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Huawei Australia

Submission to House of Representatives Infrastructure and Communications Committee

Inquiry into the role and potential of the National Broadband Network

www.huawei.com.au/connectingcommunities

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Contents

Introduction

Huawei Australia is grateful for the opportunity to make this submission to the House of Representatives Infrastructure and Communications Committee. As the world's leading supplier of next-generation broadband networks, Huawei is uniquely positioned to address the committee's Terms of Reference regarding the role and potential benefits of the National Broadband Network (NBN).

Around the globe, Huawei is already building a number of NBN-style fibre networks. In the UK, Huawei has partnered with BT to rollout the 21CN fibre broadband network. In Singapore, Huawei has partnered with Nucleus Connect to deploy the Next-Generation Nationwide Broadband network (NGNBN) which delivers broadband speeds of up to 1Gbps (1 gigabit per second) to end-user premises. Huawei is also the partner of choice to roll out NBN-style networks in Malaysia, the UAE, and Brunei.

Huawei is a world-leader in wireless broadband technology as well. We were the first company to deliver a commercial LTE (Long Term Evolution) network globally, and are currently working on more than 100 next-generation wireless broadband projects (both commercial contracts and trials), including with major Australian operators. Around the world, users are seeing the benefits of increased fixed/wireless convergence. Both will play important roles – but for Australia to lay a solid foundation for growth in the digital era, fibre technology must be the cornerstone of any National Broadband Network rollout.

In February 2010, Huawei Australia launched the White Paper report *Connecting Communities: the impact of broadband on communities in the UK and its implications for Australia. (*A copy of this report has been attached as an appendix to this submission.) *Connecting Communities* is a groundbreaking review of the community benefits and innovation enabled by broadband in the UK, and the implications this has for Australia's own broadband policy decisions. Commissioned by Huawei Australia but independently researched and compiled by renowned community regeneration expert Dr Tim Williams, *Connecting Communities* is based on a wealth of case-studies, interviews and analysis. The report offers compelling real life evidence of the impact of broadband – on public services, democratic activity, and on communities themselves.

We hope that this submission, which includes details from the findings of *Connecting Communities*, helps the Committee to address its Terms of Reference.

Peter Rossi

Chief Technology Officer

Huawei Australia www.huawei.com.au/connectingcommunities

Executive Summary

Huawei Australia believes that the *Connecting Communities* White Paper directly addresses each of the Committee's Terms of Reference. In summary:

a) *the delivery of government services and programs*: Connecting Communities notes that the UK is aiming to deliver all government services and programs as 'digital by default' – with 90% of services already delivered online. High-speed broadband is increasing both access to, and efficiency of, public services. (p3) The requirements of modern government and rising citizen expectations of government will add further momentum to the 'hunger for bandwidth'.

b) *achieving health outcomes*: *Connecting Communities* found that NHS Choices (a broadband-enabled National Health Service program) has saved the NHS £44 million, with up to 300,000 citizens logging on to the service in one day last December (p3). Pilots of tele-healthcare in remote areas of Scotland have shown how high speed broadband is saving lives now. Broadband-enabled telecare services are now provided to 1.7 million homes in the UK, allowing older and more vulnerable people to stay and live independently in their communities with their families – with the all the health and cost-benefits to the Treasury and to family budgets that result.

c) *improving the educational resources and training available for teachers and students*: *Connecting Communities* found that broadband allowed teachers to deliver greater flexibility and tailor teaching techniques to suit individuals – with case-studies showing a significant boost to student grades as a result. (p46). It also notes broadband-enabled applications suited to improving educational outcomes in more remote areas.

d) *the management of Australia's built and natural resources and environmental sustainability*: *Connecting Communities* notes a case study from the National Farmers Union in Wales, which used a video conferencing system to reduced their CO2 emissions by 41.6 tonnes per annum. It's just one small example of how broadband is improving environmental sustainability, with further case studies listed in this submission. (p51)

e*) impacting regional economic growth and employment opportunities*: Broadband is pivotal to bringing "re-population, not de-population" to rural and regional areas, the report finds. A prioritised high speed broadband rollout in Cornwall at the edge of the UK has played a key role in marketing the

area to entrepreneurial in-migrants and the area has seen an increase in population of 6.5% since 2001 – faster than the UK average. (p33)

f) *impacting business efficiencies and revenues, particularly for small and medium business, and Australia's export market*: The report notes a program in the UK dedicated to accelerating economic growth through the use of broadband, helping some 10,000 small businesses by increasing productivity, increasing employee motivation and retention, and improving work/life balance. (p34)

g) *interaction with research and development and related innovation investments*: Huawei has already partnered with two Australian Universities to share our global knowledge base and improve R&D capabilities, set to accelerate Australia's innovation capabilities.

