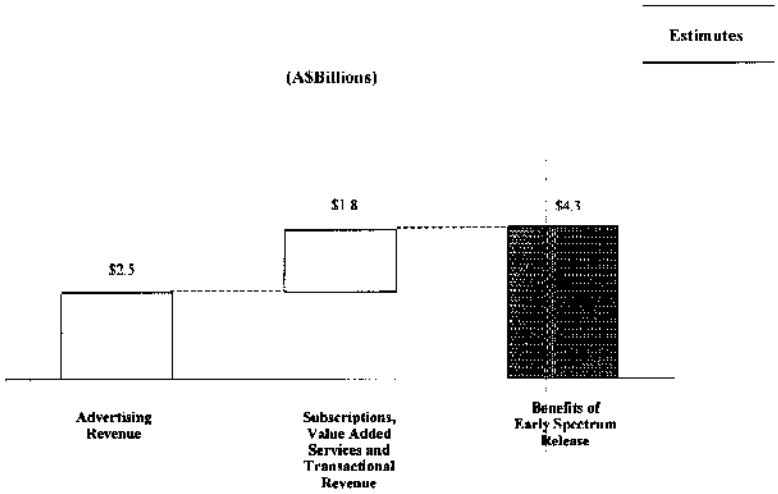
[85] If subscriptions for services such as real time information services, communications and downloaded data grew to approximately 2.5 million households (35% of current households) over ten years and these households paid A$25 per month for these services this would generate around A$450m in value over ten years.[17]

[16] Assumes cashflow from revenue based on current achieved broadcasters EBITDA and uses a discount rate of 9%. Source data from ABA "Broadcasting Financial Results".
[17] Assumes realisable cashflow of 20% of revenue and uses a discount rate of 9%.

[86] If in addition transactional fee were collected for on-line commerce, shopping and information and transactions themselves this could generate up to A$1.3B in value over ten years. This is based on forecasts of total on-line revenue and assumes that broadcasting services would achieve a 25% market share with half of this attributable to new services.[18]

[87] In total the value that could be generated from advertising, subscriptions, value added services and transaction fees *over ten years* is as much as A$4.3B (see Exhibit 11).

EXHIBIT 11: Potential Value from Releasing Spectrum Ten Years Early



[88] Releasing spectrum early would also have a number of social benefits. The most obvious is the increased choice and greater range of services available to the Australian public. These would be even greater using the SD format were available.

[89] Against these benefits are the costs of making every household accessible by DTTB. This requires purchase of an STU capable of interpreting either the HD or SD signal depending on the standard adopted. Current estimates for a basic SD are around US$200 or approximately A$300. For a basic HD STU current expectations are about US$649 or A$970 (although these are not yet commercially available).[19]

[90] Assuming that each household receives at least one STU and that those households with two TV sets receive a second STU this gives a total cost of around

[18] Assumes cashflow on these revenues is approximately 8% and uses a discount rate of 9%.
[19] Based on CEMA DTV Guide 1999. Assumes exchange rate of AUD/USD = 0.67

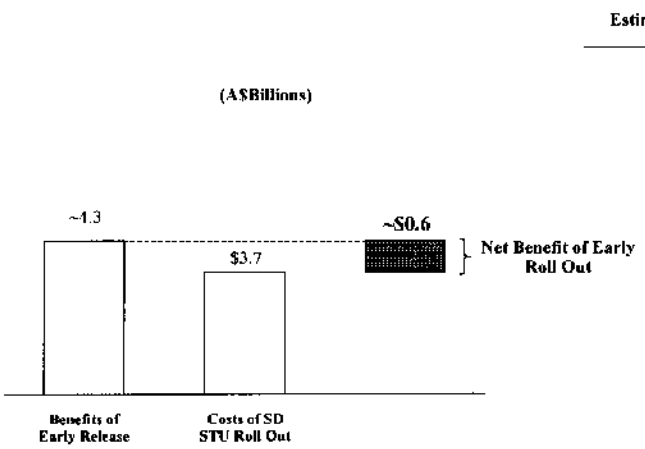
A$3.1B for SD access and A$10.2B for HD access (note this is without any significant enhancement to the image).

