Submission 082
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Inquiry into the Role and Potential of the National Broadband Network

Response to the Call for Submissions

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1. BACKGROUND

1.1. SUBMISSION BACKGROUND

The National Broadband Network is aiming to connect 93% of all Australian premises with fibre-based services (at 100Mbps) with 7% connected with next generation wireless and satellite technologies (at least 12Mbps), subject to final design[1].

The House of Representatives Infrastructure and Communications Committee called an inquiry into the role and potential of the National Broadband Network (NBN). The Minister for Infrastructure and Transport, the Hon Anthony Albanese, has asked the Committee to report by August 2011. The terms of reference are to examine the capacity of the National Broadband Network to contribute to:

- the delivery of government services and programs;
- achieving health outcomes;
- improving the educational resources and training available for teachers and students;
- the management of Australia's built and natural resources and environmental sustainability;
- impacting regional economic growth and employment opportunities;
- impacting business efficiencies and revenues, particularly for small and medium business, and Australia's export market;
- interaction with research and development and related innovation investments;
- facilitating community and social benefits; and
- the optimal capacity and technological requirements of a network to deliver these outcomes.

1.2. IRCA BACKGROUND

The Indigenous Remote Communications Association (IRCA), as the peak body for remote Indigenous media and communications, is pleased to respond to this inquiry. IRCA is well positioned to provide vital responses to this 'call for submissions'.

IRCA was founded in 2001, and has been operating now for nine years. It advocates on behalf of remote Indigenous people with regard to media and communications services. IRCA represents people within about 150 remote communities in Australia, supported by eight Remote Indigenous Media Organisations (RIMOs):

- Pitjantjatjara Yankunytjatjara (PY) Media
- Ngaanyatjarra Media
- Pintubi Anmatjerre Warlpiri 9PAW) Media & Communications
- Pilbara and Kimberley Aboriginal Media (PAKAM)
- Top End Aboriginal Bush Broadcasting Association (TEABBA)
- Queensland Remote Aboriginal Media (QRAM)
- Central Australian Aboriginal Media Association (CAAMA)
- Torres Strait Indigenous Media Association (TSIMA)

IRCA's constituency falls almost entirely within the 7% of Australia likely to receive a wireless or satellite solution under current NBN planning.

[1] Source: www.nbnco.com.au

2. INTRODUCTION

IRCA welcomes the National Broadband Network (NBN) program and this Inquiry. We commend the Australian Government's consideration of last-mile delivery and user applications as a critical part of the planning process for the NBN.

This submission will address the terms of reference that are relevant to Indigenous people living in remote and very remote Australia as well as the aspirations of the Indigenous media and communications industry. Our views have been developed through years of supporting broadcasting and communication services in remote Indigenous communities. While these views may not be shared by all people, they seek to focus on key areas of concern regarding telecommunications access for remote communities in Australia.

Access to broadband telecommunications can play a crucial role in overcoming inequities due to remoteness, and help to close the gap on access to health, education, training and employment opportunities and other basic services. It can provide important social outcomes in connecting up separated families and support the maintenance of Australia's unique Indigenous culture and languages. Broadband would reduce the vast digital divide for remote Indigenous populations and provide significant outcomes in terms of social, economic and cultural development and connect remote regions with the broader community. Effective broadband connectivity can significantly increase the sustainability of remote communities.

However, a higher priority than broadband in many communities is access to adequate telephony services. Despite numerous reviews and programs, this continues to be a major issue. With shared housing, low income and mobile populations, the ideal telephony solution for remote communities is mobile telephony, with call rates capped and pre-paid services included under a revised Universal Service Obligation (USO).

While planning for remote area delivery of the NBN is still unclear (beyond the satellite or wireless solutions), it appears that a satellite backhaul solution is being proposed for most remote communities. While we understand the economic logic, IRCA urges thorough consultation and long-term cost analysis prior to selection of technology. Considerations such as latency, upload/download speeds, usage cost structures (including changes to the USO), maintenance costs, download caps, contention ratios, real-time streaming capability, network management, last-mile delivery systems, and ability to aggregate usage within a community or region, will all help to determine the usefulness and potential uptake and future applications in remote communities.

