Submission 227
Date received: 15/04/2011

Jon Stanhope MLA

CHIEF MINISTER

MINISTER FOR TRANSPORT MINISTER FOR TERRITORY AND MUNICIPAL SERVICES
MINISTER FOR BUSINESS AND ECONOMIC DEVELOPMENT MINISTER FOR LAND AND PROPERTY SERVICES
MINISTER FOR ABORIGINAL AND TORRES STRAIT ISLANDER AFFAIRS
MINISTER FOR THE ARTS AND HERITAGE

MEMBER FOR GINNINDERRA

Ms Sharon Bird MP
Chair, House of Representatives Standing Committee on
Infrastructure and Communications
PO Box 6021
Parliament House
Canberra ACT 2600

Dear Ms Bird

Thank you for the opportunity to provide a submission to the House of Representatives Standing Committee on Infrastructure and Communications Inquiry into the National Broadband Network.

The ACT Government supports the rollout of an optical fibre based network for Australia and sees broadly based opportunities for utilising the network from health, education and environmental management to community and social benefits. A copy of the ACT Government submission is attached.

I look forward to the outcome of your Inquiry.

Yours sincerely

Jon Stanhope MLA
Chief Minister

- 8 APR 2011

ACT LEGISLATIVE ASSEMBLY

London Circuit, Canberra ACT 2601 GPO Box 1020, Canberra ACT 2601
Phone (02) 6205 0104 Fax (02) 6205 0433 Email stanhope@act.gov.au

Submission 227
Date received: 15/04/2011

ACT Government Submission to House of Representatives Standing Committee on Infrastructure and Communications: Inquiry into the National Broadband Network

ACT Government Submission to the House of Representative Standing Committee on Infrastructure and Communications Inquiry into the NBN

The ACT Government supports the Australian Government initiative to roll out an optical fibre based broadband network for the Australian community. While much of the Territory has effective broadband services for today's applications and requirements, our view is that a nationwide fibre-based network will maximise future social and economic outcomes as the economy and society transition to a knowledge based future. The ACT Government has recognised the opportunities offered by fibre based networks and has been investing significantly in the provision of fibre optic telecommunications (including connections to dwellings) in all of its recent Land Development Agency estates.

The ACT economy is also well placed to extract economic returns from an advanced national broadband network (NBN). As a true knowledge economy across both its public and private sectors, the ACT offers exceptional opportunities for the application of advanced NBN-based activities. The ACT also has the best educated workforce, the highest per capita income in Australia and the highest penetration of computer and internet use in Australia. It is also home to a cluster of quality universities and other research institutions that can be expected to leverage opportunities from the NBN infrastructure.

The ACT Government promotes co-operation between the tertiary institutions and industry through a range of programs seeking to nurture emerging knowledge-based industries. We recognise that regional economies supported by advanced innovation infrastructure hold significant advantages in competing in global markets.

Public versus private good

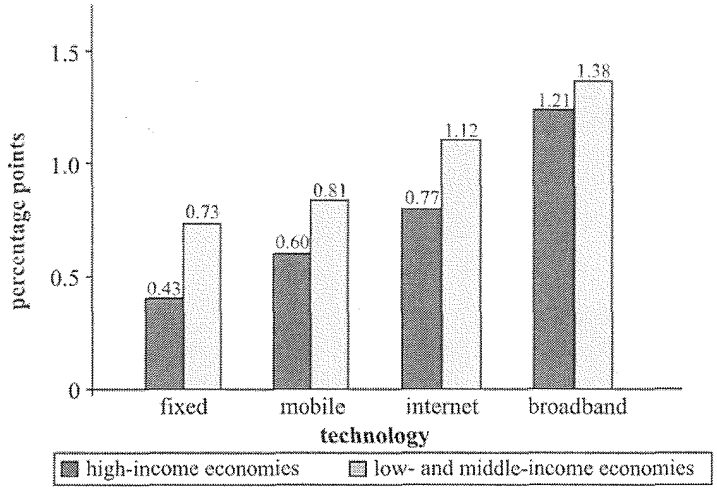
The ACT Government acknowledges the ongoing debate around the costs and benefits of rolling out the NBN infrastructure. However, our view is that a major cost benefit analysis will add little to the current understanding or decision making unless there is an agreed view on how to value the long term public good and positive externalities of the proposed NBN infrastructure. We observe that the public policy debate on costs and benefits has become politicised and therefore unlikely to produce an agreed understanding of the issues.

