SUBMISSION

TO

PRODUCTIVITY COMMISSION

BROADCASTING INQUIRY

BY

NTL Australia

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1. Introduction

NTL Australia became the new owner and operator of the National Transmission Network (NTN) on 30 April 1999. This followed a competitive tender process by the Federal Government over a 12 month period which resulted in the Commonwealth disposing of its 100% interest in the NTN.

Prior to its acquisition by NTL Australia, the NTN was managed by the National Transmission Agency (NTA), a statutory authority responsible to the Minister for Communications, Information Economy and the Arts.

What is the National Transmission Network?

The NTN is the major terrestrial broadcast transmission network infrastructure in Australia.

Currently, the NTN comprises a network of 561 individual sites with over 1,700 antennae and transmitters that broadcast all analogue television and terrestrial radio transmissions for the ABC and SBS (the national broadcasters). It reaches over 97% of Australian households. Additionally, the NTN provides access for regional broadcasters, community broadcasters and other users (eg. telephony and mobile radio).

The NTN is a truly unique asset. While there are a small number of large towers in metropolitan centres, the sites are predominantly located in regional and rural locations around Australia. For this reason the NTN can claim to be at the heart of communications in non-metropolitan Australia.

Site locations are as follows:

State / Territory	Number of Sites
New South Wales	123
Victoria	63
Queensland	162
Western Australia	93
South Australia	41
Tasmania	46
Australian Capital Territory	7
Northern Territory	26

The major challenge for NTL Australia, as the new owner of the NTN, is to oversee the conversion of the transmission network (as opposed to facilities on the premises of the broadcaster) from analogue to digital in accordance with the Federal Government's timetable and in cooperation with Federal agencies, the national broadcasters and other major stakeholders in the broadcasting sectors. Simultaneously, it is essential to ensure the continued, reliable transmission of

analogue broadcast signals until such time as analogue transmission ceases (at the earliest, 2008 in metropolitan centres and 2012 in regional areas).

Who is NTL Australia?

NTL Australia is a wholly-owned subsidiary of NTL Inc., a US-based company listed on NASDAQ whose principal operations are located in the United Kingdom. The market capitalisation of NTL Inc. is around A$14 billion.

NTL Inc. has its roots in the Independent Broadcast Authority (IBA), which was responsible for the development and operation of infrastructure for independent commercial TV and radio services in the UK. In 1991, the engineering arm of the IBA was privatised by the UK Government and became NTL Inc.

Over the last eight years, NTL Inc. has substantially grown its UK broadcast transmission network and also dramatically diversified its service offerings to customers both through organic corporate growth and acquisitions. The scope of its operations now encompass:

- *Broadcast services* – broadcast transmission of analogue and digital commercial television and radio from 1,300 sites around the UK (grown from around 600 sites at privatisation in 1991), as well as the recent acquisition and commencement of operation of the Australian NTN;

- *Radio communications* – mobile communications for over 200 emergency service, government and other organisations;

- *Telecommunications* – a national trunk telecoms network using advanced SDH technology;

- *Satellite services* – a full range of satellite uplinking services from three teleports in the UK;

- *Site sharing* – providing access to the 1,300 transmission sites for telecoms and other operators; and

- *International consultancy*.

Today, NTL transmits TV and radio for commercial and local broadcasters throughout the UK reaching 22 million homes, as well as providing additional communications services to 15,000 businesses and government agencies, and over 1 million households.

In the broadcasting area, NTL Inc. is a technological and commercial leader. In 1995, the company mounted the world's first demonstration of multi-channel MPEG digital terrestrial television, proving that this technology was a viable proposition. It then went on to construct the first operational digital terrestrial TV transmitter in London. NTL Inc. is now a major systems integrator and 'multiplex' operator for digital TV and radio in the UK, serving Digital 3 / 4, SDN and Digital One.

The business objective of NTL Inc. is to become a premier new era communications company – effectively the 'best of breed' of truly convergent communications businesses.

The establishment of NTL Australia, and the acquisition of the NTN, have been the result of a view that there are significant commercial opportunities in the Australia broadcasting and communications industries, and that NTL Australia has particular expertise to offer as the digital age unfolds.