Remote communities will always struggle to provide a viable economic return to commercial telecommunications providers. This is recognised by the USO and the government's decision to establish NBNCo. However, this does not mean that remote Australia should remain second rate citizens. The extension of fibre-optic terrestrial broadband to remote areas will provide effective service delivery and capacity for economic development, and keep operational and maintenance costs low (funding for these will invariably come from government coffers anyway).

With the convergence of media and ICT, the ability of remote media organisations to deliver media services and training, and connect communities to regional communication networks (intranet, radio broadcasting, IPTV, videoconferencing) is determined by the quality and affordability of broadband services. As a result, RIMOs have increasingly become involved as 'regional agents' in lobbying for telecommunications in their regions. Some RIMOS have

managed infrastructure programs to provide public phones, home phone services, broadband satellite equipment, UHF radio networks, and community WiFi networks.

Already there is significant uptake and positive outcomes from the use of ICTs by remote Indigenous people. Over 70 presentations given at the IT and Indigenous Communities (ITIC) symposium hosted by AIATSIS in Canberra in July 2010, described how remote Indigenous people and programs are already using ICTs[2]:

> ITIC demonstrated the growing presence of an impressive and exciting IT sector in which digital media is being used in diverse and creative ways by Indigenous Australians to support, for example, innovation, employment, training and governance, as well as the production, maintenance and transmission of culture. The sector builds on over 30 years of cultural and social capital in IT and Indigenous communities. The use of digital media was showcased in a range of programs and initiatives, spanning education, language, health and wellbeing, local and national digital archiving repositories, and the burgeoning creative industries and broadcasting sectors. The symposium highlighted the ability of IT to generate unique opportunities for income generation and local enterprise development. In particular, ITIC demonstrated the key capacity of IT to engage young people, particularly in creative media, thus providing new platforms for formal and informal training to support personal and career development.

Affordable broadband access, combined with support for ICT facilities, training and applications, will build the capacity of remote Indigenous Australia and help to bridge the divide with the broader Australian community.

[2] Statement on Key Issues identified at the Information Technologies and Indigenous Communities (ITIC) Symposium, Canberra 13-15 July (see

3. KEY POINTS

1. IRCA strongly urges the use of terrestrial broadband delivery (i.e. fibre optic or microwave) rather than satellite backhaul delivery for remote areas to reduce ongoing costs and latency, improve reliability and provide future capacity;
2. Local exchange upgrades and last-mile networking audits should be carried out as part of the project to ensure access for Indigenous users;
3. Basic telephony needs in remote communities should be addressed as a matter of priority. Selection of backhaul technology should support telephony as well as broadband access;
4. Mobile telephony should be seen as a primary telephony service for remote Australia, with a USO arrangement to ensure affordable access/ capped calls;
5. That sufficient broadband capacity be provided to enable use of two-way streaming applications (fast upload as well as download), including telephony, videoconferencing, VoIP, IP-TV;
6. The USO be reviewed to include broadband access and pre-paid services (for broadband and telephony), and ensure same access, affordability and service quality for remote users as other Australians;
7. Licencing or regulatory changes to enable aggregated regional use and low-cost regional communications;
8. Wireless last-mile internet connectivity (via WiFi or WiMax) be made available to enable shared access and use of home computers and mobile devices;
9. A recurrent ICT program be established to provide IT access facilities, training, technical support and on-line content in remote areas, including for media production and distribution, language and cultural heritage and archiving;
10. RIMOs are ideally placed to be regional hubs (or nodes) for supporting broadband uptake and coordination of ICT facilities and programs;
11. IRCA, with the RIMOs, is well positioned to play a key role in community consultation, awareness raising, baseline data collection on current usage, and policy advice for remote Australia.

4. CONTEXT OF REMOTE COMMUNITIES

In general, remote Indigenous communities are the most communications-poor section of the Australian population, with many Indigenous households still without home telephony, or in some cases, even access to a working public phone. For many communities, access to basic telephony services is a more immediate priority than broadband.