h) *facilitating community and social benefits*: "We have to remind ourselves of the social purpose and broad benefits of this investment," says *Connecting Communities* – entire chapters of the report are dedicated to the myriad community and social benefits of broadband (p54). As one of the advocates of the elderly says in the report: we have to get everyone skilled and confident to work digitally as 'on-line is where community now lives'.

i) *the optimal capacity and technological requirements of a network to deliver these outcomes*: The findings of the report are clear: following a long list of the social benefits of broadband, the report concludes that "as bandwidth and speed increase such benefits will also increase."

Addressing the Committee's Terms of Reference

1) The delivery of government services and programs

Connecting Communities notes that the UK is shifting its government services and programs to become 'digital by default', with 90% of government services now delivered online. The report gives numerous examples of how broadband has not only made government services easier to access, but has also led to dramatic savings in operating costs, and widespread gains in productivity for program staff.

"The shared public services agenda is the most important one in UK public administration. It matters to save money, to increase the bang from the public buck, and to improve both services to the public and the user or customer experience of the public. Broadband is at the heart of this agenda and increasingly so as bandwidth, speed and interactivity increase." (p49)

Chapters 5 and 6 of *Connecting Communities* are dedicated to e-democracy and the digitisation of public services.

In health: The NHS's Image Exchange Portal has – in just one year – been used to transfer over 100,000 patient studies and over 19 million X-ray and other images between NHS hospitals and also independent health care providers. (p44)

In education: Schools have seen student grades go up as teachers are given increased flexibility and greater access to resources via broadband (this is detailed in section 3).

In emergency services: Kent Connects is a program which has used broadband to create a single ICT infrastructure for 1.5 million people, 16 Local authorities, Kent Police, Kent Fire and Rescue. (p50). Wales has its own version: Public Services Broadband Aggregation, also cited in the report, building 'One network for one nation' – for 3 million citizens and almost 300,000 public servants including the emergency services.

"One small organisation, the Countryside Council for Wales with a dozen small offices in remote areas, saved, in the first 12 months of being connected to PSBA (Public Sector Broadband Aggregation), over £100,000 and significantly reduced its carbon footprint." (p50)

In social services, local government, councils and libraries: Kent Public Services network serves 1,100 sites and 250,000 users, extending broadband connectivity to 595 schools, 103 libraries, 276 council sites, 17 social services offices and 100 children's centres. The next phase will encompass the health and voluntary sectors. (p50)

2) Achieving health outcomes

Chapter 6 of *Connecting Communities,* 'A healthy public interest?' details how the UK's National Health Service is seeing cost savings and improved patient care thanks to high-speed broadband. NHS Choices, described as the "Facebook for health advice", brings a long list of benefits to online users:

- Allows people to book and change appointments with hospitals

- Provides accessible educational videos on key health issues e.g. heart by-passes, toilet training, winter health, prostate cancer, Bollywood exercise videos, breast feeding

- Provides interactive tools to help manage stop smoking programs, access your fitness and weight. There is even a program to get from the couch to running 5km
www.nhs.uk/livewell/Pages/Livewellhub.aspx

- Enables online communities including blogs and forums where people come to talk about how they manage their medical condition or help someone else to cope

"The increasing scale of the digital interface between UK public services and UK people is best grasped by logging on to NHS Choices. 300,000 citizens did so on one day in December 2010 so you won't be on your own. In the winter of 2010 it received 20 million visits (www.nhs.gov.uk)." (p43)

Telehealth and telecare services are critical to reducing the load on hospitals and are even saving people's lives (p31). One telehealth pilot program in Scotland showed audited savings of 70,000 bed-days in the winter of 2010 (p15), while in tele-care, the UK leads Europe. 1.7 million now lead independent lives, whilst enjoying high-quality social and professional care in their remotely monitored homes, and saving massively on residential care costs.

