

**Western Australian
Department of Primary Industries and Regional
Development**

**Submission to the 2018 Regional
Telecommunications Independent Review
Committee Inquiry**

August 2018

The Department of Primary Industries and Regional Development (DPIRD) submits the included information on behalf of stakeholders who responded to a request for input from DPIRD in July 2018.

Introduction:

Western Australia's population beyond metropolitan Perth is fewer than 1.2 million, spread across more than 250m ha – nearly 1/3 of Australia's total land mass. Yet, despite this small population, the economic production value of regional Western Australia exceeds \$250bn annually.¹

Reliable, high-speed communications are now essential to both economic prosperity and social well-being in any developed 21st Century economy. In a report released in August 2018 investigating digital connectivity in Western Australia, the authors conclude:

“It is no accident that many great cities throughout the world, including Perth, are built on rivers – historically providing the mode of transport of people, goods, and services, and the gateway to the world. Digital infrastructure can no longer be looked upon as a ‘nice to have’. Digital infrastructure must sit beside other infrastructures, and in doing so, there are economic efficiencies to be gained, through integrated planning, budgeting and rollout of infrastructure. It is also a key source for productivity growth and innovation – points previously pointed to in this report. Now is the time to act.”²

Also recognising the critical significance of connectivity as an essential utility, the UK government has recently enshrined in legislation that broadband is now a legal right for all.

“Ofcom now has up to 2 years to implement the scheme, meaning that by 2020, everyone in the UK will have a legal right to an affordable **[Internet]** connection of at least 10 Mbps, from a designated provider, no matter where they live or work, up to a reasonable cost threshold.”³

Regional Australians need broadband no less than metropolitan residents, yet, due to the vast size of Australia and the sparse, widely-dispersed population outside metropolitan areas, achieving ubiquitous connectivity is challenging.

Nowhere is the cost of providing connectivity more obvious than Australia's National Broadband Network, which will likely cost taxpayers nearly \$50bn by the time the rollout is completed in 2020 – more than \$2,500 for every Australian resident.⁴ But there is no magic bullet – without infrastructure there can be no connectivity.

The potential applications of high speed broadband for improved productivity and improved quality of life in regional Australia are many. Amongst them:

- Agriculture - smart farming, variable rate spraying, stock monitoring;
- Healthcare - remote diagnostics, telehealth, disease monitoring;
- Tourism - social media, marketing and promotion, live video, safety;

¹ CEDA *State of the Regions—Regional Development in Western Australia 2016*. Committee for Economic Development of Australia. June 2016.

² Bond-Smith S, Duncan A, Kiely D, and Salazar S (2018), 'Falling Through the Net: The Digital Divide in Western Australia', Bankwest Curtin Economics Centre, Focus on Western Australia Report Series, No. 11, May 2018.

³ <https://www.gov.uk/government/news/countdown-to-high-speed-broadband-for-all-begins--2>

⁴ Note this cost is per *resident*, not per *residence*, so the cost per **residence** is much higher.

- Aquaculture - remote sensor monitoring, remote feeding, population growth monitoring;
- Resources - remote sample analysis, autonomous vehicles, logistics;
- Emergency Services - rich media capabilities for first responder personnel and vehicles, bushfire tracking, search and rescue;
- Police - high definition video monitoring of crime hotspots, tracking of suspects, vehicle identification;
- Cost-effective delivery of disability services;
- Co-working, social enterprise, upskilling, start-up support, etc., delivered through Community Resource Centres;
- Education - remote learning, online free courses, amongst numerous others;

As an example, exploring potential productivity from the WA agriculture sector:

The agriculture and food sector is Western Australia's second major export industry producing more grain than any other state in Australia. In 2015-16, the gross value of Western Australia's agricultural production was \$8.2 billion, up from \$7.9 billion in 2014-15, and its total wheat production in 2015-16 of 8.5 million tonnes equates to over 38 per cent of Australia's total production (22.3 million tonnes).

Without high quality Internet connectivity, rural and regional Western Australia will struggle to sustain the performance and viability of some of its 14,500 agriculture related businesses that are currently providing employment for approximately 183,600 people (10 per cent of Western Australia's population in 2015-16).

A KPMG study titled "Infrastructure for smart farming" undertaken in August 2016 for the then Department of Agriculture and Food Western Australia (now part of the Department of Primary Industries and Regional Development) found that the business case for investing in infrastructure to enable digital connectivity in agriculture is compelling – the potential value in productivity uplift for grain farming alone in Western Australia is estimated at \$1.1 billion over a 20 year period.

WESTERN AUSTRALIA'S CONNECTIVITY FUTURE

Nbn Skymuster satellite:

The default pathway with NBN in regional Australia, (and especially regional Western Australia), has the great majority of regional broadband being provided over NBN Skymuster satellite, with limited instances of NBN's Fixed Wireless on the perimeter of a number of regional towns.

While geosynchronous satellites (such as NBN Skymuster) may be suitable and acceptable for some Internet applications (e.g., non-real-time small-to-medium-bitrate data transmission, low-to-medium bit-rate streaming media viewing; online banking, reservation bookings, uploading and downloading photos, social media, online shopping, social media engagement, etc.) many crucial online activities cannot be suitably accommodated due to unavoidable latency delays throughput limitations. Examples of these requirements not suitably addressed by Skymuster include (but are not limited to):

- 4K video streaming
- Real-time video conferencing
- Telephone calls
- Remote HD medical imaging and diagnostics

- Transmission of agricultural drone data and images
- Real-time navigation and remote vehicle control on mine sites
- Commercial-scale monitoring of remote security cameras
- Cloud-based business services
- Business-grade data exchanges
- Emergency services communications
- Gaming
- Interactive buying and selling of commodity contracts
- Interactive learning and education

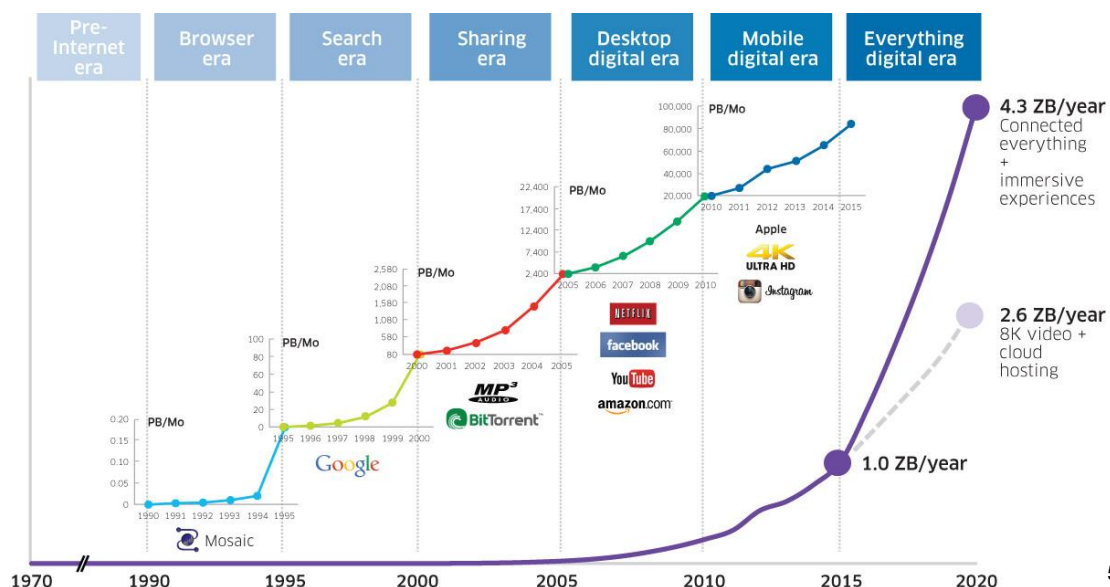
Under most currently available Skymuster retail plans, when data costs are compared to terrestrially delivered services, the cost of equivalent services is often much higher on Skymuster.

