

Day 2 – Gavin Williams

Gavin Williams: A caveat in my title is it's fixed wireless for a reason, that's because I don't really support the fixed services that have been discussed. But I will mention some of the things we're doing to address some fit for purpose and affordability issues in respect of Indigenous communities in the satellite footprint. Thanks, Narelle, good to see you again. I'd just like to start by recognising and paying respects to the traditional owners of this land. And this morning I'm going to talk about what NBN is doing to close, or help to close, the digital divide between regional Australia and metropolitan Australia - by delivering world-class, affordable broadband to regional Australia. I'll talk a bit about satellite, as I've said, but the focus for me today is on fixed wireless. Now, this is a truly amazing service. It's changing lives wherever it goes, right now. It's actually reached a particular scale that you would have to say, it's no longer just a bit player in NBN's stable of technologies. And it is truly world-class. Some people have called it the jewel in the crown of NBN but I actually think it's one of the best kept secrets and I think there is a job certainly that I need to do, and potentially with your help, that we can make sure that Australians eligible to get this service actually know that they can get it.

I'm not going to go through the details of the parlous state of broadband in regional Australia. There is no better knowledge of this than ACCAN and its members. But just to say that fixed wireless was designed ground up to serve areas, and is now serving areas, where friends and neighbours within the centre of towns are eagerly anticipating the rollout of NBN in fixed wireless areas. Outside of town, they're getting it today. Before fixed wireless, homes and businesses were supported with broadband, with low grade DSL, with high-cost mobile broadband, potentially with satellite, whether that's ABG or the NBN interim satellite service, or nothing. So this is making a difference. And the shot there of the young lady with the placard, that is not a publicity shot - well, it is a publicity shot, because I'm using it as one now, but that was actually outside a council meeting looking to contemplate the approval of a fixed wireless tower. So that was the first time that I'd seen that a community was actually coming out and saying, "Come on, let's get this thing built". So just the state of play of the fixed wireless network. We're now almost to 300,000 homes and businesses covered by the network. We've actually just exited the peak rate of build over the last few months for fixed wireless. And, as the slide says there, we've connected over 50,000, in fact we've just clicked over 60,000 homes and businesses connected. So if you do the maths, that's a penetration of 22%.

Our business plan has us growing to 55% penetration, so you would say, why am I still here and not exited NBN? It's not as bad as it seems because much of this footprint has just been released. But there is a fundamental point that it could be much better. You know, I'll be the first to call out that every time we release a footprint, we send notifications to homes and businesses in that footprint area, addressing in regional Australia delivery of unpersonalised mail is fraught. So "Return to sender" mail rates aren't great. Attempts to dial up hyper-local advertising has mixed results. And I think there is a bit after state of mind of many of the businesses here, or householders and business owners, when they see a billboard saying "NBN is available around Taree", their mind set is, "Well, that's another thing Taree has got that isn't for me". But it's another thing that can connect a farm that's off the highway by 10km. So big scale, doing pretty well, but awareness could really be better. In terms of its capability, we're now trialling, actually, a 50 megabyte per second, service. So we have in market at 25/55 megabyte service, so 25 up and 55 up. And we're doing that in the market now and we have a baseline of customers on that pilot with that speed and excellent performance.

I'm not sure where your heads are at, or your state of knowledge is, in respect of what fixed wireless is all about. And I can tell you the fact that it has wireless in the name does, I think, add to some confusion and a perspective that the category might seem a bit alien. For those of you who aren't familiar with it, essentially what this is, it's like a mobile network, except it's not mobile. It's using

that 4G technology but it's engineered to provide a quality-controlled, line of sight connection, between a tower that looks identical to a mobile tower and an antenna that sits on the roof of a home or business. And you can see on the picture there what that antenna looks like. So that may seem a little alien, but this technology really is the only feasible way to connect the homes and businesses with the sort of penetration, the sort of population density, that we have in these areas. So we've now built over 1,000 towers across the country and that's out of our peak program, it will have around 2,600 towers. So we build the tower. We define the footprint. Our desk study of footprint takes account of clutter and hills and that kind of thing, but with good visibility and good line of sight, we can reach 14km with these speeds from the tower to the premise. Occasionally, we find that when we go out there and do an installation, that we can't get sufficient signal strength to support a reliable connection, so in those circumstances, unfortunately, the installation fails that signal qualification.