"In one year in Scotland, tele-care services saved:

- 5,668 hospital bed days through speedier discharges

- 13,870 by reduced number of unplanned hospital admissions

- 61,990 care-home bed days

- overall 81,000 bed days

- and 95% users said they felt safer, 66% more independent and 87% reassured because appropriate help was not far away." (p28)

3) Improving the educational resources and training available for teachers and students

Chapter 6.2 of *Connecting Communities* – 'Broadband and education: mind-expanding, mind blowing: and that's just the kids' (p44) includes numerous real-world examples of how broadband is not only playing a pivotal role in improving student grades, but is also helping to improve teacher access to timely, relevant material in the classroom.

"If every student leaving school was able to picture their lives with seamlessly integrated technology –end user devices, integrated services from the private and public sector, life-long personalised learning applications and so on – and understand how their choices around behaviour, purchasing and usage of technology would directly affect their wellbeing and productivity, then that's the real opportunity. That some may leave able to hack the Pentagon is neither here nor there."

- ***Chris Stark, Navigant Consulting***

Some Examples:

- A 'virtual school' where 80% of the curriculum is delivered online with pupils, parents and teachers all working together 24/7 whether physically based at home, at school or waiting for a bus (p45)

- One school saw low-attaining pupils become high-attaining pupils because it replaced pen and paper with Web 2.0 infrastructure (p45)

- 55% of teachers in the UK say that children without internet access at home were at a serious educational disadvantage (p47)

- Developments such as Teachers' TV (now only available through the internet) and the many professional chatrooms have allowed the sharing of material and resources on a massive scale. This is helpful to all teachers, but especially those working in small schools or isolated communities (p45)

- A rural local authority in the north of England has used the government-funded high speed internet connection to allow community access to fast broadband. The rural schools involved are now learning hubs for the whole community, and everyone benefits (p45)

"Staff in a comprehensive school have improved their A – C science results from 30% to 98% by sharing assessment data with students. The feedback enables students to address their learning needs and therefore a greater awareness of how they can improve." (p47)*

4) The management of Australia's built and natural resources and environmental sustainability

Building a National Broadband Network will produce a wide range of environmental benefits, according to research performed by both *Connecting Communities* and Huawei. The benefits are found both in the network itself (which will be more energy-efficient than existing fixed-line networks) and also the wider impact on society, with a particular focus on improved transport services and new opportunities to increase teleworking.

Connecting Communities found that many of the environmental benefits of a National Broadband Network are directly linked to some of the aforementioned public benefits, including telecare and remote health services.

"Reducing the time spent travelling for professionals and patients reduces cost, frees up patients and staff time but also reduces congestion, air pollution and carbon emissions." (p51)

Similarly, new technologies enabled by broadband (such as teleconferencing) are not only helping businesses to reduce their running costs, but are also helping reduce carbon emissions.

"The National Farmers Union in Wales has introduced a video conferencing system across its offices in mid Wales and its regional HQ. The reduced commuting time for 4 staff over a year has been measured as a total of 880 hours of productive time. This equates to an extra staffing resource of £8,800. They also reduced their CO2 emission by 41.6 tonnes per annum." (p51)

A simple online application for carpooling (www.liftshare.com/uk/) has seen over 16,000 cars taken off the road in 2010 by allowing users to send over 55,000 invitations to share daily car journeys. Membership is increasing by 50% a year (p51). Additionally, broadband is creating new public transport efficiencies in the UK – not only making it easier for commuters to use public transport, but also creating a positive environmental impact.

Within the network itself, Huawei's own research into energy efficiency has found that moving from traditional plain-old-telephone-service (POTS) networks to fibre broadband can lead to a significant drop in energy consumption.