Weather events can induce “rain fade”, impacting reliability and service availability. In the absence of mobile phone coverage and without access to a landline, troubleshooting a faulty satellite service with a service provider located remotely can be complex.

Most importantly, there is no upgrade path for increasing Skymuster’s capacity and performance over the life of the satellites, so the current level of service is the ‘end game’, best-case over the satellites’ 15-year+ expected lifespan.

As customers continue to be added to Skymuster, (expected to approach as many as 400,000) speeds are likely to decline and performance likely to degrade at a time when precisely the opposite is required.

Given that global growth patterns in bandwidth demand have predictably increased exponentially for the past 20 years, this is an unacceptable outcome for regional Australians.



⁵ Source: Nokia Bell Labs, 2015

Some examples of the real-world implications have been shared by the WA Department of Country Health Services:

Reliable, high bandwidth, low latency connectivity is critical infrastructure in the delivery of virtual telehealth services that enable our consumers to receive timely care closer to home:

- 1. While some locations within the Kimberley and Pilbara have access to services that leverage fixed line, more challenging locations are restricted to the use of Satellite which is inadequate for modern modalities of service delivery such as telehealth videoconferencing. Resultantly, these consumers either fail to receive medical care, do not receive care in a timely manner, or travel at significant expense and inconvenience for face-to-face appointments that may have a duration of 15-30 minutes.*
- 2. Aged infrastructure has made the uptake and deployment of digital services very difficult as these services are unreliable and not fit for critical care requirements which then default to manual solutions.*
- 3. WACHS has installed two-way high speed satellite data and voice services into a number of remote Indigenous communities to improve the availability of better health care services where terrestrial infrastructure is not available or is not economically feasible. These services are not suitable for all purposes where latency represents a challenge and are not cost effective*
- 4. WACHS has a future requirement for mobile data services with access into the WA Government Data Centre private cloud and public cloud services for Artificial Intelligence and Machine Learning technologies providing real-time clinical and administrative support focused on improved care outcomes.*

While telehealth is playing an increasing role in improving health outcomes for Western Australians, an inequity has surfaced for fixed and transient populations in remote locations due to an absence of affordable high speed public internet. The increased demand for connected health solutions fundamentally relies on high-availability, contemporary telecommunications. Unless remediated, opportunities presented by disruptive digital technologies to reach those most at risk and disadvantaged in our communities, will fail to be realised. Not only will this result in greater longitudinal costs to deliver services to acutely unwell patients through lost opportunities for timely intervention, but it will result in poorer outcomes for our communities relative to those with access to both virtual and local services.⁶

Mobile phone networks:

There is an extensive network of mobile telephone coverage throughout large areas of populated regional Western Australia, (which has improved significantly with Commonwealth and State co-contributions in several rounds of Mobile Black Spot initiatives). However, recurring usage costs, poor network capacity on the fringes of coverage, especially across large agricultural regions, and the cost of extending services beyond the current footprints, make mobile networks generally unsatisfactory as the primary technology for business-grade Internet, yet mobile phone service, as indicated by information from our stakeholder engagement initiatives, are extremely important to regional residents.

⁶ Source: Stakeholder submission from WA Country Health Services July 2018.

“The [Commonwealth] government’s support for rural and regional broadband improves internet services in remote communities and constrains widening digital inequalities. For example, a user in a rural area moving to an NBN satellite service pays just over one third the price of a 3G fixed wireless **plan for quadruple the speed**.⁷ Even though it is intended that satellite services are cross-subsidised by other NBN connections, satellite services are still more expensive. The government has recently indicated in its Regional Broadband Scheme (RBS) an intention to impose a charge on fixed line networks that compete with the NBN to help fund the NBN’s non-commercial fixed wireless and satellite services. Efforts such as these to support NBN services in regional and remote areas that would otherwise not be commercially viable are intended to reduce the digital divide, but could be more effective if policies such as the RBS did not favour the NBN over alternative networks”.⁸

NBN Fixed Wireless:

On the outskirts of regional towns, NBN Fixed Wireless was meant to provide faster, more reliable Internet than Skymuster, rivalling town and city-delivered Fibre to the Node. In the real world, NBN’s network architecture, including choice of spectrum and inadequate planning for potential near-future upgrade paths to accommodate growth in demand, has meant NBN Fixed Wireless has delivered disappointing performance for many in regional areas. Congestion due to unanticipated network traffic is already being reported on many NBN Fixed Wireless towers and the limited capacity available on individual towers due to spectrum constraints makes it virtually impossible for Retail Service Providers to acquire sufficient CVC bandwidth to meet ACCC performance standards. Unfortunately, short to medium term, NBN’s potential upgrade paths for Fixed Wireless are limited and significant upgrades are neither technologically nor financially viable.⁹ NBN CEO Bill Morrow has admitted that upgrading NBN Fixed Wireless to consistently deliver 100mbps would cost “billions and billions of dollars” and has discontinued pursuing this goal¹⁰.

Financially, both Skymuster and NBN Fixed Wireless are expected to generate ongoing losses for the life of the services. For each NBN Fixed Wireless customer connection provisioned, it represents a net burden on NBN’s cash flows of negative \$105 per month, which must be subsidised out of the NBN’s profits from other fixed line services or from a levy (e.g., Regional Broadband Scheme) placed on other services. Similarly, the Skymuster satellite must be subsidised at \$110 per month per service.

“The BCR has modelled non-commercial services using a discounted cash flow (DCF) approach. Losses have been modelled at an aggregate network level, using a forecast period to FY2040 that aligns with the special access undertaking (SAU) and provides a sufficient timeframe to smooth losses. The BCR estimates the net present value (NPV) loss for fixed wireless and satellite services to FY2040 is approximately \$9.8 billion, using a post-tax nominal discount rate of 6.46 per cent. In FY2015 real terms,

⁷ OECD (2017) The evolving role of satellite networks in rural and remote broadband access, OECD Digital Economy Papers No. 264, December 2017.

