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7 March 2011

**Attention:** Andrew McGowan

Sent via e-mail: [ic.reps@aph.gov.au](mailto:ic.reps@aph.gov.au)

**RE: Submission: New Inquiry into the National Broadband Network**

Dear Mr Andrew McGowan,

On behalf of Professor James Barber, Vice Chancellor & CEO of the University of New England (UNE) I would like to thank you for inviting UNE to make a submission to the Standing Committee on Infrastructure and Communications on the National Broadband Network (NBN) and its implications for regional Australian Universities such as UNE, distance education, teaching and research. The University and the surrounding suburbs of Armidale have been selected as a 'test site' for the roll out which now is in an advanced stage of installation with completion due in May this year. The University is an enthusiastic supporter of the NBN rollout given that the Institution has app 14,000 distance education students studying a diverse range of higher education degrees across Australia and internationally. The University believes that the increase in speed and band width made possible by the NBN network will allow the University to fully exploit the benefits of 'Web 2' technology and allow for a more interactive and satisfying learning experience for our students. The University is in the process of implementing a new learning management system (Moodle) to ensure that our students have the best learning experience possible with the content of courses being delivered using video, pod casts, 'YouTube' clips and 'Facebook' to make this experience as interactive as possible. These technologies need the higher speed and band width that the NBN network will provide.

The University has also been active in exploring possible uses of the NBN network not only with our own academic staff and students but with the wider regional NSW community through a series of UNE supported seminars the 'UNE-NBN Seminar Series 2011'. These seminars in which the UNE Community and the wider business community are invited to UNE campus to

explore the possibilities of the NBN network for educational and business opportunities, but also for opportunities in teaching and research. The first of these seminars was opened by the University's Vice-Chancellor, Professor Jim Barber with an impressive list of speakers including the Hon Simon Crean Minister of Regional Australia, Senator Stephen Conroy Minister of Broadband and Communications, Mr Mike Quigley CEO NBNCo and the Hon Tony Windsor MP. I have attached the promotional flyer for your information. This series of public seminars will be conducted monthly at UNE with a range of speakers to prompt debate and explore the possibilities of the NBN network for regional Australia (see attached schedule of seminars and topics).

The University has also been actively collaborating with the CSIRO on a number of possible research areas including;

### **1. Disability and Ageing**

This project is based around enhancing the physical and emotional wellbeing of adults and adolescents who have disabilities by providing interactive tele-presence in the home of the adult and / or from a centre of a funded Non-Government Service Provider (FNGSP). In addition to face to face service support this project utilizes the direct care support worker, and allied health and therapy services. The agencies are located in Armidale within the foot-print of the NBN trial. Significant others of the participants with a disability are also located within Armidale and close environs. In addition, the FNGSP has allied health staff located in Sydney and Tamworth which would be linked into the program.

The project would initially be conducted from the FNGSP centre with set-top boxes located in the adults' home. Two locations exist in the NBN Armidale trial which have participants matching the profile of aged and with a disability. An additional trial that has been conducted in Coffs Harbour is part of the 2<sup>nd</sup> phase of the NBN trial examining the same physical and emotional wellbeing outcomes of adults by utilizing tele-presence in-home from service providers, therapy services and family members.

### **2. Professional supervision and engagement**

This is an extension of a major trial already underway within various professions. The design and methodology utilizes tele-presence in the professionals' practice, chambers, or setting to enhance their in-service training as well as engage with pre-service professionals in training located in a university setting. The project has been trialed and evaluated on a smaller scale with teachers and lawyers. The teachers in rural, regional and isolated settings have provided synchronous links from their classrooms whilst teaching to a virtual audience of pre-service educators with positive outcomes for the teachers and pre-service educators. For the lawyers the trial included a continuing professional educational program where regional lawyers were able to undertake a session that was counted towards their annual professional development. Further

development of in-chambers service delivery via tele-presence was seen as the next phase. There is a small pilot group (25) lawyers who have been involved in this project and as such there are applications of this design and methodology for a range of other professionals to utilize the technology and pedagogy of tele-presence to provide access and engagement as well as professional development in the Armidale and regional environs via set-top devices.

