

SUBMISSION



Australian Government
**Department of Resources,
Energy and Tourism**

Submission to the House of Representatives Standing Committee on Infrastructure and Communications Inquiry into “*The role and potential of the National Broadband Network*”

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Introduction

The Department of Resources, Energy and Tourism (the ‘Department’) is grateful for the opportunity to provide a submission to the House of Representatives Standing Committee on Infrastructure and Communications in relation to the inquiry into the role and potential of the National Broadband Network (NBN). The Department is responsible for developing and maintaining government policies and programs for the resources, energy and tourism industries. Key objectives of the Department include:

- achieving strong economic growth;
- resilient and secure energy systems;
- equitable distribution of the benefits of Australia's energy, resources and tourism industries; and
- actively participating in a whole of government approach to domestic and international environmental policy.

The Department is also representing Geoscience Australia (GA) in providing this submission. GA is Australia's national geoscience research and geospatial information agency and is a world leader in providing first class geo-scientific information and knowledge that enables the Australian Government and community to make informed decisions about the exploitation of resources, the management of the environment, the safety of critical infrastructure and the resultant wellbeing of all Australians. GA also encompasses the Office of Spatial Data Management (OSDM) which coordinates the implementation of the Australian Government's policy on spatial data access and pricing.

The availability of ubiquitous high-speed broadband services—potentially via the NBN—will provide considerable benefit to the Australian economy by better enabling government programs and services, and helping government, industries and the community to achieve more productive outcomes. Timely access to data is a vital component of all business operations, particularly in the minerals and petroleum sectors.

The Department also sees potential opportunities in coordinating energy sector and NBN deployments to achieve more efficient commercial outcomes. The Department is working closely with the energy sector in upgrading existing energy infrastructure—particularly through such initiatives as the Ministerial Council on Energy's National Smart Metering Program, and the *Smart Grid, Smart City* demonstration project—and in considering the benefits of a collaborative approach with the NBN Co's Fibre to the Premises (FTTP) deployment.

1. Energy Sector (smart metering and smart grids)

Smart meters are electricity meters that are capable both of measuring and recording energy consumption in short intervals, and of two-way communication, enabling energy providers to read and control features of the meter remotely. Smart meters are a key component of smart grids, which combine advanced telecommunications and information technology applications with 'smart' appliances in the home to enhance the energy efficiency of the electricity power grid, while helping householders save on their energy bills.

The Department has a lead role in smart meter policy through the Ministerial Council on Energy, and is running the *Smart Grid, Smart City* demonstration project, which will consider the industry and societal benefits of smart grids and help build a business case for the broader adoption of smart grids.

The broader adoption of smart grids is contingent on the existence of appropriate communications technologies that enable two-way flow of data across the entire energy delivery chain. Existing communication technologies (e.g. wireless communications) may be utilised to meet this need; however, there are a range of potential opportunities that may be leveraged between the NBN Co's FTTP deployment and the adoption of smart metering and smart grids. These opportunities consider a collaborative approach to the deployment of NBN and smart meter / smart grid services and, if realised, may deliver a more efficient commercial and operational model than would be achieved individually.

These opportunities can be condensed into two areas:

a) *Common Communications (both fixed and wireless)*

- the utilisation of existing infrastructure
- alignment in deploying new infrastructure
- shared skilled workforce

and

b) *Access to the customer premises*

- coordinated design, planning and deployment of infrastructure to connect consumers to the network
- coordinated design, planning and deployment of a joint smart meter / Optical Network Termination (ONT) device, which utilises a common source of power, communications and security
- shared skilled workforce

Further to the potential shared deployment opportunities, electricity utilities may also find benefit in utilising the NBN for their communications requirements due to the following factors:

- its wide-scale geographic coverage with defined communications service capability,
- the ability to leverage pre-existing operational support processes and models,
- reliable service delivery, and
- the need not to increase the utilities communications workforce to deal with operations and maintenance issues in an access network covering a large area.

