



23 February 2011  
MS#30548058

Mr Andrew McGowan  
Inquiry Secretary  
House of Representatives Standing Committee  
on Infrastructure and Communications  
PO Box 6021  
Parliament house  
Canberra  
**ACT 2600**

Dear Mr McGowan

**NEW INQUIRY INTO THE NATIONAL BROADBAND NETWORK**

Thank you for your letter dated 9 December 2010 regarding the new inquiry into the National Broadband Network, and seeking input from Gold Coast City Council.

Please find our formal response attached for your attention and consideration.

If you require any further information, please contact

Best wishes

**RON CLARKE MBE**  
**MAYOR**

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Encl.

# Response by Gold Coast City Council

to

Parliament of Australia  
House of Representatives  
Standing Committee on Infrastructure and  
Communications  
*New Inquiry into the National Broadband Network*

21 February 2011

The Gold Coast City Council (the Council) welcomes the National Broadband Network (NBN) and looks forward to its early deployment on the Gold Coast.

In general terms the NBN will benefit the community, business and government in a number of ways:

1. The most obvious attribute is the speed of the network. While the speed will be beneficial, it is not the only benefit of the NBN. The effects of the speed increase will be tempered by various constraints in other parts of the network – such as originating server queues, Retail Service Provider (RSP) interconnect capacity, international backhaul capacity, and regional backhaul capacity.

However provided that other parts of the network match NBN performance, the higher speed of the network will allow the development of new applications which are not viable without higher speeds. These applications will typically fall into two major categories:

- a. Content-rich applications such as high definition (HD) video (including higher resolutions beyond HD<sup>1</sup>). These applications present *large amounts of information*.
- b. Highly interactive applications which require information to be presented very quickly so that decisions can be made<sup>2</sup>. These applications present information at a *rapid rate*.

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<sup>1</sup> Increased definitions beyond HD (1920 x 1080 pixels) are required to increase the size of the image while maintaining the perceived definition or sharpness. For example collaborative or immersive video conferencing screens which cover a large wall would require much higher definitions than HD to maintain image quality (e.g. Ultra High Definition 7680 x 4320 pixels). Developing three dimensional (3D) technologies will increase the speed requirement even further. Ultra high definitions are also required for the graphical presentation and analysis of complex data sets.

<sup>2</sup> The best analogy is flicking through the pages of a book quickly to find a particular page. The amount of information presented is not high – being a simple text file – but the rate of presentation and interaction is very fast. This is not possible with current networks because of their high latency or delay.

- c. Some applications of course may fall into both categories.
2. The high speed of the network is important because it will allow the gradual transition from passive consumption of content to active collaboration in real-time, as more people learn to contribute content of various types. The ability to run multiple concurrent applications is another benefit of the high speed of the NBN. Not all applications will require 100 Mbps, however the concurrent use of a number of applications such as video streaming, browsing and file downloading will require faster speeds than possible on most existing technologies.
3. The ubiquity of the NBN is an equally important benefit because it will increase the penetration of access across the community. Increased access will provide service to the large number of users who can not access high-speed services at present due to capacity constraints, distance limitations and technology limitations. Higher degrees of penetration will increase the benefit to business through the *network effect*<sup>3</sup> and to consumers through greater access to education, entertainment, business and government services.
4. The increase in retail service competition will be beneficial in providing downward pricing pressure and product innovation using the NBN Co product suite – provided the wholesale product pricing allows sufficient margin for Retail Service Providers (RSP). Equality of wholesale pricing of the NBN will help to ensure that the viability of services and applications does not depend on geographical location.
5. Another benefit is the positioning of telecommunications close to the leading edge of the next wave of technology evolution. There is a strong argument that copper cable technologies (both twisted pair as used in telephony and coaxial cable as used in pay television) are reaching the end of their development cycle and are not suitable for transmitting higher speed data over longer distances. Optical fibre is a proven but still relatively new technology which has significant development potential ahead (for example Dense Wave Division Multiplexing (DWDM) and enhanced modulation techniques may increase transmission speeds by several orders of magnitude without any change to the optical fibre itself).

Gold Coast City is one of the fastest-growing regions of Australia and links the fast-growing South East Queensland region (Brisbane, Sunshine Coast, Ipswich and Logan) and the Pacific Coast Corridor (Sunshine Coast to Coffs Harbour). As such the Gold Coast will see a large number of Greenfields developments connected to the NBN (4900 this year and 23,000 over the next five years). These connections will provide an ideal base for expansion of the NBN into Brownfields areas including a high proportion of Multi-dwelling Unit (MDU) precincts.