⁸ Bond-Smith S, Duncan A, Kiely D, and Salazar S (2018), ‘Falling Through the Net: The Digital Divide in Western Australia’, Bankwest Curtin Economics Centre, Focus on Western Australia Report Series, No. 11, May 2018.

⁹ ‘nbn Upgrade_options’, from NBNCo Fixed Wireless and Satellite Review, 2014, (page 64)

¹⁰ <http://www.abc.net.au/news/2018-05-25/nbn-boss-dumps-top-speed-for-fixed-wireless-customers/9797772>

this loss represents a per-month subsidy of approximately \$110 for each satellite premises activated, and \$105 for each fixed wireless premises activated.”¹¹

Therefore, even accommodating for the sunk costs associated with NBN Fixed Wireless and Skymuster services, every premise currently designated to receive either Skymuster or Fixed Wireless from NBN that can be provided with alternative broadband technologies from non-NBN providers will result in a net savings to taxpayers and an improvement to NBN's bottom line.

Landlines and the Telecommunications Universal Service Obligation:

Landlines remain a crucial component of regional Australia's communication landscape – the fallback lifeline communication channel when all else fails. Yet, the technology on which the delivery of many of the services enjoyed by remote Australians is based, provided through the Telecommunications Universal Service Obligation and delivered by Telstra, (High Capacity Radio Concentrator technology and others) is already well past its “use-by” date, requires imminent replacement, but has no viable replacement technology on the table.¹²

A recent 2016 review by the Productivity Commission has recommended that the current USO with Telstra could potentially be scrapped and replaced by the mobile phone network and the NBN, along with a ‘competitive tendering process’ to address gaps in coverage in the satellite footprint and mobile phone coverage.¹³

However, NBN's CEO has publicly stated that the NBN Skymuster satellite “*was not designed for voice*”¹⁴ and cannot be optimised for voice transmission; and the issue of replacing the remaining USO voice sites is highly complex.

A myriad of technologies have been deployed by Telstra to address the USO obligation and any view that suggests that these could all be realistically replaced by a simple “competitive tendering process” is naïve to the realities of the complex terrestrial voice telephony environment in regional Australia.¹⁵

The complexities, and in particular, the costs associated with replacing these landline services currently being provided by Telstra under the existing USO should not be underestimated. Yet, there is no evidence to suggest that regional Australians are willing to forgo traditional landlines in return for being provided voice services over Skymuster or through a combination of satellite and mobile phone networks.

¹¹ Bureau of Communications Research NBN non-commercial services funding options. Final report March 2016 Commonwealth of Australia, page 5 para 2.

¹² https://www.queenslandcountrylife.com.au/story/5566967/icpa-hanging-on-the-telephone/?utm_source=newsletter_235&utm_medium=email&utm_campaign=webnews444

¹³ “The standard telephone service USO should be replaced by a competitive tendering arrangement to address any gaps in voice services within the NBN satellite footprint. The new arrangement should be carefully designed and, in particular, be technologically neutral to allow for cost-effective solutions. Over the medium term, these could include Telstra's existing networks, expanding mobile coverage, introducing alternative satellite services or expanding nbn's fixed wireless networks. Ultimately, it is clear that most telecommunications services provided to regional and remote areas will need to be wireless.” Productivity Commission Inquiry Report, Telecommunications Universal Service No 83 28 April 2017

¹⁴ http://www.apf.gov.au/~media/Committees/ec_ctte/estimates/add_1617/Communicationsandthearts/q138_Ludlam.pdf

¹⁵ https://www.apf.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/Completed_inquiries/2002-04/telenetwork/submissions/~media/Committees/ecita_ctte/completed_inquiries/2002-04/tele_network/submissions/sub107d.pdf

Further, the inherent nature of radio transmission and its variable interaction with geography and flora renders the suggestion of using the mobile phone network as a substitute for USO landlines categorically unviable.

WESTERN AUSTRALIAN DIGITAL CONNECTIVITY INITIATIVES

Telecommunications is a Commonwealth Government responsibility¹⁶. However, the shortfall between community needs and Federal Government support has compelled the Western Australian State Government to take action. Numerous Western Australian initiatives have been designed and are currently being deployed to address these aforementioned gaps in regional digital connectivity.

Regional Australia needs digital connectivity to take advantage of emerging opportunities from technologies such as the 'Internet of Things'. This is essential to enable significant productivity gains in industry sectors such as mining and resources, agriculture and food processing, as well as professional services. Access to digital connectivity in regional Western Australia will offer access to new markets, supports new product development, enables on-demand service delivery and provides a platform for innovative business models.

The Western Australian Government has made it a priority to improve the provision of digital connectivity across its regions and is currently undertaking a number of initiatives, listed below which aim to help overcome some of the key digital connectivity deficiencies impacting regional and remote locations of the State. These programs are targeting areas that are under-served by the NBN network.

State Telecommunications Infrastructure Audit (STIA)

In July 2017, the State Minister for Regional Development, Agriculture and Food, and the State Minister for Innovation and ICT commissioned the STIA to capture locational and capacity information of telecommunication assets in Western Australia to build a comprehensive and consolidated picture of telecommunication infrastructure. The STIA was conducted between August - November 2017 and is being used to identify gaps in digital connectivity across regional Western Australia as well as informing the Government in the development of new initiatives to address such gaps, for example, the Digital Farm Program, referred below.

The Digital Farm Program

A \$5m Digital Farm initiative will test the viability of last-mile solutions for clusters of farming enterprises in agricultural and pastoral regions which lie outside the current or planned NBN Fixed Wireless and Fixed Line footprint across rural and regional Western Australia. It aims to provide farmers with fast, reliable, affordable, and scalable broadband solutions that will support digital farming practices in the regions. The program will enable producers to use smart farming technologies such as cloud based data sharing and decision making tools to precisely manage their inputs in order to maximise production in the most cost effective and sustainable way. For example, the new connectivity to the farm gate will enable farmers to adapt and apply on-farm sensor systems and cameras to cheaply and accurately monitor the state of plants, animals and soils. The first round of successful applicants was announced on 8 August 2018 with grants of up to \$500,000 to service providers on a matching co-contribution basis.

¹⁶ http://www6.austlii.edu.au/cgi-bin/viewdb/au/legis/cth/consol_act/ta1997214/

WA Agricultural Digital Connectivity Infrastructure Study

A study has been commissioned to identify the impediments, proposed solutions, emerging business models and co-investment opportunities to enable the provision of enterprise grade digital connectivity in Regional Western Australia. This study will inform future digital connectivity opportunities for co-investment by the State Government aimed at filling the emerging gaps in service delivery.