These potential opportunities are discussed in Attachment A in the context of the National Energy Efficiency Initiative – *Smart Grid, Smart City*.

These opportunities will not be realised without consideration of some significant barriers facing the joint deployment of these two networks. These barriers include:

- the potential for a joint deployment of energy and NBN infrastructure to place further stress on an already strained workforce,
- access issues to existing and new infrastructure (i.e. where, and under what conditions, can fibre be placed on electricity infrastructure?),
- conflicting requirements for both the metering (smart meter) and NBN customer end-points (ONT),
- the ownership, control and security of shared infrastructure, and
- the conflicting timing of rollouts (i.e. the NBN rollout is commencing immediately; however, broader smart grid / meter adoption is contingent on the benefits being demonstrated).

The Department is aware that the NBN Co. is in ongoing discussions with electricity distributors to overcome these barriers.

2. Resources Sector

The Department notes that reliable communications services are vital to the minerals and petroleum industries. Many companies have established their own high speed broadband links to remote operations to facilitate communications with and between operations and corporate headquarters. These enhance productivity and facilitate increasingly automated processes at large mining operations.

The ability to quickly access accurate data will positively affect the resources sector. One of the most important characteristics of data is its timeliness. Due to the remote locations of many operations, information is typically distant from where it is needed. High speed

networks allow data to be gathered from remote information points around Australia and be analysed at a head office location in real-time. The ability to use data as it is obtained allows management decisions based on accurate, up to date, relevant information. This helps managers better understand and assess rapidly changing environments and make better informed decisions quicker.

The development of broadband supported by a wireless satellite system for remote areas will allow companies to develop low cost communications that go beyond traditional operations and safety requirements. Due to the remote location of many of Australia's major mining and petroleum operations, reliable and affordable telecommunications services are an important part of the industry's efforts in attracting and retaining employees and their families.

Greater access to high-speed broadband services will also enable resources sector workers living and working in remote areas to have greater access to training and higher education opportunities (for example, online university courses and correspondence training). It would also improve the lifestyle of these workers and the larger community, and could also improve the delivery of health care and social services. This will help to increase the liveability of these remote towns, encouraging more people to live in them rather than fly-in/fly-out or drive-in/drive-out.

While many resources sector operations do provide their own services to mining communities, the Department considers it important that the provision of privately owned and operated services to local communities be a matter of negotiation between the NBN Co. and relevant companies.

It is also likely that NBN construction will compete with other sectors, including the resources sector, for skilled workers in construction trades and engineers. This combined with the demand for skilled workers to repair damaged infrastructure in the aftermath of the Queensland floods will lead to an even more critical shortage of skilled workers than currently exists.

3. Tourism Sector

Greater access to high-speed broadband services would better enable tourism providers to enhance their product delivery and visibility, both domestically and internationally.

A lack of information about Australian destinations and product offerings, combined with difficulties in purchasing those products online, are impediments to Australia's international competitiveness, especially for tourism offerings in regional and remote Australia. Australian domestic tourism faces increasing competition from relatively cheap, short-to-medium haul international destinations which are well established online, have visible customer or industry ratings systems, and are easy to compare and book.

Digital technologies are already playing an increasing role in Australian tourism. Online bookings have increased from 5 per cent in 2001 to almost 35 per cent in 2008 at an average annual growth rate of 34.6 per cent.

Australia's small to medium-sized tourism enterprises will need to be encouraged to make the transition to a digital world. It will be a cost-effective way for them to reach their Australian and global markets. The Australian Government's decision to roll-out a national high-speed broadband network will be an important factor in making this transition possible.

4. Geoscience Australia (including the Office of Spatial Data Management)

GA has identified three key areas which would benefit from a ubiquitous high-speed broadband network; these are:

- transfer of satellite ground station data,
- repatriation of information received under international cooperative agreements, and
- greater availability of location-based capabilities across business, government and community activities.

