



Submission to the

Joint Standing Committee

on the Inquiry into the

Rollout of the nbn™ in Rural and Regional Areas

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This submission was prepared in good faith by a voluntary team. Please address any queries to
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Foreword

Better Internet for Rural, Regional and Remote Australia (BIRRR) would like to take the opportunity to thank the Joint Standing Committee on The National Broadband Network (the Committee) for the opportunity to make a submission on the *Inquiry into the rollout of the National Broadband Network in rural and regional areas*.

As per the Terms of Reference for the submission, BIRRR have not re-submitted any information previously submitted to the Committee, with the exception of the Recommendations which includes pre-existing and new recommendations. This submission should therefore be considered in conjunction with BIRRRs previous submission to the Committee, dated 7th April 2017. A copy of this submission is available at:

<https://birrraus.files.wordpress.com/2017/04/birrr-nbn-joint-standing-committee-submission-submitted-redacted.pdf> or from BIRRR, via birrraus@gmail.com.

The body of the submission therefore includes only new or supplementary information, and provides reference to the relevant sections of previous submission where applicable.

Key Concerns

The BIRRR group has five key concerns regarding the rollout of nbnTM in rural, regional and remote (RRR) Australia:

1. Lack of community consultation and research during the nbnTM rollout in rural, regional & remote areas. Many regional communities have been 'underserved' by nbnTM and are mapped to receive inferior services to their current technology. There has been a lack of fibre investment in regional Australia.
2. nbnTM marketing & consumer awareness on how to connect to nbnTM, how to troubleshoot a connection and technologies available is often confusing and complex. Furthermore, while nbnTM market the network, the end user is unable to deal directly with them and are only able to contact their provider when it comes to connecting, addressing and mapping issues, faults and outages.
3. Sky Muster satellite is restrictive in latency and data limits. These limitations mean the nbnTM roll out is not delivering for RRR business, health, education and other high bandwidth, low latency needs.
4. nbnTM Fixed Wireless rollout 'congestion' problems caused by the lack of adequate infrastructure in place before the towers become active, no enforcement of the nbnTM fixed wireless Fair Use Policy and overselling connections on some nbnTM fixed wireless towers.
5. The Government Statement of Expectations (SOE) to nbnTM focused on speed and quick connections for rural, regional and remote areas. Thus both the SOE and nbnTM have failed to take into consideration the economic and social benefits of choosing technologies which meet current and future needs for RRR areas. Resulting in those end users with no other broadband options, who are most reliant and with a high need for broadband services that meet their needs, receiving services that limit and inhibit their business, health, education and social development.

This submission will justify these concerns using real-life case studies and on-the-ground experience as evidence. Whilst the BIRRR team has focused specifically on the issues of those in RRR areas, end users of all forms of nbnTM technologies experience many of the issues discussed below.

Brief Introduction and Overview

The Better Internet for Rural, Regional and Remote Australia (BIRRR) group was founded in 2014 due to a lack of information, advocacy and support for bush broadband consumers. The BIRRR team is made up of five volunteer rural women who have dedicated countless volunteer hours to ensure rural, regional and remote (RRR) telecommunications issues are resolved.

The BIRRR website (<https://birrraus.com/>) has registered over 220,000 hits and we receive hundreds of requests for help weekly. BIRRR's role has expanded as the need for consumer advocacy, more information about telecommunications options and expectations (arising from the rollout of nbn™ in RRR Australia) have grown. The BIRRR website IS the ONLY source of much needed independent factual information across all process and troubleshooting areas for customers when dealing with nbn™ related issues. The volunteer team dedicate many hours to ensure that the website is up to date and contains current information. The group's ever-increasing following and workload highlights the widespread need for RRR consumers to have improved access to user friendly telecommunications services that meet their specific needs.

In April 2018, there were over 10,500 active, engaged BIRRR members from every state and territory of Australia. Due to the geographic challenges faced by RRR users, these consumers are extremely reliant on effective communications, especially the internet. As such, the need for strong representation and reliable and accurate statistics on these consumers is essential. Limited research into this specific consumer group, has seen the volunteer BIRRR team undertake extensive large-scale research on regional telecommunication needs and experiences. Information about the findings, tips and troubleshooting and other information is located on our website.

While RRR consumers appreciate an increase in data allowances on Sky Muster, which were applied in October 2017, there is still a very large disparity in costs and data allowances between nbn™ Sky Muster and other nbn™ technologies. The rollout of nbn™ Sky Muster had a very shaky start and was initially plagued with problems and reliability issues, which were continually attested to by members of BIRRR's online forum. Advocacy from BIRRR and the Regional, Rural & Remote Communications Coalition (RRRCC), and resulting enhancement work by nbn™, means the service is now stable with many of the issues ironed out. However, there are ongoing problems including high latency, weather issues, and restrictive data allowances. Which means that Sky Muster services will never be 'on par' with metropolitan technologies. Furthermore many rural communities are mapped for nbn™ services that are inferior to the service they currently receive.

RRR consumers require equitable telecommunications for their businesses, the education of their children, health and personal needs. Not only are RRR people entitled to this, like the rest of Australia, their livelihoods and lives actually depend on it. ***Every Australian, irrespective of where they live or work, must be confident they can connect to quality, reliable, accessible and affordable broadband and voice services.*** Customer support guarantees must be underpinned by commitments by nbn™, Internet Service Providers (ISP) and government, to ensure that RRR areas are not disadvantaged due to their population and postcode.

On 24 August 2016, the Government delivered an nbn™ modified “*Statement of Expectations*” (Department of Communications and the Arts, 2016) to guide the steps in the rollout out of the nbn™ network.

“The Statement of Expectations is issued by Shareholder Ministers and guides nbn™ Co Ltd to ensure its strategic direction aligns with the Government’s objectives for delivery of the network. It replaces previous statements provided to the company and will be updated as required to reflect future decisions by the Government.

The Government is committed to completing the network and ensuring that all Australians have access to very fast broadband as soon as possible, at affordable prices, and at least cost to taxpayers. The Government expects the network will provide peak wholesale download data rates (and proportionate upload rates) of at least 25 megabits per second to all premises, and at least 50 megabits per second to 90 per cent of fixed line premises as soon as possible.”

(Department of Communications and the Arts, 2016)

We believe this focus on speed and “as soon as possible” rollout of services has resulted in poor outcomes for many RRR communities. The rush to complete the roll out by 2020 and to remain within budget, has seen an increase to the number of addresses mapped for satellite. Even if this has resulted in inferior technology than existing connections for these communities.

The telecommunications industry as a whole need to become more accountable for their customer service and consumer guarantees. Rather than attempting to solve issues one by one, there needs to be:

1. a committed and coordinated approach to improve policy and procedures across government and industry, to ensure that issues are resolved quickly, and
2. compensation provided when issues are not resolved in an agreed timeframe

Although mandated to deliver a minimum speed requirement to every Australian, there is no guarantee, accountability or responsibility given by nbn™ to deliver reliable, affordable and equitable services to RRR areas.

We have included important recommendations within this submission and will continue to work the government and stakeholders to determine constructive solutions.

Recommendations

1. nbnTM **marketing and mapping** for regional areas needs to be revamped to make it easier to access and more user friendly. To prevent confusion to end users providers need to have much clearer guidelines included in marketing material and be more willing to assist with addressing issues.
2. The Federal Government undertake an **audit into fibre & infrastructure** across Australia, especially in communities 'underserved' by nbnTM. As per RTIRC Review Recommendation 6 - *"Given the lack of information on underutilised regional assets, Infrastructure Australia is encouraged to collect and make available public data and information about any infrastructure that might be of assistance to investors in telecommunications. This might include dark fibre or towers with a power source in other sectors such as gas and electricity."* (Regional Telecommunications Independent Review Committee, 2015, p. xv). nbnTM future planning should include a greater investment in fibre in regional areas.
3. nbnTM should be required to provide **accurate and timely information** to all stakeholders about decisions that affect local regional rollout. This should include:
 - a. facts about the locality, what technologies the area is mapped for
 - b. the reasons behind the choice of nbnTM technologies. For example the number of people who will lose their ADSL service due to vectoring issues & the location of these addresses.
4. **Further enhancement of Sky Muster** to increase capacity and reserve it for the truly remote and those with no other broadband option. This should include:
 - a. information for regional consumers on how to use off peak data and how to conserve peak data
 - b. un-metering of essential websites
 - c. an investigation into the current shaped speeds and off peak hours
5. nbnTM future planning should involve rolling out more fixed wireless in regional areas and improving accessibility and information on non-standard fixed wireless installations.
6. Enforcement of the nbnTM Fixed Wireless Fair Use Policy (FUP) to prevent congestion across the fixed wireless network, and transparency around fixed wireless upgrades.
7. nbnTM should actively seek better community consultation methods including:
 - a. community reference groups as a means of gathering local community input; and
 - b. improved collaboration with state and territory governments, local government and providers to achieve better results or efficiencies in the network rollout

8. nbnTM should ensure an equivalent quality and consistency of broadband and voice service is available under the nbnTM (at least equivalent to what was available prior to the nbnTM).