Western Australia Telecommunications Infrastructure Fund

A \$17m fund (to be announced August/September 2018) designed to provide matching co-investment opportunities to infrastructure builders to improve Western Australia's regional telecommunications infrastructure, focussing primarily on the Grainbelt region between Northampton and Esperance. The ATIF has been established to support the improvement of innovative infrastructure that will strengthen the growth and business productivity of the agricultural sector of Western Australia. The Government is currently progressing in identifying potential projects and co-investment opportunities under the fund.

Regional Telecommunications Project (RTP)

The State Government \$65 million RTP is expanding high speed mobile voice and data coverage through the establishment of 231 mobile base stations across Regional Western Australia for completion by 31 December 2018. The RTP has aligned with the National Mobile Black Spot Program (MBSP) in order to secure additional funding in partnership with the Commonwealth Government and telecommunications carriers.

eConnected Grainbelt Project

A three year State government \$10 million funded project with the aim of creating a more profitable Western Australian grains sector through increased use of technology and information enabling farm businesses to better manage risks. The project is working with Grower Groups across the Western Australian Grainbelt region hosting eDemonstration sites and demonstrating the value of technology in managing farm businesses through decision support tools and emerging technologies. The project incorporates a connectivity work stream focused at identifying emerging technologies/networks for deployment across grain enterprises faced with limited connectivity.

FURTHER INFORMATION

Issues relevant to the RTIRC inquiry are very similar to those which the Western Australian government explored and provided recommendations to address in its submission to the **Joint Standing Committee Inquiry on the rollout of the National Broadband Network (NBN) in rural and regional Australia. (May 2018)**

If the RTIRC Committee wishes to review the WA Government's submission, it can be accessed on the following link:

https://www.aph.gov.au/Parliamentary_Business/Committees/Joint/National_Broadband_Network/Ruralandregionalrollout/Submissions (Submission 20)

STAKEHOLDER FEEDBACK TO THIS INQUIRY:

Stakeholder feedback which was received during the consultation process may be of value to the Committee. (Submissions are attached as Appendices). Following are excerpts from the received submissions:

(Provided by the Western Australian Country Health Service)¹⁷:

- *Communities and consumers have an increasing expectation of access to the services they value the most, such as healthcare, to drive, schedule and engage with the services they need both locally and virtually.*
- *This requires community-available internet services in-home and through mobile consumer devices. In 2017 more than 17,000 emergency attendance, 18,000 outpatient appointments and 7,000 mental health service events were delivered to through telehealth services.*
- *This delivered not only timely expert medical care, but saved 27.3 million kilometres in travel for outpatient appointments (total distance by road from receiving location to Perth and return), resulting in an estimated \$3.95M in fuel savings, and a reduction of 5000 tonnes in carbon emissions, the equivalent of planting 75,000 trees.*
- *Reliable, high bandwidth, low latency connectivity is critical infrastructure in the delivery of virtual telehealth services that enable our consumers to receive timely care closer to home.¹⁸*

(Provided by the WA Department of Fire and Emergency Services DFES):

- *Characteristics of acceptable regional communications infrastructure for use by DFES:*
 - *Reliability*
 - *Availability*
 - *Ubiquity of coverage*
 - *Independence from operating on the same physical networks as public communications networks*

(Provided by the Goldfields-Esperance Development Commission):

- *The main telecommunication issues in the Goldfields-Esperance Region are connectivity, speed, cost and reliability. Service support and troubleshooting is also an issue particularly for remote communities.*
- *These issues have a significant social and economic impact on our regional communities and whilst programs like the Mobile Black Spot Program (MBSP) and NBN are anecdotally improving telecommunications in the regions, further research and analysis of these projects is required to understand the gaps, constraints and opportunities of these key government initiatives.*
- *Stakeholders in the region are also of the belief that access to government subsidized infrastructure through the MBSP should be available for third party access at wholesale rates to provide terrestrial backhaul solutions and to allow*

¹⁷ Australian Government Regional Telecommunications Review 2018 WA Country Health Service (WACHS) Submission (Appendix 1))

¹⁸ WA Country Health Service, *To the moon and back with telehealth*, <http://www.wacountry.health.wa.gov.au/telehealth>, 2018

new technologies and systems to be tested and developed to improve telecommunications in the region.

(Provided by the Great Southern Development Commission):

- *(Mobile phone towers) Tower infrastructure design and capacity should include allowance for anticipated growth in customers to be serviced and future customer data usage to ensure appropriate and sustainable design and sustainable service delivery.*
- *Switching to nbn has in some cases created extreme difficulties for small business in the region...the process of switching to the nbn has severely impacted on telephone services for up to three weeks, negatively impacting on business activity.*
- *Mobile phone coverage "on-the-ground" does not necessarily reflect "mobile coverage "mapping. The presumed/theoretical mobile coverage on the ground appears to have excluded the opportunity for new tower construction under Commonwealth MBSP programs.*
- *When a funded base station is declared 'frustrated', an alternative replacement site nearby may not be able to be funded due to a lack of a registered blackspot being in place.*
- *There a need for independent advice to be available to the general public that is freely available, timely and reliable. From anecdotal evidence, this model has worked well in the SW region in which a SW nbn Advisor was in place during 2017/18.*
- *It would be very useful to include an additional data layer option in the National Map that includes non-MBSP towers and MBSP 3 towers. Ideally, mobile service coverage would also be included in a National Map layer.*

(Provided by the Kimberley Development Commission)

- *Performance can be measured and future needs predicted. The review does not appear to be forward looking or predictive, nor does it draw out an evidence base that would assist the RTIRC adequately address its Terms of Reference, and particularly to identify the spatial nature of service gaps and the modelled impacts those gaps will create for business and communities in rural regional and remote.*
- *It is suggested that the State submission recommend that RTIRC initiate data collection, assessment of performance and impact modelling at a granular scale in order that future reviews are closer aligned to an independent evidence base that more accurately reflects end users experience with performance of the networks.*
- *On the basis of the limited information provided in the Issues paper, there is low confidence levels that the RTIRC can address its Terms of Reference in a way that will effectively guide policy makers.*

(Provided by the Office of Digital Government)

- *"The Office of Digital Government (DGov) supports the submission, and reiterates that digital infrastructure is critical the future economic viability of Western Australia; service delivery across all Government services; and the social and cultural welfare of the State. DGov will continue to work with State*

agencies, NBN Co and the Commonwealth government to realise better outcomes for the NBN, and all digital infrastructure, in Western Australia.”

2018 Telecommunications Review - Feedback

General feedback

The main telecommunication issues in the Goldfields-Esperance Region are connectivity, speed, cost and reliability. Service support and troubleshooting is also an issue particularly for remote communities.

These issues have a significant social and economic impact on our regional communities and whilst programs like the Mobile Black Spot Program (MBSP) and NBN are anecdotally improving telecommunications in the regions, further research and analysis of these projects is required to understand the gaps, constraints and opportunities of these key government initiatives.

