Achieve better broadband for Regional Communities (ABBRC)

WCAG Case Study

Wamboin Communications Action Group (WCAG)

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1. Introduction

With the implementation of the NBN (National Broadband Network) and its goal of 'Levelling the digital divide', the residents of Wamboin were looking forward to being provisioned with future proof internet access to replace the current reliance on ADSL (dial up modems) and patchy digital phone services. The belief was that we would get a reasonable service, probably 'Fibre to the Node' with the old Telstra copper 'Last Mile' being upgraded over time. Sadly this was not the case and in mid 2016 we found that we had been put in a SkyMuster area as 'Remote Regional'. This was surprising as the median distance of the Wamboin Area from Parliament House is ~15km as the crow flies.

This prompted a few locals, independently, to write articles for the local paper laying out what an NBN service would do for the area and expressing their disappointment. The authors of these articles got in contact to discuss the issue and what could be done to get a better service. This process was the start of the Wamboin Communications Action Group (WCAG).

The group investigated different solutions and how they could bring the current and proposed service to the attention of the powers that be. It became apparent that to gain any traction they would need to be organised and demonstrate not just a level of interest by the community, but their active and vocal support. WCAG was focused on Wamboin residents, but this quickly grew to include the adjoining areas of Bywong and Sutton region, as they faced the same challenges, and it was acknowledged that in the first instance we had to focus on rural areas.

The region has over 100 small businesses, some international, with quite large data requirements as well as a very large number of home based "knowledge workers". Many residents have children at school in Bungendore, Queanbeyan and Canberra and the schools' expectation is that all children have access to good NBN connectivity. Other residents would like to take advantage of more of the digital landscape, and COVID19 has exacerbated this, by greater use of streaming media, Skype, Zoom, WhatsApp, etc., as well as remote access to work, and where they have access to it, are having to stay with either ADSL or mobile phone data plans. While these might be slower they are nevertheless considerably more reliable than SkyMuster.

As the end result of work by the WCAG core group and organising a high level of support from the local area, we were able to lobby government and this resulted in Wamboin, Bywong and Sutton region being offered a grant by the NSW government to help build a suitable network. This has now transitioned from a grant into a bigger pilot process to demonstrate high speed large data in rural areas under the auspices of the NSW Government Gig State project.

The purpose of this document is to record how WCAG achieved this outcome with the intention of providing guidance and insight to other communities across NSW/Australia that have similar aspirations.

It is hoped that when this process completes it will provide the template for other areas with similar issues to achieve what the NBN was supposed to do. The NSW Government has allocated $400m in total for initiatives in the context of improving the digital environment for regional NSW.

Within WCAG there is considerable knowledge and expertise from their activities over the last four years. This has resulted in ACCAN providing a grant to WCAG to document their knowledge around this process. This series of documents is not designed to fixate on a single solution – not every aspect of WCAG's history and activities will necessarily work or be appropriate for each community. It is rather the process that needs to be gone through to identify the needs of a location and the technologies that could be used to provision the service levels needed.

It is acknowledged that each area will have its own unique challenges and opportunities and these documents will provide guidance on what needs to be done and how. Under the terms of the ACCAN Grant, WCAG members can provide face-to-face, ether physical (where possible) or virtual assistance

to two interested groups/communities during 2021/22. This assistance will provide more targeted information than can be provisioned through these template documents and should hopefully fast track the setup of the required local organisation.

This document contains information about how to setup a community group and get external parties to support you. Support from a reasonable percentage of the local population and from external parties legitimises the endeavour and demonstrates to everyone the level of commitment and that this is more than a thought bubble and worth investing time, effort and possibly money.

2. Case Study – WCAG

Whilst this may seem a little introspective the WCAG experience is the first case study that we have direct involvement in. Because WCAG has experience in what has worked for them, it was thought useful for others to learn what worked and what did not, as well as why this was the case. For all groups tackling this type of project there will be numerous set backs and ideas that prove not to be viable.

2.1. In the beginning

In late 2015, early 2016, most residents in the area probably believed the marketing hype for the NBN and assumed that they were going to get a fibre link to the house. This was a reasonable assumption based on location, 10-30km from the heart of Canberra, but in New South Wales. With talk of 97% of the population to get a fibre link it was a natural assumption that this location would be covered. A few residents were not quite sure this would be the case, based on locality, ground condition and the way the NBN fibre was to be delivered. Those residents then investigated, individually, what the situation actually was and were disappointed, but not surprised to learn that the area was to be serviced by satellite.

Three of the residents knew enough about ICT, the Internet, physics and networking to understand that the use of Satellite was going to be problematic before it was offered. Each of these residents wrote, independently, articles for one of the local community newspapers about the situation and what was reality rather than the hype being expressed. The articles were printed over a few months and it was only after the third article that the three approached the newspaper to try and get in touch with each other.

The newspapers quite rightly did not just give out the authors contact details, but did contact each in turn to get permission to pass them on. With these it was possible to start communication and arrange a meeting between the three, to pool their grievances and discuss the proposed NBN solution and what could be done to get a better deal for the area. It was recognised that a satellite solution would have the following issues:

- Connectivity
- Speed
- Latency
- Cost
- Lifetime

It was also recognised that there would be a problem trying to explain technical issues to a mainly non-technical audience. The group knew that just writing a few articles in the newspaper was probably not going to achieve much. So they looked at possible alternatives and ways to get a better service. The possibilities that appeared to offer solutions at the time were:

- Wireless connectivity with established organisations
- Telstra to provision a network using their recently installed 'fibre to the exchange'
- Get NBN to rezone the area for either wireless or fibre to the curb

While talking about how to achieve a better outcome for the area we recognised that a group of three was probably not going to get much traction. We also recognised that we actually didn't know much about the people that lived in the area, or their internet needs, even though some of us had lived there for over 20 years. We realised that we needed to know some fundamental information to make any attempt for better internet worthwhile.

From the initial meeting between the three in October 2016, we developed an action plan:

- Get email contacts of those in the area who are interested in better internet

- Put a small article in the local paper 'Wamboin Whisper' to try and gauge interest
- Create a PDF survey that can be distributed via email and possibly web page to get further information from those interested
  - Create a 'wish' list of questions that it would be useful to get some answers to.
- Investigate use of the Wamboin Community web site to host information exchange
- Build an action plan on who to approach, how, and by whom
  - Contact providers with the above general information to see what they can offer and if they would even be interested in the business
  - Contact Mike Kelly (Federal MP) and John Barilaro (State MP) to see what they can do to help their electorate
- Next steps?

We also came up with an initial set of questions that we wanted answered to be able to progress our case. This is the initial set:

- Block/house/road number and road name
- Current internet access, speed and average consumption
- Are you likely to want/need more download/upload ability
- Are you likely to want/need better speeds
- Have you looked at other alternatives, if so what and why did you discount them
- Are you willing to be part of a community group looking to find better internet solutions for Wamboin
- Are you willing to come to a meeting to discuss what can be done

We also wanted to state up front and centre that we were just three locals looking for a solution to the internet problem and were not involved in any commercial venture with regards to internet provision. The list then got extended with these questions:

- Do you use cloud data, e.g. store pictures or files on the web?
- Do you use, or want to use VOIP, Skype/FaceTime or other interactive, real time communications with family, friends and colleagues?

As a first pass we put a small article in the Wamboin Whisper asking for locals to send us an email and sign up to a mailing list. 2.10.1.1Appendix 1 contains this letter with the QR code having the information needed to open a new email to be sent to the WCAG email address, created using gmail. To help collect the information in a central location we setup a 'group' email address for locals to send information to us and from which we could respond. This avoided the issue of email going into individual email accounts and there not being an audit trail to follow. It also meant that the group could continue conversations when others were unable due to other commitments.

By the time the survey was put up for use, the questions had been refined and explained to hopefully gather the information we were after. So the survey was setup on Google forms as it allow easy generation of this type of questionnaire. The survey turned out to be 3 pages long and can be found in 2.10.1.1Appendix 2. It was hoped that this survey would collect enough information for us to work out what the current and near future network requirements were for the area.

The WCAG group also attended local markets and community meetings and produced handouts that could be given to interested locals. Hopefully this would help them understand the issues facing them with the internet and how NBN with Sky Muster was not going to be the saviour that was being touted in the mainstream media. An example of a handout can be found in 2.10.1.1Appendix 3.

The initial response to these attempts at communication were not outstanding. When we talked to the locals at markets, school open days and show days the feedback we got was that we should put articles in the local paper, which we had, and that we should do letterbox drops, again which we had. It appears that most people skim local newspapers and don't pick up on ideas and that they get

too many flyers in the letterbox so just bin them without looking. However, even though the take up rate was small it did start to build the numbers. As more residents signed up to the group we were able to directly communicate with them and ask for their assistance and ideas.

The biggest impact on numbers was our physical presence at shows, open days and markets. For instance we attended the Wamboin market and we handed out 50 flyers on the 17 Dec 2016, which was very encouraging. At these we displayed big pictures and graphics with simple headlines. A large map showing the area with indicative sign-ups gave a talking point as people could see where they lived and what their neighbours may be doing in regards to internet. We also displayed information on the Universal Service Obligation (USO) and the Copper Continuity Obligation (CCO) which many people were unaware of but is important when your phone provider is trying to move you to mobile and saying they don't have to keep copper alive. This is untrue, Telstra are being paid >$300M/year to provide the service until at least 2032! It also gave us a chance to talk to people, understand their issues and start to explain complex networks in simple terms so that sense could be made of the marketing and hype being pushed by NBNco, Federal Government, State Government, Telstra and other interested parties.

One of the most obvious requirements was to get in front of people and then stay there. To keep the newspaper articles a bit lighter and with less text we used a graphical cartoon type article, see 2.10.1.1Appendix 4. This article tries to explain the complexities of the use of NBN Sky Muster compared to fix line NBN. The situation has changed a little recently with more download capacity available, but you have to fit into a fairly tight set of criteria to access it.

We did get individual articles published, but there had been no continuity in these articles. So to help this process we wrote a series that explained in a page one of the ideas/implementations/concepts that were being bandied about. The idea was to become a regular feature in the local newspapers so that we would get talked about and, by word of mouth, knowledge of us and our aims would spread and hopefully result in more sign-ups.

The items covered in the series of short articles found in 2.10.1.1Appendix 6 were:

- Data limits
- Speed Restrictions
- Contention Ratios
- Symmetry
- Delivery Technology
- Future Proof
- WCAG a potted history

2.2. Group expansion

From the interest we were getting at community events and the numbers of responses that started to come in from our online survey it was recognised that there was too much to do for the three of us. We needed to expand the group that was more closely involved in the process. There were a few reasons for this:

- Need for more ideas on how to grow the group
- Need for a broader knowledge base, e.g. organisation, writing articles, marketing, networking, etc.
- Need for help talking to people, door knocking, letterbox drops, etc
- Multiple assistants to avoid burn out, etc.

The Wamboin Community association allowed us to stand up at one of their meetings and give a short talk. This resulted in quite a lot of information being passed back and forth between our group and the attendees. The general consensus was that communications in the area really were bad, and most felt that we had been abandoned by all levels of government.

From the flyers that people picked up we received ~30 emails to the WCAG email address from people wishing to join the group and some of these people offered to help which was gratifying. The original survey we posted to help gather information did not mention providing help to the group, so in the next version of the survey we added that question and this resulted in about 10% of the respondents offering to help if needed.

Following on from those responses, in early 2017 we arranged a 'helpers' evening at the community hall where we could go into more detail about what we were doing and how people could be involved. This seemed to reinforce the offers of assistance. The two most helpful outcomes of this meeting were:

- The number of extra people that could be used to do letterbox drops. In the original area there are 1300 letterboxes covering ~4000 residents
- A group of testers for the internet survey that we had put together.

With a bigger test group we got good feedback from the test survey on two fronts:

- There was a critical review from people that tried to use the survey who picked up issues when trying to fill it in and provided feedback on this.
- WCAG got useful information which was analysed to help understand the changes needed for future versions of the survey.

The initial group were looking for 'stayers' in the helpers, e.g. those that would keep on helping over a prolonged period. It was initially envisaged that it may take one to two years to get a better network. We wanted anyone who could help to do so, but we knew there were going to be quite a few meetings we would have to attend and we would need to write to journalists, politicians, councils and potential providers.

From the initial cohort we had 5 others join for the long haul and we had, unfortunately, one of the original team leave due to work commitments. Luckily the team ended up with two technical people, a small business owner, an ICT project manager, two senior ICT managers and a teacher. This turned out to be a good mix of abilities which complemented each other. We could understand the technical side of any proposal and work out if technologies being evaluated could actually deliver the required outcomes. We had someone who could help formulate documents and information for consumption by the residents, someone who knew intimately about scheduling and resourcing as well as a couple who knew how to talk to politicians, journalists and potential providers. This team has now been together for five years and is still working well.

Bigger teams don't necessarily work, certainly for volunteers. If the team becomes too large it becomes much more difficult to manage, so we found that a team of 7 was about the perfect size.

2.3. Using the information gathered

One of the things we were very clear about on the survey was that we would not divulge the information to others and that we would only use it in general terms to discuss numbers, locations, etc. We would also use the email addresses provided to help distribute electronic information. This was done through the email account by sending individual emails to each of the survey respondents, which meant others could not see who had registered. Some of this information would be considered commercially valuable. We were and are interested in the outcomes not in marketing or making money.

Once we started to get information from residents we used this information to build a map of where their properties were. We also got a good idea of the types of internet connection they were using and the issues they were experiencing. We used the location information to build a heat map of the area. We obtained topological maps and block maps so that we could colour in the blocks that had registered with us. This showed where we were being successful and where we were getting no penetration or engagement. Figure 2 shows an example of the map we produced for the local area.

The map shows all roads, the topography and the individual blocks so that residents can easily identify where they are on the map. The colouring shows the sign-up rates without having to identify individual blocks. This map was displayed in a prominent place at all the stalls we had at markets etc. The map itself attracted attention as it was printed on an A0 piece of paper, was colourful and people recognised their area. This encouraged them to come up to the stall and start asking questions.

With this map displayed we had our first commercial contact from Company A. One of their sales people was walking around and saw it so came to the stall to ask what it was about. They did identify themselves as being involved in a network company that was looking at fibre to the home for rural areas. This gave us a contact point for an organisation that we would not have found any other way.

Sometimes residents asked who of their neighbours had signed up for the group. For this we created snippets of the map, but this time included a few blocks around the address showing the blocks and those that had signed up. Figure 1 is an example of what we provided. This was helpful as it encouraged the locals to talk to their neighbours and, if they were not already signed up, to encourage them to do so. This greatly multiplied the effective number of helpers we had. Although they would only engage with a small number of residents it did help bolster the numbers. In many cases the residents who had not signed up did not know anything about us. It is surprisingly difficult to get word out. Even though we eventually did have radio and TV interviews, articles in the local newspapers, attended markets, school open days and country fairs, some people did not know of our group or our activities.
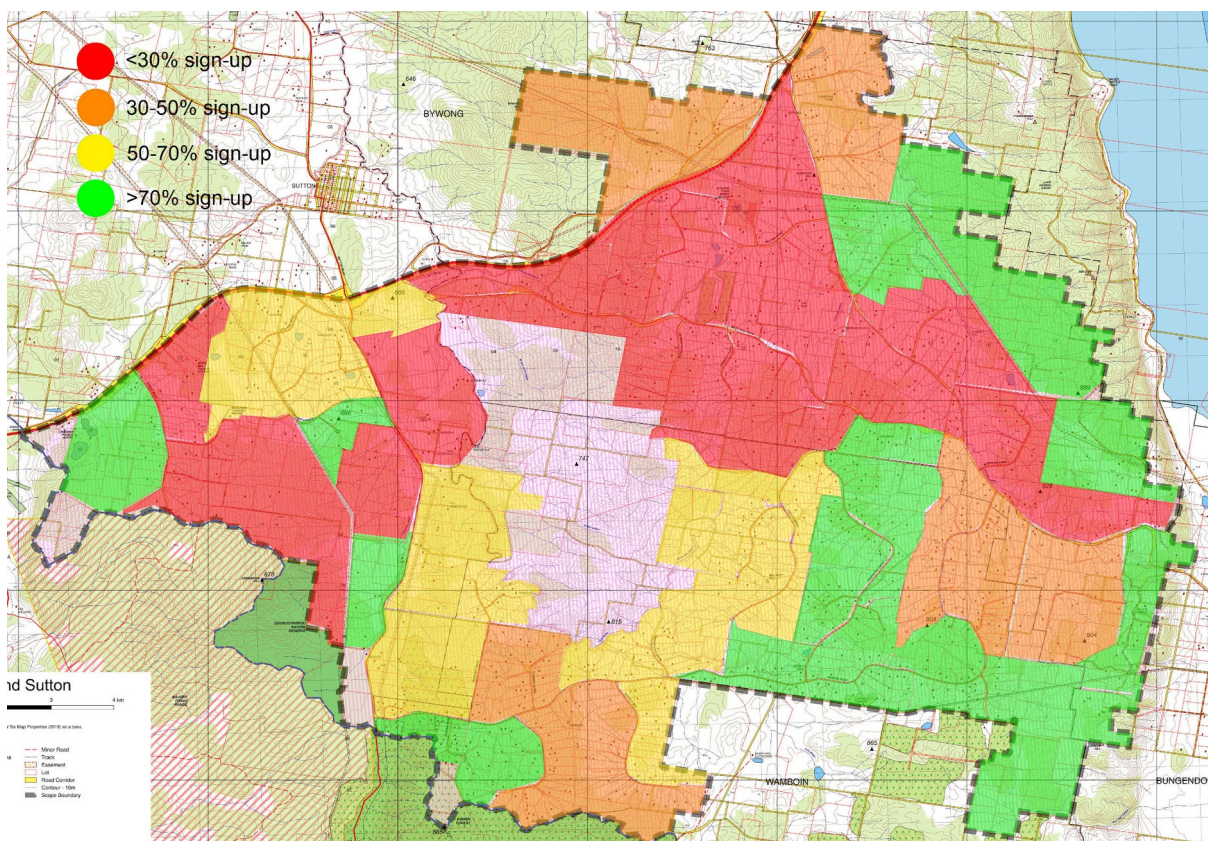

Figure 1: Example snippet of sign-ups

Figure 2: Example heat map for WCAG area

It is important to know that the only information we gave was this snippet. We did not identify the residents who had signed up in any other way. We wanted to be sure we were maintaining confidentiality as much as possible.

Further analysis was carried out on the data to understand what residents currently used in download capacity, this resulted in the Table 1 below. This is a summary we worked out from about 6 months of data and gave a good insight into the volumes of data we were looking at in 2017. We know that data usage increase at between 30% & 50% year on year based in industry reported figures. We also know from industry reported growth that when users gain access to higher speeds and unlimited data this can grow much faster. Based on the low starting base due to constrained speeds available in the area currently this most certainly will be true.

The survey also highlighted that those respondents that had children were expecting a substantial growth in data usage. This is partly driven by the need to do homework for which the internet is essential and background research for subjects which again requires good internet access. The last year has exacerbated the need for good, high speed internet with many children and parents working from home and all trying to use the internet at the same time. The growth over the last couple of years in video conferencing, e.g. Skype, Zoom, WhatsApp, etc., and its general use for communications is again increasing the need for low latency, high speed, high data volume internet connections.