"According to our data of previous network transitions, a NGN (Next-Generation Network) migration can reduce about 40% of network energy consumption." (Huawei Energy Efficiency White Paper, p5. Available for download from http://www.greenhuawei.com/)

5) Impacting regional economic growth and employment opportunities

"What we've found in the UK is that those areas that have high-speed broadband are beginning to attract people back to regional economies. It's not de-population, it's re-population. Because you can do a modern job, you can have modern services, you can have the highest quality of life in those areas now that you've got connectivity, we're seeing a recovery of those areas – it's particularly important for the sustainability of regional economies." Dr Tim Williams, at the Connecting Communities Launch

A key finding of the *Connecting Communities* White Paper was that high-speed broadband would assist in bringing about re-population, not de-population in Australia's rural and regional areas. Referencing numerous case studies of online community activism in the UK's most remote areas, the report found that people and businesses were relocating back to regional areas to enjoy a better quality of life – all because they could stay connected through the power of high-speed broadband.

"The fastest-growing online communities in the UK live in some of the more remote areas, typically receiving lower than average public and private services at higher than average cost. Fast broadband has real traction in such communities." (p31)

A phrase often used regarding the NBN is that Australia suffers from the 'tyranny of distance', but the report noted how the regional centre of Cornwall was using broadband to overcome its own tyranny of distance. A region with a dispersed population of around 500,000, a broadband rollout in Cornwall will use £78.5 million from BT and £53.5 million from the European Regional Development Fund to ensure up to 90% of homes and businesses have access to high speed next-generation broadband by 2014. Whilst the report notes the turnaround is far from complete, the effects are already noteworthy:

"Its population has increased by 6.5% since 2001, faster than the UK average. At the same time, the socio-economic mix in Cornish communities is becoming more diverse, sustainable and balanced as not just retirees but wealth creators return to the county seeking a sea-change and an outstanding quality of life for themselves and their families – and to make a buck." (p33)

A concerted effort from political, community and business leaders in Cornwall has put broadband at the centre of this process of economic and social recovery. It is a shining example of the potential for Australia's own regional communities – broadband can bring a boom to the bush.

"It may still take over five hours to get from London to Cornwall by car but broadband reduces the communications gap effectively to zero. The 'edge' just got closer to the centre." (p33)

6) Impacting business efficiencies and revenues, particularly for small and medium business, and Australia's export market

A National Broadband Network would allow businesses, both large and small, to capitalise on a raft of new opportunities to improve staff retention, reduce operating costs, and even increase employee motivation. Continuing from the previous example of bringing businesses back to regional communities in Cornwall, the *actnow* program is said to be one of the most successful EU-backed regeneration initiatives ever undertaken. Helping over 10,000 businesses, farms and voluntary organisations between April 2002 and December 2008, *actnow* was commissioned with accelerating economic growth and social inclusion through the use of broadband – essentially, 'selling' the benefits of broadband to businesses in an effort to bring them back to the regional area.

"Increased productivity is partly due to increased employee motivation and improved work/life balance, which helps in attracting and retaining staff. There are also significant productivity benefits as a result of employees being able to work flexibly from home avoiding the stress and wasted time of unnecessary travel to the office." (p34)

As well as playing a role in helping small, non-metro businesses flourish, broadband also has a pivotal role to play in ensuring employees can work effectively and flexibly regardless of their physical location. The White Paper notes the trend of 'homeshoring' (as opposed to offshoring), where call centres can be extended to an employee's home as part of a 'virtual switchboard' using Voice over internet protocol (VoIP) and broadband.

"Research has shown by providing call centre staff with the option of working from home you improve staff retention and are able to attract a higher skilled workforce. It is also enables those who are less able to travel or have other responsibilities to access employment." (p52)

In one case study, Co-Op Travel Group subsidiary 'Future Travel' operates the largest virtual contact centre in the UK – leading to reduced operating costs, reduced energy requirements, and minimal travel requirements for staff. A second case study noted how a group of organisations in Nottingham allowed employees to work flexibly at home, allowing groups such as over-50s, women returning to work, disabled people, and rural employees to actively participate in the workforce despite their isolation from a 'regular' office environment.