There is still a long way to go in overcoming the digital divide. Geographic isolation, limited access to IT facilities or technical assistance, and poor computer literacy skills all contribute factors to this state of affairs. Lack of access represents a huge disadvantage, and an inability to participate in the creative economy. Previous communications programs such as Networking the Nation, TAPRIC, Backing Indigenous Ability and the Indigenous Communications Program have helped to provide ICT facilities, internet access, IT training and technical support and on-line content, however program discontinuity and lack of broadband backhaul infrastructure in many regions hindered the potential outcomes. Some remote media organisations played a key role in delivering these programs and continue to provide IT facilities and services in remote areas. Recurrent programs are required if these programs are to succeed and improve Indigenous uptake of ICTs and have real development outcomes.

Some parts of remote Australia have already networked with fibre-optic cable rolled out to remote communities, however exchange upgrades have only been partially carried out, providing Next G mobile telephony but not ADSL services or business-grade broadband services[3]. We urge the government to consider an holistic and long-term approach to delivery of services as part of this rollout. By upgrading these exchanges, a major reduction in the number of Australian households without access to the National Broadband Network may be achieved.

Typically, remote communities do not have access to the basic services available in regional towns and cities. Despite this, people choose to live in these communities in order to stay connected to custodial country and homelands, and maintain social and cultural network and customs. While travel to and from regional centres for services and visits is common, relocation is rarely an aspiration due to language differences, 'foreign country', and the higher incidence of social issues caused by limited employment, lack of housing, access to alcohol and racist attitudes. While remote communities differ in terms of size, population, distance from regional centres, services provided, and social, cultural and historic influences, some common characteristics and challenges include:

- Highly dispersed and mobile populations, regular changes of address/community, with extensive travel for family, cultural and 'sorry' business;
- Low socio-economic conditions with primary income from CDEP or welfare;
- Higher cost of basic items such as food as fuel, leaving little disposable income;
- Limited access to secondary education (many schools only to primary level);
- Limited access to banking or government services, such as post office, police, child welfare, youth services, legal support;
- Limited employment opportunities or work options (being further eroded by abolition of CDEP);
- Limited adult education, or training opportunities or access to library services;

[3] Commercial services offered by Tesltra include BDSL, ISDN and GBip.

- High incidence of chronic disease (diabetes, renal failure, heart disease, mental health disorders etc) and significantly lower life expectancy (up to 20 years);
- Indigenous languages often spoken at home, with English a secondary language;
- High rates of incarceration with young Aboriginal people are 28 times more likely to be detained than non-indigenous juveniles (current ATSIA Committee Inquiry);
- Lack of housing, leading to overcrowding and social issues[4];
- Indigenous people often live outside of a house, making fixed line phone services inappropriate;
- Unreliable water and power supply[5];
- Long unsealed roads with high incidence of accidents and wear and tear on vehicles;
- Roads subject to flooding and closure, disrupting supplies and service provision;
- Reduced local governance and community input into decision-making;
- Reduced municipal funding for local maintenance equipment and materials;
- Outsourced essential service provision to external service providers and contractors.

These factors impact on the selection of appropriate communications technologies and service delivery models.

5. NEED FOR COMMUNITY AWARENESS RAISING AND CONSULTATION

There is a general lack of awareness about what capacity the NBN will provide in remote Australia. Also there is very little data currently available on the impacts and opportunities and potential applications of broadband in remote communities. It appears that the choice of technology (wireless or satellite) may be decided without community consultation or awareness of the possible future applications of broadband. In the current policy environment of 'closing the gap', rather than self-determination, the views and aspirations of Indigenous people are less likely to be considered relevant than those of service providers.

IRCA, in conjunction with the RIMOs, can help to play a role in that regard through awareness-raising campaigns, consultation on communities' needs, baseline data collection, and providing advice to government on appropriate solutions and remote delivery.