Data download	Percentage of respondents
<30GB	20.33%
30GB - 60GB	13.53%
60GB - 100GB	12.49%
100GB - 300GB	18.24%
300GB - 500GB	7.82%
500GB - 1000GB	4.68%
Don't know - Unlimited plan	12.49%
Did not provide	4.68%
Don't know	6.25%

Table 1: Average reported internet download usage in 2017

Since the survey analysis in 2017 we would now expect, in 2022, to have the mean data usage be in the 100-500MB/month range. This is supported by feedback we have received when talking to locals. This increase in need is not expected to slacken, rather with the introduction of 'Internet of Things' (IOT) and the move to more online delivery of services with higher density data, e.g. 4K TV, and the wish to have multiple online bi directional video calls per household, the data requirements are matching expectations.

The information we gathered was used as the basis for contacting telecommunications organisations that may be able to assist with delivering the network needs. It was also used as the basis of letters to politicians (both Federal and State), the local council, local, state and country news organisations. It enabled us to present information based on real data. This is important as we have had to demonstrate that we do understand the local area, its requirements for connectivity, and have proper data to back it up. It was important to have all the information we were likely to be asked for readily available in documents, as well as being able to talk and expand on the documents when asked direct questions.

2.4. Continuing to spread the word

We had a good start with the articles in the local papers and meeting people at markets, fete's and other gatherings. However, even with the web page, we felt that more communications were needed to let people know what was happening. We needed to keep the residents engaged and enthusiastic about the possibility of getting better internet. We started a simple 2 page news article that could be distributed online via email to those that had signed up, letterbox drops in areas with poor sign ups and through the web page for those that found us via internet searches.

We called this "Broadband News" and you can see examples in 2.10.1.1Appendix 10. The first one of these was generated in the early days and explains in simple terms what NBN SkyMuster was and the issues with it. The item was to try and attract more sign-ups to the WCAG, which it did achieve. It also started to answer questions that people had asked and disabuse them of the marketing spin that was being put out.

A website was created for WCAG,

 https://sites.google.com/site/wamboincommunications/home,

Through this, information could be more easily distributed to interested parties. It was hoped that searches would find this website and help direct locals to the group. This was created using the free Google Sites web site process. This allows the easy generation and maintenance of sites such as ours as the development process is pretty much point and shoot. There is another site, google drive https://drive.google.com, that we set up to hold our files i.e. images, survey data, joining information. There is limited space on the website itself, but the 'drives' site allows significant data (15GB) to be used for free.

The website proved useful for those that already knew about us and those that had received email from the group (as we included a web link in the signature block at the bottom of the email). However, it was not getting found by searches. It was suggested that we have a Facebook page, but the group experience of social media sites was not good. Facebook seemed to attract a lot of spam and abusive posts. Even the community Facebook page was not exempt from this type of behaviour. To get around the issue of not being found easily we registered three domain names:

- wamboinfibre.com,
- bywongfibre.com, and
- suttonfibre.com;

and pointed all three of these to our web site. If a user entered, say, 'bywong fibre' into their web browser search, it comes up as the first link on the results page and the user can click this to access our site.

2.5. Commercial Interest Company A

As mentioned above, during one of our attendances at the local market a sales representative from a commercial network provider saw our stall with a big banner, colourful map and handouts. They came and talked to us to find out what we were all about. It turned out that they were working on a rural roll out of fibre in a farming area not too far away. We talked about our situation and the need for a fibre solution to provide extensible and future proof network access. The more we talked the more it appeared we had common goals, just from different sides of the fence. The representative took our details and handouts to show her company and said they would be in touch.

We did not really expect too much, but were hopeful that something may come of it. We only had the name of the company and a sketchy idea of what they were looking to provide, but this was the first interest we had from a company. The fact that we appeared interesting to a commercial entity was a boost to our confidence and that we may be progressing in the right direction. Certainly, what we said we were looking for resulted in reasoned and sensible questions that, thankfully, we could answer.

The company did contact us in March 2017 and talked about their background, what they were attempting to do and how this may fit into our region. The company were working on providing small farming communities with high speed networks, up to 1Gbps synchronous with no data limits, connected to the wider internet. They were working with the farming community to engage them in the network ownership by making each node (connected property) a shareholder in the network. This meant that, not only each property gained the benefit of internet access, but had a direct say in the future of the network.

The build process used the farmers own equipment to help with the trenching and laying of the fibre in the ground. This would then reduce the price for those that were able to assist. Further, the more work that could be done by the community banding together would also help reduce the final price. This process was borrowed from B4RN (Broadband for the Rural North Ltd) whose website https://b4rn.org.uk/ gives more of an explanation. This process certainly seems to have paid dividends for the UK, where B4RN is located, and has enabled internet connectivity for those outside of the major cities. This is very similar to the situation that WCAG found itself.

2.10.1.1Appendix 18 contains the information we gained from our initial contacts with the company and shows where the discussion was going and a possible engagement process. It gives indicative costings circa mid 2017, which enabled us to then start the communications process with the community. We started to have some figures about what the likely costs were going to be as well as the contract structure this would work under. These initial costings were in line with what was being provisioned by NBN for major cities and considerably more affordable than was being offered by NBN SkyMuster which was very encouraging. This showed that there was hope that we could get something suitable for our area.

Two of our core group went on holiday to the UK and took the opportunity to drive through the area that B4RN was servicing. They were hoping to meet with some B4RN representatives, but unfortunately this was not possible. However, looking at the location and comparing it to the WCAG area showed that the topography was similar although with less rocks. But they did have hills, trees, issues with roads, paths, greenways, properties located well back from the roads, etc.. They found the following links that give some more background:

- https://www.facebook.com/B4RNorth/photos/?tab=album&album_id=1064506503656507
- https://www.vice.com/en/topic/B4RN
- https://groupeintellex.com/2016/09/27/blowing-towards-thrushgill-east-of-lancaster/

To help get our message across we generated a one page graphical representation of the different network technologies and what they really meant. This can be seen in 2.10.1.1Appendix 11. We found that to consistently get a message across it needs to be simple, non-technical and understandable by the majority of the target group. In this graphic we included what the alternative was that we were proposing.

It took quite a while working with this company so that they could understand fully the local area and the challenges it provided as well as clarifying what they were offering and how it could work for us. We had meetings where we showed them the area and the general topography as well as the limited fibre to the Telstra exchanges in the area. This allowed them to work with their own staff to build a feasible solution. In this case it was multi-staged such that a fast rollout of the initial group could be obtained to demonstrate the solution would work and encourage far more people to join the group. At this stage we were in a "Catch 22" position. We needed sign-ups to afford to start, but people were reluctant to commit money until they saw it would work. Hence the need to build a core part of the network which would include provisioning the local Fire Shed (the emergency gathering point for the area in case of fire). This would be done using existing Telstra back haul.

With the 'proof of concept' network up and running it would then be possible to gather more who would be willing to signup with a deposit. The deposit being used to help finance the network as it was rolled out. When the number of connections was going to overload the back haul the company would then install a suitable replacement to an internet point of connection.

At this point in the process WCAG did not have any money, the community had not been asked for any money, nor was it possible to accept any donations. Company A was looking at how to finance the build as they could see it would be commercially viable once built, but it was getting it built that would need innovative solutions. Many different funding models were considered by the company most of which were not fully presented to the group.

Due to the amount of work, including technical feasibility, technical design, financial management, project management, that needed to be done it took many months before a solution that was presentable to the community was created. In December 2017 a community wide meeting was organised to introduce Company A, their possible solutions, and to allow the community to ask questions in an open forum.

The meeting was scheduled for early evening such that interested parties who were working could attend. We had been expecting 10 to 20 people to turn up, which was normal for a community meeting. We lost count at 150. We had the community hall full, as well as people outside the doors and windows listening and providing comments. This was the biggest meeting the local community association had ever seen.

The WCAG introduced themselves so that all attendees knew that we were real people and were trying to do the right thing by them. We then introduced Company A and they gave a presentation on a possible solution to the provision of high speed, reliable, cost effective and affordable Internet to the area. This was the first time many of these residents had a chance to see what was possible and how. There were many interested and probing questions asked during the presentation which demonstrated that the community was interested in a suitable solution and were fully engaged in the process. This helped with the company as it suggested that their solution would be well received and that there was general support.

The relationship with Company A was going well, but we spent many months waiting while they investigated the legal, management and financial implications of building our network. Unfortunately it became obvious that they were not yet in a position to proceed and further events overtook them.

In December 2017 the group decided that we needed to try a 'door knock' to increase the number of sign-ups we had, so we decided to try for a meeting of WCAG with the members of the community that had indicated their willingness to help. This was aimed for the middle of the third week in January 2018. The idea being to get over Christmas and the New Year celebrations and hopefully have a reasonable number of people able to attend. Part of the process was to help locals understand what the NBN plans meant to them in real terms.. To this end we spent over a month setting up the information needed for the door know process, identifying areas that had poor sign-ups such that we could effectively use the time we had. Door knocking, particularly in a large area takes considerable time and effort. We found that it would be about 30mins per property that had someone in at the time. This rapidly eats up time and makes covering a hundred or more properties a large undertaking.

Part of the process was to create a list of important ideas and concepts to get across, but we had to be mindful that it could not be too long and had to cover all the major issues. The following is the initial list:

1. In 2020, copper no longer covered by USO or CCO. Therefore no requirement to service local exchanges. Therefore no landline and definitely no ADSL.
2. Effect on house prices, time taken to sell house.
3. Company A pricing is competitive, but we need a good take-up rate.
4. No requirement to part with any cash now, expression of interest needed to firm up pricing.
5. Future-proofing our internet service.
6. Highly likely that free-to-air TV will be replaced by streaming.
7. Kids need internet for schooling.
8. Access to online medical services.

9. Government and service industries are moving towards online delivery of many functions.
10. Finally, although you may not think you need to connect, think about your neighbours and the local community as a whole and at least allow the fibre cable to cross your land.

We converted this list into a single sheet flyer that could be used both by the Door Knockers and as a letterbox drop for those residents that were not at home of the knock. This can be found in 2.10.1.1Appendix 8. and whilst it takes up more than a page in the appendix we made it fit on one side of A4 when printed. This was to cut down costs, make it easier to handle and keep peoples attention in one location. If a person had the page they had all the information, there was no chance of losing a page.

We then had to pick the first day that it was likely that many of the target residents would be at home, this meant it had to be a weekend and it could not be a public holiday. To cater for this we picked the 28th and 29th of January 2018. From the helpers meeting we got 20 offers of assistance to help cover the area. This was a great relief as WCAG would have been struggling to do this without assistance.

It was surprising talking to the residents how many hadn't heard of us even though we had been in the local papers, at markets, shows, schools fetes, on the radio and TV. It would appear that there are as many different information sources as there are residents. Our experience showed that you have to keep on trying different communications paths. And, even if it seems like you have reached a significant proportion of residents it is highly likely you have missed a significant proportion that would be willing to sign up, if only they knew. We were asked during the door knocking why we hadn't written article in the local papers, or been on radio or attended any of the local markets. We even had big notices on the boards that every person entering the area passes every time, these were only a couple of words long to hopefully attract attention, but….

2.6. In the mean time

Whilst we were working with Company A, we continued to try and get help from the federal politicians by writing letters and highlighting the problems we saw. We decided that any financial or process assistance we could get from NSW government would help our cause.

Having had experience with the local council and government departments in the past we wanted to try and smooth the path as soon as possible. We know that it can take months to get a simple answer from them and this had the potential to slow down any progress we were making with commercial entities. We fully engaged with the local community association showing how the introduction of a decent network would enhance the area for a multitude of reasons. Because of the poor connectivity for phone, internet and mobile it was not too hard to sell the concept. The 'town hall' meeting we had with such large numbers also impressed the association so they were very willing to assist us with the local council. This was further assisted by a number of the association members being or having been on the local council. So they knew who to contact as a starting point.

We did engage with the prospective local candidates in the lead up to the NSW government elections. They were out showing their faces at all the markets, school fetes, horse shows, etc. trying to gather possible voters to their cause. We used this opportunity to explain what we were trying to do for the local area and gave them all sufficient background to really understand what we were attempting and to see the wider implications of being successful, i.e. the roll out of high speed network through rural and regional NSW. The potential members that were from rural, regional and farming areas understood the issues but hadn't realised that there were more options than just the NBN. By explaining what we were doing, the way we were looking at provisioning the solution and the fact that we were already working with a company that really wanted to put this type of network in, their interest was peeked and they wanted us to have a more formal meeting to discuss the various options and start to formulate an action plan.

To ensure we would still have support after the election we made sure we dealt with all candidates and also let them know we were working with all the candidates. We ended up getting bipartisan

support so that it did not matter who won the election we would still have support for what we were doing.

We had a number of formal and informal meetings with local council members, including the Mayor, where we explained what the group was attempting to do. We wanted to help smooth the flow of any project works through the local council process to remove as many delays as possible. We were not offered explicit support by the council, but the members and Mayor knew what we were attempting and thought it would be good for the local area. They offered to help by providing guidance on what documentation was needed to allow the process to proceed with the minimum of delay. The council could see how improved internet would make the area more attractive, assist them in their moves to put the council business online and generally act as an added attractant to the area. They recognised that this was a pilot and that if successful could be rolled out very easily across the whole area.

We continued to publish letters in the local newspaper, (2.10.1.1Appendix 7), which covered the current phone and broadband situation in the area. It gave a simple overview of what was being offered to replace the current internet access. There was so much marketing hype surrounding the delivery of NBN, with the main focus being on fibre, that it was hardly mentioned what it meant to NOT be on fibre.

To this end whilst the residents knew they were to get Sky Muster, they really didn't know what it meant. The marketing around the solution promoted all the good points, e.g. that remote areas (this was never defined) could join the internet community with what sounded like high, future proof speeds. Our article tried to show reality so that all in the area could understand what was being offered. In the Wamboin area the telephone exchange is obsolete and the marketing made out that the NBN would be replacing this and it would be sufficient. As the only option for the area was satellite, this was not truly the case and the many issues were not being mentioned. The main problems for the Wamboin area were the slow speeds, which would never be addressed by this solution, the usable download limits which were small and could not provide what most users were already getting from ADSL and finally the reliability of service.

Many residents, not having experienced Sky Muster did not quite believe WCAG, as the government and NBN kept on saying it was much better than what they were using. The reality took many months to really sink in and was demonstrated disastrously by the Black Summer fires of 2019. In this case many areas adversely impacted by the fires lost all communications, e.g. phones (land and mobile), internet TV and radio, and found that there was no way to talk to emergency services or find out the details of what was going on with the fire fronts.

Along with the promotion of NBN the federal government started looking into the Telecommunications Universal Service Obligation in 2016. This stated that Telstra was required to provide voice services to every Australian until 2033. In the age of the NBN this was considered obsolete and therefore needed rewording to remove the, now considered redundant, voice communications capability.

The Productivity Commission was invited to provide the documentation needed to forward this perspective. When they had built the report it was opened to industry and the general public to comment on in January 2017. WCAG heard about this and obtained a copy. In essence it was providing a city centric view of the telecommunications world and did not cover cases such as our area.

WCAG decided that it should respond from a rural perspective and provide input as to why a USO, even a modified one, was absolutely required to ensure the 'bush' was not forgotten in the push to modernise communications along the NBN path. This turned out to be prescient as in the 2019 bush fires many communities were cutoff completely from communicating with emergency services, family and friends. The over reliance on Wireless internet and the modern need to engage digitally proved very difficult for those close to the fires.

The wireless infrastructure is far less robust than copper landlines where power for phones is provided by batteries at the exchange. These batteries are normally maintained by using grid power, but they exist to allow days worth of communications if the grid fails, as it did in the bush fires. The modern communications technologies, whilst using batteries, require the use of petrol and diesel powered generators to maintain battery condition. In the bush fires it was not possible to maintain the fuel for these devices so all communications failed. This got to the point that not only did phone communications fail, but paying for goods and services also failed as it relied on digital communications to process the transactions. This does not sound too bad until it is realised that to obtain fuel to depart the area requires access to the non-existent digital communications. So communications continuity is a definite requirement particularly when adverse weather events occur.

As the TUSO and the WCAG response are quite large they have not been included in the appendices, but are documents that will exist alongside this one. 2.10.1.1Appendix 12 contains the names of these documents.

To further assist in raising the profile of the area we asked residents to send letters to their local politician. To assist in the drafting of these letters we provided a couple of examples, see 2.10.1.1Appendix 13 and 2.10.1.1Appendix 14. The letters were distributed via email to all residents that had registered with us. The main thing to demonstrate was the considerable interest in the outcome of the work being done.

To continue to help explain what the NBN meant within the area and get a level playing field for discussions we used a flyer (2.10.1.1Appendix 11). The issue was, both NBN and the Government were aiming all their information at city dwellers and were ignoring the non-urban population in their marketing. Because of this the local area fully expected to get fibre NBN, but this was not the case. Trying to verbally explain was proving slow and confusing for most people. This flyer tried to show simply with graphics what the real situation was. For many people this did help start and sustain a conversation. It also appeared to be a light bulb moment when they finally understood what was being offered by NBN. To say they were not happy would have to be an understatement.

To help keep the community up to date we continued to publish the "Broadband News", each of which was designed to fit on a single, double sided, page. 2.10.1.1Appendix 10 has the first four that were published. As can be seen we created a new issue every few months as each edition needed ~800 copies to be printed and distributed as a letterbox drop. This was both expensive to do (we had a local businessman who kindly printed them for us) and time consuming to deliver as there were at peak only about 10 people actively involved in this process.

The 'Broadband News' was also published on our web page and sent out through email to all residents who were registered with us. Mail outs like this have to be handled carefully to ensure they don't get marked as spam because of the volume of emails. A careful check has to be made of the allowable message rate with the provider to ensure no limits are inadvertently broken.

2.7. Commercial Interest Company B

At the end of June 2018 there was a segment on the ABC local TV about the B4RN (Broadband for the Rural North), https://b4rn.org.uk/ group in the north of England doing their own thing as internet in their country area was not good.

This group were dealing with the same problems as WCAG, i.e. a rural area, relatively close to towns but left out of the national rollout of fast internet. The area was hilly farm land, mainly grazing, with many trees on the hills. As it was farm land there was quite a bit of heavy machinery around so a group of them got together and decided they could lay their own network around the area using trenching tools. There were also some people that understood fibre networks and were prepared to provide their expertise to laying and connecting such a local area network.

The ABC local TV had a small segment on this group as an example of what 'the eccentric British' could do in the face of inadequate Internet provisioning. A couple of our group saw this segment and it prompted us to contact the ABC to let the reporter know that there was a similar group trying to do the same thing just outside of Canberra. This came as news to them and they were interested in having a more detailed talk with the possibility of an interview, if we were happy with that.

We arranged a meeting and interview over the next few days and it promptly went to air. The interview can be see here ABC local TV interview – 08/07/3018 (it is also available from our website). This enabled us to give a very brief overview of the issues and a possible solution as well as getting our name out and showing the dubious residents that we were actually trying to do something. This TV slot not only got more residents to sign up but also a few network providers saw/heard about the interview and contacted us directly.

Of those that contacted us, two of them were interested enough to come out and meet us 'on location' to get a better feel of what the issues were, the topography, the vegetation, the typical location of dwellings, their distance from the road and nearest network services, etc. They quickly understood why a Wireless solution would be sub-optimal as the sheer number of towers that would be needed to provide a suitable, future proof, network and the way that they would have to connect together to provide the back haul would make this sort of build difficult. There was also the issue that we are in a NSW E4 environmental living zone, having been reclassified from the old R2/R4 , that meant provisioning of the towers would be difficult and that there would be push back from environmentally conscious residents.