Telecommunications providers and private firms evaluate the potential returns of broadband investments and decide to invest if the market value of the investment exceeds its costs by an acceptable rate of return. Typically, these evaluations do not include broader economic and social benefits including economic externalities. So the private sector will therefore undervalue the economic returns from major infrastructure investment, creating a rationale for Government intervention.

This argument is valid in the case of the NBN because an advanced broadband infrastructure will accrue benefits to the broader society over the very long term. The Australian Government has stated that it is fulfilling an objective with the NBN that the private sector will not do, and cannot be expected to do.

This view is supported by public policy focused organisations such as the World Bank and the Organisation for Economic Development (OECD) who say that faster broadband and specifically fibre optic networks are a very good thing for any economy. For instance, one recent World Bank study of 120 countries found that for "every 10-percentage-point increase in penetration of broadband services, there is an increase in economic growth of 1.3 percentage points".[1]

Figure 1. Growth Effects of ICT Infrastructure



Note: The y-axis represents the percentage-point increase in economic growth per ten-percentage-point increase in telecommunications penetration. All results are statistically significant at the 1 percent level except for those for broadband in developing countries, which are significant at the 10 percent level

Source: Qiang (2009)

McKinsey & Company similarly concluded that a 10 per cent increase in broadband household penetration produces a rise of 0.1 to 1.4 per cent in GDP growth.[2]

Broadband Internet Connections in the ACT

According to the 2008-09 ABS Multi-Purpose Household Survey, 72 per cent of Australian households had home internet access and 78 per cent of households had access to a computer. Between 1998-99 and 2008-09, household access to the internet has more than quadrupled from 16 per cent to 72 per cent, while access to computers has increased from 44 per cent to 78 per cent.[3]

[1] Zhen-Wei Qiang C, Rossotto C & Kimura K 2009, 'Economic Impacts of Broadband' *The World Bank*, Information and Communications for Development 2009: Extending Reach and Increasing Impact. Washington DC, pp. 35-50.

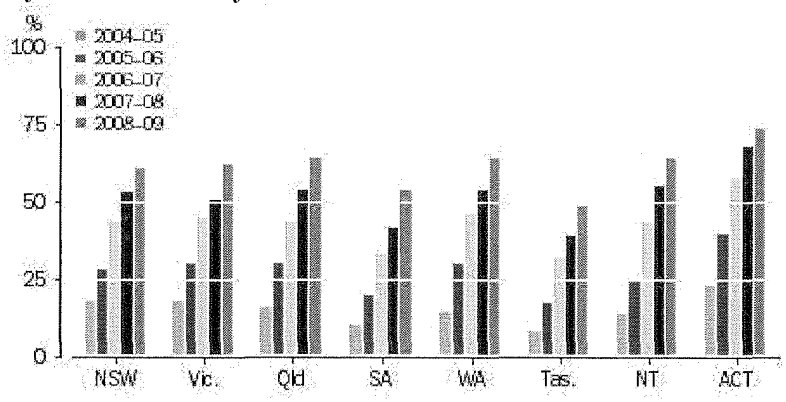
[2] *McKinsey & Company* 2009, 'Mobile broadband for the masses: Regulatory levers to make it happen', http://www.mckinsey.com/clientservice/telecommunications/mobile_broadband.asp, [Accessed February 11 2011].

[3] Australian Bureau of Statistics (ABS) 2009, *Household Use of Information Technology, Australia, 2008-09*, cat. No. 8146.0, ABS, Canberra.

The number of households with a broadband internet connection increased by 18 per cent in 2008-09 from the previous year, to an estimated five million households. Broadband is accessed by close to two-thirds (62 per cent) of all households in Australia and 86 per cent of all households with internet access. A small proportion of respondents (2 per cent) did not know the type of internet connection they had at home.[4]

The Australian Capital Territory continued to register the highest proportion of households in Australia with a broadband internet connection (74 per cent of all households), while Tasmania and South Australia continued to record the lowest proportion of all households with a broadband internet connection (49 and 54 per cent respectively).

Figure 2. Households with access to broadband, By State or Territory – 2004-05 to 2008-09



Source: Australian Bureau of Statistics

This computer and internet usage data tells an important story – that ACT residents and Australians generally have embraced online technologies and that demand has responded enthusiastically to technological innovation.