IRCA is aware of the diversity of remote communities and the need to respect local wishes with regard to introduction of modern communications technologies and media. In many remote areas, Indigenous languages and culture are active and traditional protocols and customs still practised, despite the ever-increasing impact of western culture and government policy. The introduction of broadband brings a threat of further degradation of culture, language and identity, with some old people expressing concerns about more exposure to mainstream media[6] and western values and attitudes.

Remote media organisations can play a role in reducing this impact and developing culturally appropriate and locally relevant applications and usage of broadband. Some

[4] Shared housing also makes billed phone services problematic as many people use the phone but the bill is an individual's name. Pre-paid phone services are not currently covered under the USO with many requests for installation not met as a result.
[5] Pre-paid power card meters have been installed in Indigenous households in WA communities.
[6] Issues raised include undermining kinship avoidance relationships using social networking sites, culturally accessing inappropriate content or deceased content, and dominant media representations of Indigenous people.

RIMOs have been introducing ICT infrastructure into their regions, with strong local ownership and direction, including:

- Providing community access to ICT services and facilities, through locally run on-line media centres and free or affordable access to broadband;
- Raising awareness through consultation and training, in order that Indigenous people are empowered to make informed decision and be active 'drivers' for rollout of technology and programs;
- Ensuring that broadband rollout clearly addressed community needs, including access to local media content, internet banking;
- Addressing community concerns through training and awareness, and installing content filtering and anti-virus software;
- Creation of local on-line content and user-friendly training tools and resources;
- Staging the rollout of technology to match the rate of engagement and demand;
- Providing regional coordination, training and technical support;
- Designing ICT programs to link with existing community programs and objectives.

A recurrent program that supports this model of delivery and development of Indigenous on-line content and relevant applications is much needed.

6. TERRESTRIAL vs SATELLITE SOLUTIONS

Satellite delivered Internet services have been used as a primary internet service in remote communities since the Extended Zones rollout of 2-way satellites in 2002. Initially, these services met most community needs, however the low speeds, high contention ratio, regular technical problems, outages during heavy cloud or dust, and small download limits (up to 1GB/month) have made these services inadequate for current needs.

IRCA recognises the benefits of satellite: relatively inexpensive and easy to install; works in the most remote locations; addresses basic needs of many communities for email and Internet traffic. It has been a good short-term solution while terrestrial infrastructure solutions are being established, and will continue to be useful as an emergency redundancy service.

Our experience is that many applications used in remote areas, including two-way streaming applications such as videoconferencing and some key government and health applications used in communities[7], do not work effectively over satellite internet services. Comprehensive testing of these applications would need to be carried out before the backhaul technology is selected.

IRCA has the following concerns about satellite as the primary means of delivery of broadband for remote communities:

- Latency issues impact on the capacity of high-bandwidth applications such as videoconferencing, VoIP, and other two-way streaming applications;
- Cloud cover can substantially reduce the reliability of this service, potentially leaving sites without access to safety information when required (e.g. during cyclones or storms, common in Top End);

[7] Government service providers have reported key applications not working over satellite systems due to the latency and asymmetrical download rates (see 7.9).

- Costs for satellite services are generally higher than equivalent ADSL services, with download limits capped and high excess use costs (limiting many applications);
- Satellite delivery system may be limited to broadband services only and not address the critical issue of lack of telephony services[8];
- Satellite dishes tend to require more maintenance than other technologies, especially in coastal regions with corrosion and high winds;
- Trouble-shooting satellite systems can be difficult.

Terrestrial broadband delivery (via fibre optic cable or microwave) is our preferred backhaul technology for the following reasons:

- Low latency;
- Robust infrastructure;
- Capacity for high speed and bandwidth;
- Relatively affordable services; and
- Ability to use as backhaul framework for other infrastructure, such as mobile telephony, increasing line capacity for fixed telephony, or network extension via microwave.

IRCA suggests that regional 'node' communities be identified and linked with fibre optic backhaul, with the surrounding cluster of communities supplied via microwave links. Microwave can provide a relatively low latency and high bandwidth traffic flow, provided distance to the 'node' is not too long[9]. Remote areas are familiar with the use of microwave for telephony and, while there are occasional outages, a well-designed network can build in redundancy loops to avoid this.