One of these companies came back with a proposal that would see all residential properties connected to a fibre network. This would be done by mapping where the dwellings were and providing the shortest path to cover all properties. Although this meant cutting across private property, our earlier dealings with Company A and subsequent discussions with the residents would make this possible.

Multiple redundancy was also included such that a break in any cable, i.e. being dug up, would not cause a mass outage. At worst this would only affect one or two properties. This company also suggested using a passive fibre optic network such that all the distributed optical routers were un-powered and passive, with power only being required at the main concentration locations and in each dwelling. This had an indirect benefit that each router was considerably cheaper and also much easier to upgrade.

We knew at the time that there was a plan to double the capacity by changing the number of 'channels' per fibre from 64 to 128 and that there was a further doubling coming in 2-3 years. This seems in conflict with the newsletter that WCAG put out, see 2.10.1.1Appendix 6Internet access 105 – Delivery technologies., as that was talking about a different technology where the link is shared. In this case each user would have a separate channel of 1Gbps which would be multiplexed with 64 others and is done by using different colours of light (this is fibre with coloured lasers being used) and these do not interfere with each other.

The initial speed available at each dwelling was going to be 1Gbps in both directions using a single fibre with a second fibre for redundancy. The speed to be purchased was dependant on the plan and would be controlled at either the concentrators or the wholesale service provider. Each dwelling would have the same fibre connection making all equipment the same. A further feature was that every dwelling would have fibre connected to it, regardless of whether it was going to be used or not. The only dwellings that would not be connected would be those that had an objection to the whole principle.

Each dwelling connection charge would be levied when the line became 'active', i.e. was being used. Those that did not activate the service would not be charged. The reasoning for this is that the most expensive part of fibre connections is the trenching and subterranean nature of the network. When all the equipment is onsite and being used it is a relatively small extra cost to lay the fibre to a

dwelling that will not immediately want it, and considerably less effort than having to come back at a future date to do the work.

Company B made the decision that the smallest plan provisioned would be 100Mbps in both directions with unlimited data. The connection fee would be a flat rate for all residents irrespective of the distance the cable had to travel to get to the dwelling. Only one dwelling on any parcel of land would be connected, if other dwellings wanted to be connected then there would be another connection fee.

Company B wanted to expand from their normal build locations, towns and cities, into rural areas and wanted to use us as a test case/proving ground for other locations. Our area is not an isolated location that has Internet speed and connection issues, so their idea was to build on the experience gained in provisioning this area and offer similar, but tailored, offerings to others. In some locations this may be via Wireless where it is flat enough and the local vegetation not too much of an impact on the bidirectional transmission of wireless signals.

Company B were fairly new to the Australian fibre network scene so were prepared to invest a significant sum in building our network. They looked upon it as a way of advertising their expertise and introducing some proprietary new technology to the Australian market. The difficulties of a rural area such as ours would be a good proving ground for those technologies, which could then be used to build similar networks elsewhere.

2.8. Offers of assistance

Both companies A and B were keen to build the network but we needed seed money to get them started. It appeared that each property in the area would need to invest approximately $3,000 to join the network. While this was acceptable to some, we knew that there were many that could not afford that outlay, especially older residents, many of whom saw little or no reason for the new network at the time. We were already victims of the Digital Divide in Australia and didn't want to create another Digital Divide in our own Community!

We did consider starting with a smaller footprint and using the funds generated by that to extend it. However, this would be a juggling act and it was probable the build would take multiple years rather than the ~18 months we had been told. For the sake of a few months lobbying we could reduce the build time as well as the potential installation costs for residents and this was considered worthwhile.

WCAG did not and still does not have any money as it simplifies the setting up and running of a group such as ours. To continue the process with both companies we needed to find a way to get financial assistance. To this end WCAG wrote two letters, one from the WCAG group and a template letter for individuals to use, to send to both Federal and NSW State politicians to ask for assistance. The idea being that the more individuals who sent in letters the more likely it was that we would gain assistance. See 2.10.1.1Appendix 15 and 2.10.1.1Appendix 16.

It was well publicised that each and every NBN installation in towns and cities was costing the government around $3,000. We showed that for a similar amount we could build a fibre network in a rural area.

The letters to the politicians and the fact we were on ABC TV proved to be enough to get the NSW State politicians interested in our story. We were looking for any financial help we could get but asked for $2M as a starting point. This would allow us to start the build. We were confident that once the residents saw ground being broken, they would be prepared to give a financial commitment and that would provide the funds to continue.

This process took slightly longer than expected, but the wait was worth it. In February 2019 we managed to get a commitment from our local State Member for a $5M grant towards building our fibre network. Company B then offered to match that amount. We thought that all of our hard work had finally paid off and we looked forward to breaking the first ground within a few months.

2.9. Reality bites

Having gone through over three years getting the group together, finding commercial entities and going to both Federal and State government for assistance to get the project off the ground we had been given a $5M grant. This was then handed over to the NSW Department Primary Industry & Energy to manage and from this point on it was not good news.

Trying to get access to the grant was made difficult by the fact that apparently the NSW State public service had never dealt with a grant before and therefore there was no known process to distribute it. As WCAG was just a small community group we decided at this point that we should Incorporate and we were led to believe that we would need a bank account to hold the grant as it was released. With no money to call on, WCAG had to once again rely on its members to pay the necessary fees. See 2.10.1.1Appendix 18 for details of incorporating a community association.

After 6 months the department decided to change it into a project as part of the NSW Gig State program of work using the money available from Snowy Hydro 2.0. WCAG were told that this would be an advantage because we would no longer be limited to $5M and there would be more money available to fund our network. We were told that our area would be a pilot project, with a view to using the knowledge and experience gained to build networks in other parts of rural NSW. We were also told that as there was effectively no limit to funding, they were expanding the area of our project to cover further properties to the north.

WCAG expressed concern at the expanded area as it included a village and a large area of farmland with greater distances between properties. These features would increase the cost by a large margin, for the benefit of only a few more residents.

At this time there was no program of work, or even a project team that could look at technology projects. A further 6 months elapsed before they had a team together and were in a position to start working on the WCAG network.

WCAG did have a single, in person meeting with the project team to discuss the project, but basically WCAG were sidelined from then on. We were given the impression that they were the experts and we were country hicks who had no project experience or real idea of new technology. As there were several decades of IT and related experience in our group this did not bode well.

We provided all of the information we had gathered over the preceding 3 years, including the heat maps to show where properties were located, and how it was possible to reduce the costs by cutting across private property rather than running along the roads.

We took the project team for a short drive around the area to try and help them get an understanding of the topography and vegetation. We were told that we were not allowed to travel in their government cars, nor they in ours for insurance reasons. We ended up in one car with them in another, so there was no ability to point out anything interesting or provide answers to any questions they may have had, or even just proactively provide information.

After repeated requests for information we were urged to each sign a non disclosure agreement. Without this, the department would not be able to discuss anything related to the project that could be considered commercially confidential or sensitive. This agreement was so restrictive and far reaching that none of WCAG were prepared to sign it. One aspect stated that if any information leaked to the press then WCAG would automatically be assumed to be that leak and could be prosecuted accordingly. The agreement also lasted in perpetuity.

A further 6 months was required for the department to get an Expression of Interest (RFI) out to industry to see if a fibre network was possible and some indication of how to build it. This was issued on the 22 April 2020 with a closing date of June 20 2020. Having received numerous responses to the EOI which appeared favourable, the project team then moved onto the Request for Tender (RFT) process and built the tender document, taking six months to do so. The project did allow WCAG to have a look at the tender brief, not the whole tender document, so we could only respond to what

we had seen. This was issued on the 7th Jan 2021 and closed in March 2021. We were told that there had been some responses, but not the number or who they were, and were asked to keep that information to ourselves.

After the RFT was issued we were allowed to look at it. We saw how much more of the area had been covered, approximately a 100% increase, but we did not notice that part of our original area had been cut out. We had pointed out to the project team that changing the area would drastically change the pricing and that the money we had been talking about would be insufficient for the new project scope.

We distributed the information to the community to help keep them informed and it was at this point that one of them notified us that they were not included in the new map. Understandably they were very annoyed, especially as they had been very supportive and almost 100% of them had signed up with us. They adjoin to the east of our area and on their east is a ~100m drop down to a valley where the local village sits.

It was only on detailed analysis of the newly proposed area did we understand that much of it had been drawn along postcode boundaries and unfortunately the area that had been cut out had a different postcode, which they shared with the village. The project team had determined that this area would be serviced by the existing plans for the village, because they relied on postcode boundaries rather than topography. It was precisely this type of misunderstanding we wanted to avoid and could have so easily been solved by discussion and a joint drive around the locality.

This omission caused a flurry of activity, as those residents complained to WCAG and WCAG raised these complaints with the Project Team. Several of those residents also complained to our local State Member and were assured that it would be sorted out at a later stage. WCAG was accused of lying to those residents and dropping them off our map, which was distressing for us and them.

We also noticed some of the conditions that were being applied, which made the tender document confusing and would allow companies to provide 'strange' compliant responses. Strange in the fact that if they did not want to provide fibre they could put a high priced fibre solution with a drastically slimmed down non-fibre solution that would make all bids seem high. This would then slew the results of the tender process so that, in all probability, the costing would appear to be too high.

We provided feedback on the above issues, and many more within the document, but these appear to have been ignored and no amendments were made to the tender. We were told that when it came to the tender negotiation process this information would be borne in mind.

We also suggested that the way they had written the RFT would make it very difficult to evaluate the responses and determine the best solutions and pricing. The WCAG group has experience of electrical and network engineering, project management and business management and have had 30+ years experience in projects, programs of work, communications, complex project management and large tender processes (>$1bn), so there was vast experience that could have been used to help with the tender process, even if WCAG could not have been directly involved for probity and conflict of interest issues.

One of the items that the project team committed to was communicating with the residents. This happened only once and WCAG had to follow up with an explanation of what they were saying as it made zero sense to most people. We were now receiving many queries from residents asking why it had gone so quiet and when they could expect to see their new network. We made repeated requests to the department but not once did they communicate anything directly to our residents and very rarely to us. This was disappointing and difficult for WCAG to deal with as there was little information the team had and what we did have we were not allowed to disseminate.

In August 2021, after 30 months of waiting and in the middle of another COVID-19 lock-down, we were invited to a Zoom meeting with the Secretary of the Department of Regional NSW and 3 of the project team. We suspected it would not be good news, as in that case it would have come from our local State Member, along with the TV and radio reporters.

The Secretary told us that the project had been cancelled, but that the $5M was still available and he committed to working with us to try to find an alternative solution. Apparently the tender responses had failed to pass the compliance and value for money tests. This was due in part to the requirement that ownership of the network was to be passed to NSW upon delivery. Respondents had to make their money from the initial build rather than have any income from the continued sale of connections.

Further discussion revealed that the Secretary had little knowledge of the history of our project, nor the fact that we had predicted the huge increase in cost. He also indicated that we were never to be a pilot project and there was no intention to build any other networks in rural areas of NSW. However, it was agreed that there would be further meetings over the next week to work out what the next steps should be.

WCAG held an emergency meeting and decided that we should await the outcome of the next meeting before making any announcement to the local residents. The following morning DRNSW made a public announcement on their website that the project had been canned, making little of the commitment to find another solution and potentially ruining any trust that WCAG had built with their community.

At this point, whilst WCAG had over 80% of the residents behind us in our endeavour, we were back to where we were 30 months ago, but now in a lock-down pandemic where Internet access was even more important, the ageing infrastructure was more degraded, our community trust was at an all time low and the dream of 3rd world internet capabilities was fading fast.

We also had to deal with the fact that the money that would have built the network 30 months ago may not do so now and we may have lost our supportive companies due to a range of changes in technology and their other commitments.

2.10. Next Steps

A series of meetings were held with the department about how best to progress and to explore other ways to deliver better internet. One of the suggestions was to use other satellite technology, such as StarLink capability that is currently in beta around the world. The team thought this may work as an interim solution whilst the real solution was put in place.

The community still needed affordable, high-speed, large data upload and download to be a viable solution for the future. StarLink and other satellite technologies will fail most of these criteria. They are good for connectivity in good conditions, but are not really suitable for fixed base high capacity usage. The cost of the satellite services are currently 5-8 times the cost per month of what a land based solution costs to the end user. This is not sustainable in regional and remote areas.

The department, having gone through the formal tender process could now consider going to a limited number of the respondents and looking at direct negotiations with them for a suitable solution. We carefully questioned the department on what this meant for us and, in particular, if we could now contact some of the companies that had responded to the tender to see if there were other, innovative, ways that they could move forward. This effectively allowed WCAG to now communicate freely with third parties. We were told, and expected, that we could not be involved in providing information from a company to the department, nor could we be involved in any negotiations. However, this did allow us to talk to the companies, find out how interested they were, and help formulate a way forward that would suit all parties.

The way forward for use of the initial grant of $5M could be done in three different ways:

• The department could give the grant to the WCAG group for them to manage,
• The department could involve the local council and have them run the project
• The department could direct deal with the company

These had to be approved by their legal group so that was going to take a little while.

WCAG did not want to have to manage the $5M grant as there would be a requirement to indemnify the department against loss. As a community group with no funds this would be difficult, as would the accounting and banking required to handle this amount of money. We therefore were not really interested in managing the money.

Whilst the local council had pledged support for our efforts and to help advise how to meet all council requirements they were not proactive in finding ways forward. For that reason and the possibility of the money disappearing into general revenue and being assigned to other projects, we were not happy with this option.

WCAG would prefer the department direct deal with the company, but use us as true advisors and community liaison. Having talked to some of the respondents it would appear that they would view this type of arrangement favourably as it would greatly assist them in dealing with the residents and the team has knowledge that none of the department have.

WCAG decided to wait and give the department the opportunity to work out the viable next steps. Having tried the tender process the department started to look at direct dealing with interested parties. The method of engagement would be different with money being provisioned more in line with a grant and the ownership staying with the developer. This is quite a new way of working for the NSW government in ICT procurement, but is similar to the way some of the roads are constructed. So for the department they were breaking new ground and it took time to get all the required agreements in place internally before they could inform anyone, including WCAG.

With the ICAC hearings for the ex NSW Premier front of mind, they were, understandably, nervous and cautious to ensure that they followed all due process before moving forward. This resulted in further delays.

Part of the new process was to only engage with a couple of the original tender respondents. This would make the detailed discussions of proposed solutions with the selected participants more manageable, but would allow flexibility in the delivery, payment, ownership and management of the solution. WCAG could be involved in the process to ensure that the expertise and experience the group has in both the location/residents and delivery of complex ICT solutions could be leveraged to the advantage of the area. WCAG would not be involved in the financial side nor be involved in any of the contract negotiations, but could provide input to help plan the solution and help with community communications.

A letter to the preferred respondents was timed to go out by the 25th October. Just when everything seemed to be coming together, a relative of one of the senior NSW staff moved into the WCAG area causing a conflict of interest. Further time was then required to replace this staff member, who would be signing off on the project. The letter finally went out on the 17th November and both of the parties indicated that they were still interested and were happy to talk to WCAG.

The exact details and mechanisms to be used are currently, as of 31st January 2022, unclear and the speed at which this process has progressed could be described as glacial. The ICAC enquiry into the former Premier of NSW and the response to COVID-19 have been used as excuses as to why the project is not further along.

During the last month of 2021 we were given a contact point in the department and told that from now on we could only talk through that intermediary. This has the effect of reducing our voice once again and allowing the project team to distance themselves from our input.

We also talked once again to Company B, as they were one of the two respondents and were keen to make a start. Their company had matured over the 3 years, which was positive in one sense but meant that their new financial backers demanded a solid agreement with NSW government and as of yet this has not appeared.

Our community has now been waiting 3 years for our grant to be converted to a tender and then revert to a grant again when the tender process failed. It is hard to remain positive given the demonstrated lack of urgency this project has been given. It is disappointing that the project has

drawn out for so long as this has led to a lack of trust in NSW government by both WCAG and the respondents.

WCAG are waiting to see if the NSW government will actually step up to the plate, name a successful respondent and allow this project to start. It appears that they are reluctant to do that, so our hope for our fibre network is rapidly diminishing.

After 5 years of continual work in our community we are all tired and despondent and the idea of taking control once again and working directly with a provider is possibly more than we can manage at the moment. We await the outcome of the current negotiations but are realising that our network may never eventuate.

Appendix 1   Initial sign-up

Article in local newspaper, Wamboin Whisper, asking for locals to sign up to the mailing list.

Standing up for your right to fast, reliable, and affordable Internet access – Wamboin Communications Action Group

By Jon Gough, Paul Brugman & Olaf Theden

Following on from recent Whisper articles about the state of our internet connection options, a group of concerned residents has decided to get together to form the Wamboin Communications Action Group (WCAG).

We wish to investigate better communications options for our area and will need to approach ISP's and State/Federal politicians. Purely non-profit and working for the local community, we wish to get an understanding of who else might be interested in faster, cheaper, and more reliable internet connectivity.

Sign up to our mailing list at: wamboincommunications@gmail.com and let us hear from you or use the QR code above.

Appendix 2   Initial survey

- Page 1

    Why we need your help

    The Wamboin Communications Action Group is a group of local Wamboin residents who are actively seeking to improve our communities access to communications (focusing on our future Internet connectivity options).

    We are strictly a non-commercial collective of like-minded residents that wishes to improve our Wamboin/Bywong/Sutton area's access to high speed internet.

    By filling in this questionnaire, you are helping us gauge the interest in the community for high speed, affordable internet, as well as provide us with details of location-clusters that may help in expediting the arrival of services into particular areas.

    Disclaimer

    The information provided herein will be used to help the local community. Every effort will be made to keep the responses confidential.
    What may be used when communicating with third parties (eg. Ministers of Parliament, potential ISPs etc):

    - Collated spacial information (eg. map of clusters of concerned residents wishing for better internet)
    - Collated response data (eg. averages)

- Page 2

    Your name (Required)

    Your email address (Required)

    Please use the same one you used to join the WCAG mailing list. This will allow us to cross reference responses

    Your residential address

    Providing your address will allow us to identify location / population groupings and will assist with designing services such as fibre networks or wireless towers - it will also help with potentially prioritising the area with the highest proportion of actively interested residents first. Please format your response as: [Street Number], [Street Name], [Suburb]; - so for example: 1, Norton Road, Wamboin

    Your current internet use

    What is your home's internet connection at the moment

    Do not have internet
    Do not have internet due to unavailability in my area
    ADSL 1
    ADSL2
    ISDN
    VDSL
    Fixed Wireless
    3D/4G (via Modem for fixed home)
    Already on NBN Sky Muster (Satellite)
    Other Satellite

Other

If Other, what:
What do you currently use the internet for? (tick all that apply)

General Web Browsing
Streaming Videos (eg. Youtube)
Streaming TV (eg. Netfix, Stan, IPTV, ABC streaming)
Cloud services (eg. data/pictures stored in cloud)
Business Use (eg. VPN to office)
Home Business Use
Internet Phone services (eg. Skype audio, Facetime audio, VOIP)
Internet Video conferencing (eg. Skype video, Facetime video, google hangouts)
Education (Primary – Secondary School)
Education (Tertiary/Uni/Tafe/CIT)
Education (Other)

What is your current DOWNLOAD speed

If you don't know, you can always visit something like: www.speedtest.net, and find out (both download and upload speeds)
less than 1.5 Mbps
between 1.5 Mbps and 5 Mbps
between 5 Mbps and 12 Mbps
between 12 Mbps and 25 Mbps
between 25 Mbps and 50 Mbps
between 50 Mbps and 100 Mbps
greater than 100 Mbps
Don't know

What is your current UPLOAD speed

less than 0.5 Mbps (500 kbps)
between 0.5 Mbps and 1 Mbps
between 1 Mbps and 1.5 Mbps
between 1.5 Mbps and 5 Mbps
between 5 Mbps and 12 Mbps
between 12 Mbps and 25 Mbps
between 25 Mbps and 50 Mbps
greater than 50 Mbps
Don't know

What is your current average internet consumption (usage) per month?