Stakeholders in the region are also of the belief that access to government subsidized infrastructure through the MBSP should be available for third party access at wholesale rates to provide terrestrial backhaul solutions and to allow new technologies and systems to be tested and developed to improve telecommunications in the region.

Review meeting Kalgoorlie 19/7/2018

The information in the below was noted from discussion at the 2018 Regional Telecommunications Review meeting held in Kalgoorlie on 19 July 2018.

Representative attendance

The Kalgoorlie session was attended with the isolated children's education represented, media with the Kalgoorlie Miner newspaper and the ABC, political representatives, Kalgoorlie-Boulder Visitors Centre, varied small businesses, Goldfields Land and Sea Council particularly discussing linking the networks for the regional to metropolitan area, transportation, pastoral and rangelands including the Nullarbor rangelands, information technology interests and businesses, innovation business interests, not for profit, NBN and Telstra, state government, local government, real estate, Regional Development Australia, Kalgoorlie-Boulder Chamber of Commerce and Industry, Small Business Development Corporation, and the mining sector, in total about 22 people.

There was a good cross section of both the public and private sector at the meeting. However, is this number of people a fair indication of the extent of the issues to the general community? It would be good to know how many individuals or organisations submit online from this region or represent the region.

Regional telecommunication, connectivity aspirations and needs

- The goal for the region is to have the best technology and the best internet to attract people, entrepreneurs, and businesses to the region.
- Quality communications are needed to support, grow and meet the needs of the resources sector, mining automation, tourism, transport, pastoral, education, and build industry diversity, help students in schools, families at home, remote tel-health, and region wide security.

- There is an assumption that it's all about the business location for connectivity, but there's a high level of home businesses in the Goldfields. Running a home business requires excellent connectivity and due to an increasing need for digital connection for more and more devices for learning, entertainment and home management systems the home location can have high demand and quality needs. This is the way of the future and it does place importance on internet at home being on par with the general business community.
- There is an increasing relationship with improving and delivering business development through digital services (monitoring, data tracking, customer service, product and service delivery) increasing the reliance on quality digital connectivity (trend/expectations, competitive need/ie automation in increasing and not for just the mining sector).
- The Goldfields - Esperance region is very large with pastoral stations, mine sites, tourism activity, Aboriginal communities, and travelling service providers. It is quite dangerous for people travelling around or living in these areas with no or poor mobile phone reception. To expand population and economic activity and service the region this needs to be remedied.

Concerns/solutions/ideas

Connection and connection process

- There are considerable concerns around NBN facilitators being very slow in the actual connection to NBN. After disconnection some people lose all communications, and some have 7 to 10 days without connectivity which can be fatal or difficult to recover from a business point of view. Sometimes delay is as long as a month.
 - Is it a lack of education/ information around the connection process?
 - Is it just poor service? Is this related to staffing or technical issues?
 - Where are the backup connections during transition?
- With delays in achieving the actual transition some alternative needs to be made available to keep a business or home online. People need to be informed, understand and be able to take affordable options.
- Paying out for portable internet is an option being used to make business/home work while they're waiting for hook up.
- Many participants suggested that the people on the phone are just a salesperson who are making a conversion. They don't know everything, and they are trying to make a sale. How does an individual know what they are buying what is going to be good?
- The Telstra shop in Kalgoorlie-Boulder is very busy and understaffed for the community needs. It is difficult to find anyone to talk to and it is impossible to deal with someone in Australia on the phone. There are 3000 customer service people and 2/3 are in the Philippines, 900 in India, and a small group in Australia based in Adelaide and Townsville for people that are 100 km from a town which means places like Kalgoorlie-Boulder cannot speak to Australian help. Location is noted as helpful in setting the context for the telephone consultant understanding how remote (and reliant on technology) that the customer is.

Solutions suggested

- Salespersons they need to be educated. They are observed as being misleading whether intentionally or not and it is a real problem. Better education can reduce problems in the short and longer term.
- There are only a few technicians in town. Over 90% come from Perth. Could NBN commit to bringing technicians and their families if need be on some incentive program so they could better service the region as they are based here? More technically capable people on the ground to make things work better.
- Do better planning around connection. Have the NBN running first but have a backup. All new connections could be set on wireless then when happy swap to other modem. Need voice as a failover and need a SIM card or a wireless backup.
- The NBN migration Industries Plan should be put in place and the industry standard monitored and enforced.
- NBN is interested in clients and potential clients making sure that their complaints come straight through to NBN so they can monitor what problems are there, what the service provision is, and what sort of resolutions are happening.
 - It would be valuable to know what data/ technological tracking information are NBN and Telstra (other providers) able to access through their systems? They would have the data of who's dropping off, how much is speed upload/ download, and so forth so they can monitor the problems over time, see where their issues are, and look for ways to address them.
 - If they are already doing this tracking it would be useful to communicate it to the customers who are currently experiencing some sense of abandonment or lack of service.
- Digital literacy - what do and don't people know? There needs to be a shop front that provides free independent advice. Telstra is in Bunbury and can't do it all. A dedicated advice person that is also a technical expert to help with education and support through the various processes of connecting and ongoing connectivity. A person available to provide independent information to the community regarding their communication requirements and what is available.
 - The Kalgoorlie - Boulder region could look at both what has happened in South Australia and more locally with the arrangement to have a contract person engaged like in Bunbury info@nbnadvice.com.au to assist in the South West.
 - A coordinated body in Kalgoorlie to help businesses and community asking for local options for connection support and support where adequate infrastructure is inaccessible. There needs to be a real effort for to work this out and promote at a broad level, a willingness to invest in the relevant infrastructure.
- It was suggested that it may be useful to setup a dedicated taskforce to progress the issues currently being faced. This could comprise the City of Kalgoorlie Boulder and DPIRD / GEDC through the Growing Kalgoorlie-Boulder Connecting Kalgoorlie – Boulder to the world focus group or a separate group with representation from local IT experts. Kalgoorlie is very well known for having small groups of passionate people doing great work that could be improved to achieve greater outcomes through greater coordination. Looking at similar models (South West) might assist in achieving this.
- There also needs to be consideration for what assistance is available to remote communities who are not part of the main Kalgoorlie or Esperance population areas.

- The use of Community Resource Centres as suggested by [REDACTED] external to the Review session, is perhaps something DPIRD could influence through the funding and contractual arrangements with local government authorities or others.

Drop out/ongoing issues

- There is a very high dropout in connections such as when on the phone, in teleconference, and when using internet connectivity on in the Goldfields. Technical discussion generally agreed that this could be related to the copper wire and aging infrastructure.
- NBN and Telstra are observed to sometimes blame each other.