This Inquiry

NTL Australia is clearly a very recent entrant to the Australian broadcasting industry. The NTN plays a central role in the delivery of broadcasting content to Australians and potentially in the delivery of other information content in the future. For this reason, NTL Australia has opted to make an input to the Productivity Commission's current inquiry despite the fact that is still at the start of a long learning process.

At this stage, NTL Australia's views in relation to the wide range of issues raised in the Commission's Issues Paper are focused on the digital conversion process, an area in which NTL Australia has considerable experience and which will be its most significant operational challenge for the foreseeable future.

There are two essential elements in NTL Australia's submission to the Inquiry:

- The efficient management and allocation of spectrum as part of the current Australian digital conversion process is a singular opportunity to shape the digital-era broadcasting and datacasting industries in a way that will offer optimum public benefit through plurality and diversity of content and content providers.

- The process of setting operating standards for digital broadcasting (and digital applications) is equally essential to optimising this community benefit. It will be these standards – particularly in relation to set-top boxes / receivers – that will determine the price and flexibility of the new technology to the consumer, therefore its take-up, and in turn the rate of industry development in Australia.

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2. Future Industry & Technological Issues

The digital broadcasting future undoubtedly holds great potential for the Australian consumer, the broadcasting / communications sector, as well as NTL Australia as a new private sector player that is keen to identify and develop new business opportunities. The central consequence of technological convergence in the broadcasting sector is that delivery media will increasingly become a commodity product – that is, consumers will be able to choose between platforms to receive the same or similar content.

This section aims to briefly overview some of the specific issues raised in the Commission's Issues Paper, and also to sketch out the likely impact of the digital age on NTL Australia's own business.

A. Observations on Australia's Digital Conversion Agenda

In a very real sense, the success of digital terrestrial television broadcasting (DTTB), as well as ancillary applications such as datacasting, will be measured by the take-up rate of the technology by Australian consumers. There is clearly no certainty in relation to this issue, although NTL Australia makes the following observations:

- Consumer demand for the Australian DTTB model (high definition TV, SBS and ABC multi-channelling, and datacasting) is significantly different from the both the US and UK models. It clearly lacks the scope for multi-channelling of free and subscription commercial services that has occurred in the UK where the existing five analogue services are currently being simulcast with six digital multiplexes, each of which can carry 4-6 individual services.

- Australia is pursuing a significantly more restricted model for DTTB than either the US (minimal restrictions) or the UK (moderate level of restriction).

- Australia, like the UK, has adopted the DVB standard (rather than the US ATSC standard) which will ultimately permit the delivery of substantial, sophisticated and wide-ranging content including interactive services / datacasting.

- It is potentially significant that the dominant marketing message for DTTB in the UK is 'more channels / more choice'. In the US, it is generally anticipated that multi-channelling will be more significant than high definition television (HDTV). In neither market has datacasting yet been offered as a core marketing proposition..

- In the absence of multi-channelling in Australia (with the exception of the national broadcasters), the core proposition is HDTV. The high costs associated with HDTV may act as a constraint in demand.

- If HDTV does not become a generally accepted consumer proposition, a great deal of emphasis will therefore be placed on the attractiveness of new datacasting services to the consumer, as opposed to the potentially more readily understandable offering of 'more channels: more choice'.

Accepting the above, it is appropriate to reflect briefly on what can be anticipated in relation to datacasting in Australia. Under the new DTTB environment, it is clear that datacasting potentially offers substantial benefits over what is possible under the existing analogue television environment for the transmission of additional data (which has primarily been text-based). Potential applications span video, audio, graphic as well as text.

For a number of the proposed datacasting applications (for example, those incorporating video), delivery may be constrained through regulation.

The unfolding UK digital conversion process will clearly hold significant interest for Australia in relation to the viability and take-up of interactive services. By late 1999, a suite of terrestrial interactive services is due to be accessible to the UK consumer (with the return path provided via the home telephone line) that encompasses many datacasting service offerings. One particular community benefit from the emerging provision of interactive services through DTTB in the UK is the ability to deliver 'new age' services in an effective manner beyond the cabled (ie. highly populated) areas – there is an obvious parallel here with regional and remote communities in Australia.

