Submission 010

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Infrastructure Australia

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Ms Sharon Bird MP
Chair
Standing Committee on Infrastructure
and Communications
Parliament House
Canberra ACT 2600

Dear Ms Bird

I am writing in reply to your letter of 9 December 2010 to the Minister for Infrastructure and Transport, the Hon Anthony Albanese MP, inviting submissions to your Committee's inquiry into the national broadband network.

In your letter, you note the Committee's terms of reference are to examine the capacity of the national broadband network to contribute to:

a) *the delivery of government services and programs;*

b) *achieving health outcomes;*

c) *improving the educational resources and training available for teachers and students;*

d) *the management of Australia's built and natural resources and environmental sustainability;*

e) *impacting regional economic growth and employment opportunities;*

f) *impacting business efficiencies and revenues, particularly small and medium businesses, and Australia's export market;*

g) *interaction with research and development and related innovation investments;*

h) *facilitating community and social benefits; and*

i) *the optimal capacity and technological requirements of a network to deliver these networks.*

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Consistent with Infrastructure Australia's mandate, this submission will focus on terms (d), (e) and (f); namely the management of Australia's built resources, particularly infrastructure; Australia's regional economic growth and employment; and its business efficiencies and revenues, particularly small and medium businesses, and Australia's export market.

Infrastructure Australia was established by statute in 2008 to act as the Australian Government's lead advisor on matters relating to economic infrastructure. In conducting the first national infrastructure audit into the adequacy, capacity and condition of Australia's nationally significant infrastructure, published as *A Report to the Council of Australian Governments (2008)*, Infrastructure Australia found that a national network of optical fibre cables could help boost Australia's productivity.

In particular, a national broadband network could help overcome the tyranny of distance both within our national economy, as well as in reaching export markets for services – an important source of growth for Australia's exports. A National Broadband Network presents opportunities to restructure the telecommunications sector which has been characterised by the dominance of a vertically integrated incumbent which faces incentives that are at odds with the goal of vigorous and effective retail competition.

A National Broadband Network could also help overcome the disparities in pricing and quality between regional and metropolitan Australia.

The Access Economics report commissioned by IBM in 2009 found that a fibre-to-the-node network – an inferior network to what the Government is building – "would conservatively boost the NPV and GDP by between $8 and 23 billion dollars over a ten year period, and jobs by 33,000 by 2011 in an economy operating at less than full employment".

For these reasons, Infrastructure Australia formed the view that the national broadband network could represent a generational opportunity to address the Australian communications sector's structural and competitive issues, and deliver productivity growth.

However, as the *Nation-Building Funds Act 2008 (Cth)* excludes the national broadband network from Infrastructure Australia's economic assessment, it is not possible for Infrastructure Australia to be more specific in its advice concerning the detail of the proposal. The reason for that exclusion was sensible, at the time the National Broadband Network Request for Proposals process was being conducted and assessed by an Independent Expert Panel, and was seen to have an appropriate level of arms length oversight.

Nevertheless, Infrastructure Australia retains the view that, as overseas experiences have shown, a national optical fibre network could enable 'smart infrastructure' enhancements to the management of our economic infrastructure that could realistically yield substantial productivity benefits. The submission will now turn to considering some examples of these potential enhancements.

Intelligent Transport Systems (ITS) encompass a broad range of wireless and cable communications-based information and electronics technologies.

When integrated into transport networks, and in vehicles themselves, these technologies can relieve congestion, improve safety and enhance productivity.[1]

IntelliDrive applications, for instance, utilise information technology to enable connectivity between vehicles to maximise safety, and between vehicles and network infrastructure to maximise flow. With regard to safety, General Motors' *OnStar* technology is an example of in-vehicle ITS which enables automatic crash response by reporting the condition of vehicles and occupants to emergency agencies via Global Positioning System (GPS).