Infrastructure and related software

- What is the reliability of digital connectivity? Most connectivity issues are around the copper. Rain affects it. The age of the infrastructure.
- Pastoral and remote areas present a real challenge for infrastructure and service. Satellites, cable, optic fibre, and microwave links can be close by and still be unable to connect to a reliable fast and adequate capacity service.
- One regional business has 5 Sky Musters at 100G a day each. Three just used for the home business. This is not enough especially if you want to attract staff or staff and their families to live in a business outside of the town. This impacts many industry sectors operating in regional and remote areas.
- In a schooling environment on a station there can only be two connections. This is typically is home and school but not business on a Satellite. Yet all stations are businesses and disadvantaged.
- A problem around education for School of the Air is that there are issues in that the Naplan testing has to be digital online next year. While School of the Air has good data limits and it has come a long way for this testing the children they will have to come in to Kalgoorlie on a camp in order to undertake their NAPLAN testing as it is not satellite compatible. This is expensive and inconvenient.
- There is also a problem that the Western Australian Education Department is going to WebEx and that is also not good for satellite connection either. Other states in Australia have a compatible system.
- Is there a technical standard to be abided by for infrastructure? There are too many types and not one standard reference to infrastructure. Seems very piecemeal with no one not being informed properly and no clear rules.

Solutions suggested

- There is a strong recommendation from this group that hardware and software standards and applications need to start being similarly applied and used across Australia as this would help eradicate many problems. There needs to be more communication on many levels such as in this Education Department issue.
- Discussion suggested the copper must come out and be replaced by 5G as soon as possible.
- Direct fibre connection is best. Not fibre to the node, fibre to the premise. It is cost?
- There is now a greater range of technologies available, the current NBN is old technology.

- What is the best design for Kalgoorlie- Boulder, Goldfields-Esperance for speed, up time, coverage, and reliability?
- What will the best Network cost and how can it be identified?
- Need to scope on increasing the mobile coverage on the broader Goldfields. While two new towers are going in there is not really enough. Competing for cash is a problem and it takes a lot of work to attract infrastructure funding. How can we get the infrastructure in there? We need to think and act more laterally to attract the government at a federal level.
- Action group as suggested earlier to address this.

Other ideas

- Some technologies that could be used include low altitude drones to get coverage acting as mini-satellites. This is being looked at but it will have to be a commercial offering. It won't be rolled unless application-driven and commercial.
- Can the Minister for Communications step into this space? The regional areas are being left behind and the onus should not be on the regional areas. It is everybody's problem, and the regional areas should be supported for equity purposes.
- What about other providers such as in South Australia? The City of Adelaide opened up a simple structure and invited TPG in. It must be a competitive and valuable market to attract companies such as TPG and Unity in to fill the market gaps that NBN aren't filling. How can this be established for regional Western Australia? Is there a market and how can competitors be attracted to make a play in this space? Is this a government issue?

GEDC Reference: Digital Connectivity \ Regional Telecommunications Program
Your Reference: Regional Telecommunications Review
Contact: Sarah Fletcher 9080 5007

10 August 2018

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]

2018 Regional Telecommunications Review

Thank you for the opportunity to provide input into a response to the Regional Telecommunications Review, being compiled by the Mid West Development Commission on behalf of the Department of Premier and Cabinet and the Minister for Regional Development.

The feedback attached was compiled following the attendance by two Goldfields-Esperance Development Commission representatives, at the 2018 Regional Telecommunications Review meeting, held in Kalgoorlie, on 19 July 2018.

Whilst this information may not reflect the position of all digital and telecommunication user groups within the Goldfields-Esperance region, the variety of issues and solutions that were discussed and identified, will be of value to your submission.

Yours sincerely,

[REDACTED]

Inc 2018 Telecommunications Review 20180721

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Our Ref: X15:0010
Enquiries: Gavin Ellis

27 July 2018



Dear 

REGIONAL TELECOMMUNICATIONS REVIEW

In response to your request of the Great Southern Development Commission to provide input into the WA Government's submission to the 2018 Regional Telecommunication Independent Review Committee, please see attached, a range of issues that have been identified by the Commission for your consideration.

I trust the information provided adds value to the State's contribution to the review and you are welcome to attach the details below in full to the submission as an attachment if that suits.

Yours faithfully



Enc.

Regional Telecommunications Review

Prepared by Great Southern Development Commission

1. Relative performance of mobile broadband service throughout regional areas. See accompanying chart of mobile speedtest results from various parts of Australia over the past two years (download data have been capped at 80Mbps for scale purposes). Download/upload speeds range from <0.22/0.2 Mbps in Bayonet Head Albany to 84/38 Mbps on Kangaroo Island to 142/29 Mbps in Nhulunbuy, East Arnhem Land NT.

It appears that download performance reflects customer data usage and potentially the mobile base station hardware and tower capacity of specific base stations. If driven by hardware and capacity design, focus should be directed to base station design and construction to maximise performance and service delivery, particularly in the context of the sunk costs in site selection, approvals and lease arrangements, tower design and physical construction and hardware fitment costs.

Tower infrastructure design and capacity should include allowance for anticipated growth in customers to be serviced and future customer data usage to ensure appropriate and sustainable design and sustainable service delivery.

2. Switching to nbn has in some cases created extreme difficulties for small business in the region. Two cases have been tracked in Albany in which the process of switching to the nbn has severely impacted on telephone services for up to three weeks, negatively impacting on business activity.

Specific issues include:

- Loss of phone line for up to three weeks. In the first case, technicians arrived on 21 February 2018 and left the business with no phones working at all (down from 4 lines). Business proprietor had to “fiddle with the wires” to restore telephone communications (1 line that had to be answered before 3 rings) – estimated 40 – 60 calls per day missed. 13 March 2018 technician visited the premises and all phone service restored, yet phones suffering from a “lag” of up to 15-20 seconds. Phones not working satisfactorily and new modem was received on 9 May 2018, with a plan for Telstra to “talk the customer through the installation” of the modem. On 29 May 2018 “a technician visited and replaced the modem and performed other “tasks” – leaving the phone system working well at this stage”.
- Unclear exactly what caused the issues and a lack of clarity about who the customer should contact to fix the issue.
- Based on anecdotal evidence, it appears that in some cases that modems supplied have been faulty and take a number of cross checks for the service provider to confirm the issue and to rectify.
- Based on anecdotal evidence and in the case above, it appears that issues may be as simple as the wrong IP address being used when switching phone services to nbn.
- **“Incident management” investigation and remedial action/process to avoid similar incidents as the rollout/switch progresses appears not to be done. This**

“continuous improvement” process could help address nbn switch issues that are currently being experienced.

- Based on the case study above, it is evident there is a lack of coordination between the on-ground technicians and communication coordination and customer service (Sydney based), further delaying response times.
- There appears to be a minimum of two weeks lag time between "logging" an issue and receiving attention.
- There appears to be a lack of technicians available to address the issues with switching to the nbn. nbn technicians appear to work independently to service provider technicians that can create coordination and issue responsibility issues.
- The "knock-on" effect is a lack of confidence within the small business sector and reluctance to risk making the switch to nbn until absolutely necessary.
- Bad customer experiences ultimately reflects badly on Telstra, nbn, other service providers and the Federal Government.