We will work with end users on finding alternative places to put the antenna, we want to install the fixed wireless service. There's a couple of initiatives we have in place to improve the addressability of the service. So for example we're introducing now a 3m mast which obviously goes higher off the roof and has the potential to get over and above the tree line, if, indeed, that's in the line of sight. We've also seen that the performance is hitting its targets, even where the signal strength is a little bit lower than where we'd originally anticipated. So, we're investigating now, in fact, whether we can reduce or threshold of signal strength and still support a great service. So both of these initiatives will result in additional homes and businesses being able to connect. And that's a good thing. So, what sort of difference is it making? Just a case study of one here - a Mr Penfold from Euberta in the Riverina, who runs a fishery. It's one case study, really, of where entrepreneurialism in regional Australia can be unlocked if the home and business does have access to broadband and cost-effective broadband. So, I can't actually speak for Mr Penfold and what he had specifically prior to NBN coming along. I actually believe it was a dial-up, if that. But much of his business was done over the phone.

But, as a consequence, you know, it has changed his business model, he has doubled his exports to China and other international markets and it just highlights that broadband connection, you know, if I can speak for Mr Penfold and quote him, "My NBN connection is now an essential service like electricity and water, critical to the operations of my farm and will help me access national and international markets". There's other benefits as well. Mr Penfold found that once he had broadband he was able to rent out one of the properties within his farm, where previously potential renters wouldn't go near that property because they couldn't access broadband. And I've got a number of friends in regional Australia that find the same thing. It never ceases to impress me - and the rapidity of take-up of this entrepreneurialism in regional Australia, the volume of people setting up businesses on Facebook and web to push anything from lambs through to their properties or technology industries, software, desktop publishing - it's astonishing. And don't the end users love it?!

I'm really proud to say, that our end users score this product as cream of the crop in NBN. So, NBN polls end users, which is kind of a horrible term, really, that's the customers of our customers, who are the service providers, as you are aware we are a wholesale only - we only sell to our retailer service providers. But we poll the end users of our services and the fixed wireless end users rate the service - rate fixed wireless services extraordinarily positively. So in terms of their installation process, 7.9 out of 10, 8.3 out of 10 for product experience. Value for money, 8.4 out of 10. And an overall satisfaction of 8.2 out of 10. So for any of us that are involved in polling, you know, you just think about how you rate things and when you start hitting 8s, that's pretty good. I don't know about you, but it would take me a lot to rate something at 8 and it's kind of symptomatic of, well, you can see the net promoter score there of plus 51. This is the kind of satisfaction level that drives word of

mouth. It has people at barbecues saying, "Hey, Joe, you know that fixed wireless, that's a pretty good service, why don't you get on board"?

So that's a great thing. And you might think that we're looking at something potentially world-class here. I've given myself a good segue to my next slide! We're pretty comfortable that what we've built here is a world-class fixed wireless service. Now, Ericsson commissioned a report from Ovum - and I should declare that Ericsson is our provider for fixed wireless and our management service provider for fixed wireless so you might think there is a bit of indulgent back-slapping there, which you might think is partly true, but we wanted to level-set ourselves and say, "What have we got here". And what the report found was that if you think about some of the key characteristics that you want out of a broadband service, what are the size of the allowances that it provides, what sort of speeds does it provide and what sort of costs are applied to that service - the study found that the data allowances supported by the retail user using the service are the best in the world. That the down link speed at 50 megabytes per second was equal to best in the world. It provides by far the lowest cost per byte in the world. And thereby really demonstrating that 4G LTE technology can be quite a viable solution for connecting rural areas. So just to double click a wee bit on that survey. In terms of speed, I might just say, too, that the survey endeavoured to look around the world at carriers offering a fixed line replacement type of product as opposed to a mobile broadband kind of product.