7) Interaction with research and development and related innovation investments

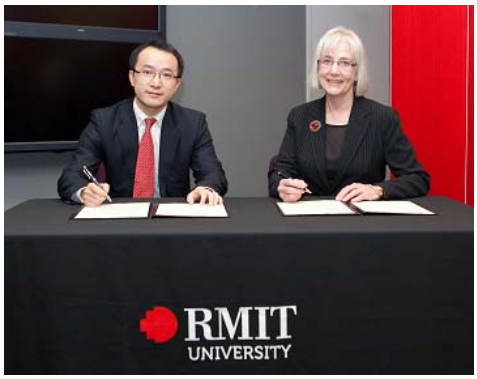
Even though the National Broadband Network is just seeing its first connections being made today, Australia is already experiencing a boost to its R&D capabilities. Thanks to the world-leading nature of the project, it has gained international attention from the world's largest technology companies – with Huawei taking the lead in partnering with Australia's R&D community.

- In January 2010, Huawei announced that it has signed a Memorandum of Understanding (MOU) with the University of Melbourne's Institute for a Broadband-Enabled Society (IBES).

"The commitment from Huawei, as well as the continuing support of the State Government of Victoria, ensures that IBES will play a key role in the development of an Australian society that is ready for a broadband-enabled future." - IBES Director Professor Rod Tucker

- In July 2010, Huawei Australia and RMIT University signed a Memorandum of Understanding (MOU) to deliver Next-Generation technology training to Australia's Information and Communications Technology (ICT) sector. In the MOU, Huawei agreed to train between 1,000 - 2,000 Australians on a variety of new technologies including Long Term Evolution (LTE), fibre Gigabit Passive Optical Network (GPON) and Next-Generation broadband applications.

"Huawei has chosen Victoria as its training base and RMIT University as its lead university to drive its entry into the next generation broadband market, training over 1000 students nationally – including 500 in Victoria – over the next three years. The Next Generation Technology Training Centre will be a joint effort between RMIT and Huawei focused on providing training for the latest in next-generation technology and products."- Victorian Minister for Information and Communication Technology John Lenders.



(Image: RMIT Acting Vice-Chancellor and President Professor Daine Alcorn, Huawei CEO Guo Fulin)

- In December 2010, Huawei added to the original RMIT agreement by announcing the establishment of a new $250,000 lab as part of the *Next Generation Technology Training Centre*.

"As a global university of technology and design, there is powerful intersection between the RMIT's research and teaching strengths and the needs of key industry partners and the labour market. RMIT's collaboration with industry is integral to its leadership in applied research and education, and to the development of work-ready, highly skilled and globally focused graduates." - RMIT Vice-Chancellor and President, Professor Margaret Gardner AO

8) Facilitating community and social benefits

As the report's title indicates, *Connecting Communities* is first and foremost a work which lays bare the real-world community and social benefits broadband offers. While much of the broadband debate in Australia is focussed on emerging technologies like e-health and e-education, the White Paper shifts the focus to two lesser-known social benefits of broadband:

"One is digital inclusion. The second is how ever-faster broadband is improving public service outcomes and the relationship between citizens and governments. The report shows the advantages and necessity in the modern world of a national broadband network with sufficient bandwidth. It is about citizenship for all in the digital era as it moves to highspeed broadband." (p2)

The idea of citizenship is seldom raised in the digital era, but *Connecting Communities* makes it clear that the NBN is not simply about 'pipes in the dirt' – it is not about building a network, but building a 'networked society'. The report notes that, with the right support, the NBN will not erode our sense of community but will instead increase community cohesion – and even strengthen the foundations of citizenship in the digital age.

"The real challenge of broadband in Britain and Australia is not just to enable access. It is to ensure use by people and communities of all kinds. It is to see the objective as not just the building of a technical network but the creation of a 'networked society' with all the benefits of online participation for all which flow from it." (p18)

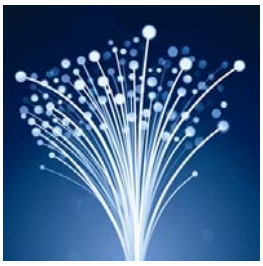
Democracy itself will benefit from this new era of online engagement, where broadband will allow citizens who were once unable to engage with Government to actively participate online. Internet services have been established in the UK to help Governments consult with citizens (p37) – one such service was used by central government to ask for proposals from the public on spending cuts in 2010 – with over 40,000 people responding in detail.