Or, of you don't know your usage, what is your current internet plan?
<30GB
30GB - 60GB
60GB - 100GB
100GB - 300GB
300GB – 500GB
500GB – 1000GB
1000GB+
Don't know – Unlimited plan
Don't know

What are you currently paying per month (OPTIONAL) for internet access (include line rental if applicable)

Add all costs that you incur for internet access (eg. Telstra Line Rental, ADSL service charge, excess usage charges etc. Leave out any costs not related to internet - such as phone calls).
Less than or equal to $60
$61 to $90
$91 to $120
$121 to $150
$151 to $180
$181 to $210
$211+

Do you have any issues with your current internet service, if so what?

- Page 3

Your future internet requirements

This is for us to see what kind of technologies would be required to provide residents with the internet services they would like to have.
What is your desired DOWNLOAD speed

less than 10 Mbps
between 10 Mbps and 15 Mbps
between 15 Mbps and 25 Mbps
between 25 Mbps and 50 Mbps
between 50 Mbps and 100 Mbps
greater than 100 Mbps
I really need 1000 Mbps (Gigabit) or higher – I have uses for these speeds

What is your desired UPLOAD speed

less than 10 Mbps
between 10 Mbps and 15 Mbps
between 15 Mbps and 25 Mbps
between 25 Mbps and 50 Mbps
between 50 Mbps and 100 Mbps
greater than 100 Mbps
I really need 1000 Mbps (Gigabit) or higher – I have uses for these speeds

What is your anticipated average internet consumption (usage) per month?

It will increase substantially (eg. growing school aged kids, different new anticipated uses, etc)
It will decrease substantially (eg. downsizing, moving business elsewhere, etc)
It will stay about the same

Have you looked at other Internet access alternatives, if so what and why did you discount them
Is there any other feedback you would like to provide?

Appendix 3   Handout

Example handout used at country markets and meetings to try and raise awareness of the current issues that impact on the internet:
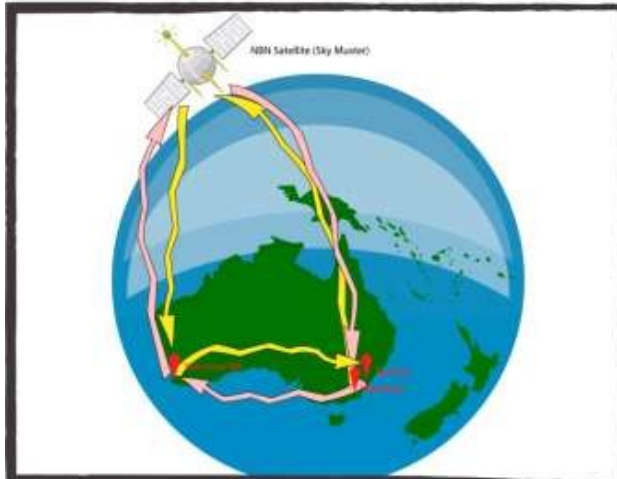
NBN Smoke & Mirrors

- The Wamboin telephone exchange is obsolete, Telstra have no parts for it. There are currently several homes without a land line because they cannot fix it.
- When this exchange fails completely, likely at the next major storm, none of us will have a land line connection or internet (ADSL)
- Telstra will have to supply you a mobile handset for phone, but there is no requirement for internet access so you won't get it.
- Currently your alternatives are, NBN satellite (~20 day turn around) or a wireless connection (turn around is dependant on demand)
- Satellite NBN services typically cost more than 4x the comparable ADSL or Fixed line NBN service, or up to 10x the cost for high data requirements.
- Maximum upload and download (combined) data plan is 70GB per month. The Australian average non-NBN usage is 82GB and NBN usage is 112GB. This has been rising about 50% year-on-year!
- Current capping, irrespective of plan, is around 30GB per month. So even if you pay for more than this you are unlikely to get it.
- If NBNco believe you are using more than your 'fair share' they will slow your connection to ISDN speeds (1/200th the top speed of ADSL) for the next 4 weeks. 'Fair share' is not defined.
- The Productivity Commission is trying to decide if satellite NBN is good enough to replace your land line. If they decide it is, then Telstra no longer has to maintain any other service including mobile.
- Satellite NBN has major latency issues when making phone calls, stuttering and over speaking making conversations difficult and frustrating. Facetime and Skype will be unworkable.

So how can you fight for better communications in the Wamboin, Bywong and Sutton areas? Sign up to the Wamboin Communications Action Group by emailing:
wamboincommunications@gmail.com

Appendix 4   Local newspaper graphical article .

Appendix 5 Example Local newspaper article

Wamboin Internet Access – NBN Satellite Disaster

Following on from Paul Brugman and John Gough's recent articles in the Whisper about the state of Wamboin's internet access (or lack thereof), the following may be of use to those unfamiliar with what is happening communications wise in our area.

It may come as a surprise to some, but we have been put onto NBN's satellite service area, and since the satellite is now up there, we are now able to get connected to the NBN. This is where the fun stops. The NBN satellite offer may well be a good deal when you are the only home in the middle of an outback property the size of Denmark, but it certainly doesn't come close to what we *already have* and what a community so close to the Canberra CBD would expect in today's day and age. Further, with the advent of the NBN offering connections to the satellite service, it is only a matter of time before the old Telstra exchanges will be shut down (NBN assures me that they won't be *forced* to shut down, but what shareholder owned company keeps their antiquated/obsolete equipment running when there are only a handful of customers left connected on it?). This means the end of ADSL in our area is coming!

Further, the surprise that Wamboin is considered a satellite service area is put into perspective when it shows up as number 10 in the list of 11,517 satellite areas across the country[i] in terms of number of households, and 3 of these top 10 are Islands far from the mainland, and 2 Tasmanian locations have already successfully lobbied the Government for inclusion in fixed line NBN offerings[ii]. (For completeness, Sutton is #29 on this list and Bywong is #35.) There are 635 households in Wamboin, and a further 489 in Sutton and 462 in Bywong. In general that means our area is highly populated and on the border-line between getting a different NBN technology choice (but this won't happen without community action, and not likely within the current NBN rollout!)

This means, that collectively, we will be burdened with a slow, and very expensive communications option (SkyMuster NBN satellite) when we are very close to the civilised world of Canberra and Queanbeyan. For a typical Wamboin family, who doesn't have access to free-to-air TV, no mobile reception and is therefore bound to whatever internet we can get for streaming services, we use between 250GB and 500GB of data per month via ADSL2. For those that like numbers and tables here is a bit of a comparison:

Technology	Download Quota (Normal living hours)	Speed (Down/Up)	Cost (p.m.) (including line rental if required)	Comment
Old Technologies currently used in Wamboin but which may reach their use-by period sooner than we expect				
ADSL2	Unlimited	8-12Mbps/1Mbps	$89-$110	This should be most people in Wamboin, though speeds and data packages may vary.
ADSL1	500GB	3-8Mbps/0.3Mbps	$127	If you are still on ADSL1, you may find you can change to ADSL2 but you have to ask for it (again every few months) and be with an ISP which gets its backhaul through Telstra's infrastructure.
New Technologies currently enjoyed in Canberra and Queanbeyan				
VDSL2	1000GB	80Mbps/30Mbps	$79	Cheap and fast
Fibre NBN	Unlimited	100Mbps/40Mbps	$110	Fast, resilient and future-proof
New Technology that we could be getting (but only with some community effort)				
Fixed Wireless NBN	Unlimited	50Mbps/20Mbps	$125	Getting NBN to privately reconsider our area would have upfront cost implications (just for the quote part) as well as leading to upfront costs to pay for the "additional hassle" of providing the service (could be thousands of dollars per household). Another option may be political lobbying.
Fixed Wireless via Lightning broadband (Melbourne based)[iii]	Unlimited	100Mbps/100Mbps	$120	Requires at group of residents to register their interest (as per previous Whisper article by Paul).
Fixed Wireless via the Signal Co (Canberra based)[iv]	500GB	25Mbit/10Mbit	$89.95	Requires at group of residents to register their interest.

New Technology that we will be stuck with if we don't do anything				
Satellite NBN (SkyMuster)	**60GB**	25Mbps/5Mbps	**$189**	Yep, that's right. This costs about twice as much as other plans, and nearly a tenth of the download data allowance. There is no way of getting more data, and NBN considers downloads in excess of 75GB (after being shaped to 128kbps) to be a breach of fair use. Also, the high latency of a satellite connection will render some internet services unusable.

As you can see in the table, <u>we will soon be paying about twice as much for an NBN service and getting nearly one tenth of the required download capacity</u>. While not everyone will be downloading as heavily, you will find that if your current connection is in the 3-8Mbps range of ADSL1/2 and you then get 25Mbps on Satellite, your download quota can disappear in no time at all (and you will be back to dial-up speeds until the next billing cycle).

Unless you wish to be left in the digital dark ages, this calls for urgent community action! There are two ways forward: either lobby NBN (probably via Ministers of Parliament) to change their mind on Wamboin's technology choice (like Tasmania's west coast already has), or engage a private company (eg. Lightning Broadband or Signal Co) to setup shop here in our district. The choices require a bit of community action, as either would require multiple interested parties to show their support and/or outrage at being left for dead in the alleyways of digital communications doom.
– Olaf Theden, Norton Rd, Wamboin.
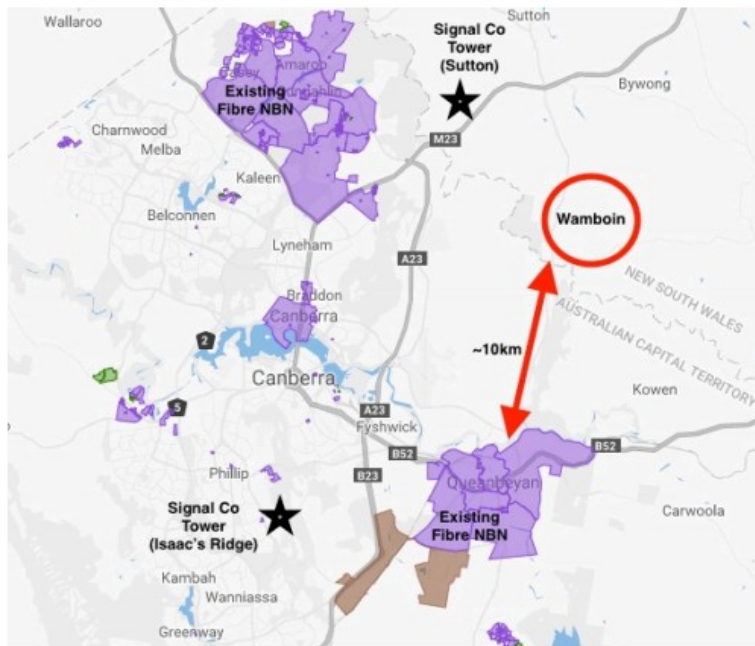
Figure: Current state of Fibre NBN rollout in Canberra and Queanbeyan as well as current Signal Co wireless tower locations. Note that Wamboin, though in close proximity to existing fibre NBN installations has been relegated to <u>satellite NBN only at this stage</u>.

i   https://www.finder.com.au/nbn-who-gets-the-most-sky-muster-satellite-coverage
ii   https://delimiter.com.au/2016/06/14/coalition-dumps-satellite-fttn-nbn-tasmanias-west-coast/
iii   https://www.lightningbroadband.com.au/
iv   https://thesignalco.com.au

Appendix 6 Set of Local newspaper articles

The following are the contents of a sequence of articles published in the local newspaper.

Internet access 101 – Data Limits.

Remember the good old days of 2.4Kbps modems and dialup, before the internet was pervasive? Well perhaps not, but you may remember Maestro and their modems, as they were built on Macs Reef Road near the Federal highway. We used to get 56Kbps access to the internet at that time, then we doubled our speed to ISDN and got 128Kbps, in both directions! At this time you paid for access to a service provider that had the capabilities you wanted, the only consideration was trying to get a modem with maximum speed.

Then ADSL arrived. Much higher speeds with the possibility of up to 8Mbps and at this time, limits on the amount of data you could download became a reality.

Now we get to NBN and broadband. This can be delivered by cable, both copper and fibre, wireless and satellite. With this introduction a subtle change occurred. You were now charged not only for the speed at which you wanted to connect., but also the data you used. Both of these have caused issues for end users, but here I will only cover data usage, where high costs can be incurred if you breach your purchased data limit.

Questions to ask your provider and why

When you look at a plan you should ask:

- What data limits do I have and when can that data be used

This is particularly relevant to satellite as data plans of up to 250GB per month are being offered, but this is typically made up of a peak and off-peak usage, in this case, 60GB peak and 190GB off-peak. Did you know that the off peak is between 01:00 and 07:00 in the morning, peak is from 07:00 to 01:00, so six hours off peak and 18 hours peak. Guess when you will normally be using the internet? Also, if you are unlucky enough to have a slow connection then you may not physically be able to download 190GB in the 180 hours (30days x 6hours) you are allowed!

Say you go to a gym and sign up for their special deal, giving you 25 hours of usage each month for $65. Sounds good eh? Then you read the fine print and discover that you can only go there during the day for 6 of the hours and the other 19 hours can only be used in the very early hours of the morning. Would you be happy? I wouldn't.

Another 'gotcha' may be the word 'unlimited'. You need to understand what it actually means from each provider. In some cases they say it is 'effectively unlimited', as the amount of data seems huge, i.e. ITB (1 TeraByte, or 1000GB, or 1000,000MB) and you think you could never exceed this. If you do the sums you will find that in about 19 hours you can download 1TB at 25Mbps. So, you could run out of your 'unlimited' plan within a day, particularly if you are updating Windows 10, Mac OSX or iPhones and with a few teenage children streaming videos and playing games. Unlikely you may think, but with the advent of 4K TV and Microsoft and Apple wanting you to update each device individually, and schools using interactive media for homework, etc. it is quite possible to run out of download, particularly if there is a reasonable access speed.

Next week I will cover the topic of speed restrictions and what to watch out for.

Internet access 102 – Speed Restrictions.

Last week I wrote about data limits, this week I will cover speed issues.

When ADSL became available, the providers relied on Telstra for the exchange equipment and you were limited in speed by the distance from the exchange. When improvements were made to ADSL you could make use of this just by changing your modem, assuming Telstra upgraded the exchange. There was no price difference between ADSL and ADSL2+, but there were potentially speed differences with ADSL2+ giving up to 24Mbps, assuming you were camped on the exchange with a VERY short cable.

With the introduction of NBN, you are now charged not only for the data you use, but also the speed at which you want to connect and often, you are paying for a higher speed than you are able to connect at. The providers, until very recently, just advertised the maximum speed it was theoretically possible to connect with, and made it sound as if that was what you would get.

Recent ACCC action against Optus and Telstra has changed that practice, as they now say 'Up to' in the speeds and in the small print blame the users equipment, for which they cannot be held responsible. Sounds OK, but in truth it is quite often the provider throttling the connection so that you don't overload their network.

Questions to ask your provider and why

When you look at a plan you should ask:

• What speed will I get if I buy X Mbps?
• What is the guaranteed download/upload speed?

Regarding speed, if you get offered 'Up to', or guaranteed 'X% of maximum speed', then think in terms of going to fill up your car. If you went to a service station and they sold fuel in a similar manner you may want 20 litres, but when you finish pumping and have paid for '20 litres' you find that you have actually only got 10 litres, would you be happy? I know I wouldn't. In fact they would be in breach of quite a few consumer protection laws in doing so. For some reason the internet does not yet, apparently, have this protection. So if you are offered a 25Mbps plan with a guaranteed 50% speed, in reality you are paying for 25Mbps and may only be getting 12.5Mbps or less! Does this seem right, or should you only pay for what you get, i.e. half the amount?

Further food for thought

In December 2017 TPG admitted selling internet services that could not be delivered, in this case plans for 100Mbps download and 40Mbps upload. They knew that the customers may not be able to get even half of that rate. The ACCC stated that "This likely contravened the Australian Consumer Law (ACL) by engaging in misleading or deceptive conduct and making false or misleading representations".

The ACCC said "This is the third major internet provider we have taken action against in the past few weeks. Internet service providers must take responsibility to ensure that their customers get the promised speeds that they pay for".

If you find yourself in a similar situation, having paid for a speed and finding that you are getting much less, then you should raise the issue with your ISP, then Trading Standards and possibly the ACCC. If enough people complain then maybe something will be done to stop these fraudulent practices and bring the same levels of protection to the consumer that we have come to expect in other areas.

Internet access 103 – Contention Ratios.

I have written about data limits and speed issues so I will now cover internet access speeds as opposed to connection speeds. They sound similar and can seem similar as after all you either get good speed or you don't, right? Well yes and no.

There are two aspects to the speed you see, one is the speed from your device, PC, Phone, Tablet, etc. to the Internet Service Provider (ISP) and the other is from the ISP to the internet. In the previous article I covered the speed to the ISP, which if they had all the content you wanted would be fine, but most of us use the ISP to get to the internet and so the second speed becomes important.

Questions to ask your provider and why

When you look at plans you should ask:

- What contention ratio do you aim to provide?
- What contention ratio do most people get most of the time?

Now, what is contention ratio? Well it is the number of users trying to use the same service at the same time and having to share it with each other. To help, think about the road system, you use the road to get from your house to Canberra. Now in the old days you would have gone slowly along a gravel/dirt road but now we have bitumen roads, with theoretical speeds of 100km/h and you will have noticed that the volume of traffic varies during a 24hr day. If you go in at 08:30-09:30 you will see lots of other vehicles, if you go in at 01:00 you may not see another vehicle. Even with the speed restrictions you will notice that you can get to Civic in about 30 minutes at 01:00 and an hour at 09:00. Why? Well you are sharing the road with others and not everyone is going to the same place as you.

The road has a contention ratio, that is the number of vehicles trying to use that section at the same time. The higher the number the more likely there is to be a slowdown. You can increase from 1, you, to probably around 10 before you start to notice that you speed up and slow down. When the number of vehicles increases the variability of speed increases with a general trend to going slower. At some point you will find yourself sitting in a traffic jam, stationary.

So the idea is to find out how many people are trying to use the service at the same time, i.e. you alone, contention ration 1:1, you and 9 others, contention ratio 1:10, you and 99 others, contention ration 1:100. Some ISP's have contention ratios around the 1:150 mark. The lower the ratio the better, a business may want a 1:10 to ensure they have good speed all the time, a home user may accept 1:50 so that most of the time all is OK.

The other aspect of this is what ratio are you getting when you want to use the internet. If you use it mainly between 16:00 and 22:00 (when the rest of the community is using it) then you will want a target ratio around 1:20-1:50, if you use it mainly between 01:00 and 07:00 then you would be happy with 1:150 as most other users will be in bed!