Terms of Reference

Pursuant to paragraph 2(f) of the committee's resolution of establishment, the committee will inquire into the rollout of the National Broadband Network (nbnTM) in rural and regional areas, specifically focussed on the capacity and reliability of the satellite, fixed wireless and fixed line networks, in particular the:

- a. Planning, mapping and eligibility for satellite, fixed wireless and fixed line services;
- b. Adequacy of plans and service reliability of satellite, fixed wireless and fixed line services;
- c. Issues in relation to the future capacity of satellite, fixed wireless and fixed line services;
- d. Provision of service by alternative providers of satellite, fixed wireless and fixed line services;
and
- e. Any other related matters.

Submission

1. a) Planning, mapping and eligibility for satellite, fixed wireless and fixed line services

BIRRR has several concerns regarding nbnTM planning, mapping and eligibility for satellite, fixed wireless and fixed line services. Despite extensive research, BIRRR have been unable to locate any guidelines followed by nbnTM that dictate what technology a community would be mapped for. In some cases there appears to have been an ad hoc approach and a wave of a wand for several large communities (already receiving ADSL) with many businesses and fibre running through town, yet mapped by nbnTM for Sky Muster satellite (*see Kaniva, Victoria Section 5.3.10 in previous submission*). Some communities such as Urana, NSW were originally slated for fixed wireless and then bumped to Sky Muster without community consultation. Additionally, larger regional towns such as Emerald, QLD have been mapped for fixed line nbnTM. However, the outskirts and surrounds of these larger towns (including some very populated areas) have been pushed onto Sky Muster, some of these addresses will lose their existing ADSL services – effectively pushing them from a superior service to an inferior one.

Furthermore, there have been ongoing issues for RRR consumers when attempting to determine if they are eligible for nbnTM services (for example the nbnTM website states that access is “planned” and providers are stating that it is “not available”, discussed further in Section 1.2).

BIRRR have previously made (an extensive) submission to the Joint Standing Committee (Sparrow et al., 2017) on these issues, further information related to the Term of Reference a) included the first submission are listed below:

Section 5.1.1	nbn TM mapping, location and addressing issues	pp. 10-12
Section 5.1.2	Lack of accessible information on standard and non-standard nbn TM Fixed Wireless installs from nbn TM	pp. 13-17
Section 5.1.3	Cancelled installs and services not activating on install	pp. 17-19
Section 5.1.4	nbn TM installer and delivery partner issues.....	p. 19
Section 5.1.5.	Choice of nbn TM technology	pp. 20-22
Section 5.3.1	Complexity of nbn TM network	pp. 28-29
Section 5.3.10	Inferior technology of nbn TM roll out for some regional locations	pp. 47-51
Section 5.3.11	Accessibility.....	pp. 51-53

Further to the first submission issues such as poor planning, mapping and eligibility problems still occur, each of the areas are discussed below:

1.1. Planning for satellite, fixed wireless and fixed line services

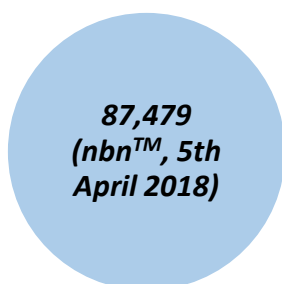
- **Lack of Community Consultation:** When determining the technology type for a RRR community, BIRRR believes there was a serious lack of community consultation and discussion around business and community needs. This lack of community engagement prior to roll out resulted in nbn™:
 - not determining (or understanding) business needs within a community
 - looking at number of residences, without determining population or population growth
 - failing to investigate what services were already being provided and what fibre may have been available, and
 - poor planning with local government and existing providers around the possibilities of co-contribution and resource sharing
- **Under-serving regional townships/communities by mapping them for inferior services:** The lack of community consultation has led to many regional and rural towns with existing ADSL services being under-served and mapped for nbn™ Sky Muster satellite. As stated by nbn™:
 - 1500 addresses will lose existing ADSL connections (Crozier, 2017) and be only able to access nbn™ Sky Muster. For these addresses this will be a step backwards in technology.

For these addresses this will be a step backwards in technology. Despite requests for these areas to be identified, the BIRRR team have been unable to get a clear answer as to which communities and townships this will occur in. This is extremely frustrating for end users who often get no clear information when they contact a provider to connect to nbn™.

- **Sky Muster footprint is much larger than originally planned:** BIRRR has concerns that the Sky Muster footprint is now much wider than was originally planned.
 - The nbn™ weekly progress report as at the 5th of April, 2018, says 428,005 premises have been mapped for the Long Term Satellite service (nbn™ Co, 2018).
 - On the 30th June 2016 this number was 405,959,
 - The 2016 corporate plan states that the long term satellite only has the capacity to service 250,000 premises at a time (Tsang, 2016).

Currently **Connected** Sky Muster Premises

Currently **Mapped** for Sky Muster Premises



It is our view that Sky Muster has been used as a “dumping ground” for harder-to-install and more expensive connection areas on the metropolitan fringes, when it should have been reserved for those that are truly rural and remote. BIRRR is concerned with the growing number of residences mapped for satellite and that some of these addresses are not rural or remote. Evidence of this can be seen in Finder’s table of areas mapped for a large number of Sky Muster installations (Kidman, 2016). This increase in the footprint size will reduce the capacity for Sky Muster enhancements to offer increased benefits to rural and remote users.

The following photograph highlights a large number of clustered Sky Muster installs on Christmas Island. Prior planning and community consultation could have resulted in better connectivity for these users, instead they were delivered a service that left them worse off than their previous broadband connections.



Figure 1: Sky Muster Installs Christmas Island (Ash Michau 8/4/18)

1.2. Mapping & Eligibility for satellite, fixed wireless and fixed line services

There are continuing issues for RRR consumers when trying to determine which nbnTM service they are eligible for. Please see prior submission Sections 5 for further details.

Incorrect addressing: Despite this issue being previously highlighted, incorrect addressing and addresses not listed in the nbnTM portal remain ongoing issues. Furthermore, many rural and

remote properties are difficult to find on nbnTM mapping systems and providers are not always helpful when getting these issues addressed. Some addresses bring up “not yet planned”, which in BIRRR’s experience usually relates back to an addressing issue. There are also nbnTM Fixed Wireless mapping issues, where people are told they are “outside” the footprint (when they actually are not) because their premises is not mapped correctly. Those people (through no fault of their own) then have to jump through many hoops before they can be reclassified. It should be noted that some providers are not willing to help them in this process, See Appendix 4 for a case study into the issues faced with a new fixed line connection.

Inability to search via GPS Coordinates & nbnTM map shading: The ability to search via GPS coordinates has been removed from the nbnTM ‘Check Your Address’ site, and fixed wireless shading is not provided on the general “Check Your Address” function. Both issues lead to consumer frustration and confusion.

- **nbnTM Marketing:** Consumers continue to be confused by the process involved with getting connected to nbnTM. Many consumers are still unaware that every Australian is entitled to an nbnTM connection, they are also still confused about where to go to connect to a service. nbnTM marketing seems to focus on how good nbnTM connections are, when there is a huge need for targeted awareness campaigns on:
 - how to get connected
 - how to choose a provider
 - what to do if your address is not listed on nbnTM maps, and
 - to dispel myths around how nbnTM connections work

BIRRR has recently published a ‘Myths and Facts’ information sheet to assist with this as we regularly come across the issues mentioned (see Appendix 2). However, this is not our role and should be part of the work being done by nbnTM marketing.

- **Installation Issues:** Installation issues (as stated in our previous submission) have improved with the development of the ‘nbnTM local’ teams, and enhancements made between delivery partners and nbnTM. However, the train of complexity still exists, so that when a consumer has a fault or installation issue, it is a complex process to get this addressed.
- **Non Standard nbnTM Fixed Wireless Information:** nbnTM have recently released [guidelines](#) for non-standard Fixed Wireless installs involving a cable (less than 70 metres from a residence), however these need to:
 - be made much clearer and
 - include criteria for the use of point to point equipment

Many of those living on the fringes of fixed wireless services, when given the option, are willing to pay for the cost to obtain fixed wireless rather than be placed onto the satellite network (which places greater limits on their speed and data, increases their latency and gives an inferior service).