Each of these key areas are discussed briefly below.

Transfer of satellite ground station data

GA operates satellite ground stations at Alice Springs and in Hobart. These facilities receive data from remote sensing satellites many times each day. Of these, the data from the Landsat and MODIS satellites underpin 92 currently active federal and state government programs valued at \$1.3 billion.

Current telecommunications networks cannot cope with the load associated with satellite data and, as such, much of the information has to be transferred across the country and internationally via postal and courier services. This method of transportation is too slow for emergency situations.

The issue of the need for increased mapping capabilities and availability has, in response to the recent flooding events across Australia, recently received media attention—an Australian Financial Review article from 11 February 2011 (*Floods Stress Mapping Needs*) is provided in Attachment B.

Repatriation of information received under international cooperative agreements

Australia is a major beneficiary of overseas-operated satellites and the importance of these satellites for Australia is growing. Information from these satellites, received at little or no cost, underpins over a billion dollars of state and federal government programmes and contributes an estimated \$3.3 billion to Gross Domestic Product. However our ability to continue to enjoy the benefits of those capabilities is at risk due, in part, to the lack of effective communications with ground stations within Australia. Within less than a decade the data being received from Earth observation satellites is projected to require gigabit communications capabilities.

Greater application of location-based capabilities across business, government and community activities

Accurate geospatial or location-based data is of critical importance to the range of areas of interest indentified by this Committee.

The availability of ubiquitous high-speed broadband services can be leveraged through the increased application of location or place-based capabilities across business, government and community activities. The concept of mapping information to better understand business activities is being widely adopted to make improved decisions and increase the effectiveness of work activities. A current example is the efforts being put into maps to support the recovery processes of the Queensland floods and the northern Queensland cyclone, which, through the application of spatial information, have resulted in significant public safety outcomes.

One significant barrier to the utilisation of spatial data in business, government and community activities is the existing internet bandwidth limitations. Spatial resources are quite frequently large in size and organisations must invest significantly in data management infrastructure to hold up to date spatial datasets. This large investment often weakens the business case for leveraging the location component of their information and, as a result, organisations may reduce their effectiveness and the quality of their decision making processes. A ubiquitous high-speed broadband service may reduce the need for organisations to invest in costly information management infrastructure.

5. Governance and Portfolio Services

In addition to the important role of spatial data in government policy making and service delivery, the Department is also examining ways to utilise the NBN to more efficiently

provide its services to the Australian Government, businesses, and the community. This may be achieved through such activities as:

- increased use of videoconferencing,
- providing more flexible working arrangements for departmental employees, and
- the online provision of more relevant, up to date and interactive information on energy, resource and tourism matters.

The Department is strongly committed to identifying opportunities for enhancing its capabilities and efficiencies through a ubiquitous high-speed broadband network.

Attachment A – *Smart Grid, Smart City*

The \$100 million National Energy Efficiency Initiative – *Smart Grid, Smart City* – will demonstrate Australia's first commercial-scale smart grid. Ausgrid (formerly EnergyAustralia) was selected through a competitive process to lead the project, which will demonstrate ways to improve the reliability of electricity services for consumers and, in conjunction with smart meters, help consumers understand and manage their electricity consumption. Smart grids may also help electricity businesses identify and resolve faults on the electricity grid, better manage voltage and identify infrastructure that requires maintenance. Smart grids can also enable better integration of renewable energy sources, such as solar and wind power.

One of the principle objectives of *Smart Grid, Smart City* is to *investigate synergies with other infrastructure (such as gas and water) and the National Broadband Network*. As such, Ausgrid has been in discussion with NBN Co. regarding the best ways to investigate any potential synergies over the term of the project, which will end in September 2013.