In Canberra, TransACT has built a substantial fibre-optic network. More than 75 suburbs have access to TransACT's broadband and phone services and over 50 of these suburbs can also access TransACT's digital subscription television - TransTV. In recent greenfields developments across the ACT, including Forde, Franklin, Bonner, Crace, the Flemington Road corridor, Forde North and Springbank Rise Transact has provided fibre to the premises services. The planning for the ACT rollout of the National Broadband Network will need to take account of these existing services and how they can be linked into the overall network. Closer collaboration between NBN Co and TransACT is encouraged to take advantage of TransACT's existing infrastructure. The use of available fibre infrastructure to extend the spread of National Broadband Network has the potential to facilitate the early rollout of the network.

[4] ibid.

Supporting Innovation

Within the ACT many services are already delivered on-line reflecting the nature of the local economy, the preferences of ACT consumers and their higher levels of access to enabling technology. The coverage and depth of these services will continue to increase, but will accelerate under the NBN infrastructure which will create the environment for higher levels of service innovation and new applications and uses.

The success of Apple's iPhone was driven by the continuous adoption of innovative applications now numbering in the thousands. Similarly, the value of the NBN is likely to be seen in the development of new applications and uses, many of which may not yet have been conceptualised.

Innovative, low cost applications can also provide a platform for greater social inclusion, as broadband services can assist those that are isolated through disability or illness to access government services and connect with community organisation and support services.

The ACT Government sees health, education and social support services as key areas of service delivery that will benefit from the NBN.

Businesses too across the ACT will benefit from fast broadband services and there will be new jobs and employment opportunities and greater integration of regional economies, nationally and internationally.

Achieving health outcomes

The Canberra community has one of the highest standards of health in any Australian community. However, with a population that is growing and getting older, more and more people are expected to access ACT health care services over the next 10 to 15 years, placing increasing pressure on the health care system. The ACT Government is committed to ensuring that its health care services are able to cope with future demand and to use innovative approaches enabled by on-line technologies to deliver services.

The Australian health care system will be challenged by demography to deal with increasing demand and costs and pressures from a growing deficit of skilled health care workers. These impacts will be felt more by people living in rural and regional Australia than those in metropolitan areas. To maintain the current level of health services Australia will need to leverage the benefits that remotely delivered services, such as e-health, can provide.

e-health will enable a safer, higher quality, more equitable and sustainable health system for all Australians by transforming the way information is used to plan, manage and deliver health care services. NBN infrastructure will underpin that capability and provide Australia with an opportunity to lead in the delivery of e-health care and innovation in those services.

The implementation of the NBN – with a vastly greater bandwidth capacity and geographic reach than currently exists – will create the foundation for bandwidth intensive applications

in health care, as well as in other sectors of the economy. The NBN will enhance the delivery of real time remote consultations, stable transmission of medical data such as x-rays and remote monitoring and disease and injury management. The provision of tele-education will also create new avenues to train health professionals or to assist members of the public to self-manage their health.

An example of the kind of bandwidth intensive application being developed is NICUCAM - "now I see you" at the Centre for Newborn Care at the Canberra Hospital. NICUCAM offers remote viewing of individual babies via a secure website, so that parents who are unable to be by their newborn's bedside can view them via live video. While this service is technically available to everyone, some families are restricted to access by where they live and the broadband services they currently receive. For example, many areas of the ACT are still unable to access the internet speeds required for such applications.

Taking health care online through NBN infrastructure will have a positive impact on all Australians, both directly and indirectly. Faster, more accessible broadband can provide ACT residents access to highly specialised health services which are currently located in major cities. The surrounding Capital Region will particularly benefit from being connected to ACT health services.

There is also a heightened value for Aboriginal and Torres Strait Islanders, regional and remote Australians, older Australians, those with chronic and complex health needs, mental illness and dementia and disability. Physicality and geography present significant barriers to access for many Australians that often remain 'out of sight' and 'out of mind'.

Improving the educational resources and training available for teachers and students

High-speed broadband will create the building blocks for a new world of teaching and learning, delivering unprecedented gains in the ability of our schools to access information, collaborate and communicate with each other, and to work together in developing or accessing services. Broadband connections will support new learning and teaching practices, including virtual classrooms, video and audio streaming and high definition video conferencing.

Virtual classrooms and video conferencing provide a great opportunity for tertiary institutions to collaborate and share resources – revolutionising the way they engage with students and with each other, while greater interaction will increase the rate and depth of learning.