- **False information from providers:** Appendix 1 contains an email from Telstra to a BIRRR member who is mapped for Sky Muster satellite and shows wrong information for this address, regarding moving to an nbn™ connection. Some larger providers who do not offer Sky Muster services have told customers that ‘nbn™ is not available to them’. Additionally providers signing customers up to Fixed Wireless services are not providing factual information regarding landline services, resulting in customers:
 - losing their traditional landline service
 - losing their phone number
 - losing the ability to troubleshoot their nbn™ connection, especially when they lack mobile coverage
 - This has been particularly evident for small business and this issue is ongoing

The following case study’s highlight difficulties with installation:

Case Study 1: Tracey - Far Western NSW

"I knew we had to switch, but just had no idea what to do or how to do it. I am just so overwhelmed with all this stuff. I set a day aside a couple of weeks ago, psyched myself up rang Telstra got put in a queue and then got told they would call me back but never did."

Case Study 2: Gen - Biloela QLD

"Gen rang her provider to get connected to nbn™ Fixed Wireless. However she was advised by her provider that nbn™ was not available yet. She contacted the BIRRR team for assistance. BIRRR discovered Gen’s provider had provided false information. Fixed wireless was up and running in her township, however her address was not listed correctly in the nbn™ portal. Once Gen had an nbn™ LOC ID, obtained by the BIRRR team, she was able to place an order for nbn™ Fixed Wireless."

Case Study 3: Shane - Charters Towers QLD

"Telstra rang Shane a couple of weeks ago wanting to help him switch to Telstra nbn™. Shane said Telstra can't give us nbn™ and was told 'Yes we can, Telstra can connect every premise in Australia to nbn™'. Shane is mapped for Sky Muster Satellite and Telstra are not a provider."

2. b) Adequacy of plans and service reliability of satellite, fixed wireless and fixed line services

BIRRR have previously made (an extensive) submission on this matter, further information related to Terms of Reference a) in the first submission are included below. The majority of these issues continue:

Section 5.3.3	nbn™ Sky Muster Fair Use Policy (FUP)	p. 31
Section 5.3.4	Data Limits and Off Peak Times	pp.32-34
Section 5.3.5	Affordability	pp. 34-34
Section 5.3.6	nbn™ Network Reliability	pp. 36-39
Section 5.3.7	nbn™ Troubleshooting and Repair Times	pp. 39-44
Section 5.3.8	Weather	pp. 44-47
Section 5.3.9	Latency	p. 47
Section 5.3.12	nbn™ Network Congestion	p.53

Customer confusion across all nbn™ technologies: Overall there continues to be a lack of understanding of what happens regarding nbn™ connections in RRR areas.

- There is confusion over who to contact in the event of an issue or fault.
- Retailers and suppliers assume that consumers have the ability to fully comprehend instructions when troubleshooting when, for some RRR consumers, using information technology (IT) is a very steep learning curve.
- Consumers are concerned about losing their landline phone once they get a nbn™ connection, even though the copper lines are not being ‘switched off’ in nbn™ fixed wireless and Sky Muster areas. A good proportion of the elderly population only want to keep a landline and become disoriented and confused when they see marketing material stating that ALL landlines will be switched off in their area in 18 months’ time. Suppliers need to make marketing material a lot clearer that this only applies if you are on an nbn™ Fixed Line connection.
- The nbn™ network and getting connected is very confusing for an elderly person who just wants a landline connection. Some people have no need for an internet service and have difficulty understanding that the internet is needed for the phone to work.

See previous submission Section 5.3.1 pp. 28-29

The case study below highlights the issue of confusion and reliance on the nbn™ network to deliver voice communication.

Case Study: Although not in a RRR area this article highlights the issue of confusion and reliance on the nbn™ network to deliver voice communication

“Melbourne couple Don and Joy do not want anything fancy. They simply want to keep using the landline they have had for the past 40 years. The couple in their 80s reluctantly agreed to have the National Broadband Network installed in their Mentone, VIC home in October last year but since then have had continuous problems. There have been continual dropouts since. Others in the same street have had the same problems. Don said nbn™ technicians came to their home on two different occasions to fix the phone line, only for the line to drop out again within an hour of their departure. ‘The only way I can be guaranteed is to buy myself a mobile phone, tell everybody the new number, give away a number I’ve had all my family life — well before I got married, the home phone,’ he said.”

(Hall & Rizmal 2018)

Fault rectification across all nbn™ technologies: Getting a fault rectified is a very time consuming process for end users. It is often difficult to work out what carriage the fault lies in.

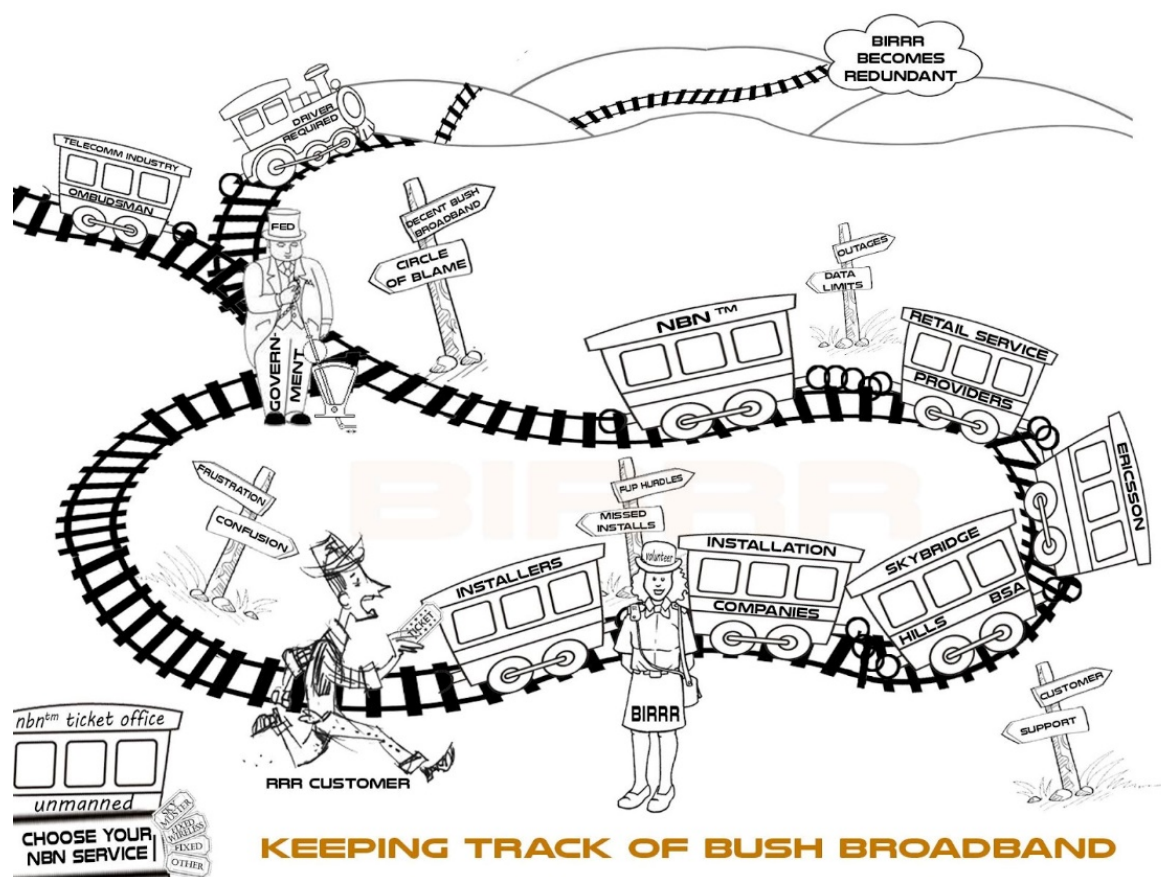


Figure 2: Keeping Track of Bush Broadband. BIRRR liken nbn™ to a driver less train with loosely coupled carriages, see Page 4 of previous submission (Sparrow et al., 2017)

2.1. Adequacy of plans and service reliability of Satellite:

Sky Muster Plans: An increase in data allowances for nbn™ Sky Muster users was applied in October 2017. This was greatly welcomed by regional communities and we urge the importance of continued enhancement of the nbn™ satellite to ensure that the digital divide between metropolitan and RRR does not grow wider.