[91] If the cost of installing the STU averaged around A$50 per TV set, total installation costs would be approximately A$525m. This brings the total cost to give all Australian households access to SD to around A$3.7B compared to A$10.7B for HD.

[92] Other roll-out costs and risks should, of course, be noted. There are some technology risks in building a network of this size in unforeseen developments in STU technology and potential for future cost decreases. There are also some significant issues to consider in managing the logistic of a national roll-out including warehousing costs, transportation, timing and maintaining integrity in distribution. Finally, a roll-out of this size would require adequate publicity to ensure smooth implementation.

[93] These issues notwithstanding, based on these assumptions there appear to be potential net benefits of an early release of spectrum as the value of released spectrum would more than compensate for costs associated with a roll-out of equipment for access to SD digital television (see Exhibit 12).

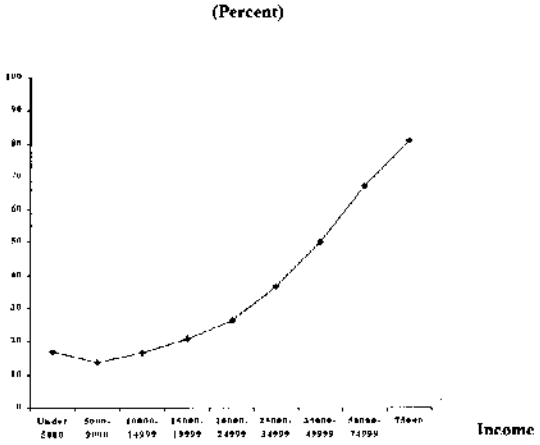
EXHIBIT 12: Net Benefit of Early Roll Out



[94] A universally accessible open network may not be supported by incumbent broadcasters, who benefit from a closed market, but it has general social benefits for the broader community. The first is a public policy objective of equality of access. In the U.S., the gap between those who have access to technology is widening between ethnic

groups and income levels (see Exhibit 13). This gap is now so entrenched it is also apparent between different states.

EXHIBIT 13: U.S. Urban Household Computer Penetration

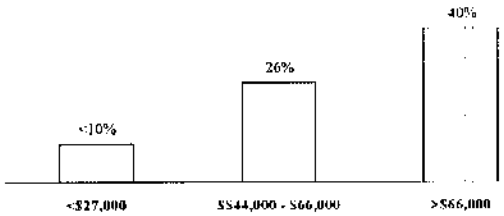


Source: US National Telecommunications and Information Administration "Falling through the net: defining the digital divide", July 1999

[95] This trend is not isolated as recent reports in the U.K. also indicated the need to address the tendency for differential access to digital technology.[20] In Australia too there is already disparity in access to internet services (see Exhibit 14).

[20] Independent Review Panel, "The Future Funding of the BBC", August, 1999

EXHIBIT 14: Australian Households with Internet Access



Source: The Australian 08/04/99, *Australia: TV's great leap forward*

[96] There are also positive effects of a universal digital network for business. The network (depending on technical standards and overcoming interoperability issues) may allow other broadcasters who use cable and satellite to have early access to digital receivers which could eliminate their need to simulcast during the changeover period from analogue on their platforms.

[97] Existing Free-To-Air broadcasters would also save. Their benefit would come from lower operating costs from avoiding simulcast of analogue.

[98] More importantly, however, Australia will benefit from much lower barriers to innovation in the critical growth area of information and communications. An established open network would provide many new services with a ready platform at low cost. Of course, the formation of this new distribution channel also opens opportunities for businesses and employment in other industries that could then readily access the entire Australian market.

[99] Overall, preliminary estimates indicate that there appear to be net benefits of an early release of spectrum and the adoption of the SD format as the value of released spectrum would more than compensate for costs associated with a roll-out of equipment for access to SD digital technology. At a minimum a dual HD/SD standard would provide the most efficient upgrade path. Certainly there is sufficient evidence to suggest that a program to capture these economic benefits by accelerating the move to digital television should be explored further.