Ausgrid proposed three areas of investigation which have been incorporated into their Funding Agreement with the Commonwealth. The areas of investigation are:

a) *Smart Home Digital Gateway*

This project examines the design of a consolidated smart meter and Optical Network Termination (ONT) device. This device could be installed in a single truck-roll, reducing NBN and smart meter installation costs. Furthermore, it was intended that the ONT and smart meter could be interconnected over the smart meter base, allowing utilisation of NBN services for smart metering with minimal overhead costs.

b) *NBN Support for Smart Grids*

This project comprises a physical trial of NBN Services for the delivery of both smart grid and smart metering applications. The trial will cover approximately 3000 consumers encompassing various housing density type (single dwelling unit, multiple dwelling units and high density buildings). The project will demonstrate what service offerings NBN Co could develop, relevant to an energy utility (at both a technical and operational level), to utilise the NBN for smart grid communication requirements. This project will also be concerned with capturing the costs associated with delivery of this offering, understanding the business model that supports this type of service offering to the power industry and testing technical synergies available in terms of network failover, reliability and service coverage.

c) *Broadband over WiMAX*

This project comprises the trial delivery of broadband services over the energy utility's wireless network to determine whether NBN-like services can be supported over an energy utility's infrastructure in a rural context. The project would see a trial of internet services delivered to potentially several thousand residents in the Scone area in NSW.

Ausgrid have discussed these projects with NBN Co. and have agreed to conduct project b) – *NBN support for smart grids* – and are conducting feasibility studies for projects a) and c) in advance of any further commitment.

Attachment B – Media Article, *Floods Stress Mapping Needs* – AFR, 11.02.2011



Floods stress mapping needs

Christopher Jay

Federal ministers are under pressure from private industry groups such as the Insurance Council of Australia and the Spatial Industries Business Association to improve the array of geospatial data available to handle flooding, tidal surges, tsunamis, rising sea levels, inland water planning and many other operational challenges.

Particular emphasis is being put on improved digital elevation models, or DEMs, seen in insurance circles as the indispensable ingredient for the creation of accurate flood models. Once this is available, a second stage could be the creation of potential flooding maps for all relevant parts of the country.

Paradoxically, the type of terrain where there is a high need for extremely accurate modelling is not steep, hilly areas where the slopes are obvious but the mainly flat areas where only faint variations in levels may determine which house will stay just above the water and which will see a surge of floodwater into the living room.

"Really steep terrain doesn't need high accuracy," Peter Woodgate, chief executive of the Co-operative Research Centre for Spatial Information said. "It's flat areas with subtle flooding, with people and important installations."

Bill Shorten, the Assistant Treasurer and Minister for Finance, has

had detailed discussions with the Insurance Council over additional federal funding for flood forecasting, with more meetings expected.

In a piece of fortunate timing for the government, Minister for Climate Change and Energy Efficiency, Greg Combet released three important geospatial products on December 15. These have been warmly greeted by industry and local government sources.

Particularly significant is an elevation data web portal hosted by Geoscience Australia, the main technical agency for geology, geoscience, terrain mapping and related activities.

Billed as a beta site, this assembles all the available data into a national elevation data framework, arranged in three grids. These are one second of arc, three seconds and nine seconds. These equate to 30, 90 and 250 metres on a horizontal plane.

The one-second data, which came from military sources through DIGO, the Defence Imagery and Geospatial Organisation, is only available to public sector agencies and their contractors, for defence security reasons.

The three-second and nine-second material, however, comes under creative commons.

A vast amount of extra data and several years of geospatial flying will be needed to fill in the many gaps and differing levels of accuracy of this data assemblage. For sensitive areas, a vertical resolution of just 15 centimetres is needed.

But even with the less voluminous data available now, heavily reliant on spaceborne radar passes flown by the US shuttle Endeavour 11 years ago, Geoscience Australia has cautioned would-be users not to try downloading the whole mass of data in one go.

The recommended approach is to select specific squares, or tiles, and nominate just which tiles are relevant to a user's local area.