There is still a very large disparity in costs and data allowances between nbn™ Sky Muster and other nbn™ technologies*. The new Sky Muster Fair Use Policy currently:

- **restricts RSPs** on average to **45GB** of downloads per customer in any four week period
- limits the peak-hour data usage of individual customers to no more than 150GB in any four week period (Skymesh, 2017)
- the **maximum** data plans offered by nbn™ Sky Muster providers (on average for peak data plans 12/1 speed) was **131.81GB** Peak Data (across 11 providers), at a plan cost of on average **\$141.34** per month or **\$1.10 per GB** of PEAK data (as at 1/11/2017) (Source: www.birrraus.com)

This FUP has resulted in RRR residents (who do have access to mobile broadband) paying for two connections (Sky Muster and mobile broadband) to access their data needs. Those who have no access to mobile broadband have to manage their data use to fit within these restrictions. BIRRR has serious concerns that as data needs grow, RRR Sky Muster users will (once again) be left behind. The figures below highlight the growing gap between Sky Muster users and other nbn™ technologies.

- nbn™ Sky Muster Average Monthly Download = **33GB**
- nbn™ Fixed Wireless Average Monthly Download = **167GB**
- nbn™ Fixed Line Average Monthly Download = **200GB**

(Figures from Pers Comm nbn™ 14/2/18)

*Sky Muster plan comparisons can be viewed on the BIRRR website (BIRRR, 2017).

There can be little doubt that data usage across Australian internet users continues to escalate. According the Australian Bureau of Statistics (ABS), the total volume of data downloaded in Australia in the three months ended 31 December 2017 was 3.6 million Terabytes (Australian Bureau of Statistics, 2018). ABS states this as:

- a 19.7% increase in data downloads when compared with the three months ended 30 June 2017
- a 38.6% increase in the year between December 2016 and December 2017
- data downloaded via fixed line broadband (3.5 million Terabytes) accounted for 97.0% of all internet downloads in the three months ended 31 December 2017

These figures clearly demonstrate the need for nbn™ to have a plan in place for future growth of data needs in regional areas.

The addition of an education port for distance education and approved homeschoolers has been very welcomed by regional communities, however no provision has been made for:

- tertiary external students, secondary students needing the internet to research at home,
- students returning from boarding school to a Sky Muster connection in the school holidays
- students from small schools who need data for online homework and research

There is also no quarantined peak data available to Sky Muster users who have health needs such as online speech and occupational therapy, remote health monitoring equipment, counselling and psychological / mental health needs etc. These services are not available in remote communities, as such it is imperative that online tools can be accessed to enable RRR users to have access to health and social services as well as education services.

Sky Muster Off-Peak Times: Current Sky Muster Off-Peak data times are very restrictive (1am - 7am) with large amounts of a subscriber's total allocated data only able to be used between these hours. nbnTM should be:

- Offering advice and assistance to providers and consumers on techniques to maximise off-peak data usage and conserve on-peak data usage
- Researching / developing in conjunction with provider's routers that limit data to certain devices and count data. Establishing a NTD that is also a router with data counting and restriction tools would have been a welcome addition to the nbnTM Sky Muster network.
- Assisting providers in designing desktop/device usage calculators
- Un-metering of key websites such as government sites, weather, fire mapping etc.

(Refer to previous submission Sections 5.3.3. & 5.3.4. pp. 31-32)

Sky Muster Shaped Speeds: Data restrictions on Sky Muster result in many users becoming 'shaped' (this is when the speed of the service is reduced dramatically). BIRRR members report that when shaped the service is unusable, and that they are unable to change plans or buy a data block online before the beginning of the next month data period.

Lack of Business Plans: Refer to previous submission section 5.3.14 p. 55

Sky Muster Business plans are currently still not available. nbnTM has awarded remote communications and IT solutions provider Speedcast with a 10-year, \$184 million contract for enterprise-grade satellite services. nbnTM anticipates that the enterprise-level services will be available by early 2019 (Arboleda, 2018). In the meantime RRR businesses have had to 'make do' with current data limits or spend extensive amounts on setting up Wi-Fi equipment and mobile broadband plans.

Sky Muster Lack of Mobility: Refer to previous Submission Section 5.3.15 p. 55

A mobile version of Sky Muster is still not available to the general public.

Sky Muster Reliability: Reliability of the Sky Muster service has improved greatly since our last submission. However, it continues to be affected by weather events, rain fade, power outages and high latency (see Section 5.3.6 to 5.3.13 of previous submission). Additionally, BIRRR members who have had a fault with their service have reported extensive waiting times for the service to be repaired. Even when the end user knows that the service has storm damage, extensive troubleshooting seems to be required.

Sky Muster continues to be an unsuitable voice replacement for traditional copper landlines and nbn™ have stated that it was never designed to provide a voice service (see Section 5 of previous submission).

Not all Sky Muster providers offer the same customer service, and it is often difficult for an end user to know if the fault even lies within the provider's network, or the nbn™ network. This lack of transparency has resulted in BIRRR creating a document detailing how to choose a good nbn™ provider. <https://birrraus.com/2017/10/30/how-to-choose-an-nbn-provider/>

All of the above can be attributed to poor general take-up of the nbn™ Sky Muster Service, indicating that for many RRR users Sky Muster does not meet their needs.

Case Study 5: Ian, Mokine, WA

"Thanks to the information supplied by BIRRR and support teams at other ISP we confirmed the Sky Muster packet loss was only associated with our provider, ANT. I felt ANT had not been completely up front about the problem, although they finally admitted the nbn™ ground connection to ANT was the cause and nbn™ were still trying to resolve it and then offered a business package which they assured me would fix the problem but at nearly three times the price. I changed ISP to Activ8me on Friday 2nd and have had almost trouble free internet since. Thanks for your assistance."

NB: Pers Comm nbn™ February, 2018 - The issue was in ANT's network and not nbn™.

Case Study 6: Jack, Theodore QLD

***Lightning Strike on a Sky Muster service (details from BIRRR troubleshooting form).
Seven weeks to be fixed.***

"Jack's Sky Muster service stopped working in early February 2018. He had no internet with or without his router. The circle light on front of the NTD remained constant orange. After reporting the outage to his provider and undergoing extensive troubleshooting, a technician was booked for 5/3/18, however didn't show up and didn't ring to communicate this. A new appointment was booked for 14/3/18. The installation had been damaged during a storm and Jack had no internet for 7 weeks, his NTD required replacing."

2.2. Adequacy of plans and service reliability of Fixed Wireless:

nbn™ Fixed Wireless Congestion: In February 2018 nbn™ published the threshold at which it considers fixed wireless towers to be congested enough to warrant an upgrade. They stated that speeds of less than 6 Mbps (average throughput of all end-users in a cell in the busiest hour averaged over a month) in the busiest hour of the day would result in tower upgrades for affected towers. nbn™ also noted that their models were not always accurate, and as such some towers may be congested even when they are not flagged by nbn™ as being ready for upgrades. nbn™ stated:

“In some cases, the end user demand – either in terms of take up of the service, or of usage of internet services over the fixed wireless network – exceeds our modelled timeframes.”

(Crozier, 2018)

nbn™ provider Aussie Broadband have called for a ‘stop sell’ on fixed wireless towers until the congestion issues are sorted.

nbn™ Fixed Wireless Fair Use Policy (FUP) not being enforced: Is nbn™ effectively managing capacity across its fixed wireless network, particularly during busy periods? The nbn™ Fixed Wireless FUP states that the average download usage for a fixed wireless customer should not exceed 200GB of data per month and the average upload usage should not exceed 60GB of data in a month (nbn™, 2017). Currently the fixed wireless FUP is not being enforced by nbn™, resulting in backhaul and over-the-air congestion on certain segments of the nbn™ fixed wireless network.

Building the nbn™ Fixed Wireless network but not enforcing the FUP is analogous to designing a bridge but building it without a key design component. The bridge will fail under load. That is precisely what is happening to the nbn™ Fixed Wireless network, where Aussie Broadband reports that **up to 20% of their nbn™ Fixed Wireless customers experience unacceptable peak hour congestion** (refer to Aussie Broadband Submission to Joint Standing Committee). There has been no meaningful alleviation of this congestion by nbn™ (despite many promises) and as tower sectors fill with more customers, the problem will continue to grow. BIRRR acknowledge that whilst the Sky Muster Fair Use Policy (the only other nbn™ 'last mile' design with a FUP), savagely restricts customer data quotas; it does ensure that Sky Muster customers and RSP's play fairly. The outcome is a service that doesn't suffer from the same congestion issues as fixed wireless.

2.3. Adequacy of plans and service reliability of Fixed Line:

Weather: Issues with the quality of FTTN services are widespread but especially noticeable in regional towns, where old and worn copper goes out in bad weather and natural disasters.