In relation to the development of datacasting, NTL Australia's view is that:

- Over the medium term, it is possible that delivery via the DTTB spectrum to PCs will be a more significant opportunity than delivery to television (although its is likely that there will be heavy competition from other delivery mechanisms such as the Internet). This assessment is based on the preparations being made by the computer industry to make DTTB receivers part of the standard configuration of a PC within the next few years, and the far higher replacement rate of PCs versus televisions (assuming there is a similar tendency as between televisions and set-top boxes).

- In the longer term, television delivery, with its potential to reach mass market audiences will probably be most important. This timing, however, is critically dependent on the take-up of digital terrestrial television equipment by the Australian consumer.

- Advertising is anticipated to be the most viable revenue stream in the long term, although it is unlikely to be so in the short term. Subject to the final regulatory structure, it is reasonable to expect that datacasting advertising revenue will be closely tied in to existing television advertising, potentially providing broadcasters with an advantage. Ultimately, advertising is likely to become much more interactive and targeted as DTTB reception equipment becomes more sophisticated and is able to 'filter' advertising for relevance to the particular household.

- The key to general consumer acceptance is likely to lie in 'lazy interactivity', rather than complex technological applications (eg. the ability of users to flick from a TV program to datacasting services as opposed going out of one system into another, or using a relatively complex medium such as the Internet) . A close tie-in with traditional broadcasting services may also prove advantageous in accessing users. *[The concept of 'lazy interactivity' is examined in detail in "People and Technology, Lazy Interactive TV", June 1998, Forrester Research]*

- The likely major participants in Australian datacasting are existing broadcasters as well as content aggregators (such as Fairfax and News Limited), Internet service providers (ISPs) and telecommunication companies. It is foreseeable that the non-broadcasters may seek commercial arrangements with the broadcasters who have inherent strengths, particularly in relation to advertising relationships and access to the consumer.

- Non-broadcasters are likely to make a significant contribution to the early development of datacasting content. Research in both Australia and the US shows that those most vigorously addressing the development of datacasting applications are in fact software providers (such as Microsoft) and ISPs (such as AOL), whose interests clearly lie in DTTB services being provided to PCs as well as their experimentation with interactive TV platforms (where something other than provision of Internet content will be required to satisfy the viewer). *[See "Digital Broadcasting in Australia", November 1998, PricewaterhouseCoopers and "Digital Broadcasting in Australia: Navigating the Transition in the US", PricewaterhouseCoopers]*

- There may be similarities between the low commercial returns from datacasting in the early years, and the recent experience of Internet companies.

- In the longer term, regional and rural Australia may benefit particularly from the availability of datacasting services in the form of improved Internet access (speedier access on the bandwidth-hungry forward path), with a return path achieved through the telephone system (typically, less bandwidth required).

B. Digital's Likely Impact on NTL Australia

The NTN, as the core business of NTL Australia, will be fundamentally affected by the pending digital conversion process. As set out above, digital broadcasting offers the potential for significant growth in the range and sophistication of services provided to consumers. With the increasing convergence of broadcasting, telecommunications and information technology applications, NTL Australia sees a major business opportunity to draw upon its key strengths and experiences as an innovative enabler of new technology.

Some of the likely impacts on NTL Australia include:

- The potential additional income stream that will arise over the seven years in which there will be a simulcast of analogue and digital transmission which will be offset by a substantial capital investment program. From 2008 to 2012, as both Australian metropolitan and regional areas are switched off analogue, revenue sourced from analogue will obviously decrease rapidly.

- A substantial operational exercise to project manage the installation of new hardware on NTN sites in a way that effectively integrates with preparations being made by the national broadcasters and other potential users.

- Potential new business associated with the introduction of digital radio broadcasting, which may encompass a significant number of new channels.

- Potential new business associated with the introduction of datacasting through existing and new service providers.

- Provision of other communications services using advanced digital technology.