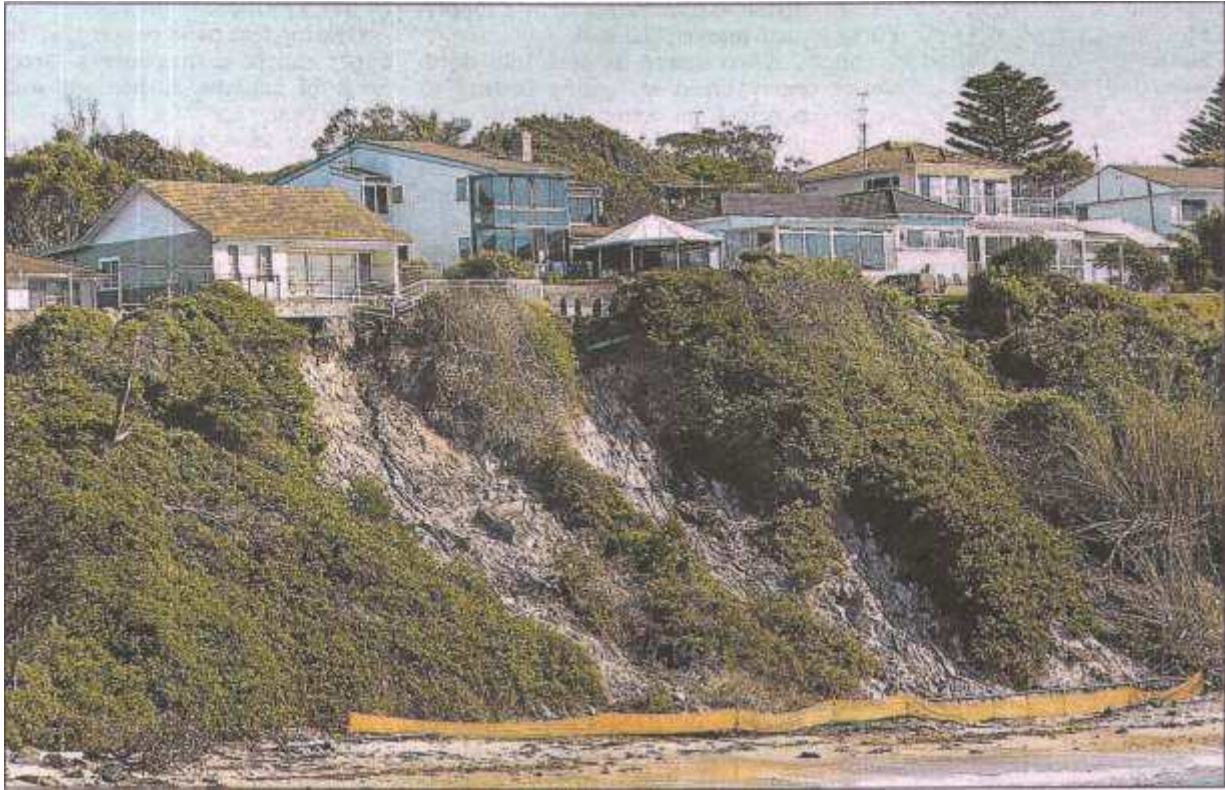
"It's a patchwork quilt from dozens and dozens of different agencies," said Mr Woodgate, whose CRC for Spatial Information is deeply involved in advancing the availability of digital terrain modelling.

"If it isn't stitched together, you can't unlock the power," he said. "We haven't yet stitched it all together. This terrain model in digital form is a fundamental infrastructure need for Australia."

The second product launched by Mr Combet on December 15 was a series of static sea level rise maps for several capital cities showing the inundation likely with low, medium and high estimates of sea level rises.

The third product was a pilot sea-level rise visualisation tool, allowing users to form a picture of what low lying coastal areas will look like as they go under water.

In response to calls from decision-makers for better tools for coastal planning, this product allows government agencies and local councils to plan for variations in ocean level.



Coastal areas in particular would benefit from more accurate terrain modelling.

Photo: PHIL HEARNE