Power Outages: Often in regional areas, for users with a fixed line connection, there can be no ‘in the house’ mobile coverage. A power failure situation causes major safety issues, especially for older people in regional areas who may not have access to a mobile phone.

Voice Services: Many rural fixed line users only require a landline phone service, it is confusing and often expensive for these users to connect to a service they do not want. According to the 2016 Census 14.1% of Australian dwellings do not access the internet in any form (ABS, 2016). In regional areas this figure is much higher.

3. c) Issues in relation to the future capacity of satellite, fixed wireless and fixed line services

The nbnTM should now be tasked with establishing a path for the evolution of the network, to ensure it meets future needs of RRR areas. This future planning must include a greater investment in fibre in regional areas to ensure that the digital divide currently existing between RRR users and metropolitan users does not widen. Additionally nbnTM fixed wireless and sky muster connections cannot be regarded as suitable reliable voice replacements under the new Universal Service Guarantee.

4. d) Provision of service by alternative providers of satellite, fixed wireless and fixed line services

BIRRR have previously made (an extensive) submission on this matter, further information related to Terms of Reference a) in the first submission are included below:

- Section 5.1.5 Choice of nbnTM technologypp. 20-22

4.1. Provision of Service by Mobile Broadband Providers:

The rise of new and improved mobile technologies could see a reduction in the number of nbnTM connections. In particular mobile broadband is becoming more popular for RRR Sky Muster users who do have mobile coverage. As mobile broadband plans improve in data allowances and costs, they may soon become a better option than nbnTM connections for many regional Australians. Optus already have a 200GB data plan which some BIRRR members with Optus coverage have switched to. Whilst this may free up more capacity on Sky Muster, it demonstrates poor planning by nbnTM. Some mobile broadband plans already offer speeds that are much faster than 25 Mbps. Akamai's 2017 State of the Internet report showed mobile broadband in Australia is already 41 per cent faster on average compared with fixed broadband, and is improving almost twice as fast (Chang, 2017).

As mobile plans and speeds improve RRR users will look at mobile internet connections, rather than nbnTM services, especially if they are not happy with their nbnTM connections. Whilst some RRR users do receive adequate mobile coverage, BIRRR research has shown that 42% of Sky Muster users do not receive mobile coverage and thus will be limited in choice when it comes to alternate internet providers. This will result in a widening divide for those who are remote and rely on connectivity to conduct business, educate their children, meet health requirements, utilise best-practice options for personal and work needs, and interact as a community both within their RRR boundaries and across urban and international communities (see Figure 4, Figure 5 and Figure 6 for mobile coverage maps).

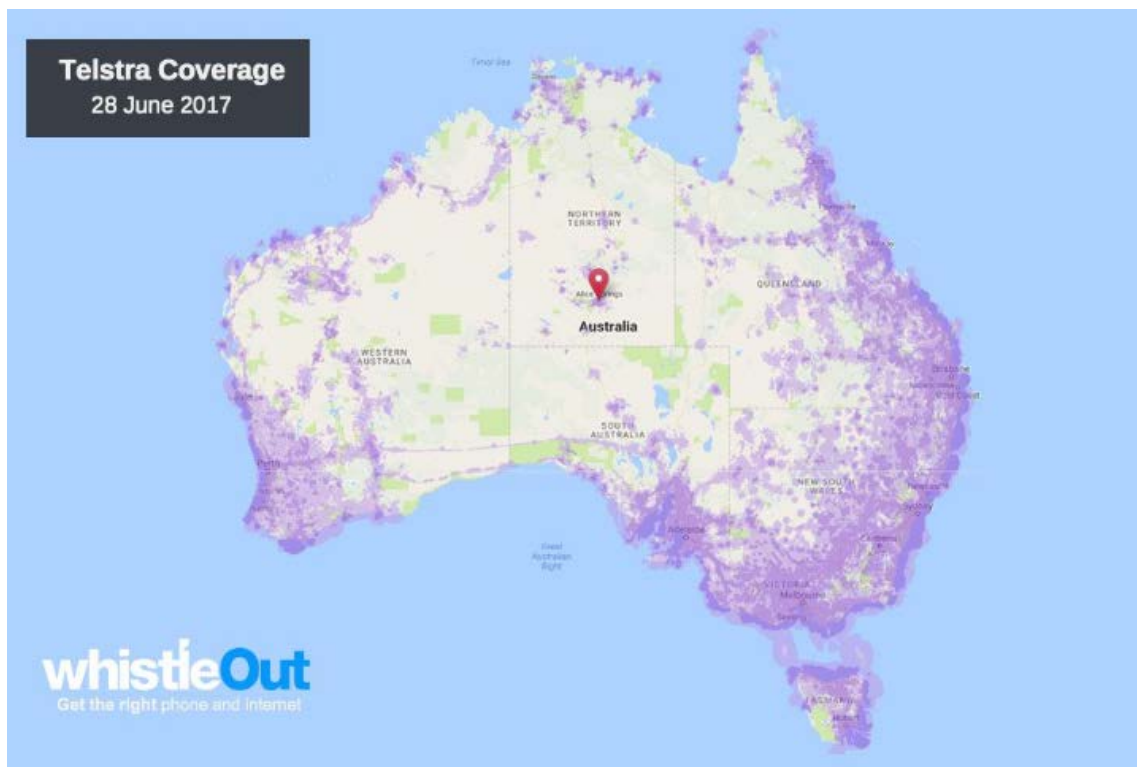


Figure 3: Mobile Coverage Maps for Telstra 28/6/17
(<https://www.whistleout.com.au/MobilePhones/Guides/who-has-the-best-mobile-coverage>)

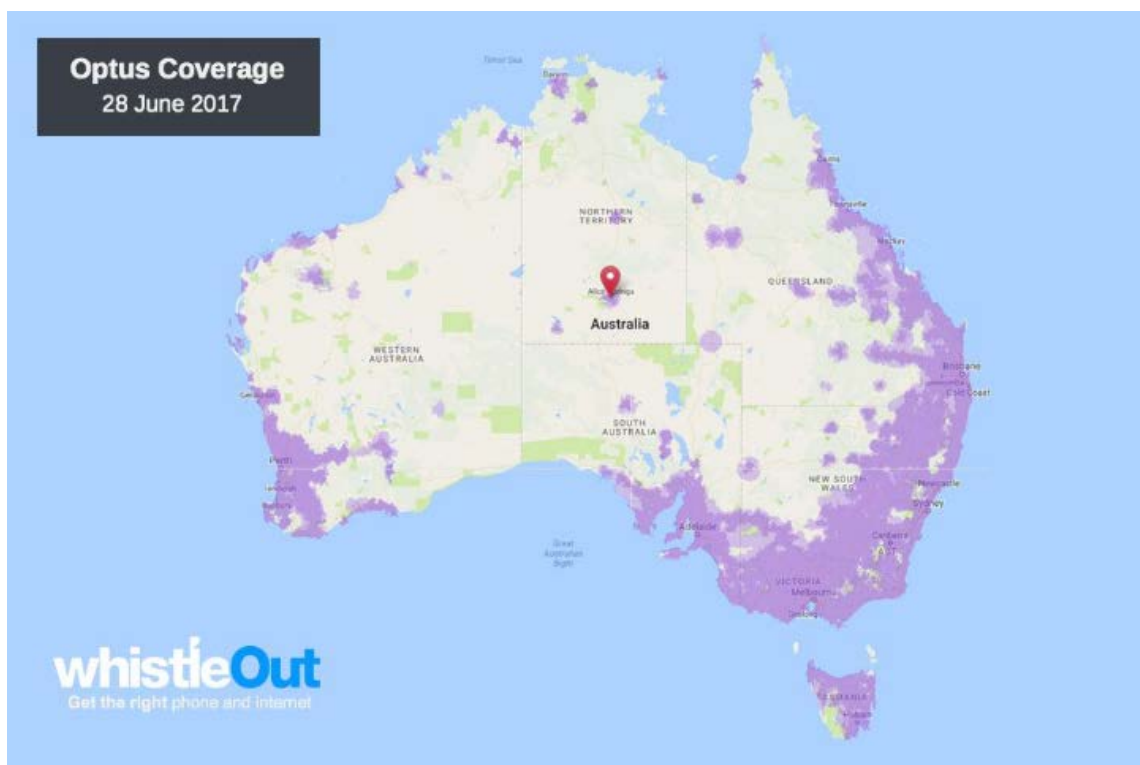


Figure 4: Mobile Coverage Maps for Optus 28/6/17
(<https://www.whistleout.com.au/MobilePhones/Guides/who-has-the-best-mobile-coverage>)