While fibre optic may be more expensive to install initially, the ongoing usage and significantly lower maintenance costs would easily offset the up-front costs for remote areas and enable more high-end applications[10]. With the high cost of technical services in remote areas, and long delays, the up-front rollout costs of fibre optic (which has very low maintenance compared with other technologies) to regional nodes or exchanges would be offset over time.

Whichever technology is ultimately determined, it is critical that exchange upgrades and last-mile networking audits be carried out as part of the project to ensure that Indigenous end users will be able to access the broadband services.

[8] Current low-speed DRCS and HCRC terrestrial services and satellite services have limited capacity for additional lines and do not support modem-style services.

[9] Runs beyond 300km can introduce latency issues. New technology repeaters enable longer 'hops' of 60-90 km (reducing the number of towers and power supplies required), although high temperatures and dust or smoke can reduce the signal flow. In many remote regions Telstra towers, used for DRCS and HCRC (some now redundant), could be re-used or piggy-backed.

[10] A full cost analysis of installation costs for fibre optic or microwave may prove to be comparable. The 400km fibre rollout and exchange upgrades in 6 communities in the Ngaanyatjarra Lands was achieved for $6.5million (in 2007), which was less than the quote to roll out microwave repeater network to the same sites.

7. REMOTE BROADBAND APPLICATIONS AND CONSIDERATIONS

7.1. Mobile telephony and Internet access

All Australians should have the right to access basic telephony services, and while Indigenous people see communications as a high priority, many remote community households still do not have home phone services. Provision of long-awaited telephony services should be a key consideration of the NBN.

Mobile telephony is the most appropriate and effective form of communications in remote communities, due to shared households and lifestyle (mobile populations, living outside of houses). In remote communities where mobile telephony has been installed, it is tending to be more popular and utilised than fixed phone services. Even in sites where there are no services there is high uptake of mobile phones for use as a media storage tool and for accessing Internet via WiFi. As observed by researcher Dr Inge Kral (2010), mobile phones are being used for more than just communications, but also for media creation, viewing/listening and sharing via Bluetooth. The next generation of media makers will be using mobile phones for creating ICTV content, uploading web stories and media, communicating via social networking sites and creating iPhone applications. If sufficiently high-powered and well located, they also provide safety (reporting of accidents) for travelers on remote roads.

The primary issue with mobile telephony is the high cost of usage, with many remote people owning phones but unable to afford recharge cards[11]. Recent research by Laurel Dyson, undertaken in Hopevale where a mobile tower had been installed in 2008, indicated that 55% of people owned or shared a mobile phone. The average monthly usage costs were $378[12], compared with about $47.95 for a fixed line phone for the same number of calls, or about $45 using the public phone.

Mobile telephony needs to be included under telecommunications Universal Service Obligations (USO) to ensure affordable capped usage for remote and regional communities. We also need more equitable pricing of mobile calls and inclusion of mobile telephony (as primary phone service) and pre-paid services under USO. If mobile call rates were on a capped untimed call rate of $0.30 under a USO arrangement, mobile telephony would be an ideal service for remote communities.

NextG mobile telephony also enables the use of Network Cards (dongles) for accessing internet from laptops or PCs in remote communities. The network cards are relatively easy to use, however, the current plans (2-year terms for billed services) and costs are prohibitive[13]. IRCA would strongly recommend that a subsidy be implemented for these devices to bring costs in line with ADSL.

However, terrestrial backhaul infrastructure is currently required for effective Next G mobile provision. With the upcoming shift by Telstra to 4G, the need for high-speed backhaul will increase further. This is unlikely to be achieved by satellite and even microwave will need to be tested.

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[11] There is also a risk of access to inappropriate content and unsolicited calling and marketing, but these can be easily addressed through network management.
[12] This was well over 25% of the weekly income.
[13] Also, they are not so reliable with regular service dropouts due to low-powered mobile transmission in most communities.