Super fast broadband will become the most vital tool in communication systems, and fundamental to the way education will work in the digital age.

The ACT Government has invested heavily in broadband and the digital education revolution because it believes that computer and digital literacy is as important to a student as being able to read, write and do maths. The ACT Government has made public education a major priority, with significant resources provided to a number of key initiatives. Specific integrated ICT programs support the provision of high-speed broadband to every public school and

technologies to support learning. Interactive whiteboards and wireless lap top computers are just two examples.

Another example of the digital revolution in action in ACT schools is the virtual learning environment known as the connected learning community, or cLc. The cLc system – delivered from ACT schools' high-speed fibre infrastructure – is a safe online learning community for students to interact with their school and one another. The cLc system allows students to replay a lesson at home via podcast, use video links to practice speaking a language with a student at another school and have the option of completing their maths homework online. Students will also be able to log in from home to double check their homework requirements and create online portfolios of work. Video conferencing amongst students and teachers is also currently being integrated into the cLc. Without optical fibre based broadband – the fastest, most effective way for schools to access online content – functionality and access to the cLc would be limited.

On-line based content is now as pervasive an educational instrument in the ACT school sector as was the text book for previous generations of students. Fast broadband will dramatically improve the quality of resources available to ACT students and increase the level of interaction around content. The ACT Government believes Australian schools can be the best in the world if they are able to embrace the learning platform that super fast broadband will provide.

Fast broadband is also important to education because it connects people to each other and to information, allowing for the free flow of ideas, making it much easier for students to access the world and get instant feedback. However, it is not enough to have high-speed broadband in ACT schools if they cannot plug into an equally responsive and capable national network. The ACT Government sees the NBN as integral to the broader progress of our education and training system. In the adult learning environment fast broadband will deliver a number of benefits including the opportunity for learners both inside and outside the ACT to remain in their own environments while engaging online in high quality learning. Many of the ACT tertiary education institutions offer niche programs, such as forensic science, which will be more accessible to a wider market. Broadband access to institutional learning will also have a direct productivity gain for ACT industry, as learners have more options for using new generation learning technologies, including high bandwidth virtual conferencing, while in the workplace. New opportunities for partnerships between tertiary education providers will be possible, in particular to service thin markets and where there are high equipment costs. The Canberra Institute of Technology (CIT) has already been part of a trial of the use of high definition oral cameras for dental assistant training with partner TAFESA. This trial demonstrated the opportunities that broadband brings for diverse partnerships that will deliver skilled workforces across different geographical domains. A unified national broadband infrastructure will not only support the development of individual state and territory systems, but it will provide the technological groundwork for a seamless national education and training system.

The delivery of government services and programs

Australia's geography and scattered population creates huge challenges for the delivery of government services. The implementation of NBN infrastructure will lay the foundation for a smarter, more efficient delivery of government services.

Recent advances in technology have expanded the way that people communicate and share information. The convenience and application potential of optical fibre broadband has transformed the way we are able to share information from largely passive technologies into new mediums – video and voice transmission over the internet has particularly changed the way we communicate and share information. Government agencies can utilise these innovations to improve the way it engages with each other and with the public.

According to the CSIRO ICT Centre, "there is an estimated productivity gap in the provision of these services of 10 to 15 per cent of total expenditure (based on Productivity Commission data). Closing this productivity gap will be critical in an era of rising citizen expectations and the budgetary challenges driven by an ageing population." [5]

One innovation that can improve government administration in a fully integrated broadband network is cloud computing. Cloud computing provides alternatives to data storage and the use of applications without having to buy, maintain or support IT infrastructure. The ability to share information within government entities will create an opportunity to raise productivity as well as open governments up to innovative ways of delivering services. Transferring in-house IT infrastructure to cloud services is particularly relevant while Australia faces significant skills shortages in the ICT sector.

The ubiquity and speeds available with an NBN will unlock opportunities in communication, connection and application, meaning more Australians will have better access to its government, while governments can improve the way it delivers services.

A digital divide currently exists in Australia, where many have limited or no access to government. A fast and comprehensive broadband network will foster a marked shift in the way governments engage with people. The ACT Government sees the NBN as crucial for developing and supporting the transformation of government services into the future.

Management of the Australia's built and natural resources and environmental sustainability

The ACT Government recognises that the use of intelligent technologies and systems will be facilitated by the rollout of high-speed broadband that will be available to the majority of premises. These technologies will be integral to improved day-to-day management and monitoring of environmental factors that contribute to improved environmental sustainability.