### **3. Simulations and gaming**

Applications for the simulation and gaming for pre-service professionals and their clients/students/ service users in regional and rural Australia are enormous. Trials have begun utilizing 2<sup>nd</sup> Life and scenario training in both Education and Law. Further applications have been applied in Medicine and Nursing. There are currently several academics at UNE who are undertaking applied research around the impact of simulations and gaming on pre-service professionals. This has occurred within the UNE context but also for those students who study at a distance from the campus. Further development of these projects is continuing in 2011 and 2012 with evaluations of the simulations and affect on the pre-service professionals. The engagement and access for pre-service professionals involves network connectivity, bandwidth as well as cost of data. All of these issues are fundamental for all consumers who engage in the virtual simulation training and engagement. Research on the positive effect of gaming is growing and the current research projects would add to that through further collaboration.

The University continues to explore the possibilities of the NBN network for its own teaching and research opportunities, these include;

#### **Achieving Health outcomes**

The NBN has the potential to deliver considerable savings in achieving health outcomes.

- Keeping the elderly and disabled in their homes and out of expensive nursing home, for longer. Monitors already exist which can easily register weight, blood pressure, detect whether a person has taken required medication etc. The NBN will enable ready transmission of this data to a central monitoring site thus enabling even quite frail people to remain, safely in their own homes rather than having to move into nursing homes
- Delivering in-service training and support to remote and regional areas, without the need for medical personal to travel to central training hospitals (this is linked to education, see below).
- Enabling very high level diagnosis and care for patients in remote centers where it is not practical to have cardiologists, neurologists etc based. While health needs are the same in cities and in regional areas, the capacity for a health service to employ specialists is

linked to the size of the population. This means that people in more remote areas often cannot get rapid treatment in the case of stroke or heart attack or severe trauma as caused by car accidents. Thus health outcomes are often worse in regional areas than in the cities and can result in the need for much longer, and more expensive rehabilitation than for city patients, who can rapidly access specialist care. The NBN will enable specialist, real time, high fidelity consultations, diagnosis and even treatment over very large distances thus overcoming much of the disadvantage and higher cost associated with limited medical resources in remote areas.

- Enabling consultations between specialist clinics and chronically ill patients in their own homes, that overcoming the need for cancer patients for example to undertake what can, in some cases, be long trips from their homes into the specialist centers on a regular basis to undergo treatment.

### **Improving education resources and training available for teachers and students**

The high upload and download speeds of the NBN allow the development of a true Virtual classroom, which enables real time, multisite delivery of high quality educational experience. This will apply across the board from primary up to tertiary education.

- Many children in regional areas are denied educational experiences that city children take for granted, such as visits to museums, art galleries. Using the NBN, museums and art galleries could run programs which will enable children to experience exhibitions in an interactive way, as if they were present in the museum, even if they are thousands of kilometers away.
- It is becoming increasingly difficult for secondary schools to offer a full range of subjects for their students. Often only one or two students in a school will be interested in a particular subject. In larger centers, these students may be able to travel to another nearby school to study the desired subject, but in many cases, especially in smaller centers, this is not possible, there may not be another school in easy commuting distance. The NBN will enable students to study the desired subject in real time, and in a participatory manner, just as if they were in the classroom, even if that classroom is in another State, thus increasing education choices and outcomes. Partnering arrangements between Universities could also bring this broader choice to University students
- The NBN will enable the sharing of very expensive, high technology equipment and teaching aids, e.g. the robotic operating theatre at the Medical School of the University of California in Irvine, could be made available to students in Australia.
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### **The management of Australia's built and natural resources and environmental sustainability**

80% of our agricultural exports are produced by 20% of our farmers. These farmers are large, high tech businesses. The farmers can get sensors that tell them where their stock is, what

parts of fields they preferentially graze, what the weight gain is. They can remotely monitor pasture for moisture content, for pasture growth and thus they can work out when and how to move stock around for maximal yield. But at present they cannot handle that data themselves, because they do not have access to enough bandwidth. NBN will enable on-farm analysis of data and real time application of results to the better management of the farm.