3. Digital Conversion

A. Timing and Policy Issues

NTL Australia is cognisant of the vigorous debate surrounding the definition of the terms 'broadcasting', 'datacasting' and 'enhanced services', and joins with other industry participants in suggesting that this is one of the core policy issues that remains outstanding. Clearly, each of these services involves the transmission of data over the broadcast spectrum – the issue is what can be provided within each definition. The following provide at least some guidance as to likely examples of each medium, as opposed to any all-encompassing definition:

- Broadcasting – traditional entertainment and news content of the type currently provided by the FTA and national broadcasters under the analogue regime.

- Datacasting – news and weather information, software and games, e-mail, Internet (including e-commerce applications), electronic program guides, programs on demand, specialist information to specific groups etc.

- Enhanced Services – 'side' channels directly allied to the core broadcasting content (eg. different camera angles and team / player statistics related to a sporting program).

As has been acknowledged by Government and other industry stakeholders, the real challenge is to identify the boundaries of each medium in a way that maximises public benefit and ensures balanced and competitive industry development. A number of technical and other parameters have been suggested by broadcasters and potential datacasters to establish these boundaries.

NTL Australia submits that there is a real possibility that an unduly conservative definition of datacasting runs the risk of effectively stifling the development of the new medium before it is established. Whereas broadcasting and its existing participants are very well-established and successful in the marketplace, the same cannot be said for the embryonic datacasting sector. Indeed, the success of digital conversion in Australia will depend to a significant extent on the creation of a vibrant datacasting medium that functions as an additional enticement for consumers to take up the DTTB technology.

NTL Australia is confident that a policy formulation is possible that avoids the outcome of either broadcasting or datacasting 'winning' or 'losing'.

In a timing sense, it is intended that datacasting be introduced in Australia at the same time as digital terrestrial television. Unlike digital television for which a legislative commencement date has been set (1 January 2001), there is no such mandatory timetable for datacasting. Should there be a significant delay in the commencement of datacasting beyond January 2001, this will also potentially influence the manner in which the datacasting industry develops in Australia. For example, it is arguable that the FTA broadcasters (who may also participate in datacasting under the legislative framework) will enjoy a valuable 'head-start' on other datacasters (in terms of

technical lead-time, market development etc.) if the latter are only able to start providing services at a later date.

B. Spectrum Availability

The above discussion focuses on the interaction of broadcasting and datacasting from a policy viewpoint in terms of legislative / regulatory definition of these terms. Equally important in NTL Australia's experience is the planning and principles that underpin the management and allocation of spectrum to existing and future users.

In a practical sense, it will be the actual management and allocation of spectrum in the lead up to the commencement of DTTB services that will determine the extent to which Australian consumers will have access to a diverse range of content, particularly interactive services / datacasting. A corollary to this, of course, is the issue of industry structure – spectrum availability will directly impact the number of players able to participate in the broadcasting / datacasting market.

As it stands, the timetable for the introduction of DTTB to Australia's metropolitan areas is scheduled for January 2001. In relation to its component of the digital conversion process (ie. transmission as opposed to studio facilities), NTL Australia believes that this timetable is achievable. However, NTL Australia also has a strong view that the public policy interest in achieving the most efficient allocation of spectrum using the most advanced management practices is greater than achieving a particular date for the commencement of DTTB. It is probably too early to determine whether or not both of these objectives can be obtained simultaneously.

Given the practical difficulties of future modification, the decisions taken on spectrum allocation and management in the lead up to the commencement of DTTB are highly likely to have a long-term impact on both the Australian consumer and the industry.

C. Standards

Government and industry are both committed to the success of DTTB. The Australian consumer, however, will determine this success by evaluating the 'why' and 'how much' of the new technology – why it is worthwhile embracing digital at all, and if so, how much is it worth to gain access to it. Both judgments will be critical to the rate of take-up in Australia.

It is in relation to the 'how much' part of the equation that the setting of reasonable standards for receivers / set-top boxes are so important. Without a doubt, the key variable of consumer behaviour will be the price of the new technology.