Many of the MDU localities are critical tourism hubs which service a clientele with high expectations of telecommunications services based on their overseas experience.

The Gold Coast is bidding for the 2018 Commonwealth Games with a high expectation of success. Such an international event would represent an ideal showcase for Australia in demonstrating the power of the NBN in delivering services to guests, overseas media and Australian spectators.

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<sup>3</sup> The *network effect* or *network externalities* (Metcalfe's Law) states that the benefit of a telecommunications network is proportional to the square of the number of connected users. For example — if *all* ratepayers used online payments, the over-the-counter payments facilities could be re-directed to other uses and rate payments could be largely automated — but as long as there are people not using online payments the over-the-counter facility must be maintained.

# Benefits of the NBN

In more specific terms it is the view of the Gold Coast City Council that the NBN will contribute in the following ways:

- a) the delivery of government services and programs;
  - i. The NBN will allow local governments to offer existing online services to more people and to offer a wider range of services using the NBN – rather than through face-to-face transactions and conventional mail delivery.
  - ii. Examples include:
    - Providing and extending the access to mapping information relating to road and traffic conditions, flooding and property developments;
    - Permits and approvals;
    - Providing high-definition video tourism information about cities and regions as part of their marketing program;
    - Providing improved access to library resources using high-definition video and rich media experiences; and
    - Developing new opportunities for business which use, value-add and package government information<sup>4</sup>.
  - iii. The benefits which are expected through the online delivery of services include new business opportunities, improved utility for consumers, reduced cost to councils, reduced cost to consumers, reduced travel needs and wider use of services.
  - iv. There is also potential for governments to engage more actively with the community in areas such as interactive participative democracy and direct feedback using techniques such as the *wisdom of crowds*<sup>5</sup>.
  - v. Most local governments conduct identical functions within their council operations and the NBN has the capacity to enable greater cooperation between councils through the sharing of resources, expertise and even major functions such as billing and customer service. The Broadband Today Alliance which originated in Queensland and now has over 30 members through Queensland and Northern New South Wales is an example of how local governments can work together. ([www.broadbandtoday.com.au](http://www.broadbandtoday.com.au))
- b) achieving health outcomes;
  - i. The NBN has the potential to improve health outcomes through the improved delivery mechanisms available to state health departments and private service providers.

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<sup>4</sup> For example: If a council provides access to public transport timetable databases and route maps, developers can integrate these two sources of information (and others such as GPS) and develop sophisticated software to enable route planning, vehicle tracking and other services as commercial products for fixed or mobile usage.

<sup>5</sup> The wisdom of crowds refers to the ability of a large number of connected people to find the *correct solution* to a problem or issue due to their collective wisdom.

- ii. The new Gold Coast University Hospital and the associated Gold Coast Health and Knowledge Precinct will provide a centre of expertise relating to health practice and research, generating content of high value for distribution across the health industry for educational and collaborative purposes. Examples include live high definition coverage of medical procedures, lectures and pathology.
  - iii. There are a number of improvements which can be made in the aged care sector to improve the quality of in-home care, which may delay the need for institutional care. This outcome, if achieved, would reduce costs to private sector providers and governments while at the same time increasing the choices available to the aged and their families.
  - iv. There are also many opportunities within aged care facilities to improve the lives of residents by introducing services such as:
    - video conferencing for virtual visits;
    - online games such as bingo and social interaction between residents in different facilities; and
    - the use of cloud services to deploy more sophisticated software applications to manage facilities.
  - v. The existing telephone-based emergency medical referral system (13HEALTH) could be upgraded to include high quality video in each direction, so that a medical expert could have the benefit of much more information, and the consumer could benefit from seeing the medical expert demonstrating treatments. This could be achieved relatively easily using a normal television with the addition of a portable camera.
  - vi. There are a number of benefits to private practice within the health sector, including the use of national eHealth records and the electronic transfer of pathology records.
- c) improving educational resources and training available for teachers and students:
- i. Interactive learning will allow collaborative teaching between classes on the Gold Coast and other schools in Australia and internationally to make the most use of specialist teaching resources<sup>6</sup>. One of the additional benefits of interactive teaching is the skills transfer between teachers.
  - ii. The TechGC Science Technology Engineering Mathematics (STEM) education program is aimed at encouraging study in these fields. This program would also benefit from the ability to use high speed connections to connect together multiple locations for interactive teaching to make the most effective use of specialist teaching resources. Additionally, higher speed and availability of access would allow for interactive, collaborative student projects within Australia and with our international partners.
  - iii. Gold Coast Health and Knowledge Precinct comprising Griffith University and Gold Coast University Hospital, and the Citywide

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<sup>6</sup> Already under trial in some schools in Queensland but severely limited by lack of connection speed in Australia.