So equal top in terms of claimed speed with Deutsch Telecom and Vodafone. There is a caveat there, as I mentioned, we're monitoring the speed, we are in the market with the 20/55 speed. So we've highlighted that in the report. That pilot we anticipate actually launching as a fully-fledged part of the product before Christmas. The uplink speed of 20 megabits per second is also leading. In some ways the report was quite conservative because it acknowledged that whilst the NBN fixed wireless solution had thoroughly engineered the network to sustainably support these speeds, many of the offers provided by those global peers were very much more peak speed. In terms of allowances, the report looked to a couple of retail service providers offering services on fixed wireless and picked Telstra's 500GB plan and iiNet's 200GB plan. Again that was somewhat conservative. They decided not to include the range of providers that support unlimited plans on fixed wireless. So, that is a massive seven times larger than the nearest - if you take account of those examples with Telstra and iiNet, that's seven times larger than the nearest peer. In fact, you know, we find that almost universally, retail service providers do not distinguish between the offer that they support with fixed line NBN connection versus fixed wireless. And we've invested heavily to give them every reason to not distinguish. So, our operational interfaces with retail service carriers are the same, the technical interfaces are the same and the product characteristics are designed to make their level-set offer be quite equivalent.

So now, end users can get the full advantage of what broadband can offer, including things like over-the-top video and other high bandwidth applications on NBN. And in terms of value, if you divide the cost by the allowance, you get quite a small number per gigabyte on NBN versus some of the international peers. So essentially it reinforces the point I just made - that fixed wireless users get the same value for money that is available to fixed broadband customers. Now, the survey went on to weight these characteristics of speed, allowance and cost and they found that the NBN, in conjunction with the RSPs, was world-class. That's good, isn't it? It's a consequence of significant investment. The fixed wireless business is a subsidised product, so you would hope that, with that financial horsepower, that in fact the NBN could offer something that was world-class and I'm pleased to say, we are. Now, it would be remiss of me not to mention what we're doing to bring world-class broadband to even more remote homes and businesses. So just a couple of points on the satellite program. So the good news is that the first NBN satellite, which we've named Sky Muster, that's scheduled for launch in October. In fact, the 1st of October. The satellite is now sitting in French Guyana, having flown over on a cargo plane. Now, commercial services are set to begin in the

first half of calendar 2016. I often get asked, "Why the hell are you launching in October and you can't offer services until then"? There is actually a heck of a lot to do. So unlike a satellite going into an existing satellite network, we have a new satellite going into a new satellite network, 110 spot beams that need to be tested and then integrated into a product set integrated with a customer base.

But you can rest assured that in the post-launch period we will keep to the minimum we can and that the service we end up with delivers the quality we need to deliver to end users. So, these are two satellites - sorry, I've talked about the first satellite. The next satellite will be launched around about six months after the first. These were designed ground-up for the job at hand, to connect regional and remote Australia. The aggregate capacity supported by these satellites is 135 gigabytes per second, which might be quite a meaningless number, but to put it into perspective, the full capacity of the interim satellite service is actually, I've said here, 4, but it's actually closer to 3. So, 4 actually reflects the capacity covered right across Australia with some of these commercial services today. So, today, across Australia we have 4, and with these two satellites, 135. So a significant increase in the capacity available to Australians. Now, I'm the first to acknowledge the bad rap at that time interim satellite services had. So, I can understand a level of scepticism that many in regional and remote Australia have about the nature of the satellite service, where they've today might utilise the interim satellite service or AB G services. But I guess my call is to pause that technology debate and give this thing a red-hot go.

This does represent a very significant investment. It's the biggest deal so far for communications in the bush. It will offer wholesale speeds up to 25mb down and 5mb up. It is the best consumer broadband service by far that has ever been available in these areas. In fact, it is one of the world's best satellite broadband services. There's many questions that people reasonably want to know, like, you know, how much is it going to cost, what are the allowances going to be, and how is the migration going to be handled. And we aren't in a position yet to release all of those details and that's not because we're being obstructive but there's many issues to work through, including in designing the balance of a non-fixed line footprint, we're designing fixed wireless towers, so we need to do to that understand what premises we can cover with the fixed wireless next and therefore understand what premises we need to cover with the satellite network. But you can be sure that we're working to make sure that we wring this technology for everything it's worth for the good of homes and business of homes and businesses in regional Australia. I might digress and talk about, beyond a standard broadband service to a home, we've listened and we are working to do a couple of exciting things and we will do more exciting things to focus on particular applications.