3. Mobile phone coverage "on-the-ground" does not necessarily reflect "mobile coverage" mapping. For example, a major zone of intermittent mobile coverage exists on Albany Highway, in particular between Beaufort River and Williams and further north between Williams and North Bannister, a distance of up to 50km or more, yet coverage maps show adequate coverage.

Whilst there are some Blackspots registered in this general area, Albany Highway is the major highway from Perth to Albany, MBSP funding has not been directed to address the issues.

The presumed/theoretical mobile coverage on the ground appears to have excluded the opportunity for new tower construction under Commonwealth MBSP programs.

4. MBSP 1 and 2 funding can only be directed to registered blackspots shown on the National Map. In some cases this has generated unintended consequences when MBSP base stations proposed for funding have been unable to proceed due to being declared "frustrated" (eg. due to budget being exceeded, approvals not forthcoming).

Given that the expected construction of a funded MBSP base station and the associated mobile coverage to be generated, there is little value to be gained in registering a range of other blackspots nearby, "just in case". However, **when a funded base station is declared frustrated, an alternative replacement site nearby may not be able to be funded due to a lack of a registered blackspot being in place.** This can potentially result in lost opportunity in the Albany region in relation to the “funded” Napier MBSP2 base station.

5. Telstra finds itself in a compromised position in being a service provider, customer technology adviser and retailer of technology and service improvement devices. In turn, the public may be wary of what may appear to be “upselling” activities and become uncertain or sceptical of who to listen to and who to believe when it comes to communications technology.

This may result in community members not taking advantage of available technology, like the use of external antennae and car aerials to improve their mobile service.

There a need for independent advice to be available to the general public that is freely available, timely and reliable. From anecdotal evidence, this model has worked well in the SW region in which a SW nbn Advisor was in place during 2017/18.

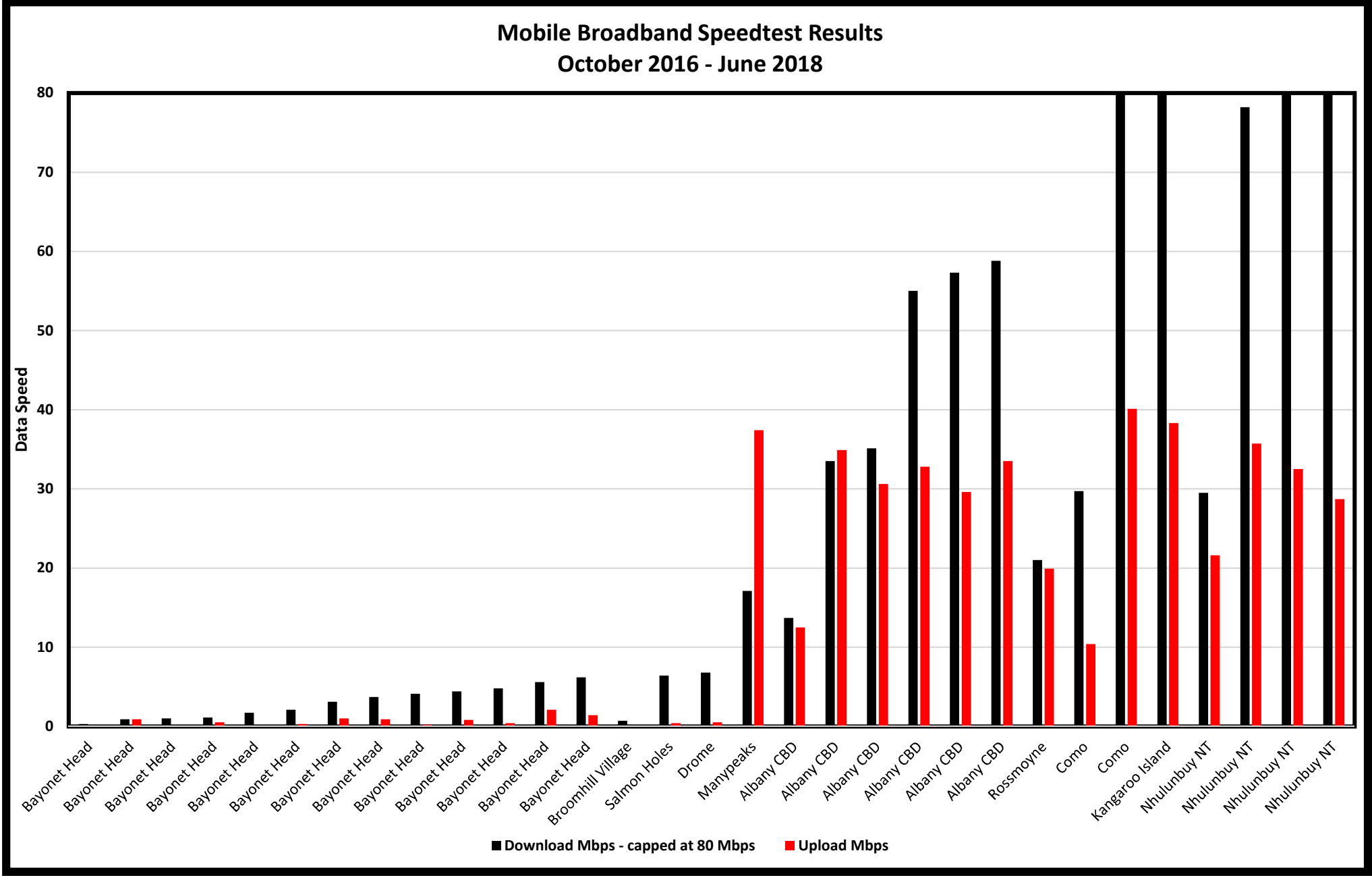
6. The National Map is a very useful source of data around the mobile blackspot program mobile, including registered Mobile Black Spot Database, and funded base stations under MBSP 1 and MBSP 2. However, the database falls short in capturing the overall mobile service infrastructure and coverage across the nation, being simply restricted to the MBSP program data.

It would be very useful to include an additional data layer option in the National Map that includes non-MBSP towers and MBSP 3 towers. Ideally, mobile service coverage would also be included in a National Map layer.

Mobile Broadband Speedtest Results
October 2016 - June 2018

The chart displays mobile broadband speedtest results. The y-axis represents Data Speed in Mbps, ranging from 0 to 80. The x-axis lists various locations. For each location, two bars are shown: a black bar for Download Mbps (capped at 80) and a red bar for Upload Mbps.