### **Biosecurity**

Protecting Australian environment and farmlands from invasive pests and diseases is a major and very expensive goal. Expertise is limited and often situated in major centres, yet the likely sites of entry of pests and diseases into Australia are often remote. In one state in Australia, we have only two plant pathologists specializing in grains. If a farmer notices a fungal disease on his crop he can collect a sample, send it off to one of these two people, it is usually much the worse for wear when it arrives, and by this time, it has probably spread to the entire crop and maybe to neighbouring properties. What if the farmer could take a photo of the infected cereal on his mobile phone, beam it straight to the plant pathologist, who could give advice on how to deal with it within a few hours, thus enabling control, preventing widespread dispersal and preventing major crop loss with the associated economic loss. The NBN will enable this.

### **Interaction with research and development and related innovation investments.**

While there are many advantages of the NBN that can be realized with current technology, there are many other areas of potential use, which still require research and development to turn ideas or prototypes into reality. Thus the uses of the NBN will become topics for research and development. This is particularly the case in medicine, agriculture, environmental management and in education. There will be a very important area of research associated with the pedagogy of online learning, utilizing the NBN

The NBN will also enable more ready access to and exchange of data in real time, which will become a very useful tool in many fields of research including medicine, agriculture, environmental management, epidemiology, biosecurity.

The University views the NBN network rollout as critical for the development of regional Australian and the future of distance education for those students who chose to engage in higher education but cannot access the benefits of an on campus experience either due their location in regional in Australia or to work or family commitment. The NBN network with its increase in speed and band width will allow these students to have a quality and interactive higher educational learning experience and essential in achieving the higher participation rates expected by the Commonwealth Government by 2020.

For further information concerning the University of New England's position on the NBN rollout please contact Professor Annabelle Duncan Deputy Vice-Chancellor (Research) on phone

I would like to thank the Committee for inviting the University of New England for this contribution to your inquiry.

Yours Sincerely,

***Mike Quinlan***  
***Executive Director (Infrastructure)***

# UNE-NBN Seminar Series 2011

This exciting seminar series will be showcasing some of the University of New England's leading academic researchers and teachers, our partners and collaborators, presenting work which utilises a broadband network.

The possibilities of a national broadband network and the implications for the application of research and teaching will be explored.

Opportunities for the audience to question and engage the speakers will be provided over a light lunch.

Professor Jim Barber  
Vice-Chancellor,  
University of New England (UNE)



**Professor Jim Barber**  
Vice-Chancellor  
University of New England

## Series dates and presenters:

23 February  
**Jason Bordujenko (National Video Conferencing Support Manager, Applications and Services, AARNet)**  
Topic: The role of AARNet in supporting regional and rural research.

**Dr Stephen Winn (School of Education, University of New England)**  
Topic: Access and engagement: Meeting critical needs without critical mass. How a national broadband can enhance the quality of professionals and their clients in rural and regional Australia.

30 March  
**Dr Harry Haigler**  
**Dr Chris Fox**  
**Dr Shahram Lotfipour**  
**Dr Gerald A Maguire (University of California, Irvine School of Medicine)**  
Topic: Examples of i-med education innovation.

20 April  
**Dr Des Maddelena (AiVision)**  
Topic: On-line vision screening and assessment. The reality of universal childhood screening via the broadband network.

25 May  
**Sue Gregory and Dr Yvonne Masters (School of Education, University of New England)**  
Topic: Focusing on student engagement and performance via a virtual world platform.

22 June  
**Dr Laurence Tamatea (School of Education, University of New England)**  
Topic: Knowledge production, exchange and transfer between international students in the field of teacher education.

27 July  
**Professor David Lamb (School of Science and Technology, University of New England)**  
Topic: Precision agriculture: Utilising a broadband network to improve farming efficiency.

24 August  
**Professor Belinda Tynan (Academic Director, Faculty of The Professions, University of New England)**  
Topic: Network-Educate-Employ-Grow, using a broadband network to enhance regional and rural communities.