One area that's quite exciting is the potential for this technology to do a much better job of serving kids who are learning at home through distance learning. And we're working a concept with the Department of Education and groups like the Isolated Children's and Parents Association, which is represented here today, on the utilisation of a second dedicated port on the network device in the home that can be, in fact, allocated to distance education applications, supporting a direct link, if you like, to an education department to support video conferencing, lesson streaming and utilisation of allowances distinct from anything else the family might use. It's quite an exciting development that we're - that we've kicked off. The other one that I would like to talk about is what we're piloting and so thinking about supporting broadband in Indigenous communities. I won't profess it is a great idea from me or the NBN, but we've listened to groups like Broadband for the Bush and the remote Indigenous communications association and you can see it when you go out there - you question the fit for purpose nature of a communication delivery to a home. And I heard some analogous issues for public housing here, compared to a community solution that would enable community members, for example, to use their handheld mobile devices just to get access to the internet.

I'm totally on board, and NBN is totally on board to supporting that kind of model, with the long-term satellite service, my open question is, what's the best model to actually deliver that? To that end, we're actually piloting now in a number of communities in remote Northern Territory such an application. The first one went online only a couple of weeks ago. The particular application - we're obviously installing the service and supporting the service. There's a retail service provider involved and it's funded by a charity organisation that's operating out of Alice Springs, partnering also, I should say, with Northern Territory Library, who have allowed us to connect the service into their building, so thereby providing a secure piece of real estate with electricity. They've then plugged into a hotspot and they're enabling people around the library to use their phones to do whatever they will on the internet. And it's quite humbling when you go to some of these communities and you see, you know, today people - I know many communities don't have this cost, but some communities still do. If you want to check the bank balance to see whether a payment has arrived in your account on an ATM machine, it can cost \$2.50 for a transaction when a very low data use on an Android phone can give you the same kind of outcome. So, we're very excited by that initiative, also, and we're learning quite quickly about how that application is used and what sort of data allowances are required. So, to wrap up, we're committed to giving regional and remote Australia world-class broadband. And I guess the big news for me is that - or from me, is that the fixed wireless service is delivering that today, being halfway through its rollout. There's a massive investment in these technologies and, rightly, it will leave remote and regional Australians with access to great broadband at affordable prices. Thank you.

(APPLAUSE)

Can we have a couple of questions?

No, no, who got their hands up first? It was really quick! Thank you!

Peter Durant: Peter Durant. First, congratulations on the results of that international benchmarking. My question is, in which year do you estimate you will complete the rollout of the fixed wireless for regional areas? And for those with premises which won't be connected to a phone here, will there be the opportunity, as an interim solution, to get one of your satellite solutions?

Gavin Williams: So we're saying that we will complete the rollout in line with the broader NBN rollout by 2020, but we think it will be a little bit sooner for fixed wireless. We haven't contemplated an interim connectivity at this stage, bearing in mind that the public funding involved in truck-rolling a satellite service is quite considerable.

William Tibben: Will, from the University of Wollongong, that was for the presentation, it was very interesting. I have a friend who's actually on the fixed wireless service and he rates of about it, I mean, his bandwidths are much better than I can achieve in Wollongong on ADSL 2 plus. But one thing he mentions is people in town can see the tower but they can't actually access it because they're in town and the idea, I assume, is for another kind of NBN solution to be given to those people. Is there any reason why people in town can't access fixed wireless? And I'm wondering whether the fact that people such as the town area can't get access to the fixed wireless - that's the reason why your figures are so good in terms of your benchmarking. And isn't it unusual for the townies not to get things first?!

Gavin Williams: Look, the key point is that this is a rigorously engineered solution. Our typical tower - we split a typical - a typical tower would have three sectors. Each sector supports about 60 dwellings. We could have six sectors and allow for more densely populated areas but where I'm fumbling towards is, it is designed for a reasonably sparsely populated area. Now, what you find in many of these towns is, whilst radio coverage is available through the fringe of the town, population

density steps up, you know, as soon as you get to the developments on the edge of town, population density steps up X 10 or more.

So it's not so much a factor of radio coverage it's more a factor of what capacity we need to allocate to each dwelling to support the kind of service we're talking about. And frankly, you know, when you have 10 times plus higher population density, we strictly speaking could offer a service in there but we could only offer it to, you know, 10% of the population in there. That's why those areas are best suited to a fix line technology.