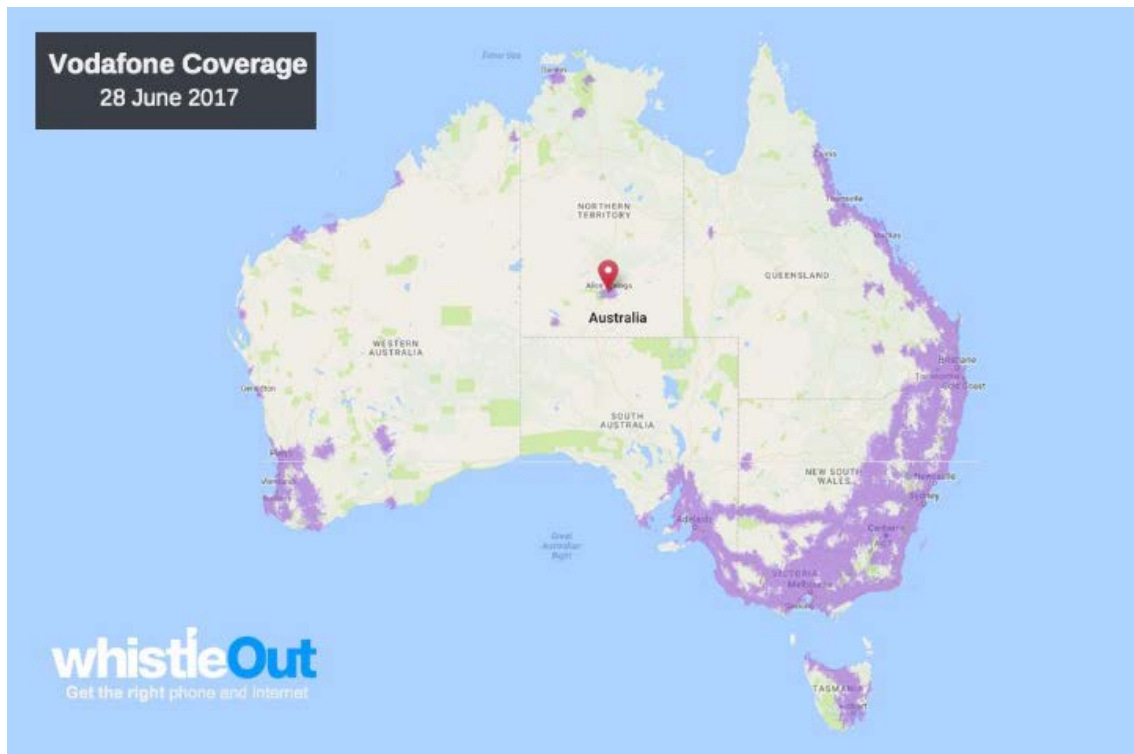


Figure 5: Mobile Coverage Maps for Telstra, Optus & Vodafone 28/6/17
(<https://www.whistleout.com.au/MobilePhones/Guides/who-has-the-best-mobile-coverage>)

4.2. Provision of Service by Alternative Satellite Providers:

Telstra have announced that their Satellite broadband service will be closing in December 2018.
(<https://www.facebook.com/groups/BIRRR/permalink/727695210772502/>).

Current options appear to be:

- The (alternative) ANT portable Satellite service, which is expensive, cost \$49 per GB
(<https://www.ant.com.au/portable-satellite/plans-and-prices/>)
- Pivotal Satellite plans involve large connection fees and expensive plans
(http://www.pivotal.com.au/thuraya_ip_rate_plans.php) e.g. \$4,500 for 15GB with speeds of around 144kbps, considerably more expensive, with more restrictive data and slower speeds than nbnTM Sky Muster.

There appears to be little in the marketplace as yet to offer alternative or competition to Sky Muster.

4.3. Provision of Service by Alternative Fixed wireless Providers:

The mapping of many RRR communities for inferior internet technologies has opened the door for alternative, non nbnTM providers to set up services. The number of nbnTM alternate fixed wireless providers continues to grow across Australia, particularly in areas under-served by nbnTM (refer to previous submission section 5.1.5.) This will ultimately result in fewer nbnTM customers, less profit from nbnTM connected services and further confusion for RRR consumers on technologies available.

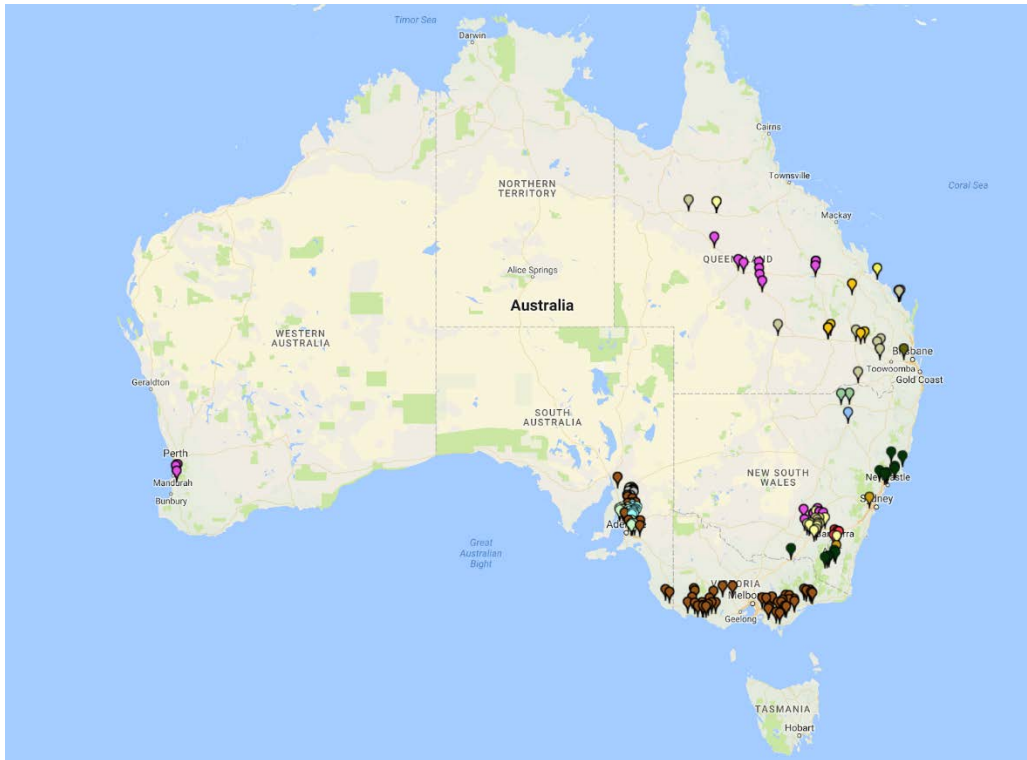


Figure 6: BIRRR Non- nbnTM Alternative Fixed Wireless Provider Map (BIRRR, 2018)

4.4. Provision of Service by Alternative Fixed line services Providers

Alternate fixed line providers do not generally service RRR areas and as such BIRRR cannot comment.

5. e) Any other related matters

It is essential that the Joint Standing Committee consider that the nbnTM “Statement of Expectations” (Department of Communications and the Arts, 2016) has changed over the years. The ‘*Statement of Expectations*’ is issued by Shareholder Ministers and guides nbnTM with their strategic direction as well as stating the Government's objectives for delivery of the network.