21 September  
**Dr Gary Doherty (Director, Business Development, CSIRO ICT Centre)**  
Topic: Australian Centre for Broadband Innovation: Collaborating and partnering leading edge research in the application of a broadband network.

19 October  
**Professor Nicholas Talley (Pro Vice-Chancellor, Faculty of Health, University of Newcastle)**  
Topic: Using i-med to enhance the quality of graduates.

16 November  
**Microsoft Australia**  
Topic: Cloud computing and its impact on education and research.

## Seminar times:

12.00pm - 2.00pm

## Venue:

Ooral Centre, University of New England  
February - November 2011  
(UNE staff, students and members of the public are welcome to attend)

## For further information, please contact:

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Website: [www.une.edu.au/une-nbn](http://www.une.edu.au/une-nbn)

## Series Facilitators and Convenors:



**Professor Victor Minichiello**  
Pro Vice-Chancellor and Dean  
Faculty of The Professions  
University of New England



**Dr Stephen Winn**  
Deputy Head (Professional Practice and Partnerships)  
School of Education  
University of New England



# Setting the Agenda for Regional Futures

Thursday 17 February 2010, from 10.30am Armidale Campus UNE  
Full day Regional Summit Program

## Morning Session:

### **Federal Government Regional Development Agenda and the Future of Regional Investment:**

Introduced by Tony Windsor MP

#### **Presented by the Hon. Simon Crean MP**

Minister for Regional Australia, Regional Development and Local Government

#### **Additional Key Note Speakers**

#### **Dr Peter Brain, Executive Director of National Economics:**

Future Demographic Challenges and Opportunities for Regional Australia in Business, Economics and Society

#### **Hon Dr Richard Torbay MP, Member for the Northern Tablelands and Chancellor, UNE:**

Presenting a Panel on Regional Priorities and Investment

#### **Panelists Include:**

**Hon Simon Crean** – Minister for Regional Australia, Regional Development and Local Government

**Mr Tony Windsor MP** – Federal Member for the New England

**Dr Richard Sheldrake** – Director General, NSW Industry & Investment

**Mr Kevin Dupe** – CEO, Community Mutual Group

**Dr Peter Brain** – Executive Director for National Economics

**Mr Peter Bailey** – CEO Foundation for Regional Development



**Morning Session to be followed by a  
Regional Business and Education Network Luncheon  
RSVP Essential**

## Afternoon Session:

### **National Broadband Network and the Digital Future for Regional Australia:**

Introduced by Tony Windsor MP

#### **Presented by Senator Stephen Conroy**

Minister for Broadband, Communications and the Digital Economy

#### **Additional Key Note Speakers**

#### **Mr Mike Quigley, CEO NBNCo. and Mr Sean Casey**

**NBNCo.:** Exploring Technical Capacity, Economic Benefits and Social Impact of Investment in Digital Technology

#### **Professor Mary O'Kane, NSW Chief Scientist & Engineer:**

Science, Technology and the Impact On Industry and Investment Through NBN Delivery

#### **Dr Alex Zelinsky, Group Executive, CSIRO Information**

**Sciences:** The NBN and Opportunities for Innovation of Broadband Technologies and Applications

#### **Professor Jim Barber, Vice-Chancellor UNE:**

The NBN and the Endless Possibilities for Health and Education in Regional Australia – Video Link With University of California's Irvine Medical Institute

#### **Q & A Forum Panelists to include:**

**Hon. Senator Stephen Conroy**

**Mr Mike Quigley** – CEO NBN Co.

**Mr Sean Casey** – NBN Co.

**Professor Mary O'Kane** – NSW Chief Scientist and Engineer

**Dr Alex Zelinsky** – Group Executive, CSIRO Information Sciences

**Professor Annabelle Duncan** – Deputy Vice-Chancellor, Research UNE

#### **Launch of the UNE NBN Seminar Series by UNE Vice-Chancellor Professor Jim Barber**

**RSVP for attendance and catering essential as numbers are limited**

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**by Wednesday 9 February 2011**