Such technology can also provide for on-board monitoring of vehicular conduct, such as speed, for subsequent investigation purposes. This feature may also act as a strong incentive to safer driving. Moreover, such technology could also be used to monitor or even control vehicular conduct in the proximity of specified locations, such as schools.

Integrated Corridor Management (ICM) technology enables transport networks to be managed as whole systems rather than as individual assets. This enables, for example, a traveller driving in an ICM corridor to be informed of congestion on that route and be advised of alternative travel options, enhancing the overall efficiency of the network. Infrastructure Australia is currently collaborating with States and Territories in developing a proposal for *managed motorways*, which involves harnessing the power of technology to manage demand, congestion and safety on Australia's major motorways.

Smart infrastructure features can also be used to enhance the safety of infrastructure assets. For example, the newly reconstructed I-95 Minnesota bridge in the United States includes $1 million of sensors that enable it to continually monitor the condition of girders, ice on the road surface, and general traffic — an obvious safety benefit to motorists that can also help manage maintenance expenditure more efficiently.[2]

Applied to other infrastructure, like roads, this networked technology can enhance safety and lead to efficiencies as maintenance resources can be allocated based on need and not driven by an arbitrary time cycle.

Teleconferencing and telepresencing are very bandwidth hungry technologies which hold the promise, however, of reducing business travel, with associated benefits to productivity and greenhouse gas emissions.

Cisco saved $215m in travel costs by avoiding 53,788 meetings that would have involved travel by using video-conferencing. They estimated this at a $81m annual productivity cost saving not to mention the 116,000 metric tons of emissions.[3]

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[1] See for example United States Department of Transportation Research and Innovative Technology Administration, "Intelligent Transportation Systems", http://www.itsoverview.its.dot.gov

[2] K. Bloch (2010) "ThinkFuture: Smart Infrastructure Conference", 12 March, http://www.aph.gov.au/house/committee/itrdlg/smartinfrastructure/thinkfuture/transcripts/transcript_session3.htm

[3] http://www.thetransnational.travel/news.php?cid=Cisco-virtual-meeting-telepresence.Feb-09.11

Telecommuting, which involves employees utilising technology to work from locations other than the traditional workplace, is increasing worldwide.
The Government of the United States has legislated to promote telecommuting by public sector employees by mandating that all federal employees are eligible unless explicitly excluded, and requiring federal agencies to develop telecommuting plans and report upon them to Congress.

By 2008, these measures had supported 5.2 per cent (102,900) of federal employees to telecommute regularly.[4] This has helped reduce congestion on transport infrastructure, delay demand for additional infrastructure investment, and reduce the size and cost of the real estate footprint of the workplace. An Access Economics report on teleworking says if 10% of the Australian workforce teleworked 50% of the time, the savings could be between $1.4 and $1.9 billion per annum.[5]

With regard to the energy sector, smart energy grids help to enhance the efficiency with which consumers use energy by enabling sophisticated choices such as time of day consumption, pre-specified tolerance to interruptions, the defined management of appliances, and consumers' sensitivity to price fluctuations. Smart grids can facilitate better disaster management and recovery by enabling the remote closing down of vulnerable parts of the network in large scale disasters like the recent Queensland floods.

These are only some examples of the smart infrastructure possibilities currently or imminently available. I hope they provide the committee with an appreciation of the sizeable scale of the productivity benefits that these technologies can help deliver. However, these technologies depend on the availability of a broadband network of adequate speed, capacity and coverage — and future smart infrastructure innovations are only likely to be more demanding in this respect. Ubiquitous high speed broadband is the key to innovation of new applications.

I would be happy to provide the committee with further information if required.

Yours sincerely

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National Infrastructure Coordinator

[4] United States Office of Personnel Management (2009) *Status of Telework in the Federal Government: Report to the Congress*, August, http://www.telework.gov/Reports_and_Studies/Annual_Reports/2009teleworkreport.pdf

[5] http://www.dbcde.gov.au/digital_economy/benefits_of_digital_economy_from_nbn