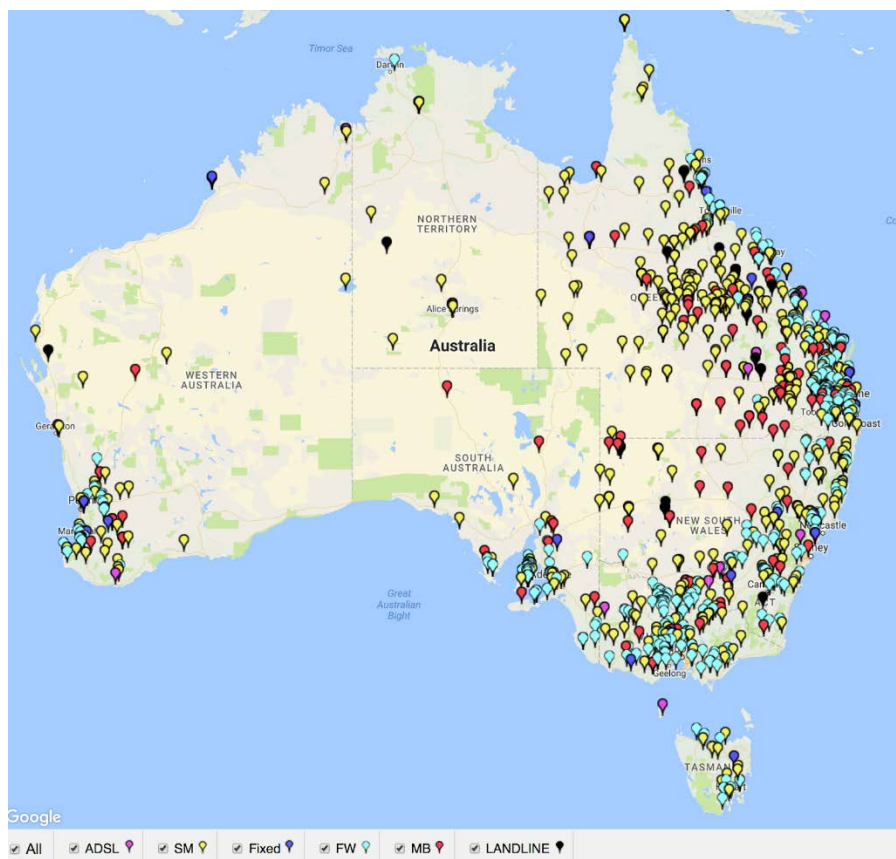
Each time the ‘*Statement of Expectations*’ is released the guidelines for delivering the network change. This is particularly evident in regards to voice services. Initially **nbnTM were never tasked to deliver voice services** and as such the network was designed to deliver fast and quick broadband to every Australian. “*The nbnTM satellite network has been designed and configured to deliver broadband and not voice*” (Morrow, 2017).

nbnTM have indicated during stakeholder discussions that if they were required to deliver both broadband and voice services to all Australians, Sky Muster may never have been on the agenda and regional technology choices may have looked very different. The nbnTM statement of expectations should have included:

1. more than a timeline for connection and a speed requirement
2. provision for the growing need for data, low latency, reliable connections throughout regional Australia that meet needs now and into the future
3. customer service obligations, fault rectification times & compensation entitlements

Concluding Remarks

Initially simply a volunteer support group for Australia's rural, regional and remote internet issues, BIRRR has found itself being relied on more and more heavily with the roll-out of the nbn™. The map below illustrates the enormous troubleshooting burden we have taken on as customers have been unable to resolve their issues with providers, installers and nbn™. This map also illustrates just how widespread issues have been (and continue to be) across the network - a clear indication that access and consistency still have a long way to go before they can be considered reliable enough to depend on for any kind of VoIP dependency.



ADSL - Red, SM (Sky Muster) - Yellow, FIXED (Fixed line nbn™ & ADSL) - Dark Blue, FW (nbn™ Fixed Wireless) - Light Blue, MB (Mobile Broadband) - Red, Landline (Voice Service) -Black

Figure 7: Map of troubleshooting undertaken by BIRRR during 2017-2018. Pins represent people who were unable to resolve their issue with their provider and / or nbn™ (BIRRR Zee Maps, 2018).

We remind the committee that BIRRR is a voluntary group - whose admins have invested vast amounts of their own time into this troubleshooting work. We believe that a similar (funded) group must be established to take over this role. Basic connectivity is a responsibility of government and should not be left to volunteers to 'patch up'.

The BIRRR team would also like to recognize the huge amount of volunteer hours (and broadband data) spent compiling this submission. We acknowledge the patience of the nbn™ Joint Standing Committee in allowing an extension for the BIRRR submission.

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Appendix 1: Telstra marketing material for connecting to nbn™

This address is located in a Sky Muster satellite area and is already connected to nbn™. Marketing material supplied from Telstra below shows the misinformation distributed by providers that leads to customer confusion.

Having trouble viewing this email? [View Online](#)



Hi Kristy,

As Manager of your local Telstra Business Centre Gold Coast, my aim is to make the process of change over to the nbn™ easier for you. We recognise the whole nbn™ project has been a confusing entity from the start and often we find customers asking whether they need to get nbn™ and why.

I can break nbn™ down into general terms to help you better understand what is involved.

Six important points:

1. nbn™ identifies each building and street as a technology type, this can be anywhere from a fibre cable direct to your building or sometimes even via a wireless solution.
2. A lot of people are not aware it impacts both your home phone and internet connection.
3. nbn Co. determines a date in which you can move across to the nbn™; from this date you can ask your chosen provider (i.e. Telstra) what nbn™ plans they have available and you sign up to this - just as you did with ADSL or Cable.
4. From the date nbn™ says you are 'live' you have 18 months to move across. If you don't move to an nbn™ plan in this timeframe your regular services will be disconnected, but you will get plenty of warning.
5. Not all nbn™ connections are the same. For instance, there are four different speeds to choose from, entertainment packages included and data allowances available.
6. To ensure you're getting the best possible package speak to our team today. We're also available for face to face meetings.

I work as part of a team at your local Telstra Business Centre Gold Coast. Our goal is to take away the hard work involved, far too often, in telecommunications connectivity.

The team are skilled and knowledgeable and can help you to decide on the most suitable internet and fixed line package for your needs.

We also have the capability to take care of your business communication needs: from fleets of mobiles to your landline office phone system, we will ensure your business will work seamlessly on the new National Broadband Network.

Leave it to us so you can focus on what's more important to your business!

Kind regards,

Kyra Harvey
Centre Manager
Telstra Business Centre Gold Coast
1300 368 132
kyra.harvey@tbcgoldcoast.com.au

Appendix 2: BIRRR Myths & Facts Sheet



NBN MYTHS & FACTS

I CAN'T GET NBN, IT WILL NEVER COME OUT HERE

FALSE. Every Australian will be eligible for a nbn connection by 2020. Even if you currently have mobile service, even if you live in the middle of no where, even if you have never had internet before. Most remote people are mapped for nbn Sky Muster and can order a service now (NB: TELSTRA & OPTUS are not nbn Sky Muster providers).

IF I GET A NBN SKY MUSTER OR FIXED WIRELESS CONNECTION I WILL LOSE MY LANDLINE PHONE

FALSE. People who are mapped for nbn Sky Muster & nbn Fixed Wireless Services can **keep** their traditional voice service, it is **not** being 'turned off'. Under the current Universal Service Obligation, every Australian is entitled to a fixed line voice service, no matter where they live. BIRRR recommend keeping your current landline when moving to a nbn Sky Muster or Fixed Wireless service.

NBN SKY MUSTER IS NOT RELIABLE

FALSE. Initially nbn Sky Muster Satellite had lots of teething problems and bugs to be ironed out. The service is now very stable and has even had an increase to data plans. Plans of up to **200GB** of peak data are now available. nbn are continuing to work to enhance satellite capacity.

MY CURRENT PROVIDER TOLD ME I COULDN'T GET NBN.

FALSE. Every Australian residence will be able to access a nbn connection by 2020. However not all providers offer a nbn Sky Muster service, you should check on the nbn website which providers service your address. NBN installations are **FREE** and **EACH** residence on your property is eligible.

MY ADDRESS WON'T MAP ON THE NBN WEBSITE

If you enter your address on the nbn website and it doesn't recognise it, try entering your closest locality and then moving the pin to your house. Sometimes you might need to have your address 'fixed up' in the nbn addressing portal, contact your chosen provider to help you.

TIPS

- * Head to the BIRRR website to check out Sky Muster plan comparisons & tips on how to choose a NBN provider.

www.birrraus.com

- * Enter your address in the nbn address checker to see what type of nbn you are mapped for.

www.nbnco.com.au

Appendix 3: Case Study - nbnTM Fixed Wireless Skirmishes, Terry, Budgaree Victoria

Case Study participant comment: I believe that Fixed Wireless is the most appropriate delivery format for RRR areas, though the current implementation appears lacking in providing constant reasonable and usable data throughput, and comparable pricing to Fixed Line Services. Additional coverage to minimise reliance on Sky Muster needs examination. My case study below highlights the lack of transparency and truth in terms of real performance on the nbnTM fixed wireless network.