7.2. Videoconferencing

Videoconferencing is used for tele-health, meetings, court hearings, education and training, family linkups with institutionalised family members and many more applications. It reduces the need for long-distance travel, with the associated cost and risks. Where established, it is very well used by indigenous people due to the two-way audio-visual communication and ability for large groups to be involved.

The uses and benefits of videoconferencing include:

- Linking families with relatives who are away from the community for extended periods due to schooling, incarceration, hospitalisation, renal dialysis, or aged care.
- enables large groups to be involved;
- communication in Indigenous language and via body and facial language;
- reduces need for travel for visits, sometimes thousands of kms, saving costs and risk of travel on remote roads;
- used for regional meetings, improving governance and saving costs and time of travel;
- tele-health with remote diagnosis or medical support for nurses in dealing with emergency situations, potentially saving lives;
- education and training delivery, providing access to courses/lectures/ workshops otherwise unavailable, with ability to ask questions;
- court hearings and probation meetings, reducing need for travel to court and reducing unnecessary incarceration.

Videoconferencing facilities are offered in some communities at sites such as telecentres/ rural transaction centres, training or library centres, local government facilities or media organisations. However, equipment costs and ISDN costs (line rental + call rates) are currently prohibitively expensive for general usage. IP videoconferencing is a more affordable solution if high bandwidth broadband is available to communities at affordable rates. Alternatively, on-line services such as Skype are more affordable, although the quality is currently too low for large group interaction.

If made affordable and accessible via the NBN, videoconferencing will be one of the most used applications of broadband in remote areas.

7.3. Last-mile Shared Wireless access in communities

The small size of most remote communities, with existing broadcast facilities, makes them ideally suited to wireless internet delivery. By implementing a Common Wireless Network, 'users' could potentially take their laptops or mobile devices from community to community, in the full knowledge that the next community has internet access and the same network. The advantages to remote Australia of an overall strategy that takes into account high transient lifestyles and a readiness to take up new technologies should be seriously considered.

Shared wireless broadband in communities can make a significant difference to affordability and access for Indigenous people, as well as provide social and economic development opportunities. Share WiFi networks are being trialled in the Ngaanyatjarra Lands with very

successful outcomes[14]- rapid increase in uptake and home computer usage and increased ICT awareness and skills. It also provides an internet service for visiting support staff in community, who would otherwise have no connectivity for email or access to on-line services.

Detailed costings could assess the comparative efficiencies of a central node of wireless service against repeated single premises responses under NBN/ABG/USO provisions to remote and regional Indigenous populations. New Indigenous telecommunications program funding may strategically combine with these broader administered programs to achieve efficient and effective outcomes.

7.4. VoIP telephony

VOIP is revolutionising telephony and provides a more affordable option to other forms of telephony. Indigenous communities can be expected to quickly adopt VOIP telephony as they gain access to the Internet. By making use of local WiFi networks, community members can have a mobile VoIP handset (or smart phone) to make and receive calls and access internet services while in communities.

While the use of VoIP (and WiFi) technologies raise a number of policy and regulatory issues[15], including a review of the Universal Service Obligation (USO), it can enable affordable community access to telephony without the requirement of landlines or mobile towers.

7.5. IT Access & Learning Facilities

Community on-line access facilities have various names, auspicing arrangements and functions throughout Australia. Examples are Rural Transaction Centres (in eastern states regional centres), Community Resource Centres (formerly telecentres) in regional and remote WA, Indigenous Knowledge Centres (in Queensland and NT run by state libraries), PYKu facilities in the APY Lands of SA, internet cafes, youth drop-in centres, and Media e-centres in the Ngaanyatjarra Lands of WA. Basically, they provide community access to on-line computers and services in sites where internet access is otherwise limited. Some charge for use of computer and IT services, others provide it free of charge.

Media convergence has already been a reality in many parts of remote Australia and has been built into the changing face of remote Indigenous media and communications. Computers are used in all aspects of media production, distribution and viewing, young people are creating and sharing media using mobile telephones, digital cameras and MP3 players are ubiquitous, and on-line community access IT centres (telecentres, RTCs, PYKu centres, community colleges or libraries) are becoming common in remote communities. Remote media organisations are playing a key role in supporting community access to IT facilities and developing appropriate on-line services and applications, teaching resources community uptake and using ICTs for language and cultural maintenance.