Knowledge Precinct are aimed at creating a corridor of innovation hubs across the city. These are designed to become centres of learning and teaching and will become major sources of content which will be published using the NBN.

- iv. Social media is a new source of content for educational purposes as a personal medium and a publishing mechanism for institutional content (for example political blogs being used as content for analysis in tertiary study; users *following* an expert in their field of study).
- d) the management of Australia's built and natural resources and environmental sustainability:
- i. There are a number of major challenges facing the Gold Coast as it embraces a high level of population growth over the foreseeable future, including housing and transport.
  - ii. Improved environmental management of houses and businesses will assist overall targets to reduce water and energy usage, through the monitoring and control of devices and networks through smart grids. The growth in new housing on the Gold Coast means that new technologies such as Smart Wiring, Smart Grids and Heating Ventilation and Air-conditioning (HVAC) control can be incorporated into a larger number of premises.
  - iii. Applications such as teleworking, whether from home or local offices, will reduce the load on private and public transport. Access Economics has estimated that the savings Australia-wide could be in the order of \$1.4-\$1.9 billion per year<sup>7</sup>. The value to the Gold Coast, which has a highly urbanised population, is significant in terms of lifestyle benefits (reduced time spent travelling) and reduced or delayed expenditure on transport infrastructure and services.
- e) impacting regional economic growth and employment opportunities:
- i. The Gold Coast City Council sees a number of opportunities resulting from the NBN deployment:
    - 1) New software application (*app*) development presents an opportunity for some of the entrepreneurial companies operating on the Gold Coast to develop products for domestic and export markets.
    - 2) NBN Construction is itself an opportunity to increase business opportunities and employment levels in the Gold Coast region and improve skill levels. The Gold Coast City Council believes the NBN should favour local staff and contractors over fly-in fly-out resources. This would provide valuable skills development, especially in regional areas and provide ongoing economic benefits.
    - 3) High-rise telecommunications (data, voice and video) cabling will need to be upgraded in many cases, providing another opportunity for increased employment and skills development.

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<sup>7</sup> Access Economics *Impacts of Teleworking under the NBN* July 2010 – assuming 10% of people telework for 50% of the time.

- 4) Economic development opportunities exist in other industries such as ICT, Tourism, Health, Marine, Film and Creative industries.
  - 5) The Gold Coast film industry is a major source of attraction for investment and creative skills, and the NBN will enhance the industry by enabling the development of new creative processes using the high-speed data transmission capacity of the NBN.
- f) impacting business efficiencies and revenues, particularly for small and medium business, and Australia's export market:
- i. The benefits to small and medium business from the NBN will come from better access to markets, the more widespread use of eCommerce and enhanced marketing.
  - ii. Access to *cloud computing*<sup>8</sup> provides an option for small and medium businesses to outsource the provision of software, hardware and storage to a service provider to reduce the capital costs and access a higher standard of software, hardware and storage.
  - iii. There are some threats which may be increased by the NBN. The Retail sector is the second largest industry by employment on the Gold Coast and the threat to Retail from online shopping is significant. There is potential for the NBN to increase the loss of business due to online shopping, although this also provides opportunities for local retailers to expand their markets and provide alternative shopping platforms to purchasers.
  - iv. The use of virtual trade missions using video conferencing to meet with overseas partners is an opportunity to build international relationships and improve the export capabilities of local businesses, particularly Small and Medium Businesses (SMB) who can not afford frequent visits overseas.
- g) interaction with research and development and related innovation investments:
- i. There are many applications under development such as:
    - Remote sensors deployed widely to gather information on weather, environment and other conditions;
    - Remote control of machinery in dangerous locations; and
    - Management of activities within the Health sector.
- h) facilitating community and social benefits:
- i. Community and social benefits will most likely come from the higher level of engagement enabled because the NBN is more available to residents. The expected improvements to the competitive structure of the telecommunications industry should result in better pricing and a wider range of services, which will also help to drive adoption of broadband services.

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<sup>8</sup> Cloud computing refers to the provision of computing services from a centralised data centre using a high speed network to provide access. The advantages include the more efficient use of power and hardware and the higher level of maintenance and support provided.