The net effect of all this is that you get high speed connection from your device to your home router (ratio between 1:1 and 1:10 depending on how many users are in your family), you get medium speed from your router to your ISP (ratio between 1:1 and 1:30 depending on when you use it) and you get slow speed from your ISP to the internet (ratio between 1:1 and 1:150, any more than this and you will get no service!). The ISP should be able to tell you what the peak times are and what the ratio is at this time.

Internet access 104 – Symmetry.

This article will cover a new, well relatively new, approach to the delivery of internet services, namely the symmetry of the connection. We didn't really think too much about this prior to the introduction of ADSL. When we used Maestro modems (remember them?) you basically bought the modem as a 9.6Kbs (Kilo bits per second), 19.6Kbs and most recently, 56Kbps. These modems transmitted data at the advertised speed in both directions, assuming your phone line was of good enough quality to allow it. We then moved on to ISDN, a modem with 128Kbps speeds and this was also symmetrical.

Then ADSL (Asymmetric digital subscriber line) appeared. By reducing the upload speed it was possible to increase significantly the download speed. At the time this was introduced most users of the internet were consumers, i.e. they downloaded far more data than they uploaded so this was a definite advantage. We moved onto ADSL2 & ADSL2+ which further increased the speed. ADSL started at 8Mbps down and 1Mbps up and got to 24Mbps down and 3.3Mbps up, although very few in the local area got close to the higher speeds.

Then the NBN came along. This can provide Fibre to the Premise (FTTP), Fibre to the Node (FTTN), Fixed Wireless or SkyMuster satellite service. All of these new broadband connections, apart from satellite, are symmetric by nature, i.e. the download and upload speeds are the same. However, it would appear that the use of ADSL has conditioned us to expect better download than upload speeds, so we don't question why we are getting an asymmetric service over a symmetric delivery method, even though there is no technical reason why you cannot have a symmetric service. However, because the ISP's want to maximise the number of customers that can use their service, they set a limit on the speed of upload, assuming that most of their customers are downloading rather than uploading. While this may be true in the short term, it does not bode well for the future.

In the modern age we are now using live video, Skype, WhatsApp, Facetime, etc., we are trying to use the 'Cloud' for storing our pictures and files and are using 'Cloud' applications, think Microsoft Office 365. All of this really requires the use of symmetric connections where the download and upload speed are the same. If not you will get your data from the 'Cloud' in seconds and put your data (pictures, etc.) into the 'Cloud' in minutes and hours (depending on the upload speed).

Questions to ask your provider

When you look at plans you should ask:

- What is the download speed?
- What is the upload speed?

Understand what you are being told and think about how you want to use the internet now and in the future. I can say that based on history your internet usage will increase dramatically, and in particular, your uploads will increase massively. The best solution will be a symmetric plan so that you will have as painless a future as possible, sadly, this is a pipe dream unless you live in a city.

One other thing to remember, most of the appliances, TV, Fridge, Cooker, Vacuum cleaners, etc. are all becoming Smart (not really sure about that as Smart is something quite different to Chatty) and will want to talk/upload to the internet to provide 'valuable'(?) information to you, i.e. you can check on the temp of your freezer whilst at work and how much of the floor has been vacuumed! Very essential to a stress free work day.

Internet access 105 – Delivery technologies.

This article will cover the different delivery technologies that can be used to access the internet.

At the moment we are in the middle of a major transition from ADSL (Asymmetric Digital Subscriber Line) to the various offerings including wireless, mobile data and fibre (FttP, FttB, FttC, FttN).

ADSL uses a modem to send a digital signal down an analog copper wire, your phone line. This signal is at a higher frequency than your voice signal which is why you need a splitter on your line to allow your phone to 'share' with the ADSL modem, otherwise you get a high pitched squeal.

Wireless can be mobile or fixed. We are all familiar with WiFi in the home, at work and in general public areas. This is mobile or omni-directional wireless, where the wireless signal is broadcast in all directions by all devices, including the WiFi hub. This means that the range is very limited so you don't have to go far before you lose the connection. This is how a mobile phone works, which is why so many towers are needed to give a good coverage. We are also familiar with wireless broadcast as that is what is currently used to deliver your radio and TV. The more information that needs to be

sent the more sensitive the signal is to distance and intervening objects. A radio will work well in most places, but the TV quite often requires a directional antenna AND a signal booster to get an acceptable picture. This is a one way flow, i.e. from the broadcaster to you.

For internet access you need to send information back to the broadcast station, so fixed wireless is used. A special antenna is mounted on your roof, pointing at the broadcast location. It is used to receive a weak signal, boost it so that it is useable and send a signal back to the broadcast point. The broadcast location may have an omni directional antenna or, more likely, directional antennas that cover a segment of a circle, i.e. a quarter or a sixth. This allows for a stronger signal to be sent in specified directions which then allows for greater distances.

Next we get to Fibre, and this can be delivered to your premise (FttP), to the apartment basement (FttB), the curb (FttC) or the Node (FttN). FttC and FttN will use the existing copper phone line to get from the curb or the node to you. This will be limited to around 100Mbps unless the copper link is very short. There are also two types of network available with fibre, Active and Passive. Active networks require the use of a powered router at each 'node' (think your home WiFi, ADSL modem or Wireless device), which allows traffic (data) to be directed to the device that wants it. Active networks are more expensive but they ensure that the 'last mile' is handling only data for that particular end point, so you can get your 1Gbps speed as only you will be using it.

Passive networks use un-powered devices at each 'node'. These devices just send all data to all end points and rely on each end device to filter out the data meant for them. Passive networks provide less and less real data to each user as the number of users increases, so with 1 user you get 1Gbps, with 10 you get 100Mbps, with 32 (the current planned max NBN sharing) you get ~32Mbps. See where this is going?

In the current environment only active fibre networks will deliver the fastest speeds into the future. In a few years when we will need 100Mbps or more, all the other technologies will need to be replaced.

Internet access 106 – Future Proof.

This is the last article in this short sequence and covers the future usage based on a knowledge of how things have changed over the last 50 years.

My first introduction to computers was at school using a teletype (a very basic form of electric typewriter) an acoustic coupler (this made the squealing sounds needed for digital information in an analogue world) and a phone handset that could be placed, very carefully and precisely, into the foam cups of the acoustic coupler. This allowed us to connect with a massive Mainframe (you can see the sort of thing at Tidbinbilla tracking station, they have an example of a 1970's mainframe there) and do simple physics calculations (do you remember doing the laws of motion and finding how far you could throw a ball, dependant on the speed and angle to the horizontal you threw it?). This was VERY exciting and it would print out the flight path of the ball on z-fold, green striped paper as a set of asterisks! Wow!!!

Things have progressed a little since then, not only in the miniaturisation of computers but also in the way they communicate with us. We have moved on since we used 2400bps (bits per second) acoustic coupled modems to now expecting 20-100Mbps (Mega {million} bits per second) as a norm.

In the last few years there has been a lot of talk about the NBN. It was originally sold to Australia as being the panacea for all the issues with the 'old' ADSL and that ALL Australians would get it. The marketing suggested that all but an unfortunate few, who lived hundreds of kilometres from anyone else would get fibre, the new wonder stuff. This was sold as providing world leading ultra high speed broadband to all users.

So what is 'fibre'? This is very thin strands of very pure glass bundled up into a cable. You do need to be fairly careful how you handle it as sharp bends will break the glass fibres. Instead of using sound and electricity, fibre uses laser light. The light is broken up into very short pulses (rather like flicking

on and off a torch) and is in many more 'colours' than you can see, some of it being in the high infra red and some of it being in the low ultra violet and beyond. Light travels about 10 times as fast as electricity AND can go much further in fibre with minimal losses than an electrical signal down a copper wire.

One of the benefits with fibre is that by changing the colour of the light from, say, red to blue gives an increase of about 10 times the data that can be sent down the same cable. So by changing some hardware routers (rather like your modem, but on steroids) the speed of data can be drastically increased in an existing cable. Currently there appears to about 50+ years of growth in fibre capacity.

Computing, and networks are an essential part of computing, has been following Moore's Law for over 50 years. This law 'states' that there is a doubling of '….' every 24 months, where '….' started as transistors in an integrated circuit, but has also proved true of storage, memory, computing speeds and network capacity. What does this mean for you and me, well if you use 10Mbps today, you will use 20Mbps in two years, 40Mbps in four years, 80Mbps in six years, 160Mbps in eight and 320Mbps in ten years time. I am sure most people would actually want considerably higher than what we currently have. From talking to many residents, around 25Mbps is currently the lower end of the sweet spot.

The above is all well and good, but here is the crunch, SkyMuster satellite is limited to a maximum of 25Mbps, Wireless 'can' get to 100Mbps if you push it, but it is limited by the number of concurrent users. NBN FttN (fibre to the exchange, copper to the house) is limited to 100Mbps even if you are lucky to have a good copper cable. NBN FttP (fibre to the premise) is limited to 100Mbps as all users on the exchange share the same capacity like Wireless.

A modern network should provide scaleability to the user for the next 20 years minimum BEFORE other technologies have to be investigated. If this is not the case then there will be continual replacement of the networks, but this time it will be much more expensive. The NBN is currently going to cost $30-100billion and it will be obsolete before it is delivered. Think about it.

Internet access 107 – 5G explained.

This article will cover the emergent 5G mobile wireless delivery technologies that can be used to access the internet.

At the moment we are in the middle of a major transition from 3G/4G hybrid to 4G and 5G mobile networks. 3G is the last of the voice services with both 4G and 5G being digital data services. With 3G voice calls are carried as analog over a digital signal, with 4G and 5G there is no analog signal at all, it is all digital data. So if you have a 3G phone you will not be able to make or receive phone calls in a 4G only area. You may be able to send an SMS or dial 000, but don't count on it. If you have a 3G/4G phone you probably are not aware of the issue as the phone switches automatically between 3G and 4G depending on what service you are trying to access.

Telstra are currently building 4G only areas which don't have 3G capabilities at all. If you have a 3G/4G phone you will probably know when you have entered one of these areas as you will get an automated message from Telstra saying you are in a 4G only area. Most 4G phones (3G/4G hybrids) on the market can make phone calls over a digital connection. They do this quite happily in the rest of the world, but unfortunately Telstra has only turned on 4G calling for the latest, top of the range, phones. Most people don't have these and therefore cannot use their phone for normal voice calls. You can make Zoom, WhatsApp, Teams, Signal digital calls, but these will be limited to people you have already made calls to. There is no way to dial a new phone number and have a voice call.

We are all familiar with WiFi in the home, at work and in general public areas. This is mobile or omni-directional wireless, where the wireless signal is broadcast in all directions by all devices, including the WiFi hub. This means that the range is very limited so you don't have to go far before you lose the connection. This is how a mobile phone works, which is why as the data speeds increase, so many towers are needed to give a good coverage. The more information that needs to be sent the

more sensitive the signal is to distance and intervening objects. A radio will work well in most places, but the TV quite often requires a directional antenna AND a signal booster to get an acceptable picture. This is a one way flow, i.e. from the broadcaster to you.

With the use of mobile phones and devices the data flow is in both directions, but by definition being mobile all signals have to be broadcast in all directions from the mobile device. The base station you are connected to may be partially directional, you can see this on Telstra towers which have long, vertical, oblong antennas spaced around the tower. This allows for a higher density of traffic and makes the receiver more sensitive to weak signals (all mobile devices have weak signals to avoid 'micro-waving' the brain).

With the reliance on mobile technologies, particularly mobile phones, the need to have good bidirectional coverage is increasing. Also the amount of data needed is increasing, hence the move from 4G to 5G. It sounds simple, but the fact is that the higher the speed the higher the radio frequency needed and the shorter the distance it travels and the more items that can block or degrade the signal. Standard low frequency radio frequencies can quite easily go through trees/woods, houses, people, cars, etc. The newer TV signals are a higher frequency and start to have issues with woods and houses. When you get to 4G frequencies they are really about direct line of sight without any intervening obstructions. They will tolerate small items, but the quality of the signal deteriorates rapidly. When true 5G frequencies are used, often referred to as millimetre wave lengths, they are very dependent not only on true line of sight, but with no obstacles between the transmitter and receiver, and they are relying on the distance between the transmitter and receive being in the order of less than 100m. In a city this would equate to at least and antenna on each road intersection to enable continuity of signal. Also even glass windows can reduce the signal strength, so in city buildings they are looking at placing 5G hotspots both inside and outside of the building to ensure the service is reliable.

There is confusion around 5G capabilities as there are two factors at play in this technology. One is the radio frequency of the carrier signal, the other is the encoding of the data onto the carrier signal. So it is quite possible to have a 5G encoded message delivered on a standard short wave radio carrier. The data rate obtainable will be abysmal and many of the capabilities will be lost due to the slow speed. Telstra and other providers are in the process of upgrading the mobile phone network to use both 4G and 5G to deliver services. This means using a new phone or tablet that an uses these encodings. Part of the reason for decommissioning 3G is that it is seen as 'old' and therefore 'not needed' and it frees up some of the radio spectrum that is used. In non-urban areas this 3G frequency will be used to deliver 5G services. It is highly likely that 5G over 3G will be slower than the current 4G, but it will not require as many radio towers to be provisioned. This may sound great, particularly if you are just 'passing through', but if you intend to try and use 5G as you main data access network it may not live up to expectations.

Jon Gough
Wamboin

Appendix 7 Wamboin Whisper Article – Feb 2017

Wamboin Communications Action Group

The current telephone & broadband situation

The Wamboin telephone exchange has been showing its age for quite some time, but it has provided a 'mostly' reliable voice & data service except during and after heavy rain. This exchange is probably the oldest exchange currently in use by Telstra and this has an implication for its maintenance, as the parts are no longer available (Telstra techs have confirmed this), so it can be considered obsolete. Currently Telstra are 'just' maintaining it, although they frequently fail to meet their obligations under the Universal Service Obligation (USO). However, it gets more bleak than this:

Telstra's regulatory obligations to satisfy the standard telephone service universal service obligation (USO) do not define the type of technology that Telstra must use to supply a standard telephone service…

Telstra currently uses its fixed line copper network, satellite and wireless solutions for the provision of the standard telephone service. The Department expects satellite and wireless technologies will continue to be used, where available, for supply of the standard telephone service in the residual 7% of Australia if the copper serving a premises is too degraded for use.

What this means it that when our exchange equipment dies completely (something that can happen at any minute), Telstra may well just hand you a mobile phone or satellite phone to provide you with a standard telephone service (STS). However this means your current ADSL connection will be gone, and your default option for internet connectivity will be the NBN Sky Muster satellite; a service already overwhelmed and under-delivering to Australians in regional and remote areas (with only 10% of its projected user base currently connected). There is currently no obligation to give you ADSL or any other internet connection!

Sky Muster and what it means for you

Sky Muster NBN services typically cost more than 4x the comparable ADSL or Fixed line NBN service, or up to 20x the cost when higher data requirements are factored in.

Importantly downloads are capped at 70GB in peak periods (@~$200/month), with NO ability to increase this at the present time. In fact, NBNCo enforce an average 30GB per connection per 4 week period limit on the service as satellite bandwidth is limited and already congested.

To put this into perspective, the average Australian fixed-line connection downloads 82GB per month, while the average NBN fixed-line connection downloads 112GB per month (when you have a faster connection, you tend to use more), and this has been rising about 50% year-on-year!

To add to this, the satellite service comes with high latency (delay) making it difficult to use for telephony/Skype/Facetime services. Remember the days of making an international call and needing to wait a few seconds before speaking to ensure you didn't talk over the other person? This will be the new normal when you call your next door neighbours via Sky Muster!

If the claimed satellite speeds were accurate, you could use up your entire monthly data in as little as 6 hours! Although you would incur the 'Fair use limit before this and be throttled to 128KB/s for the rest of the month.

NBN Co's Fair Use Policy

• NBN Co requires each customer to limit their Data Usage to no more than 150 GB in any four week period.

• Furthermore, NBN Co requires each customer to limit their Peak Hour Data Usage to no more than 75 GB in any four week period.

• NBN Co requires all RSPs to limit their average customer Peak Hour Data Usage to no more than 30 GB of downloads and no more than 5 GB of uploads in any four week period.

• As a result of this policy, Plans with smaller data allowances represent better value than Plans with larger ones.

The Alternatives

• Lobby for fixed-line or fixed-wireless NBN for our area

• Engage with alternate service providers to set up other internet options

What we aim to do & why we need you

We aim to explore the alternatives, in order to facilitate the delivery of fast, reliable, and affordable internet, and possibly VOIP(phone via internet) for Wamboin & the surrounding districts.

What we need from you:

In order to achieve this goal, we need you to join us by emailing:

wamboincommunications@gmail.com

This will help us get an understanding of where high-speed, and/or high data requirements are desired in our area, and will help amplify our voices when it comes to lobbying politicians, service providers and departments.

We need to act before our current ADSL services die of old age and neglect. Don't wait until it is too late!

More information

More information is available from our website: https://sites.google.com/site/wamboincommunications/

Appendix 8 Door knocking flyer

Do you want FIBRE BROADBAND? - Sign up NOW

You may have already heard about the possibility of our area getting a broadband fibre connection to each property. The Wamboin Communications Action Group (WCAG) is in discussion with a Company A to lay fibre optic cable around this area, giving everyone who chooses to connect a superfast internet connection, faster and more reliable than the satellite service NBN is offering and at a cost comparable to what our friends in Canberra pay.

AS A COMMUNITY and AS RESIDENTS WE NEED TO ACT NOW

- **Your current ADSL service is not guaranteed past 2020**

Whilst Telstra has recently made some verbal promises to continue to support ADSL in the area there is nothing to stop them turning off your ADSL. The Universal Service Obligation and co-requisite Copper Continuity Obligation will no longer apply after 2020. This means that Telstra will no longer have an obligation to provide a copper landline to each property. Given that our exchanges are some of the oldest in the country and not easily serviceable, it is unlikely that Telstra will bother to fix them or replace them if they don't have to. Some local residents have already been advised that their copper services won't be repaired. In the future you may well find yourself forced onto inferior and more expensive mobile or NBN Sky Muster service options.

- **You will need increasingly more and more internet bandwidth**

More services are being delivered via the internet, needing higher speeds and increased data. Government and service industries are moving towards online delivery of many functions, including medical, social, business and tax services. Schools are using the internet for homework and study. TV is moving towards live streaming rather than free-to-air transmission. If your internet service does not keep pace you may lose access to key services (so even if you still had your ADSL it would not be able to support your long term needs – and Sky Muster certainly doesn't provide download capacity to support streaming.).

WE NEED TO ACT AS A COMMUNITY

- To make this a reality we need as many people as possible to get on board. Laying fibre in the ground is an expensive business and our partners need a minimum number of properties to make this feasible and minimise costs. Even if you don't want to connect to the service, potentially you can still support the community by allowing your property to be part if the network design (and keep your options open for future connection).

IT'S A GOOD INVESTMENT

- The quality of a property's internet connection is impacting sales and house prices around the country. A fibre connection to your home is a key selling point and, research would suggest, could increase your selling price by at least 1% but more likely much more.
- You will no longer need to pay for a landline and can potentially even use the network to make your mobile phone calls over your house wi-fi even if you're outside the mobile coverage area.

WHAT and WHEN

- The planned solution is to install a private fibre network in the Wamboin, Bywong and Sutton region and, subject to the network design, to connect almost every property (i.e. Fibre to the Premise - FttP); a solution faster than wireless, cheaper than mobile and upgradeable over time.