[14] In the Ngaanyatjarra Lands of WA, a pilot project to provide WiFi in each community is enabling Indigenous community members and travelling service providers and staff to access internet and email from almost anywhere in the community, and use the same password across the 12 communities.

[15] See *Regional Telecommunications Independent Review Committee Report* (2008:12)

Numerous online platforms are becoming available, but most rely on high-speed broadband to be effective. These include lectures via videoconferencing, Second Life applications (Classroom in a Box), TAFE programs, Digital classroom, libraries, youth programmes. Many online learning programs require high-speed broadband.

Low English literacy levels is a key factor influencing types of ICT applications being used, with many users tending toward audio-visual, icon-based and media applications – music, digital photography, video production, music recording, digital archives, interactive games – rather than text-based applications. Additionally, with MP3 players, digital camera, mobile telephones and even laptop computers becoming more affordable, remote Indigenous people are increasingly purchasing these tools for media creation, storage and viewing/listening. Young people are becoming engaged in and wanting to develop further media and ICT skills and actively produce their own media.

IT is a powerful tool for youth engagement and learning, with young people developing technological competence using the new digital tools and using this to re-engage with language and culture. They are developing a role as mediators for old people, using new technologies to preserve culture and build social capital for the future.

7.6. On-line Media Content and Indigitube

IRCA and ICTV have set up an on-line platform for remote media called Indigitube (www.indigitube.com.au), which showcases radio broadcasts and video content from remote communities. There are numerous other on-line media delivery platforms developed for Indigenous community access around the world. These include: Sunchild Cyber School in Canada (www.sccyber.net) which provides an online interactive indigenous schooling platform leading to tertiary education; Inuit television and film (www.isuma.tv); Ngapartji Ngapartji online Pitjantjatjara language course and videos (www.ngapartji.org); Us Mob (www.abc.net.au/usmob); Deadly Mob; Ara Irititja Archival Project (going on-line soon) and many more. Without broadband access, viewing or participation in programs such as these (as well as Youtube, ABC's iView an other mainstream sites) is not possible.

Broadband and on-line streaming (like ABC's iView) are increasingly becoming the way community media and Indigenous media service are expected to reach their audience. Currently IRCA and ICTV are working with remote communities to develop strategies for distributing remote video content after 2013, with the planned direct to home delivery of digital television, making BRACS local broadcasting obsolete. However, on-line delivery and IPTV will only be feasible if communities have high-speed broadband capacity and affordable access.

7.7. Regional Radio Networks

There are eight regional satellite radio networks. They broadcast programs from community radio stations, with codec links to a regional hub connected to Imparja in Alice Springs for uplink via satellite and re-transmission in communities. This requires adequate telephony for modem phone links to connect, with many communities currently unable to broadcast over regional networks due to low-speed and high latency satellite telephony systems. The new Tieline G3 codecs used for radio networking can have IP connection instead of POTS, with

improved signal quality over broadband with less compression[16]. All that is needed is the broadband.

Once broadband services are in place, music and audio libraries can be accessed from a central regional server, reducing the need for regular updating of every community studio computer. Also, listeners will be able to access the radio services and feature programs on-line from the Indigitube website.

7.8. Government and Health Service Delivery

Government and NGO service providers are increasingly requiring broadband to access data and records from centralised servers, communicate via videoconferencing and provide on-line services to clients in remote communities. Many of these services do not work over standard satellite services due to latency and download speeds. Some examples of broadband applications being used by government agencies in the Ngaanyatjarra Lands of WA, where a broadband network was installed to six communities in late 2007, include:

- Education Department: Ngaanyatjarra schools use GBip, with fibre networks connecting from the exchange and between classrooms. Classrooms use interactive smart boards, on-line teaching resources, and videoconferencing for staff meetings to head office. Remote children could potentially link with children in urban areas and even international schools.
- Justice- Videoconferencing is now used in the multi-function police facilities for court hearings and for probation meetings. This significantly reduces need for travelling person to regional centres or capital cities (up to 2000km away) for court cases which are often petty and result in a fine or probation.
- WA Police: A 'Briefcase' application for records retrieval; does not work over standard 2-way satellite services.
- Ng Health Service: Patient records database system was not working over satellite; Now able to retrieve records easily; Tele-health also being used with IP videoconferencing being installed in all clinics; Videoconferencing also used in regional training facility from training delivery and meetings.
- Shire of Ngaanyatjarraku: All licencing data and records are stored off-site in Perth, requiring remote access; IP Videoconferencing set up in meeting rooms.
- Community Resource Centres WA (formerly telecentres WA): Videoconferencing facilities in Irrunytju telecentre (operated by Ngaanyatjarra Media), used regularly for family visits to prison inmates or hospital patients; Westlink service in WA uses videoconferencing for meetings and network lectures.
- Essential service providers for communities are increasingly reliant on effective remote monitoring (e.g. generators, water supply and filtration); remote monitoring reduces expensive maintenance visits and enables technical support via telephone as a first-in service.

7.9. Enterprise and Economic Development Opportunities

There are many potential economic development opportunities to be gained through broadband in remote areas. These include: e- tourism, art sales, music and media production and distribution, language and culture awareness, service delivery, websites,

[16] Maximum phone line rate on DRCS microwave telephony networks is 9.6 kbps and up to 19.2 kbps on HCRC microwave telephony systems. ITERRA Satellite phone systems can be as low as 2.4 kbps.

development of Smart Phone applications and son on. Already art centres websites are used for on-line sales and promotion.

Cultural tourism will increase over time, with broadband potentially enabling use of geographic information systems (GIS) will augment GPS with layers of meta-data relating to regional language and culture, history, topography, flora and fauna, land use and so on; also provide safety information to tourists and cultural protocols when travelling in remote areas.

7.10. UHF Radio Networks

UHF radio communications was popular with Indigenous users across the Ngaanyatjarra and APY Lands when regional networks installed in 2003[17]. UHF radio provides free communications for Indigenous users across vast regions (beyond the range of mobile towers), including on remote roads where accidents and breakdowns are common. While UHF does not require high bandwidth, a regional broadband network could help to link remote sites and extend the range of the UHF radio network.

7.11. Other Applications

Numerous ICT applications were showcased at the IT and Indigenous Communications Symposium in Canberra in July 2010. These included land management tools (iTracker) using GPS to undertake flora and fauna and land use surveys, archiving software, language maintenance, music recording software, media production and distribution systems, and much more.

Increasingly, remote monitoring (of IT networks, essential services equipment, broadcast facilities, air conditioning etc) is able to reduce the need for on-site technical visits and provide early warning to reduce breakdowns. Webcams and security cameras can enable security of community facilities and streets, reducing theft or vandalism. In time, roads could be remotely monitored for accidents and road conditions (help Shire provide accurate condition reports).

[17] Unfortunately these are no longer operational due to lack of ongoing maintenance funding and damage to towers by camels.

8. SUMMARY

Broadband communications has the potential to dramatically change the nature of remoteness, providing services and opportunities to remote communities that all other Australians will take for granted. This is the dream of the NBN and one that remote Indigenous people look forward to being part of.

IRCA commends the government's initiative and foresight with the establishment of the National Broadband Network and the intention to benefit all Australians, including in remote areas.

IRCA strongly urges the consideration of terrestrial broadband infrastructure to address the long-term broadband and service delivery needs of remote communities. We suggest that last-mile delivery and telephony needs, including mobile telephony as a primary service, are part of the considerations.

We also urge that indigenous people are considered stakeholders in this project, and not just the service provision agencies operating in remote areas. IRCA and the remote indigenous media organisations can play a role in raising awareness of broadband, providing the government with information about community needs and delivering culturally appropriate IT programs and social marketing campaigns that ensure community uptake and readiness.

IRCA would be happy to provide further information to the government with regard to this submission. We look forward to the outcomes of this Inquiry.