[5] Dr Ian Oppermann, 'Innovation in a Broadband World', *CSIRO ICT Centre*, http://www.webls.info/weblease/clientimages/csirobroadband/oppermann_handouts.pdf [Accessed 11 February 2011].

High-speed broadband will enable the implementation of smart technologies in areas such as electricity, transport, water usage and irrigation.

The use of smart grids in electricity networks will lead to improved management and control of networks. Benefits from their use are likely to result in reductions in energy usage, greater consumer control of energy usage and network efficiencies. In the ACT, ActewAGL is working towards a more intelligent network for its services. It has upgraded its smart metering initiative to adopt the broader opportunities offered by transforming its operations to an intelligent network. As well, ActewAGL has a number of feasibility projects to trial new technologies on its energy network. These technologies offer improved efficiencies and reliability for the ActewAGL network.

The ACT Government recognises the challenges of climate change and is determined to develop the national capital as a sustainable city while preserving local environment and the 'bush capital' lifestyle. The concept of a 'Virtual ACT' is being investigated to utilise web 2.0 to facilitate improved planning and public consultation utilising, amongst other technology, 3D modelling. This will enable urban infill building applications to be modelled and viewed against environmental and aesthetic considerations such as shadowing, solar access and visual impact. Broadband capacity currently limits the flexibility and usability of current systems however the NBN would enable greater interactive analysis and more real-life modelling.

Water is a precious resource, and broadband enabled smart systems can make an important contribution to protecting this resource and ensuring that it is used wisely. Intelligent systems can be used to monitor water flows and provide 'on demand water supply'. The savings from providing water as required and reducing water wastage can be substantial.

Intelligent transport systems also offer possibilities for reducing environmental impacts. Improved traffic flows and vehicle management lead to reduced fuel consumption and reduced greenhouse gasses.

In the ACT, NICTA's Canberra Research Laboratory is developing new technologies for intelligent electricity networks. These technologies will be used in the Decision Making Systems needed to control the Smart Grid of the future. Specifically NICTA research will provide complementary analytics for a whole of network view.

Regional economic growth and employment opportunities

Greater connectedness for regional communities will be achieved through the NBN and will provide opportunities for regional economic development. From the ACT perspective, the increased opportunities for high bandwidth data exchange, video conferencing and other information sharing applications over the NBN will assist the Territory to fulfil the role of a regional hub for a large range of business and government services.

Business efficiencies and revenues, particularly for small and medium businesses

The adoption of information and communication technologies has been a crucial driver for productivity. The availability of high-speed broadband is seen as a key driver for future economic growth. The NBN will deliver speeds much faster than those currently available to much of Australia and provide businesses with a platform for delivering new services.

The ability for businesses to operate as part of the on-line community is increasingly important. For small businesses it offers the opportunity to provide services and sales locally, domestically and internationally. These business models are not dependent on geographic location or limited by the size of local markets.

Australia is considered to be lagging behind other economies in sales from online retailing. This is likely to be a potential area for small business growth.

According to the ABS, income derived over the internet increased by 52 per cent in the 2008-09 to reach $123 billion, up $42 billion from the previous year. This result correlated with statistics that showed an additional 25,000 businesses received orders over the internet during the same period and the take up of broadband continued steadily. However, only 27 per cent of all businesses use the internet to generate business, indicating greater growth is possible.

Organisations like the World Bank and OECD say early adopters of broadband technologies will have significant advantages in international trade, if they are able to appropriately harness the necessary skills and adequately work through regulatory and policy issues.

The NBN will open up opportunities for more Australians to take advantage of tele-working. The high speeds offered by the NBN will enable high quality video conferencing and other collaborative broadband based sharing approaches to be used by tele-workers. In 2006 only 6 per cent of workers in Australia reported having tele-working arrangements of any form with their employer[6]. International rates are considerably higher. Tele-working allows expertise to be used where it is needed regardless of the location of the worker. It means less office accommodation is required and it reduces travel and time costs for workers.

Research and development and related innovation investments

The ACT research community is already doing some outstanding work related to exploiting the opportunities that the NBN offers. The ACT is home to a number of ICT researchers in the top rankings of the world research community and this is being built on through the efforts of institutions like NICTA.

NICTA has signed a memorandum of understanding with Japan's Nomura Research Institute (NRI) to study the use of ICT in urban, industrial and social infrastructure, with a view to developing recommendations for research and commercial applications.