A National Broadband Network will allow Government to re-shape itself online as a 'Participative Platform' (p37), where the online community can offer feedback on anything from potholes in roads (p6), to graffiti on local landmarks (p40), to campaigns against new developments (p6). And on the other side of the fence, broadband is already allowing politicians at all levels to engage with their constituents – through mediums like Twitter, blogs, YouTube, Facebook and more. (p41)

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

The implications for Australia are clear, according to *Connecting Communities*: there is greater danger in failing to invest, rather than in investing, in a National Broadband Network. A high-capacity, high-speed network is central to this point. Listing the great number of benefits which will be unlocked by broadband, the author notes that: "as bandwidth and speed increase such benefits will also increase." (p3)

"It seems to me, from the UK experience and the even more impressive performance of the even better-in-class countries, that the dangers lie more in failing to invest than investing." (P61)



Without investment in broadband infrastructure, Australia's future economic growth may well be constrained (p61). While the report is focussed on benefits rather than speed (the author makes it clear it is 'by a non-techie, for non-techies'), the point is made time and again that having access to high-speed broadband is critical to unlocking the full benefits of the networked society. The greater the capacity, the greater the benefit.

"As bandwidths and speeds increased, applications proliferated and users got more sophisticated and demanding. That sophistication is not decreasing and neither is the demand – nor the need to be part of the networked society. And that goes for Australia too… You cannot build a networked society without a national broadband network and Australia's building one." (p14)

Connecting Communities notes many case studies based on broadband speeds much lower than what Australia will experience from the NBN. But, despite the benefits of broadband becoming evident even at relatively low speeds, it is reiterated that higher speeds (up to 100Mbps) will amplify such benefits.

"This is a uniquely collaborative technology which empowers consumers by making them co-producers – with far-reaching consequences for private and public services, individuals and communities – and in the UK we have only just come through the first broadband decade to reach average speeds of 5Mbps and basecamp Web 2.0, with 50Mbps in our sights. Just imagine what will happen as speeds of 50 and 100 become normal and universal."(p9)

About the Author: Dr Tim Williams

Dr Tim Williams, Director of consultancy company Publicani, is currently working on projects in both the UK and Australia.

Prior to this, Tim was Managing Director for Navigant Consulting Public Services in London where he built a team of 25 working on housing, regeneration, local government and education projects. He is acknowledged as one of the UK's leading urban regeneration, community development and housing specialists. In 2003 Tim was named as the UK's Regeneration Personality of the year.

Tim was special advisor to the Rt Hon David Miliband when he was a Cabinet Minister for the Department for Communities and Local Government. Uniquely, he then advised all subsequent housing and regeneration ministers until June 2010. Having also been an advisor on regeneration in Wales, Tim remains the only person ever to have been a special advisor for ministers in both England and Wales. He is currently advising the Welsh education minister on the reform of the education system in the Principality. Tim has also advised the current London Mayor on the new design guide for London, the Chief Executive of the Homes and Communities Agency on the start-up process for the organisation with its £5billion budget and the CEO of Lend Lease Europe on the Olympic legacy.

Tim was a founding associate member of the UK Prime Minister's Delivery Unit headed up by Sir Michael Barber. He has also been involved in ministerial review of public services in Wales.

In 2007 Tim chaired an inquiry for the UK's Housing Corporation into the design of affordable housing in Thames Gateway which was published as 'The Williams Report'. In 2008 he chaired a Ministerial Task and Finish group which led to the creation of the Centre for Regeneration Excellence Wales. Tim is soon to be appointed a visiting professor at the University of Cardiff in recognition of his contribution to urban regeneration.

Tim was Chief Executive of the Thames Gateway London Partnership between 1998 and 2003, when the Gateway, Europe's biggest urban regeneration programme, become a national priority.

Tim has had a weekly column in Regeneration and Renewal for ten years and is now a regular blogger. http://regenwilliams.wordpress.com/. He is a regular public speaker in the UK and has been a key note speaker for the Australasian Housing Institute. For three years to 2001 he had a weekly column in The Scotsman and has been a regular broadcaster in English and Welsh.

Tim was born in South Wales and was educated at Peterhouse Cambridge, University of Cardiff, Merton Oxford and the Inns of Court School of Law. He has a doctorate in history, a teaching certificate in English and has been called to the Bar from the Inner Temple. Coming from a mining village in 'old' South Wales and worked in regeneration in Cornwall and east London, Tim is passionate about ensuring public policy ensures a level playing field for all.