- Initial feasibility and costs have been assessed and the network is at the detailed design stage; the aim being to commence laying cable in mid 2018 with the entire network to be in place within 18 months.
- Our partners, Smart Farm Net (SFN), are asking for expressions of interest to ensure your property is considered during network design (and to ensure we maximise the number of properties involved to minimise costs). There is no requirement to sign a contract or part with any cash - at this point it is just gets you on the map.

There are two steps

1. Sign up at the community site:

    https://sites.google.com/site/wamboincommunications/

    Join WCAG for general project updates (we won't divulge your information to others)

2. Indicate your interest with Company A by competing their survey:

    https://www.surveymonkey.com/r/Wamboin2017XX

    If you are interested in getting the high-speed fibre access visit SmartFarmNet's survey to register your interest (since we won't divulge your info to a third party you need to do this yourself)

Appendix 9 Starlink – A potential interim option for local residents

The WCAG has been approached by a substantial number of residents wanting advice on Starlink – either in advance of our fibre network or as an alternative. This note provides some background on Starlink, explains why the WCAG believes that it may be an option for some residents in the short term, and also why it may not be.

For those unaware of Starlink – this is a satellite-based internet service being built by SpaceX. When completed, Starlink will have between 20,000 and 40,000 small satellites in low earth orbit and offer high speed, low latency broadband services to people located in regional and rural communities across the world. Please note that, in the Australian context, Starlink is effectively competing with NBN's satellite offering known as SkyMuster. Though, to be frank, some would argue that it really isn't a competition since the SkyMuster service is so poor by comparison.

As at December 2021, Starlink has a little over 1600 satellites in orbit as part of its "Beta Phase" deployment and has used these over the last year to complete testing of the system. It has allowed a limited number of customers to connect to this network as part of the trial under a program knows as the "Beta than nothing" program. This Beta program has apparently now finished, and it is understood that as more satellites are added to the network, Starlink will progressively allow additional customers to sign-up and connect. Assuming this all goes to plan the service will be in full commercial production in 2022.

One member of the WCAG committee has been participating in Starlink's Beta Program since May 2021. Overall, the experience was found to be far superior, more reliable and more cost effective than his previous experience with NBN's SkyMuster satellite service. The advantages and disadvantages experienced are summarised below, along with some of the other issues that Starlink users have found. In summary though, while it is not a particularly cheap service (see below), it is certainly much faster than other options available and, as there are no data limits, it supports all the major streaming services at full 4K resolution (eg Netflix, Stan, Prime, etc). However, network latency does vary a lot, and with occasional short outages (10 to 20 seconds), and some longer, it has problems with video conferencing and any VPN use. For general web browsing, email, YouTube, etc, it works fine.

Finally, as per our last community update, the NSW government is now considering several alternative proposals to construct our community fibre network. These were submitted following the EOI process undertaken in November 2021.

Based on our knowledge of these proposals, we can confidently say that a fibre-based community network will be far cheaper, faster, more reliable, and certainly more "future proof" than what we understand to be Starlink's production service or other wireless based offerings for that matter.

Assessment of Starlink's service offering:

Speed	It's fast … but your speed will vary … a lot! Typically download speeds exceed 100Mbs and it's not unusual to see 200Mbs plus. However, it's also not uncommon to see this drop to around 50Mbs. Uplink speeds are usually about 15% to 20% of the download. Importantly, as this variability in speed relates to

	the number of satellites visible in the sky, it will probably reduce as Starlink adds more satellites to its network. It's also worth noting that as the number of users increase there is a high probability that the performance each users receives will decrease. Whilst Starlink should not suffer as badly as SkyMuster in this context, this issue will still arise given the fact that, unlike a fibre based service, each satellite must share the bandwidth with multiple users. It is hard to predict how Starlink might respond in terms of providing extra satellite coverage.
Cost	You need to purchase the installation kit/equipment to connect to the network. This includes the "dish", router, cabling and mounting bracket/stand. The current costs for these items are approx. A$800 (inc shipping), though this is expected to drop by about 30% when Starlink release their new hardware soon. Monthly service charges are a bit over A$143 per month. Note that this is slightly more than the advertised fee of $139 as you will billed out of Starlink's Singapore office and be subject to an international currency conversion fee. You can cancel the service on a month notice however there is no refund for the kit.
Installation	You will need to install the satellite "dish" on your roof or near your house. It must have an unobstructed view of the sky. The original dish has a fixed length cable between the dish and the router (30m) which may limit your options in terms of locations. The new dish reportedly has a shorter length but does allow for and extension cable. The router that is included supports WiFi but the range of the WiFi is quite short. You may need to add range extenders or a WiFi mesh system to provide good coverage through your house.
Data Limits	Currently the are no download limits. However, there is some speculation that these may be introduced in the future.
Availability	The service is primarily restricted to regional and rural locations. There are rumours that Starlink are currently limiting the number of customers able to connect to the network as there have been delays in launching additional (and upgraded) satellites. There are certainly many reports of people waiting many months for their kits to be shipped after signing up and paying their deposit.
Reliability	While there are regular short outages of 10 to 20 seconds (a few times each hour), there have also been extended outage periods over the last few months. Importantly, the service is definitely affected by storms, rain and even heavy cloud cover. If you are web browsing or using email these outages probably will not affect you. If you are streaming content however, you may experience random freezes. Of more concern is if you are using bi-directional video calling/conferencing (e.g. Whatsapp, zoom, messenger, facetime, MS Teams, etc), you may lose the connection altogether and have to re-establish that connection and need to rejoin the meeting. This will be of considerable impact for 'work from home' users. This type of outage is also highly likely to cause

	VPN's (Virtual Private Networks) and cloud based applications, i.e. Office 365, to lose connection and require a restart.
Potential Legal Issues	While we understand that Starlink is registered as an Australian ISP, as a USA based company you may find that access to some data and services will be subject to US law and their rulings on what is acceptable content and access, as well as privacy and data sharing. The USA already has 'interesting' data ownership laws compared to Australia, and the way that data can be used is not necessarily what you expect. If you have issues with them you may find it difficult to get a resolution to the problems or find a satisfactory solution.
Power	You need to be aware that the dish uses a lot of power – 90 watts. Over a year, that will represent more than 750kWh and, assuming your power costs are about $0.26 per kWh, will add approx. $200 to your power bill for the year.

Appendix 10 Broadband News

Broadband News

Wamboin & Surrounding Areas

Our Mission:

To lobby for, engage with and otherwise champion the cause of obtaining fast, reliable and affordable internet for Wamboin and surrounding districts.

The current telephone & broadband situation

The Wamboin telephone exchange has been showing its age for quite some time, but it has provided a 'mostly' reliable voice & data service except during and after heavy rain. This exchange is probably the oldest exchange currently in use by Telstra and this has an implication for its maintenance, as the parts are no longer available (Telstra techs have confirmed this), so it can be considered obsolete. Currently Telstra are 'just' maintaining it, although they frequently fail to meet their obligations under the Universal Service Obligation (USO). However, it gets more bleak than this:

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What this means it that when our exchange equipment dies completely (something that can happen at any minute), Telstra may well just hand you a mobile phone or satellite phone to provide you with a standard telephone service (STS). However this means your current ADSL connection will be gone, and your default option for internet connectivity will be the NBN Sky Muster satellite; a service already overwhelmed and under-delivering to Australians in regional and remote areas (with only 10% of its projected user base currently connected). There is currently no obligation to give you ADSL or any other internet connection!

In this issue:

1: The current telephone & broadband situation

2: NBN Satellite: What this means for you.

3: The alternatives.

4: What we aim to do & why we need you

Join our efforts by subscribing to :
wamboincommunications@gmail.com

https://sites.google.com/site/wamboincommunications/

Sky Muster and what this means for you

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Importantly downloads are capped at 70GB in peak periods (@~$200/month), with NO ability to increase this at the present time. In fact, NBNCo enforce an average 30GB per connection per 4 week period limit on the service as satellite bandwidth is limited and already congested.

To put this into perspective, the average Australian fixed-line connection downloads 82GB per month, while the average NBN fixed-line connection downloads 112GB per month (when you have a faster connection, you tend to use more), and *this has been rising about 50% year-on-year!* [2].
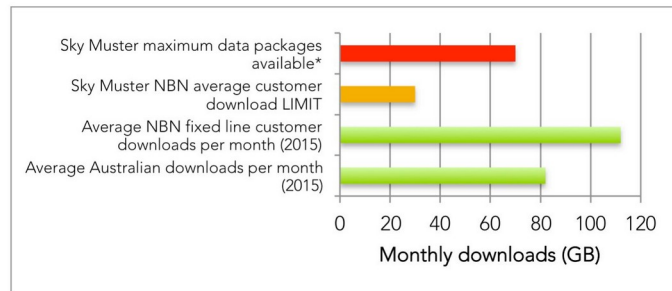
To add to this, the satellite service comes with high latency (delay) making it difficult to use for telephony/Skype services. Remember the days of making an international call and needing to wait a few seconds before speaking to ensure you didn't talk over the other person? This will be the new normal when you call your next door neighbours via Sky Muster!

If the satellite speeds were accurate, you could use up your entire monthly data in as little as 6 hours!

The Alternatives

• Lobby for fixed-line or fixed-wireless NBN for our area

• Engage with alternate service providers to set up other internet options

Act before it is too late! Join us now!

What we aim to do & why we need you

We will aim to explore the alternatives presented herein, in order to facilitate the delivery of fast, reliable, and affordable internet for Wamboin & the surrounding districts.

What we need from you:

In order to achieve this goal, we need you to join us by emailing:

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This will help us get an understanding of where high-speed, and/or high data requirements are desired in our area, and will help amplify our voices when it comes to lobbying politicians, service providers and departments.

We need to act before our current ADSL services die of old age and neglect. Don't wait until it is too late!

Sources

[1] Senate Environment and Communications Legislation Committee

Inquiry into telecommunications legislation amendment (deregulation) bill 2014 – further referral

Answers to questions taken on notice

http://www.aph.gov.au/DocumentStore.ashx?id=d45ec1c7-760b-4927-8023-f858f20b20be

[2] NBN users download more data per month than national average

http://www.zdnet.com/article/nbn-users-download-more-data-per-month-than-national-average/

* Sky Muster data limit includes peak time use only, as Sky Muster off-peak data is only between 1am & 7am which is useless to most normal people.

Broadband News
## Wamboin & Surrounding Areas

Our Mission:
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NBN Sky Muster & the new digital divide

While all the hype about the NBN makes you *believe* that it will be a great step forward, the reality of what it means for Wamboin and the surrounding areas could not be further from the truth.

While the digital divide between city suburbs and regional suburbs like ours has always existed (we have poorer ADSL speeds and need to pay a few $ more for "Region 3" ADSL compared to Canberrans), the new NBN Sky Muster satellites will mean a whole new digital divide coming to regional Australia (just 10kms from the CBD)! While headline grabbing speeds are one thing (and the satellite is slow by any modern comparison to fixed line alternatives); the difference in data download limits couldn't be more stark [1, 2]:

Historical Average Australian Monthly Downloads
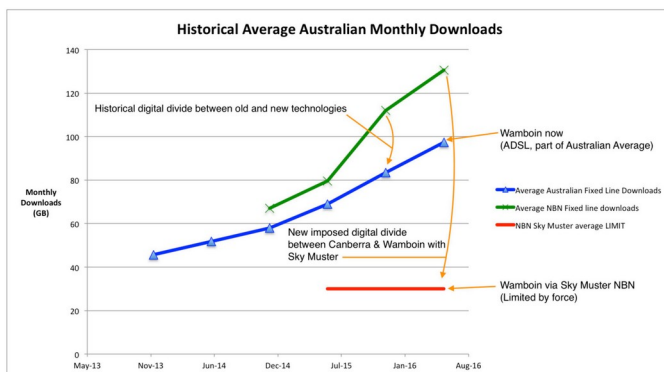
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NBN Sky Muster and what this means for you

High latency

If you make a call to your neighbours via VOIP & Sky Muster it has to travel:

Wamboin - Sky Muster - Waroona (WA) - Sydney - Your ISP - Their ISP - Waroona - Sky Muster - Wamboin

A round trip that can take about 2 full seconds!

Introducing very noticable delays!

Unreliable

The Sky Muster signals are easily obstructed by clouds, rain, or other weather events.

These weather events don't even need to be overhead - just somewhere in the communications path.

Don't expect it to work when needed!

Digital Divide!

While fixed line NBN customers enjoy unlimited downloads (and have been using 50% more data each year); Sky Muster NBN customers are limited to an average (across all satellite users) of 30GB, with maximum plans available at 70GB - with NO forseeable increases due to capacity limits of the satellites.

Education suffers due to lack of accessible internet!

School kids in town — Unlimited downloads for research & studies @ $60/month — A+

School kids Wamboin — FAIL — 70GB download limit for the whole family @ $200/month

The NBN satellite is the biggest con-job the current government has pulled over our area in recent times! - Originally designed for remote users and now being utilised for all regional and even city areas that they can't be stuffed to service properly.

The Alternatives

- Lobby for fixed-line or fixed-wireless NBN for our area

- Engage with alternate service providers to set up other internet options

Act before it is too late! Join us now!

What we aim to do & why we need you

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Sources

[1] Australian Bureau of Statistics, 8153.0 - Internet Activity, Australia, June 2016

http://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/8153.0 Main%20Features4June%202016?opendocument&tabname=Summa ry&prodno=8153.0&issue=June%202016&num=&view=

[2] NBN users download more data per month than national average

http://www.zdnet.com/article/nbn-users-download-more-data-per-month-than-national-average/

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Broadband News

Wamboin & Surrounding Areas

Our Mission:
To lobby for, engage with and otherwise champion the cause of obtaining fast, reliable and affordable internet for Wamboin, Bywong and Sutton.

Welcome

Over the past few months the WCAG committee has been busy working on communications issues in your area.

We have engaged with politicians and representatives, via letters, attending "meet the member" functions and making ourselves heard at local field days.

While perhaps not surprising, we are sorry to have to tell you we are seeing some familiar patterns:

- Politics is slow; all about promises, excuses and not much delivery; and largely misinformed about the growing digital divide between city and regional areas.

- NBNCo considers our area "ready for service" – finished. With an utterly substandard Satellite service as the only option.

- Telstra is non-committal about keeping our ADSL online – especially with the growing list of people in our area who are having difficulties accessing ADSL services (eg. No investment planned to add more ports and even disconnecting some residents where – for example previous owners had ADSL, but the new owners can't get ADSL anymore).

There's a common saying that "if you want something done right … do it yourself". In short – if we don't do it ourselves, we will continue to suffer horrible and worsening Internet connectivity into the foreseeable future.

So, we have been in discussions with various organisations about providing our area with fast, reliable and future proof network options. We are very happy to say that at least one of these is looking particularly promising.

In summary – At similar costs to existing services, residents in Sutton, Bywong and Wamboin could have access to a community driven Fibre To The Premise (FTTP) network.

Read on to find out more!

In this issue:

1: What we have learned so far

2: The way forward – A community FTTP (*Fibre)* Network

3: What we need you to do

Potential fibre network to your door! Make sure to join us in order to stay informed:

https://goo.gl/forms/Q8eCiQ6jkScR2Vu33

Join our efforts by subscribing to :
wamboincommunications@gmail.com

https://sites.google.com/site/wamboincommunications/

The way forward – A community Fibre To The Premise (FTTP) network

Thank you to those who have completed our survey, we've had over 100+ responses that show our area to be made up of citizens desperately wanting a better broadband service including a very significant number of business activities. You are keen for fast and reliable internet with significant download quota requirements. The low satisfaction combined with the sums our residents (that's you!) are paying for sub-optimal networks now (via ADSL, wireless or satellite) clearly show that the existing services are not providing value for money. The survey confirms that as an area, the Wamboin/Bywong/Sutton region ticks the boxes for a fibre network.

Talking to fibre providers with experience in providing broadband to rural communities, it has become obvious that our area is a prime candidate for our own local fibre network. A service which could offer us much faster speeds, more reliable service, with unlimited downloads for the same costs as presently being paid for limited, and intermittent fixed and wireless connections.

We are currently liaising further with providers to refine a costed model. We are pretty confident that this model will put our area onto the truly high-speed, future-proof broadband path.

The idea being investigated at the moment is a community driven local fibre network passing from premise to premise in a mesh configuration. It will require the laying of new optical fibres across properties giving us truly future-proof broadband with built in redundancy. This fibre based network would initially offer speeds ranging from 20Mbps all the way to 1000Mbps (depending on your needs and budget) and importantly would be symmetric (ie same speed up and down – unlike what NBN is offering us). And the best bit… downloads would be unlimited!

Importantly – the aim is to keep costs on a par to those currently being paid for existing ADSL and wireless services – but delivering a vastly better and more capable service now and into the future.

What we need you to do

If this fibre idea sounds good to you (and we hope it does) – we need you to get your neighbours involved. A fibre network of this kind requires our community to come together and participate jointly. Fibre routes will need to be planned. The more people joining up now reduces costs and provides greater flexibility in designing fibre pathways. It is likely that the costs to residents of joining the network at a later date could be significantly higher. Perhaps on a more positive note though – there is increasing evidence that the value of properties in Canberra connected to NBN Fibre are now commanding a premium over those that are not.

We believe therefore that it is in everyone's interest to get connected as early as possible. This requires everyone to spread the word now, and ensure we know of your address as someone who is keen to get connected to a high speed future.

Join us now – visit:
https://sites.google.com/site/wamboincommunications/
or sign up directly via the survey:
https://goo.gl/forms/Q8eCiQ6jkScR2Vu33

- Tell us where you are (complete the survey link above)
- Talk to your neighbours to ensure they are also joined up (you can give them a copy of this flyer)

What we aim to do & why we need you

We will aim to explore options and lobby on your behalf, in order to facilitate the delivery of fast, reliable, and affordable broadband internet for Wamboin, Bywong & Sutton.

In order to achieve this goal, we need you to join us by supporting us - visit our website and complete the questionnaire (see links in this flyer).

The most important step now is to get as many residents as possible aware of our efforts and to make sure that we know your address as being a property interested in a communications network fit for the future.

If you have any questions please contact us by emailing:

wamboincommunications@gmail.com

This will help us further improve our understanding of where high-speed, and/or high data requirements are desired in our area, and will help amplify our voices when it comes to lobbying politicians, service providers, departments and designing a fibre network.

We need to act before our current ADSL services die of old age and neglect. Don't wait until it is too late!

Increase the value of your property – join us to hear about a fibre network to your home.

2

Broadband News
Wamboin & Surrounding Areas

Our Mission:
To lobby for, engage with and otherwise champion the cause of obtaining fast, reliable and affordable internet for Wamboin, Bywong and Sutton.

Fibre broadband for our area!

As presented at the community meeting held on 13 December, WCAG is pleased to announce that we have a very promising option to provide a fast, reliable and affordable fibre-to-the-premise (FTTP) network in the Wamboin, Bywong and Sutton regional areas.

For those that missed the details, the short-form summary is as follows:

We have been in discussions with SmartFarmNet (SFN), who are proposing a private fibre network for our area, with shareholders being those who sign up for a connection contract (5 year term).

After much effort and planning, the indicative pricing* for **unlimited downloads and symmetric speeds** is:

Speed (Up/down) Mbps	Installation Cost	Monthly
15/15	$900	$80
25/25	$900	$110
50/50	$900	$150
100/100	$900	$180
500/500	$900	$399

*Pricing is based on a desktop network study of the area and properties, talks with the contractor who has visited our area and negotiations with backhaul providers. It is based on a high take-up-rate and a geographic distribution of properties that capitalises on close proximity between connected parties (no big gaps of non-connected properties in-between those that want a connection). The pricing is subject to change based on take-up rate, geographic distribution, final network configuration, and finalised construction costs etc.