Location	Download Mbps (capped at 80)	Upload Mbps
Bayonet Head	~0.5	~0.5
Bayonet Head	~1.0	~1.0
Bayonet Head	~1.0	~1.0
Bayonet Head	~1.0	~1.0
Bayonet Head	~1.5	~1.5
Bayonet Head	~2.0	~2.0
Bayonet Head	~3.0	~3.0
Bayonet Head	~3.5	~3.5
Bayonet Head	~4.0	~4.0
Bayonet Head	~4.5	~4.5
Bayonet Head	~5.0	~5.0
Bayonet Head	~5.5	~5.5
Bayonet Head	~6.0	~6.0
Broomhill Village	~0.5	~0.5
Salmon Holes	~6.5	~0.5
Drome	~7.0	~0.5
Manypeaks	~17.0	~37.0
Albany CBD	~14.0	~13.0
Albany CBD	~34.0	~35.0
Albany CBD	~35.0	~31.0
Albany CBD	~55.0	~33.0
Albany CBD	~57.0	~30.0
Albany CBD	~59.0	~34.0
Rossmoyne	~21.0	~20.0
Como	~30.0	~11.0
Como	80.0	40.0
Kangaroo Island	80.0	38.0
Nhulunbuy NT	~30.0	~22.0
Nhulunbuy NT	~78.0	~36.0
Nhulunbuy NT	80.0	~33.0
Nhulunbuy NT	80.0	~29.0



Australian Government Regional Telecommunications Review 2018

WA Country Health Service (WACHS) Submission

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1. WA Country Health Service (WACHS) provides primary and acute services across 2.5M square kilometers of Western Australia through Regional Health Campuses, Integrated District Health Services, Small Hospitals, Nursing Posts and Population Health Clinics. WACHS has an increasing need for wide area carriage services for a rapidly expanding array of digital technologies including IP telephony, high definition video for telehealth and peer video conferencing, accessing clinical systems, digital resources and corporate data platforms. On the whole, Australia's rural and remote populations have poorer health outcomes than those in the city. These populations experience lower life expectancy, higher rates of disease and poorer access to, and use of, health services. While telehealth is playing an increasing role in improving health outcomes for Western Australians, an inequity has surfaced for fixed and transient populations in remote locations due to an absence of affordable high speed public internet. The increased demand for connected health solutions fundamentally relies on high-availability, contemporary telecommunications. Unless remediated, opportunities presented by disruptive digital technologies to reach those most at risk and disadvantaged in our communities, will fail to be realised. Not only will this result in greater longitudinal costs to deliver services to acutely unwell patients through lost opportunities for timely intervention, but it will result in poorer outcomes for our communities relative to those with access to both virtual and local services.
2. There is a rapidly growing requirement for high speed wide area network services for the increased use of digital systems and applications such as virtual acute care, in-home monitoring, mobile clinical decision support and video-conferencing, emergency telehealth services and increasingly artificial intelligence driven patient care and coordination patient focused technologies. The core challenge faced by real-time technologies such as videoconferencing is that of latency. While bandwidth constraints play a part, one-way latencies of over 150ms (0.150 Seconds) begin to materially impact the quality of interaction between two individuals. This situation is further exacerbated when multiple parties are included in a discussion due to the increased likelihood of parties 'breaking in' where they interrupt another speaker.

3. Communities and consumers have an increasing expectation of access to the services they value the most, such as healthcare, to drive, schedule and engage with the services they need both locally and virtually. This requires community-available internet services in-home and through mobile consumer devices. In 2017 more than 17,000 emergency attendance, 18,000 outpatient appointments and 7,000 mental health service events were delivered to through telehealth services. This delivered not only timely expert medical care, but saved 27.3 million kilometres¹ in travel for outpatient appointments (total distance by road from receiving location to Perth and return), resulting in an estimated \$3.95M in fuel savings¹, and a reduction of 5000 tonnes in carbon emissions¹, the equivalent of planting 75,000 trees¹. Reliable, high bandwidth, low latency connectivity is critical infrastructure in the delivery of virtual telehealth services that enable our consumers to receive timely care closer to home.
4. To improve the Health literacy of the most disadvantaged segments of our regional and remote communities in a cost-effective, meaningful way, affordable internet availability is essential to enabling this access through social media channels such as Facebook, Instagram, Youtube, targeted search materials and other common digital media channels. This will enable these consumers to be well informed, active participants in their health and wellbeing outcomes.
5. WACHS would expect that NBN would deliver high speed broadband with affordable access fees to be able to deliver better health care to regional and remote areas. WACHS would expect that faster broadband services would become available in areas where currently only low speed broadband is only available. NBN Connectivity utilises a broad mix of technologies, including Fibre to the Premises (FTTP) Fibre to the Building (FTTB), Hybrid Fibre Coaxial (HFC), Fibre to the curb (FTTC), Fibre to the node (FTTN), Fixed Wireless and Satellite. Remote communities are more often than not limited in their NBN options. While some locations within the Kimberley and Pilbara have access to services that leverage fixed line, more challenging locations are restricted to the use of Satellite which is inadequate for modern modalities of service delivery such as telehealth videoconferencing. Resultantly, these consumers either fail to receive medical care, do not receive care in a timely manner, or travel at significant expense and inconvenience for face-to-face appointments that may have a duration of 15-30 minutes.
6. Aged infrastructure has made the uptake and deployment of digital services very difficult as these services are unreliable and not fit for critical care requirements which then default to manual solutions.
7. WACHS has installed two-way high speed satellite data and voice services into a number of remote Indigenous communities to improve the availability of better health care services where terrestrial infrastructure is not available or is not economically feasible. These services are not suitable for all purposes where latency represents a challenge and are not cost effective.

¹ WA Country Health Service, To the moon and back with telehealth, <http://www.wacountry.health.wa.gov.au/telehealth>, 2018

8. WACHS experiences on-going issues with satellite services in the northern areas due to environmental extremes such as cyclones and severe weather systems.
9. WACHS has installed 15 NBN Sky muster satellite services to remote Indigenous community staff housing to allow staff internet access from their homes.
10. WACHS uses Smart Antenna's to improve mobile in building coverage (where required) and portable satellite handsets with external antenna's where there is no mobile coverage.
11. WACHS has a future requirement for mobile data services with access into the WA Government Data Centre private cloud and public cloud services for Artificial Intelligence and Machine Learning technologies providing real-time clinical and administrative support focused on improved care outcomes.
12. Remote working staff require reliable connectivity to both telephony and digital platforms for the safety of both consumers and themselves. Working alone and patient medical, risk and microbiological alerts are currently digital. Without these systems being available, and duress systems being connected, significant risk exists for both staff and our consumers.
13. WACHS has a layer three data network connecting all regional and remotes site to the WA Health data network where available. Other sites utilise two-way satellite services and 4G mobile data.
14. Due to the increasing critical nature of digital services, not only are cost effective, high availability primary network services critical infrastructure, but redundancy and fail-over options are equally critical in their reliability and bandwidth.