[6] Australian Bureau of Statistics (ABS) 2009, *Household Use of Information Technology, Australia, 2008-09*, cat. No. 8146.0, ABS, Canberra.

NICTA has expressed a view publicly that as the NBN rolls out in Australia, a unique window of opportunity is opening for the creation of intelligent ICT applications to address problems in transport systems, urban infrastructure and environmental management.

Proposed NICTA research includes a focus on intelligent transport systems (ITS), smart power grids, water supply management and agriculture and an examination of two models of ICT use in these fields: one for developed countries, targeting selected cities and regions in Australia, and another for emerging and developing countries, which will cover selected cities and regions in Southeast Asia.

Based on these models, NICTA and NRI will pursue field tests in the candidate cities and regions and compile recommendations for the host governments. NRI intends to encourage businesses, research institutes, and other organisations in Japan to join in the project. NICTA will liaise closely with CSIRO and other Australian research and industry organisations to bring additional capability and experience to this project.

NICTA is also participating in the Australian Centre for Broadband, a joint initiative between the NSW Government, CSIRO and NICTA.

Industry sectors are beginning to engage with Australia's quality research infrastructure as the search for online business solutions intensifies. For example NICTA has worked with the mortgage lending industry in the creation of the Lending Industry XML Initiative (Lixi). Through the creation of a defined language and defined processes across the industry, the platform was developed so that different offerings from mortgage brokers could be compared online.

The project has led to most mortgages now being applied for online, and although different parts of the process use the online environment to a greater or lesser extent, the mortgage broking industry has created savings in processing and transaction costs of between $50 million to $80 million annually.

According to NICTA, if the whole process goes completely online through a ubiquitous network, annual savings of $150 million can be achieved.

Community and social benefits

There are already some significant community and social benefits associated with the introduction of the NBN. For example, consumers will benefit from a wider range of audio-visual services. NICTA has developed a trial package which includes free-to-air television channels and the ABC iView catch-up service, along with a new NICTA-developed application that personalises television viewing and adapts to user preferences.

The quality of internet video content has been upgraded to suit a large-screen television set rather than a PC screen. Through the use of a set-top box, viewers will be able to use their high-speed NBN connection to view programs at a much higher quality than is normally

possible over standard ADSL lines. As it becomes available, high-definition content will also be supported. With this high-speed network, users will be able to get a better television experience, with higher quality TV that is personalised.

The optimal capacity and technological requirements of a network to deliver these outcomes

The advantages of the NBN have as much to do with speed and improved bandwidth as they do with its ubiquitous roll-out. The uniform nature of the network interface and the mass roll-out to the entire Australian population will mean that the nation can start to move large parts of the economy online and into the digital economy – and reap savings and productivity improvements from that process. The same network interface, the same methods of access, the same plug and play arrangements will be important. A uniform approach across the country will maximise benefits to the economy and society.

In conclusion, the opportunities for the ACT community to utilise a nationwide fibre-based network are broad ranging extending from health, education and environmental management to community and social benefits.

The ACT Government recognises the opportunities for the National Broadband Network to improve services for the ACT community. Gungahlin, one of the second release sites for the National Broadband Network, has been underserviced for broadband services. The residents of this area have been active in pursuing better broadband services for their community. A community meeting with NBN Co in October 2010 attracted 130 residents demonstrating the community's support for the introduction of fibre based broadband services. The ACT Government supports the rollout of the National Broadband Network as a priority for the residents in the Gungahlin.

To assist the rollout the ACT Government has established a cross agency NBN Implementation Taskforce to work with NBN Co on the local implementation in the North Canberra region of Gungahlin, the rollout of the network in greenfields developments and the volume rollout. The focus of the Taskforce is on the practical implementation issues of the rollout and opportunities for improved community, business and government service delivery using the NBN. The ACT's leasehold system of land tenure will assist with a streamlined planning process for the implementation. The incorporation of existing telecommunications fibre infrastructure, owned by TransACT, Telstra and others, into the network will be important as the network extends its reach.

It is clear the processes adopted by NBN Co for approving infrastructure designs and installing cable will need to be properly resourced and managed to ensure that the delivery of broadband does not unnecessarily complicate or delay the delivery of new housing estates. It may be appropriate for the Standing Committee to review how the system is operating following an initial period of 12 months and to seek feedback from development industry associations and government land development agencies.