7. Appendices

- Appendix A: Annual Australian Sales of TV Sets
- Appendix B: U.S. Demand for TV Sets
- Appendix C: Letter in support of the Report from Professor Henry Ergas

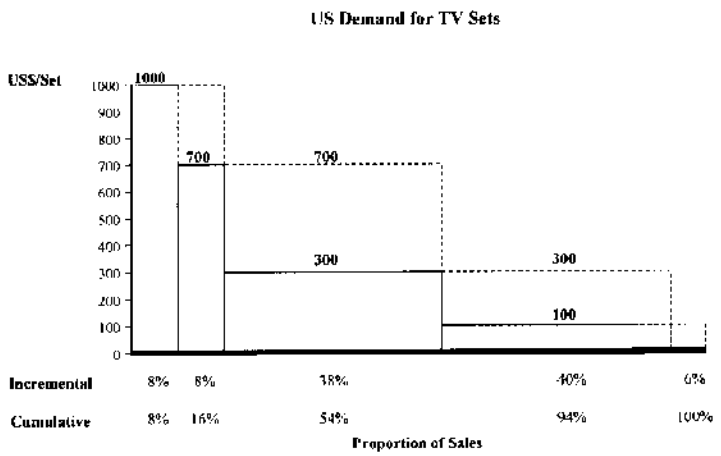
Appendix A: Annual Australian Sales of TV Sets

Screen Size (cm)	Units	Percent
28 and smaller	220,620	25%
38 - 48	133,487	15%
49 - 52	199,534	23%
53 - 61	81,506	9%
62 - 75	218,232	25%
76 and larger	22,588	3%
Total	**875,967**	**100**

Size needed for full benefit of HDTV

Note: Data for Year end December, 1997
Source: Digital Business Consulting Pty. Ltd., *Digital Broadcasting: Australian Industry Opportunities for the New Millennium*, 1998

Appendix B: Demand for TV sets in the U.S. is relatively elastic



Source: Forrester Research and Mediamark Research cited in Forrester Research, *Digital TV's Uphill Struggle*, July 1999

Appendix C: Letter in support of the report from Professor Henry Ergas

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Dale Raneberg
Principal
A.T. Kearney Pty Ltd
Sydney

Dear Dale,

We have read your report on digital television entitled "Benefits of Early Spectrum Release" and are in broad agreement with its conclusions. In our view, there is absolutely no doubt that a decision to mandate HD as the only digital broadcasting standard would impose a very significant burden on Australian society. Indeed, we believe that your numerical estimates of the benefits of early spectrum release are actually quite conservative.

Our own research on this issue has focussed solely on the social costs and benefits of the choice between digital standards. This work has found that, compared to a joint SD/HD standard, the mandating of HD alone will inflict the three distinct categories of costs on Australian society.

1. *The opportunity cost arising from delaying the deployment of alternative uses of the analogue spectrum.*

   We estimate this cost alone at $4.5 billion, assuming a 5 year migration period when SD is an option and a 15 year period when it is not. However, this figure, which is very similar to $4.3 billion figure you quote, ignores two other important categories of social costs.

2. *Costs arising from the much higher investment required in reception equipment when HD is the only standard.*

   These costs include the direct resource costs for those who do purchase HD equipment and the surplus foregone by consumers who would have bought SD equipment but either delay, or completely avoid, the purchase of HD equipment.

3. *Costs arising from the heavier demands that HD makes on scarce spectrum resources.*

   These costs include the value of the additional channels foregone by mandating HD alone, and the reduced incentives for cost containment that would result from less vigorous competition in broadcasting markets under this scenario.

Your report covers all of these issues and also highlights some other aspects of relevance to the general problem of migrating to digital television. Two of these additional issues are worth mentioning briefly. First, the effect of additional channels on total advertising revenue is clearly of relevance to the profitability of

broadcasters. You have correctly used this variable as a determinant of the total value of broadcast channels, or more generally of spectrum. Secondly, your discussion of the difference between the cash cost of SD reception equipment and the value of the digital spectrum will be especially relevant in the event that consideration is given to policies designed to speed up migration.

In conclusion, this report deserves to be considered carefully by all parties with an interest in the future of broadcasting in Australia. Its policy conclusions are consistent with economic analysis and highlight the significant efficiency losses that could flow from inappropriate policy decisions.

Yours sincerely,

Henry Ergas

11 November 1999