In setting standards that respond to the price variable, NTL Australia is convinced that regulators must avoid the temptation of providing a 'gold-plated' solution. Essentially, this means the adoption of an internationally-recognised standard that facilitates the sale of mass-produced (ie. low-cost) receiving equipment that is not over-specified (ie. avoids expensive add-ons). Connected with this is the desirability of broadcasters being able to transmit a signal that that can be decoded by either

HDTV reception equipment or substantially less expensive standard definition television (SDTV) equipment.

The cost of HDTV equipment can be expected to remain substantially higher than standard definition television (SDTV) reception equipment for at least the medium term due to 1) the inherent additional expense of the HDTV technology and 2) international economies of scale in equipment manufacture (only SDTV reception equipment is being provided to the UK market, and long lead-times are anticipated in the US for take-up of HDTV equipment).

In relation to datacasting, the potential for interactive services is likely to be influenced by the ability of users to access a return path (such that the user who receives the signal via their roof-top antennae can send a message back via their telephone line). In terms of the standards that are set in Australia for receivers and set-top boxes to optimise the potential of DTTB, these should be sufficiently flexible as to provide for a future return path, say, via a modem connection.

Interoperability is also a significant issue in terms of equipment and standards for different delivery systems such as DTTB, cable and satellite. The take-up of new technology will clearly not be assisted by the consumer being confronted with the necessity of purchasing a number of different receivers / set-top boxes for each delivery system. Later retro-fitting of reception equipment to provide for greater flexibility would be a very difficult and unpalatable option from a consumer point of view.

An international, as opposed to purely Australian, issue also exists in relation to the simplification of, and agreement on, standards for content provision across datacasting and potentially other related services such as Web TV etc. One widely-debated area of content standards concerns electronic program guides (EPGs) and the question of ensuring that one provider is not permitted to dominate the provision of content information to consumers – in other words, is there to be a 'gatekeeper' on program information or should each content provider be able to effectively put itself before the consumer.

D. Digital Radio

Digital radio broadcasting is a significant part of the Government's digital agenda. The current early stages of planning, combined with the cost and availability of receivers, means that it is unlikely that digital radio broadcasting services will be introduced in the short term.

As part of the due diligence process underpinning its recent acquisition of the NTN, NTL Australia has closely examined the long-term potential of digital radio and sees the opportunity to establish a practical and cost effective solution to its introduction, over a relatively short time-scale. This solution, based on adapting NTL Australia's experience in establishing UK digital radio, will provide benefits to broadcasters, consumers and policy-makers:

- While digital radio broadcasting already has dedicated 'L-band' spectrum, provision of services can be best achieved through a VHF implementation operating from existing NTN sites and infrastructure. This would result in lower implementation costs and higher grades of service for both domestic and mobile consumers. It would also mean simpler and less costly conversion for consumers because they can connect their receivers to existing aerials.

- As with DTTB, the success of digital radio broadcasting in Australia will certainly depend on cost effective implementation. Of critical importance is the availability of Band 3 VHF spectrum, which should be available in regional Australia. This however, cannot be confirmed, nor detailed planning proceed, until the finalisation of the digital terrestrial television Channel Plan.

- Because of the 'multiplex' structure of digital radio broadcasting, it is likely that broadcasters will operate through a common carrier, requiring multiplex delivery of services. NTL Australia is uniquely placed to play this role, given that this parallels its role as a licensed multiplex operator for both digital radio and terrestrial television in the UK.

E. Access Issues

The Television Broadcasting Services (Digital Conversion) Act 1998 provides an obligation on the owner or operator of a broadcasting transmission tower to allow access to its tower or site for the installation or maintenance of facilities for television broadcasting or datacasting services. The Act contemplates the ACCC will develop an access code setting out the conditions that are to be complied with.

While this access code has not yet been formulated, NTL Australia believes that it should be designed to ensure the most efficient use of available spectrum having regard both to the legitimate interests of existing players and the interests of new entrants who would want to use the new technology across a wide range of services (ie. the creation of a level playing field).

It should also ensure that services are provided in the most cost-effective manner so that the new technology is available to as many people as possible. To achieve these objectives, access arrangements should ensure wide geographical coverage, speedy roll-out of new services, a universal low-cost standard for receiving equipment and the efficient allocation of spectrum (as discussed above).