In this issue:

1: Fibre broadband for our area!

2: Community Private Network

3: What we need you to do

Potential fibre network to your door! Make sure to join WCAG in order to stay informed:

https://goo.gl/forms/Q8eCiQ6jkScR2Vu33

Also make sure to register your interest in the local fibre offering with SmartFarmNet:

https://www.surveymonkey.com/r/Wamboin201712

Join our efforts by subscribing to :
wamboincommunications@gmail.com

https://sites.google.com/site/wamboincommunications/

Community Private Network

The proposed Wamboin, Bywong & Sutton regional community network is a Private Network. It will be installed on private property where possible and connect members of the area to the internet.

SmartFarmNet encourages local residents to participate in planning, construction and maintenance in order to keep prices to a minimum and a local community focus on service levels. This project will be successful if there is strong community support and a collaborative approach to construction and operation.

The idea is that the residents that become members of the network at the commencement date will become shareholders in a suitably set up company.

Construction will not commence until the community obtains agreement from enough residents to make the project operationally and financially viable. This will depend on a collaborative approach to planning with residents and Council.

Notional network backbone layout

SmartFarmNet will:

- Install the fibre cables to each home in consultation with each home owner.
- Install networking equipment
- Operate a help desk for queries and maintenance issues
- Establish and Convene Local Management and Shareholding group meetings.

Draft customer contract outline (extract):

The shareholder receives:

- A high speed, scalable, and secure service where limited options currently exist at a price that is highly competitive with local technology competitors
- As shareholders in the local Optical Fibre layer, inclusion in the national SmartFarmNet network and subsequent benefits.
- Potential increased property value.

Terms and Conditions.

- Term of 5 years
- Installation will be conducted in consultation with property owners
- The customer contract will include a right of access or similar arrangement for cable traversing the customer's land.
- Application fee placed in Trust fund for use in network construction (if the network does not go ahead within a certain amount of time you get your money back)
- Nothing that SFN offers removes your right to purchase a plan from competitors. SFN always needs to be competitive.
- To reassure you however SFN proposes a condition that requires SFN to maintain its agreements as offering competitive rates after the 5 year term in similar geographies and communities over time.

What we need you to do

If this fibre idea sounds good to you (and we hope it does) – <u>we need you to register your interest with SFN</u> and get your neighbours involved. A fibre network of this kind requires our community to come together and participate jointly. Fibre routes will need to be planned. The more people joining up now reduces costs and provides greater flexibility in designing fibre pathways. It is likely that the costs to residents of joining the network at a later date could be significantly higher.

We believe therefore that it is in everyone's interest to get connected as early as possible. This requires everyone to spread the word now, and ensure we know of your address as someone who is keen to get connected to a high speed future.

Join WCAG for general updates – visit:

https://sites.google.com/site/wamboincommunications/

or sign up directly via the survey: ←YOU NEED TO SIGN UP TO
https://goo.gl/forms/Q8eCiQ6jkScR2Vu33   BOTH FOR FIBRE →

Register your interest for fibre broadband with SFN now – visit:

https://www.surveymonkey.com/r/Wamboin201712

Or visit the WCAG website for links

← QR Code for WCAG updates   2   QR Code to show interest in fibre broadband
                                                with SFN →
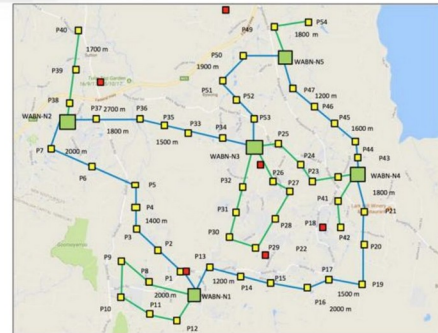
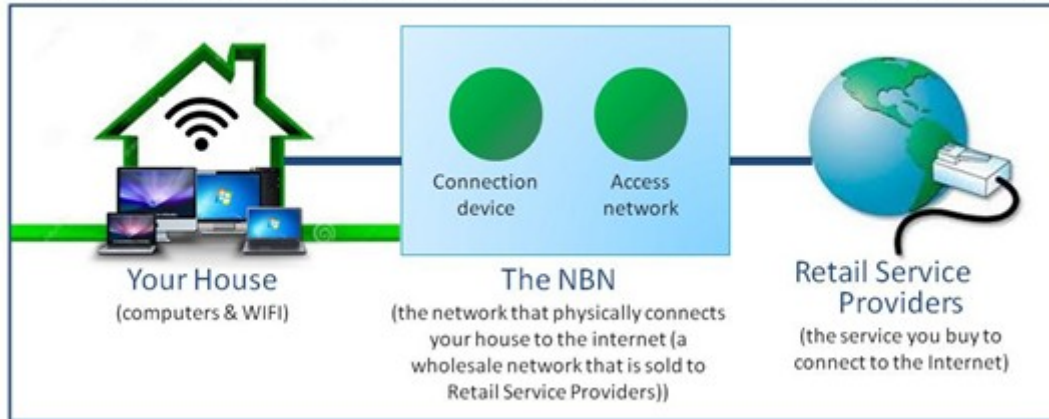# Appendix 11 Connecting to the Internet - What is the NBN and what does it mean for me?
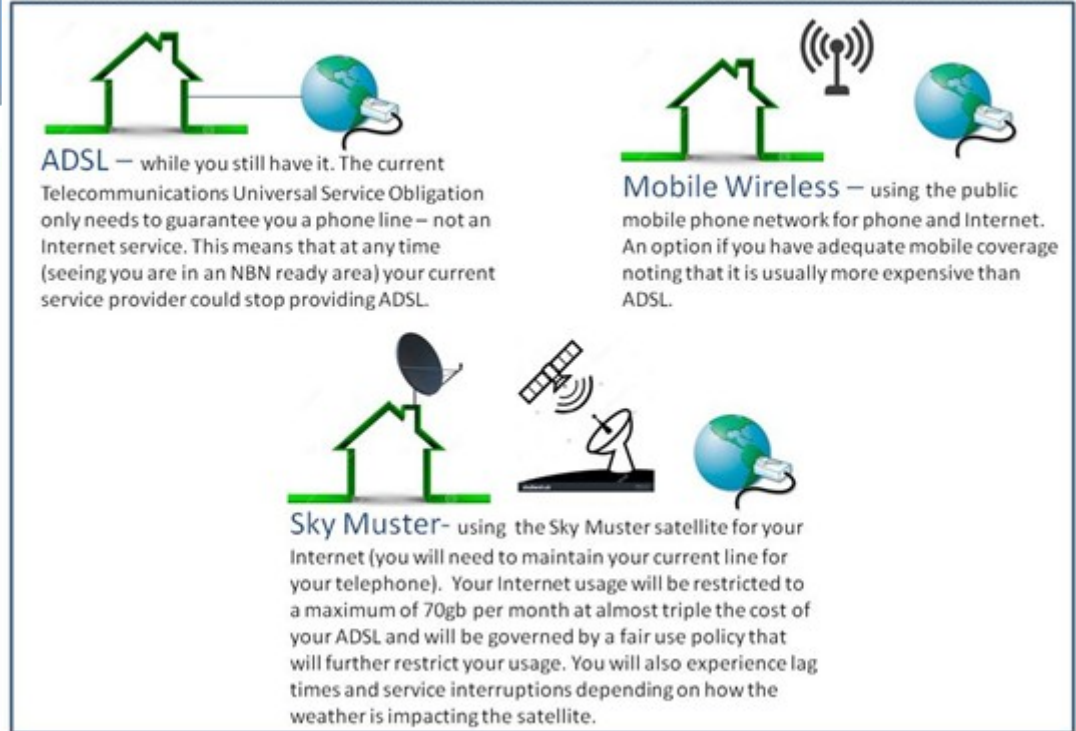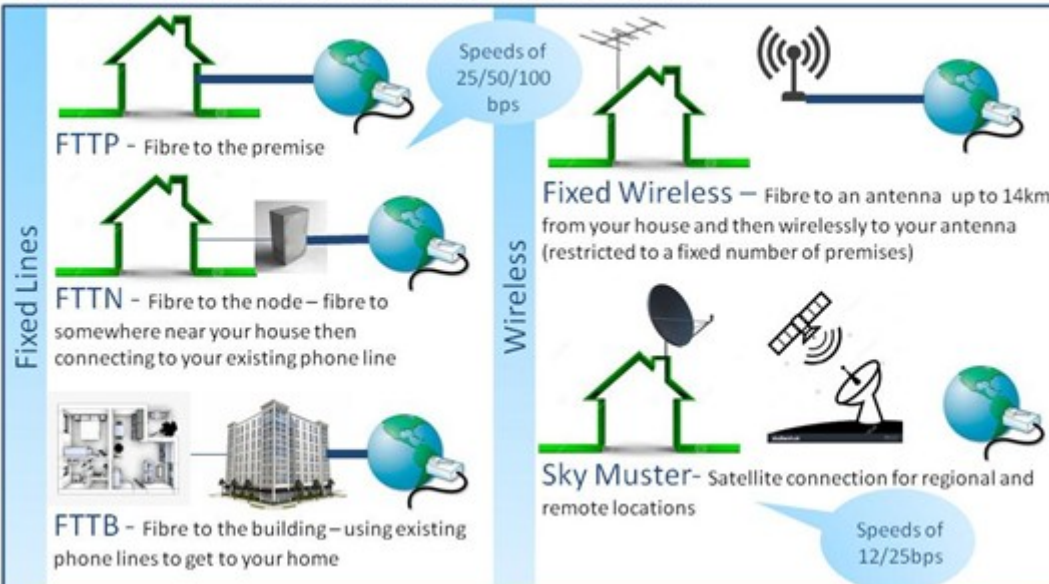
Appendix 12   Telecommunication Universal Service Obligation

Productivity Commission TUSO :- USO report April 2017 telecommunications.pdf

WCAG response to the TUSO :- Wamboin Communications Action Group (WCAG) TUSO Submission.pdf

Note: these two documents need to accompany this main document.

Appendix 13   Example letter to cabinet politician

The Hon First_name Last_Name, MP
<<Official Title>>
  <<Area of Responsibility>>
<<Registered Address>>

Dear <<official name of politician>>,

I know that you are concerned about the quality and extent of services offered to citizens, businesses, schools and farmers in regional NSW and I'm sure this is particularly true of those located within your own electorate. I am writing to express my concerns regarding the poor choice of NBN broadband service being provided to my area.

I was shocked to discover recently that my [house/business] is to get the NBN through the Sky Muster satellite service. While this service may be theoretically faster than my current broadband, it comes at a cost that is two or three times my current Internet service and with only a fraction of the usable download limit – maybe a tenth. By all accounts – including the NBN Co's own admission, it will also be far less reliable. This is hardly the brave new digital world the coalition, and Malcolm Turnbull personally, promised us in 2013.

Not only is it late, more expensive and slower than we were promised, but now I find that I'm to get the lowest specification and quality service that the NBN has to offer.documen

Clearly satellite is the only practical way of supporting the needs of very remote communities and citizens across the country – most of who don't have any Internet service available today. As a local, I'm sure you know this description does not apply to the residents of the Wamboin/Bywong/Sutton region – located as it is, just 10 Kms from the ACT border. This is a rural residential area with very small block sizes of typically 2 to 4 hectares or on standard residential size blocks in the village. There are over a 4,000 citizens and many businesses in a relatively small and commercially vibrant region. Sutton School and its students, as well as the students of other schools that live in the area, are being seriously disadvantaged by this poor technology choice. This is simply not equitable. The population density and existing fibre infrastructure in the Wamboin/Bywong/Sutton region make it far more suitable for a fixed wireless or even the Fibre to the Curb (FTTC) service now being deployed by NBN.

According to NBN, Sky Muster is the least capable and least reliable of all the NBN offerings.

> *"The Satellite – while it's wonderful in new technology and cutting edge in so many ways and offers a service that many people otherwise wouldn't have had – it's prone to error. It will never be as reliable as what people have in metropolitan areas; it is susceptible to weather and there really isn't anything we can do."*
>
> - Mr Bill Morrow, CEO of NBN Co, Senate Estimates, February 2017

As reported by numerous press articles, Mr John Simon, NBN Co's Chief Customer Officer also recently conceded that "Sky Muster satellites had not met anyone's expectations so far".

The OECD report published earlier this year now shows Australia's broadband languishing as one of the slowest performing of the nations in the OECD - ranked 29th out of 32. And it's not just the OECD. According to Akamai's latest State of the Internet Report, Australia is no longer even on the list of

the top 50 countries in the world with fast Internet. Even New Zealand is on that list (at #34) ! This is certainly not something to be proud of and not even close to what were led to expect would be the outcome of the NBN.

The Sky Muster service is completely inappropriate as the only and default offering from NBN for this region. It perpetuates the Digital Divide for the community. I've examined the plans offered by the few Retail Service Providers (RSP) that offer a Sky Muster connection. Aside from the high costs, all of them set a cap on the maximum data at a level way below the amount I already consume. The typical 30GB available during normal hours (if you can call 7am to 1am normal), is not even a tenth of what most NBN users are able to get now. As streaming services and 4K video become the norm over the next couple of years, 30GB represents less than two days usage for most households. It is completely inadequate. So I can forget about my dream of ever being able to use iView, Netflix or Stan for entertainment, or those similar services supporting my health or education [or my business].

The Sky Muster satellite lag (i.e. latency or Ping) means that gaming, video conferencing or just using the net to make a telephone call, is near impossible. I understand that as an area serviced by Satellite we get to keep our existing phone – which might sound like a reasonable response to this problem, until you understand that the copper in the ground in this area is becoming increasingly unreliable with basic phone services regularly failing.

Most people in Wamboin/Bywong/Sutton depend on rain for their water and in times of drought we look to the sky. But when we look up at Sky Muster all we see is a digital drought with no end in sight.

And all this when I live only a few minutes from the national capital!

It is hard to believe, but the effect of this decision is that, if I were to move to NBN's Sky Muster broadband service, I would end up with a much poorer internet experience in terms of cost, data, latency and reliability. Simply having a faster data rate does not nearly compensate for those shortcomings.

I know that this is a significant issue for my neighbours and friends that live in the area. You have often spoken about the need to better support citizens, businesses, farmers and communities in regional NSW. While I understand that you are not responsible for NBN Co's decision here, I do think you might be able to lobby your coalition colleagues in the Federal Government or to make representations to NBN Co about this poor decision. Specifically, you could ask that NBN reconsider its intention to deliver NBN to my area via satellite and to instead commit to a Fixed Wireless or FTTC service.

I look forward to your action and response.

Yours sincerely

[Your Name]

[Date]

Appendix 14   Example letter to local politician

Dear [Name]

I am writing to express my concerns regarding the poor choice of NBN broadband service being provided to my area. I was shocked to discover recently that my [house/business] is to get the NBN through the Sky Muster satellite service. While this service may be theoretically faster than my current broadband, it comes at a cost that is two or three times my current Internet service and with only a fraction of the usable download limit – maybe a tenth. By all accounts – including the NBN Co's own admission, it will also be far less reliable. This is hardly the brave new digital world the coalition, and Malcolm Turnbull personally, promised us in 2013.

Not only is it late, more expensive and slower than we were promised, but now I find that I'm to get the lowest specification and quality service that the NBN has to offer.

Clearly satellite is the only practical way of supporting the needs of very remote communities and citizens across the country – most of who don't have any Internet service available today. This description though does not apply to the residents of the Wamboin/Bywong/Sutton region – located as it is, just 10 Kms from the ACT border. This is a rural residential area with very small block sizes of typically 2 to 4 hectares or on standard residential size blocks in the village. There are well over a 4,000 citizens and many businesses in a relatively small and commercially vibrant region. Sutton School and its students, as well as the students of other schools that live in the area, are being seriously disadvantaged by this poor technology choice. This is simply not equitable. The population density and existing fibre infrastructure in the Wamboin/Bywong/Sutton region make it far more suitable for a fixed wireless or even the Fibre to the Curb (FTTC) service now being deployed by NBN.

According to NBN, Sky Muster is the least capable and least reliable of all the NBN offerings.

> *"The Satellite – while it's wonderful in new technology and cutting edge in so many ways and offers a service that many people otherwise wouldn't have had – it's prone to error. It will never be as reliable as what people have in metropolitan areas; it is susceptible to weather and there really isn't anything we can do."*

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The OECD report published earlier this year now shows Australia's broadband languishing as one of the slowest performing of the nations in the OECD - ranked 29th out of 32. And it's not just the OECD. According to Akamai's latest State of the Internet Report, Australia is no longer even on the list of the top 50 countries in the world with fast Internet. Even New Zealand is on that list (at #34) ! This is certainly not something to be proud of and not even close to what were led to expect would be the outcome of the NBN.

The Sky Muster service is completely inappropriate as the only and default offering from NBN for this region. It perpetuates the Digital Divide for the community. I've examined the plans offered by

the few Retail Service Providers (RSP) that offer a Sky Muster connection. Aside from the high costs, all of them set a cap on the maximum data at a level way below the amount I already consume. The typical 30GB available during normal hours (if you can call 7am to 1am normal), is not even a tenth of what most NBN users are able to get now. As streaming services and 4K video become the norm over the next couple of years, 30GB represents less than two days usage for most households. It is completely inadequate. So I can forget about my dream of ever being able to use iView, Netflix or Stan for entertainment, or those similar services supporting my health or children's education [or my business].

The Sky Muster satellite lag (i.e. latency or Ping) means that gaming, video conferencing or just using the net to make a telephone call, is near impossible. I understand that as an area serviced by Satellite we get to keep our existing phone – which might sound like a reasonable response to this problem, until you understand that the copper in the ground in this area is becoming increasingly unreliable with basic phone services regularly failing.

Most people in Wamboin/Bywong/Sutton depend on rain for their water and in times of drought we look to the sky. But when we look up at Sky Muster all we see is a digital drought with no end in sight.

And all this when I live only a few minutes from the national capital!

It is hard to believe, but the effect of this decision is that, if I were to move to NBN's Sky Muster broadband service, I would end up with a much poorer internet experience in terms of cost, data, latency and reliability. Simply having a faster data rate does not nearly compensate for those shortcomings.

You were elected in 2013 on a promise to deliver a better broadband. I know that this is a significant issue for my neighbours and friends that live in the area. As it stands, for residents in Wamboin/Bywong/Sutton this promise will not be met.

I would ask that you request NBN to reconsider its intention to deliver NBN to my area via satellite and to instead commit to a Fixed Wireless or FTTC service.

We look forward to your action and response.

Yours sincerely

[Your Name]

[Date]

Appendix 15   Example group letter to politicians asking for financial assistance

Dear Minister,

We, the Wamboin Communications Action Group (WCAG) are writing on behalf of our community to ask for your support in relation to the inadequate Internet service available in the Wamboin/Bywong/Sutton rural residential area of NSW - just 10 kms from our Nation's Capital. There are well over 4,000 citizens and more than 50 small businesses in this relatively small region. Notwithstanding the density of residences and proximity to Canberra, we have only been offered the SkyMuster satellite based NBN service. It is certainly not a large scale farming or remote region – where SkyMuster might arguably be the only practical option.

SkyMuster is neither appropriate for our region nor adequate for the needs of residents and businesses here. While it may be notionally faster than ADSL, it costs two or three times as much for a fraction of the data download allowance. It has also proven to be very unreliable – something that even NBN Co have acknowledged. As a consequence it fails to address our communities basic broadband needs, as well as not resolving the long-standing communications reliability issues the community suffers from.