Bruce Bebbington: Bruce, Bridgetown, Western Australia, we are on the interim satellite and we were on the Australian broadband guarantee. We would probably have given you 8 off 10 when the satellite was originally put up because it was a huge jump forward. Now we think we've gone backwards. With the issues of the satellite, do you know what the footprint is going to be? We guaranteed we went with Optus because their footprint predominantly covered northern and south-western Western Australia where others companies didn't. NBN, we had no choice. Is the footprint going to be identical? Do you believe you can cover the whole of Australia with the duplication of the satellite with the same footprint? And if the footprint covers one rather than the other, won't that mean that perhaps one half of the country will transition before the other?

Gavin Williams: So, we haven't released the specific footprint end state for fixed wireless or satellite. And I'd love to get your details when I finish, just to understand where you are, but I'll make one observation about fixed wireless. Within the current footprint of fixed wireless, I'd estimate that 1,900 interim satellite customers can get on. And there would be more than that, there would be 3,000 APG customers that could get on the fixed wireless today. So in due course, we'll release the footprint and without knowing your specific circumstances, I wouldn't be able to suggest whether you would be supported ultimately by fixed wireless or satellite, but, you know, you will be covered by one of them. Two more questions and then we will go to morning tea.

Jim White: Gavin, Jim White, a couple of months ago your investing shareholder announced a major investment in Blackspot mobile infrastructure across the country. From Western Australia we've mapped the 130-odd sites there and based on your published information at the moment it looks like about 30% plus of those sites would correspond with communities you are planning to connect with satellite. Is NBN open to the concept of expanding its fixed wireless network across some of those new sites that you weren't aware of, obviously, but now could be aware of in regards to the 499-odd towers that will be deployed under that program?

Gavin Williams: Erm, yeah, I mean, we continue to look - we are continuing the process of optimising where fixed wireless can go. So we've not designed out every single one of those 2,600 towers yet and that design will take into account an estimate of what costs it will take and the population coverage in those kinds of communities. Now, I can't make a judgement without knowing the details on whether that's a game-changer, it may be, it may not be, you know, but we are about - we're spending shareholder funds in the best way we can to help with that rollout and if that gives us an opportunity, then we will be on it. Our work with the network operators, it's strong, we co-locate with mobile operators wherever we can and we're seeing renewed interest from mobile operators to co-locate on a tower we have in place. So I don't think those opportunities are going unaddressed. Last one.

Unknown audience member: Twofold. First of all, on the satellite, I mean, to go to that earlier point, the important difference that everyone has got to realise is that this satellite is built around a series of spot beams. It's not like its one big coverage area. So breaking it up into spots and those spots have got different-sized footprints. The question for me, though, to go back to that, is, do both satellites attempt to cover the entire country or does one do one half and the other do the other? I

always thought they were both meant to cover the whole country, because effectively they were to provide a redundancy. So that is the first question. And secondly, reading the corporate plan between 2018-2020 there is a decrease of the coverage of satellite by 20,000 and an increased in the coverage of fixed wireless by 20,000, so I presume that means that once the fixed wireless is completed, where there are opportunities there may still be some incremental growth for fixed wireless beyond the final buildout. Is that assumption correct?

Gavin Williams: Let me address that one first. I'd need to look at the corporate plan but I suspect that might be a reflection of interim satellite customers coming off and new satellite customers, the long-term satellite customers, coming on. But I would need to check which element you are talking about. The first question, yeah, I didn't really explain terribly well, did I, the nature of coverage. You are absolutely right, David - each satellite breaks up Australia into 101 spot beams and they're of differing sizes and capacity. So the eastern seaboard through the coastal fringe, where lots of people live, there will be lots of high density spot beams and then multiple spot beams across the centre. Importantly, spot beams also across the islands down to Macquarie Island and down to the Torres Strait. Each satellite has the same 101 spot beams. As I'm told, there are slight differences in exactly how they manifest but you are right, there are two with spot beams and they cover the redundancy. Thank you very much.

(APPLAUSE)

Narelle Clark: If you just want to grab some morning tea and we will be back here at 11:00.