Dates are approximate

- Moving to a new rural property in May 2014, I was aware that nbnTM Fixed Wireless coverage was in the general area. I attempted to apply for the service, first via my previous ADSL ISP, Internode, but they responded that my property wasn't covered. I also tried DSCI, SpeedWeb and Aussie Broadband with the same result. SkyMesh would have attempted, but did not have POI coverage. Sky Muster was not an option at the time.
- On viewing an nbnTM Coverage Map, part of the property was nominally covered. Through my own research (my own self developed Desk Check and the commission a professional Path Analysis) and before prior to telephone contact direct to nbnTM I determined that a Fixed Wireless connection was possible. The nbnTM agent reviewed the "desk check" documentation that established probable coverage. This resulted in a query to "missing addresses" and subsequent reclassification. A new installation application was made through Internode, with satisfactory Field Strength Test and system install.
- Initial performance was consistently excellent, around 23 Mbps constant, 24/7.
- Early 2015 saw marked decrease in evening speeds on numerous occasions. Formal monitoring via speed tests was done after creating an account at Speedtest.net. Random evening hours were tested.
- Little progress in support from Internode in dealing with the issues after their change of ownership resulted in changing to Aussie Broadband as RSP.
- Aussie Broadband (ABB) support established a ticket and arranged for speed tests to their server, via router and direct to NTD, so compliant to nbnTM requirements. This started in early 2017.
- ABB responded that nbnTM rejected the first contact query, stating that the system was normal. ABB returned to nbnTM with another message, also rejected. On third contact and escalation to nbnTM, there was finally an admission that confirmed there was indeed congestion and that an upgrade was scheduled for Q4 2017. This process took about 1 month.
- Around this time, I began "beta" trials on another port with SkyMesh who were doing trials using Vocus before establishing more POIs. At this stage, I signed up with SkyMesh as well as ABB, as SkyMesh had a better reputation for liaising with nbnTM in regard to prioritizing FW Tower upgrades. There was not much difference between the connections. For budget's sake, I dropped ABB, but as with Internode, the buyout of SkyMesh altered their service standards, so I returned to ABB. By this stage the speeds at evening peaks had dropped to as low as 2Mbps.

- My major enjoyment of the FW Internet had been in watching Apple TV movies, the HD versions requiring 8Mbps . In several instances I had to wait nearly 3 hours before there was enough buffer to begin playing.
- Two years of degraded speeds, while still paying full fare for the plan, with no compensation or rebate.
- Having resumed with ABB as RSP, I re-submitted a Support ticket for slow speeds in July 2017. ABB and myself were taken aback as nbnTM treated the new ticket as a mirror image of the first. They twice denied any fault, before yet another escalation and admission, with the Q4 Upgrade planned, but no dates confirmed.
- I had observed, possibly in May 2017, an 1/8th page colour advertisement in the Latrobe Valley Express that may have been placed by VisionStream, that proudly announced that they were going to be performing the Boolarra Tower Upgrade.
- I had also “evangelised” nbnTM FW to a number of neighbours who currently rely on Telstra 4G for their only Internet access. Some were nominally allocated Sky Muster, but desk checks showed FW to be feasible, so I submitted on their behalf. However, these neighbours consulted FW users in Boolarra and received very negative reviews. I had to counsel that they defer nbnTM applications until after the results of the upgrades. With no firm dates from nbnTM regarding the upgrades and wishing to plan a trip away during the downtimes, I contacted localvic nbnTM, also expressing the negative reports from other users.
- Eventually ABB forwarded nbnTM’s upgrade outages notifications. These were in most cases minimalist in detail, and not in terminology that many “end users” would easily understand.
- The outages did proceed, but at the end of it, there was a zero change in performance. That resulted in more RSP and nbnTM local vic contact, who returned with the explanation that the work wasn’t complete.
- Certain users were to have their ODUs changed over to 3.4Ghz units, in January and February 2018 (deduced from ACMA website). Only users so affected would have received these notifications, others remaining uninformed.
- That process though would still not complete the upgrade process, as we learnt that once the ODUs were changed, a further process of load balancing was to be done. That notice came from nbnTM, via ABB, to be done on Feb 23, 2018. Anecdotal information from users with other RSPs, report minimal or no notifications.
- Results since the upgrade was completed have seen a general improvement, peaking around 16 Mbps, though worryingly quite inconsistent with whole evenings as low as 6 Mbps, a long way from the “expected” advertised 22Mbps that RSPs advertise.
Degraded speeds occurring immediately after extensive upgrades must be of concern to nbnTM engineers.

Appendix 4: Case Study Ross Wagga Wagga NSW

- New development application for the estate submitted in 2016 by the developer Alatalo Brothers
- **February 24 2018.** Ross was told by NBN enquiries he had to apply for a connection, which he did and applied for a new connection in a new development Told by NBN they had received a new development application and it can take up to 12 weeks!
- **March 28.** Ross Asked why and NBN required him to provide the development application number given to Alatalo Bros. Ross's reply *"As stated in all previous emails development applications all occurred prior to NBN takeover of Turvey Park, NBN refused to accept a development application at the time and now does not regard our small estate as in existence despite it's location in the middle of an NBN managed network. We are amongst thousands of Australians who by no fault of their own moved in to new estates developed in conjunction with Telstra just prior to the ham-fisted legislation changes forcing NBN to buy out existing ISPs. We are without an active connection because law prevents Telstra from activating any new services in these areas despite the fact that the NBN has no immediate plans to takeover, purchase or connect us to the existing network."*
- **March 29.** NBN advised that Ross's application had been accessed and moved to the planning stage.
- **April 11.** Ross contacted NBN as to progress and was advised *"We have checked your New Development Application and can advise that it is currently on hold, due the pit and pipe not yet being ready. We have set a request for the nbnTM representative handling your application to contact you as soon as possible to discuss this further."*
Ross replied *"Unfortunately the information you have is incorrect, the work on pit and pipe network to our development was completed November 2017. It is increasingly apparent that there has not been a proper assessment performed by NBNCo and this needs to be rectified ASAP."*
- **April 12.** NBN replied that a Case Team had been assigned, and to allow a few days before it was processed and they contacted him.

Ross's reply *"As per previous emails, I have yet to be put in touch with the "specified case team" that you allude to. The last direct contact I had with NBN via phone was with a Peter, of NBN Build Partnerships who since our first conversation has not been contactable."*

If you could please provide the up to date contact details for this "specified case team" that would significantly assist us in communicating the issue at hand. It has been exceedingly difficult to get a helpful response as yet and as we speak I am returning to the hospital to review urgent imaging as I'm still without an internet connection and therefore unable to access remote imaging servers. This delay in connection is putting patients at risk and costing the local health network a significant amount of money in delays and what would be unnecessary call backs to review imaging usually available remotely." Please get back in touch ASAP with more specific contact details for your special case management team.

Appendix 5: Senate Standing Committee on Environment and Communications.
Answers to Senate Estimates Questions on Notice. Additional Estimates February
2017. Communications Portfolio, nbnTM Co Limited. Question No: 138

Senate Standing Committee on Environment and Communications
Answers to Senate Estimates Questions on Notice
Additional Estimates February 2017
Communications Portfolio
NBN Co Limited

Question No: 138

NBN Co Limited

Hansard Ref: Page 123, 28/02/2017

Topic: Satellites - Latency

Senator Ludlam, Scott asked:

Senator LUDLAM: I have two questions. If they are complex please take them on notice, because we are out of time. Have you had any complaints from users of those satellites around the latency involved that makes it almost unusable for voice communications because it is bouncing a long way out and a long way back? Secondly, how many people did you leave behind in the rollover from the interim service?

Mr Morrow: The network was never designed for voice. It can do it but it is a second-rate service, if you will.

Senator LUDLAM: Because of the latency?

Mr Morrow: Because of the latency, predominantly.

Mr Simon: It is not a voice satellite; it is a broadband satellite.

Mr Morrow: I would remind the senator, too, that we do not disconnect the copper. Telstra does not disconnect the copper going to these homes. After 18 months the fixed line network has to disconnect. For the fixed wireless and the satellite, Telstra continues to maintain the copper and provide those services.

Senator LUDLAM: So what do the folks in the Sky Muster footprint without copper do for voice from now on?

Mr Morrow: No. Again, you can do a variation of it, but it is like an early Skype call, if you remember that quality.

Senator LUDLAM: I do. Right. What are those people meant to do for voice communications?

Mr Morrow: It is not a requirement of NBN.

Senator LUDLAM: I am happy for you to take it on notice if you have got anything you can add.

Mr Morrow: We are happy to. If that does not answer your question, we will.

Senator LUDLAM: Thank you.

Answer:

1. The nbn satellite network has been designed and configured to deliver broadband and not voice. Existing voice services supplied over copper are maintained in fixed wireless and satellite areas. The Sky Muster satellite service does allow Retail Service Providers (RSPs) to add an optional 150kbps prioritised data allocation for each purchased Sky Muster service specifically to support VoIP. In these instances RSPs would also need to supply or support the end user equipment necessary to support VoIP. Alternatively end users can use Over The Top (OTT) applications such as skype to make calls via the internet but it is not prioritised as it would not be utilising the optional prioritised 150kbps allocation. Feedback from RSPs indicates that VoIP services have been successfully deployed on Sky Muster.