With the Internet now expected to provide many services such as education, health, banking and entertainment, the situation in our area is rapidly becoming critical, as many of the residents cannot currently use these services and will struggle to do so if SkyMuster is their only option.

WCAG has spent the past two years researching viable alternatives (See https://sites.google.com/site/wamboincommunications/home). More recently WCAG has been working with Company A - which is proposing to build a rural fibre network to cover our region. Company A has obtained a carrier license and has completed its business case – including a network design to connect 960+ homes. They have also put in place subcontract arrangements for data services, construction, network build, maintenance and support.

WCAG's assessment of the business case, together with feedback from residents, has shown that Company A's proposal is certainly viable, with the running costs and resultant user charges well below that of SkyMuster (with far greater data, speed and reliability). However, there is one aspect of the project that is proving to be a challenge. An extensive community survey has confirmed that more than 60% of residents are willing to commit to this service and of the remaining 40%, many are just waiting until the network build starts before doing so. With an initial 60% take up rate the initial build cost is much higher than anticipated, in fact much higher than many of the original 60% can afford. Experience overseas has shown that once a network of this type is commenced, adoption rises to over 80% and we are confident that the same would be true in this area.

As a consequence, WCAG is asking for your support of $xm in financial assistance – representing approximately 50% of the cost to connect 1,000 residences in our community. We believe there is significant benefit, not just for our community but also for government, that will arise as a consequence of this.

Given recent information in the news[1] about the cost per premise for NBN fixed wireless, around $3700 per household, and government losses of $110 per household per month for satellite services, our need for financial support for the install of a fibre to the premise network is good value. It negates our need to move to NBN SkyMuster, saving the government in excess of $1.7M pa., while concurrently reducing the congestion on that service for rural and remote citizens that literally have

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[1]   http://mobile.abc.net.au/news/2018-06-01/nbn-fixed-wireless-congestion-upgrade-delay/9770802

no other option. It is also, at a per household cost, significantly less than NBN fixed wireless, even though we would be getting fibre to the premise.

We also note with interest that the government is proposing to spend $136 million to fund the laying of fibre cable to PNG and the Solomon Islands and wonder why they cannot use some of that money to improve communications closer to home.

There is absolutely no doubt that there is considerable dissatisfaction with the current state of communications in this area and that this issue will feature strongly in the minds of local voters at the forthcoming Federal and State elections.

We are hoping you are concerned enough about the quality and extent of services offered to residents in this community that you will support us in achieving our goal. We look forward to hearing from you about how such support will be facilitated.

Yours sincerely

Olaf Theden, Jon Gough, Lyn Randall,
Glenn Archer, Connie Tasker, John Rodgers, Harold McCormick
Executive Members,
Wamboin Communications Action Group

Appendix 16   Example individual letter to politicians asking for financial assistance

Dear Minister,

I am writing to ask for your support in relation to the inadequate Internet service available to me. I live in the Wamboin/Bywong/Sutton rural residential area of NSW - just 10 kms from our Nation's Capital. There are well over 4,000 citizens and more than 50 small businesses in this relatively small region. In spite of the density of residences and proximity to Canberra, we have only been offered the SkyMuster satellite based NBN service.

This service is neither appropriate for our region nor adequate for the needs of citizens and businesses here. Those of my neighbours who have tried to use it have found that, while it may be notionally faster than ADSL, it costs two or three times as much for a fraction of the data download allowance. It has also proven to be very unreliable – something that even NBN Co have acknowledged. As a consequence it fails to address my basic broadband needs, or resolve the long-standing communications reliability issues this area has suffered from.

With the Internet now expected to provide many services such as education, health, banking and entertainment, the situation in our area is rapidly becoming critical, as many of us cannot currently use these services and will struggle to do so if SkyMuster is our only option.

Rather than simply accept SkyMuster, our community, via the Wamboin Communications Action Group (WCAG), has spent the past two years researching alternatives (See https://sites.google.com/site/wamboincommunications/home). More recently WCAG has been working with Company A - which is proposing to build a rural fibre network to cover our region.

WCAG's assessment of their business case, together with the feedback from residents, has shown that it is certainly viable, with the running costs and resultant user charges well below that of SkyMuster (with far greater data, speed and reliability). An extensive community survey has confirmed that more than 60% of residents would be interested in committing to this service.

Unfortunately, the initial build cost (and resultant installation fee for residents) is significantly higher than originally estimated and represents a major hurdle. As a consequence, I am asking for your support of WCAG's petition for financial support to cover a share of the costs to connect the first 1,000 residences in our community.

There is absolutely no doubt that there is considerable dissatisfaction with the current state of our communications and that this issue will feature strongly in the minds of myself and fellow electors at the forthcoming Federal and State elections.

Yours sincerely

[Your Name]

[Date]

Appendix 17   Company A

Initial discussions

In lieu of our meeting this week, a bit of an update on where the Community Fibre Idea is at:

PLEASE NOTE: ALL THIS INFORMATION IS PROVIDED TO THE HELPER GROUP OF WCAG ONLY TO ENABLE DISCUSSIONS AND FURTHER COMMUNITY CONSULTATIONS. PLEASE TREAT IT AS COMMERCIAL-IN-CONFIDENCE. NONE OF IT IS SET IN STONE. I DON'T WANT TO GET ANYONE'S HOPES UP TOO EARLY.

Company A have come back with some proposals for our area. So far it's all sounding very positive and flexible to suit us. Obviously they can't give exact figures yet but the estimates at this stage (after seeing our area first hand) are that they should be able to provide a basic fibre based service to our area at competitive rates in the order of:

- 1000Mbps fibre connections to each premise that wants to connect. Note this speed is for all traffic <u>within</u> the local private network. All general internet traffic would cost based on what the upstream providers charge us for a connection into the main network links. Generally this would be:
    - **$80-90 per month for unlimited downloads at a speed of 50Mbits/second (the aim being to have a product that most people will be able to afford). Possibly around the $140-150 per month mark for 100Mbit.**
    - Internet traffic speed tiers up to the full 1000Mbps for those who need higher speeds or dedicated bandwidth (at significantly higher costs). Think something like $500+ per month for 500Mbps.
- **Upfront costs would be kept to a minimum. They believe they can make it work with less than $1000** (depending on uptake, the upfront connection fee could be *much* lower).
- Signup would involve a minimum 24 month contract, and rolling 12 months contracts thereafter.
- Property owners with fibre runs across them would need to sign a way-leave across their property to ensure access to the fibre is obtainable at any time by the network operator (similar to access rights Telstra automatically has already).

They are very happy to discuss the requirements and pricing options to suit our needs. Some of the options are:

- More or Less upfront costs, balanced with less or more ongoing costs (to pay back the upfront capital).
- Shareholding vs. just connection fees (eg. how much say the community has in the network after it is built). The above figures relate to no requirement for shareholding.
    - Some of the benefits of shareholding could be: voting rights, dividends, and/or sharing in profits from sale of bandwidth across the network to external providers (think Telstra or Optus if they want to install a tower in the area - they could lease a fibre off the local network at commercial rates rather than have to dig their own).
    - More community shareholding obviously puts the community into a better position to control future network planning than if it were just a "commercial operator".
- Tailoring the connection contention ratios to suit the level of service we are happy with. Eg:

- to make it more affordable, the contention ratio - (the amount of upstream bandwidth purchased as a ratio of downstream bandwidth promised to end customers) can be adjusted (meaning that in peak times, the promised internet speeds may not be fully delivered, but the service is overall cheaper).
- Pricing points could be set to allow people to pay more if they require dedicated (uncontested) bandwidth.
- Adding certain services as "peered" connections (this means for example that Netflix/iView or other high-bandwidth applications could be considered "local" traffic and be available at the full 1000Mbit without incurring external costs). Obviously depends on what people use frequently and what services are available for such arrangements.
- Locals trained to provide the technical support and/or servicing (if anyone is interested in this).

All of this is obviously at a very early stage in the developments, but it is a promising start, and certainly beats any other offers seen/received to date.

To start the project they would require around 200 interested properties in the same general area (don't all need to be adjoining each other, but it would certainly help to keep the costs down).

WCAG currently has just over 200 members :-). Apart from working out some of the details of what we want, what kind of company structures we are happy with etc, the main goal would be to get people interested and to (hopefully) have as many continuous paths between connected properties as possible.

At this stage I have tried to focus their cost models on the following:

- Providing at least one affordable entry-level solution rather than a "perfect uncontested business grade" solution (which was their starting point). My reasoning being that we are much better off with a high proportion of "sign-ups" in order to build a good, future proof network than we are if the starting price point was out of peoples reach and only a few actually signed up (but had perfect uncontested connections). I am a huge fan of ensuring the majority of people have the ability to get access to this network.
- Balancing upfront costs with ongoing costs - again to ensure there is no big upfront hurdle for most to join the network.

Still awaiting further details on the shareholding aspect of the company structure. Will keep you posted.

Questions arising

The initial discussion then generated some questions within the group that needed to be addressed to better understand the offering. The following is the list we came up with

- what is their ownership period
- how would they transfer ownership
- how do you maintain right of access over time unless it is on the title
- service management - they want to have local community helpers (employed)
- SLAs
- can they use power poles? is it cheaper, easier?

- Olaf, primary concern - long term aspects - ownership etc, making paths through the properties, pricing
- Can they use greenways ?
- do you have something you can demonstrate to us (ie do you need internet access)
- will they guarantee pricing will never be more than metro fibre (or defined factor higher)
- would they cover the village (telstra pit and pipe)?

Appendix 18   Guide to Community Associations

Once a core group has formed they may need to consider what type of structure is most appropriate. The possibilities are

1. Unstructured group
2. Unincorporated Association
3. Incorporated Association
4. Incorporated Limited Company

As one moves down the list, the regulation and rules increase but the responsibility for the outcomes of decisions shifts from the individual to the organisation. The level of responsibility that the individuals of thwe group are willing to assume will, in part, determine which type of structure is most appropriate. This will be influenced by the level of risk to which the group is exposed; the amount of money involved, the contestability of any advice given, the possibility of inadvertent slander, and the likelihood of a successful completion of the project are some of the considerations that need to be balanced against the appetite of the individual members to assume these risk.

WCAG decided to use the Incorporated Association structure. These entities are not-for-profit organisations for use by community and sporting groups. They are not allowed to make distributions to their members and on winding up all assets are distributed to another community group. The Association is however, allowed to reimburse members for association expenses and "members may obtain monetary gain from the association in the form of remuneration (ie salary/wage) for a proper purpose".

If you need to have donations to the Association as tax deductible, the association must be registered with the Australian Tax Office as a charity.

https://www.acnc.gov.au/for-charities/manage/register-my-charity-type

Advantages of a Community Association

1. An Incorporated Association is an identity in its own right. It can have its own bank account, own property, register for an ABN and carry on a business. It allows the separation of the affairs of the group from the affairs of the individuals in the group.
2. The Incorporated Association provides some protections in liability to the members of the group.
3. An association should allow expenses etc to be evenly shared across the group.
4. The association provides a structure (a set of rules) for issues to be decided in a more democratic manner.
5. Allows a group to continue even if some of the members do not.

Disadvantages of an Incorporated Association

6. There are costs involved- usually a fee for incorporation and an annual reporting fee. At the present time the registration of an Incorporated Association is $178 and the lodging of the annual summary is $202 for Tier 1 Associations and $48 for Tier 2 Associations. Tier 1 Associations are also required to have audited financial statements.
7. There are obligations involved in being an incorporated association.
8. These include annual reporting obligations, maintaining minutes, proper financial and membership records and registers. Many of your records are open to the public.
9. The rules may limit the flexibility of the operation of the group.
10. In NSW at least five members are required.

Forming An Incorporated Association

The mechanism of forming an Incorporated Association and the regulation of those identities are a function of the states. This document will provide links to the information for Incorporated Associations in NSW for each topic. At the end of the document general links to the regulator of Community Associations is provided for other states. In New South Wales Incorporated Associations are regulated by New South Wales Fair Trading.

Information for Associations can be obtained at https://www.fairtrading.nsw.gov.au/associations-and-co-operatives/associations.

Once a group has decided to become incorporated an application can be found on the relevant state website. The application in NSW is at https://www.fairtrading.nsw.gov.au/__data/assets/pdf_file/0009/903159/Form-A2-Application-for-registration-of-an-incorporated-association.pdf

The application can usually submitted on line.

Applying to Become Incorporated

The application requires the following

1. The Incorporated Association's name
2. Three names are normally submitted as names may be rejected by the regulator.
    The application must be authorised either by at least 5 individuals or the minutes of an unincorporated association containing at least five members.
3. A public officer must be nominated. That person must reside in the state, be over 18, not be a bankrupt or mentally incapacitated.
4. Contact details . These are address and contact details are the public officer
5. Choose a constitution. These are the rules by which the business of the Incorporated Association should be run. NSW Fairtrading has a model constitution. You can use this or an alternative. If you choose an alternative it should be attached. One alternative is to start with the moidel constitution and then amend as required. A copy of the model constitution is at https://www.fairtrading.nsw.gov.au/associations-and-co-operatives/associations/starting-an-association/model-constitution
6. Objectives -This should state clearly what the group hopes to achieve.
7. Financial Details -In this section you would estimate where your income is likely to originate and the amounts. You need to select an end of financial year date. In NSW if you use the model constitution it must be June 30.

Having completed the information the public officer must agree to the declaration and the fee needs to be submitted.

Hopefully you will be advised of the success of the application and will receive the certificate.

Running An Incorporated Association

Initially the association must have a meeting to

1. elect office bearers normally president, vice president, secretary and treasurer
2. elect committee members- This group will manage the day to day running of the association. If the group is small you may opt to have all association members to be committee members.
3. set the joining fees and the annual membership fees When you consider these fees you should have an idea of how you will pay for the running costs of the association. Will you rely on fund raising or grants for enough revenue to cover your costs or will the basic costs be covered by fees?

General Meetings

The Association must hold an Annual general Meeting once a year within 6 months of the end of year date. Notice of the Meeting date and time 14 days before the meeting. The Annual Meeting shall be called in adherence to the rules but the agenda would usually include

1. election of office bearers
2. acceptance of financial statements
3. report from the committee of the year's activities
4. authorisation for the public officer to submit the report to the regulating body

Other General Meetings

Other General Meetings may be called giving notice of any motions that will be considered according to the constitution.

Insurance

Incorporated Associations are allowed but not required to carry insurance.

Some of the reasons that you might require insurance include

1. protection for committee members against the charges of negligent and careless practices in carrying out their duties
2. protection against incidents and accidents at fund raising events
3. workers protection (compulsory if you have employees)
4. it may be a requirement for recipients of government grants to carry the appropriate insurance.

If you feel that you might require insurance google " not for profit insurance australia" to find a host of providers to give you a quote.

Tax Considerations

The first consideration is to decide if your association is income tax exempt. The ATO provides advice on its website at https://www.ato.gov.au/Non-profit/Your-organisation/Do-you-have-to-pay-income-tax-/Income-tax-exempt-organisations/

This information should help you make a self determination on your tax exempt status.

If you can't determine your status from this information call the helpline.

However, even if you are income tax exempt association you may need to deal with the ATO, either to register for GST, PAYG or obtain an ABN.

ABN

Not-for-Profit identities do not need to obtain an ABN.

However, many (if not all) government grants may require an identity to have an ABN in order to receive the grant.

If you find that your association needs an ABN you can apply online at https://www.abr.gov.au/business-super-funds-charities/applying-abn

As soon as your registration is accepted you are provided with your number. There is a help line if you have any difficulty with the process. You must answer yes to the question "Are you carrying on a business" You are not entitled to an ABN unless you are.

There are also a number of other sites that will register and get the number for you (usually involves a fee).

GST

Your association does not need to register for a GST unless the turnover reaches $150000 per annum, although you may choose to. Information about the implications are available at https://www.ato.gov.au/non-profit/your-organisation/gst/gst-registration/

PAYG Withholding

The following extract from the ATO provides the basic requirements

"As a payer, you may need to withhold amounts from payments you make to your workers, other businesses and other payees, and send the withheld amount to us (ATO).

Your withholding obligations depend on whether your worker is an employee or contractor. If your worker is:

- an employee, you generally have to withhold amounts from payments you make to them
- a contractor, you generally do not withhold amounts from payments you make to them (unless they request withholding by entering into a voluntary agreement with you) or do not supply an ABN. "

The association must register for PAYG before any payment in which withholding may be required.

Information for the registration process is at:

https://www.ato.gov.au/Business/Registration/Work-out-which-registrations-you-need/Taxation-registrations/Pay-as-you-go-withholding/

Annual Report

Every year the association must submit an annual report to the regulating authority. The requirements for a type 2 association are not very onerous but the report for a type 1 association are more exacting including an annual audit of the books. Tier 1 associations are those with an annual turnover of 250,000 or assets of over 500,000. All other associations are Tier 2. The report needs to be submitted within a month of the annual general meeting being held. The cost of an annual submission is $48 at present.

Details for submitting a Tier2 annual report are contained at https://www.fairtrading.nsw.gov.au/associations-and-co-operatives/associations/running-an-association/financial-reporting-requirements/tier-2-associations-financial-reporting

Details for submitting a Tier 1 report are at https://www.fairtrading.nsw.gov.au/associations-and-co-operatives/associations/running-an-association/financial-reporting-requirements/tier-1-associations-financial-reporting

Details for all aspects of operating an association in NSW are at

https://www.fairtrading.nsw.gov.au/associations-and-co-operatives/associations

Queensland are at:

https://www.qld.gov.au/law/laws-regulated-industries-and-accountability/queensland-laws-and-regulations/associations-charities-and-non-for-profits/incorporated-associations

South Australia are at:

https://www.sa.gov.au/topics/family-and-community/community-organisations/types/incorporated-associations

Tasmania are at:

https://www.cbos.tas.gov.au/topics/clubs-fundraising/incorporated-associations

Victoria are at:

https://www.consumer.vic.gov.au/clubs-and-fundraising/incorporated-associations/become-an-incorporated-association/register-as-an-incorporated-association

Western Australia are at:

https://www.commerce.wa.gov.au/book/export/html/5408

Northern Territory are at:

https://nt.gov.au/industry/licences/incorporated-associations

Australian Capital Territory are at:

https://www.accesscanberra.act.gov.au/s/article/incorporated-associations-tab-related-resources

Glossary

Definitions of terms commonly used in this document are contained here.

ACCAN   Australian Communications Consumer Action Network

ADSL   Asynchronous Digital Subscriber Line. Up to 25mbps service, but typically1.5mbps-
            5mbps

DoCA   Federal Government Department of, Communications and the Arts

DSL   Digital Subscriber Line, a broadband technology typically used by telecommunications
            companies to access customers

FTTC   Fibre To The Curb

FTTN   Fibre To The Node

FTTP   Fibre To The Premise. Currently upto 100mbps download, but can be extended beyond
            1gbps easily

ISDN   Integrated Services Digital Network. 128Kbps symmetric service

LAN   Local Area Network, for computer-based networks generally in a premises

SBW   Sutton, Bywong and Wamboin

SkyMuster   NBN Satellite provisioning NBN services to remote rural and remote regional areas

WAN   Wide Area Network, for connecting LAN's together and to the wider internet

WBSR   Wamboin, Bywong and Sutton Region

WCAG   Wamboin Communications Action Group

Wireless   NBN provisioning of services to edge of urban area. Up to 25mbps