- ii. There are specific projects under consideration on the Gold Coast, which can use the NBN to provide community benefits including:
  - 1) Interconnecting Surf Lifesaving facilities and services on the Gold Coast and nationally, to share live video of beach conditions, emergency tasking and rescues, sporting events, education and training sessions.
  - 2) In-home care of aged people through the use of advanced monitoring systems and video conferencing.
  - 3) Online community consultation platforms to allow citizens to participate in local decisions and provide valuable input into projects and services.
  - 4) Increased provision of information by the Council under flexible licences allowing residents to use and add value to the community's knowledge assets.
  - 5) Provision of historical and library information online, including expansion of existing online services.
  - 6) Provision of new methods of engaging with the Council including the ability to access transactional information and interact with Council officers via web portals, secure online transaction gateways and videoconferencing.
- i) the optimal capacity and technological requirements of a network to deliver these outcomes:
  - i. The Gold Coast City Council is concerned about the robustness and resilience of the NBN in the region and in Queensland generally. The recent flooding and cyclones have demonstrated the need for telecommunications services to keep operating in times of natural disasters.
  - ii. The NBN will only connect from the Point of Interconnect (POI) – expected to be Ashmore, Robina and Southport – to the customer. The connection to the rest of the world will be provided by the Retail Service Provider (RSP) using transmission capacity from existing providers such as Telstra, Optus, NextGen and Pipe Networks.
  - iii. In particular the Council is concerned about:
    - 1) The number of optical fibre feeds used by NBN Co to provide services to the whole of the Gold Coast. The Council believes that the number of fibre feeds should be selected so there is a combination of geographical path diversity and carrier diversity<sup>9</sup>.
    - 2) The possible reliance on only one Fibre Access Node<sup>10</sup> for the Gold Coast. There are currently many telephone exchanges within the Gold Coast so the failure of one exchange may only affect a relatively small area. If the Gold Coast is only served by one Fibre Access Node, a failure of

<sup>9</sup> Geographical or path diversity means that the fibre feeds should not traverse the same path so that the probability of both being physically damaged in one incident is low – this extends to the building entry. Carrier diversity means that different suppliers are used so a failure of any kind with one supplier (equipment, financial etc) does not cause total failure.

<sup>10</sup> The Fibre Access Node is the optical fibre “exchange” used by NBN Co to connect all premises on the Gold Coast to the national network.



- that node or the fibres feeding it would deny service to all of the Gold Coast.
- 3) The potential that all telecommunication services (fixed line telephony, mobile telephony and broadband) will eventually be entirely reliant on the NBN infrastructure.
  - 4) The ability of the NBN Access network<sup>11</sup> to withstand natural disasters such as earthquake, flooding, inundation and storm events.
  - 5) The suitability of areas to be served by fixed wireless or satellite services particularly the need for 'line of sight' to fixed wireless transmitters and potential issues with geography and terrain in our hinterland.
- iv. The Council would like to seek assurances that the design of the NBN will seek to minimise the risks of service unavailability particularly during times of stress such as natural disasters through the use of techniques such as:
- 1) The housing of all external plant in weather-proof enclosures located above 1 in 100 year flood or inundation levels.
  - 2) The use of storm resistant housings and buildings appropriate to the risk of the area.
  - 3) The provision of a robust power supply with sufficient battery back-up at the Fibre Access Node to survive long power outages.
  - 4) The provision of emergency generator plant at the Fibre Access Node.
- v. The Council would like to seek assurances that the operation of the NBN will consider the full range of risks and make available sufficient local spare parts, resources and capability to restore services quickly particularly during times of stress such as natural disasters.
- vi. The Council notes that the rest of Queensland is partially served by the optical fibre route which passes through the Gold Coast. The robustness and resilience of this service therefore impacts on the rest of Queensland.
- vii. In an area of rapid growth such as the Gold Coast, there is a need to design for future growth in population. The Gold Coast already has a significant Multi-Dwelling Unit (MDU) footprint and there is potential for this to grow in the future as a way to manage growth.
- viii. The urban footprint of the Gold Coast consists of a relatively narrow strip along the coast, and the design of the NBN should consider this unique geography.

The Regional Development Australia Gold Coast supports the Gold Coast City Council response to the parliamentary inquiry standing committee on infrastructure and communications.

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<sup>11</sup> The part of the network which connects premises to the Fibre Access Node.