

Understanding the nbn™ network

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What is nbn and the nbn™ network?

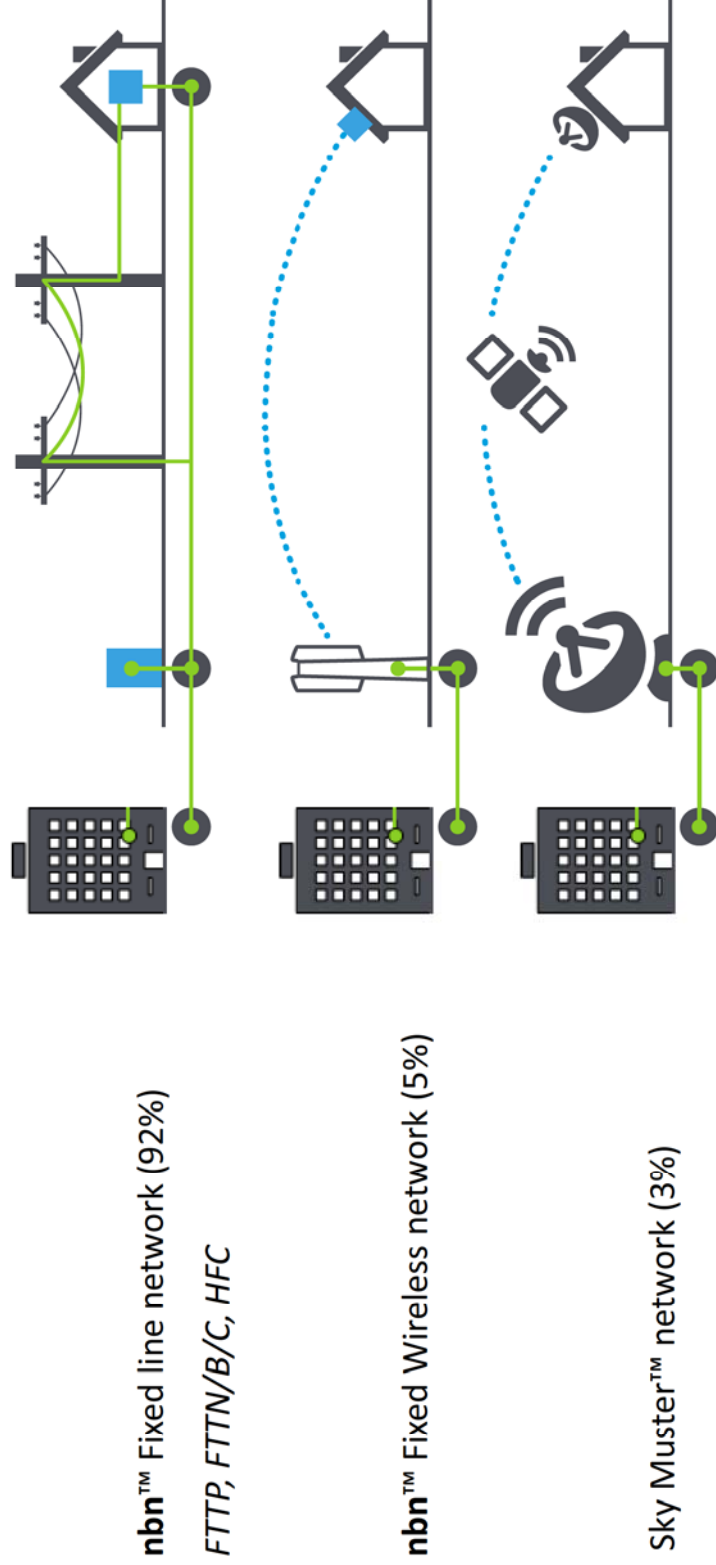
- The **nbn™** network is Australia's first national, wholesale-only, open access phone and broadband network for all Australians, no matter where they live.
- **nbn** is responsible for building and operating the **nbn™** network infrastructure across Australia, and is the owner/operator of the **nbn™** network – from the satellites, to the fixed wireless infrastructure and any **nbn™** boxes installed at your home.
- **nbn** sells capacity in bulk to Retail Service Providers who then bundle up services at different price points and plans to sell on to homes and businesses.
- **nbn's** role is to ensure the **nbn™** network is operating effectively as designed, and that any issues relating to the infrastructure are investigated and resolved. As **nbn's** customers are Retail Service Providers, **nbn** acts upon advice received from providers.
- The **nbn™** network is driving a mammoth revolution across telecommunications industry in Australia.

What isn't nbn or the nbn™ network?

- The **nbn™** network does not provide mobile phone services – fixed services only.
- As a wholesaler, **nbn** does not sell services over the **nbn™** network direct to the public.
- The **nbn™** network does not provide end-to-end phone or internet service. As such, the service quality and speed experienced in each home or business can not be entirely controlled by **nbn**.
- The **nbn™** network is not a 'line in the sand' at 2020: we will continue to evolve and upgrade our network in line with technology advancements to remain competitive.



Technology allocation – Multi-Technology Mix





2020 speeds and upgrade paths



By 2020:

- 100% of nation at 25Mbps or more
- 90% of nation at 50Mbps or more
- 40% of nation at 1Gbps



Fibre to the Premise
➔ **NGPON2**



Hybrid Fibre Coaxial
➔ **DOCSIS 3.1+**



Fixed Wireless
➔ **LTE+, 5G**



Fibre to the Node / Building
➔ **Different paths to G.Fast, xG.Fast**



Fibre to the Curb
➔ **Different paths to G.Fast, xG.Fast**



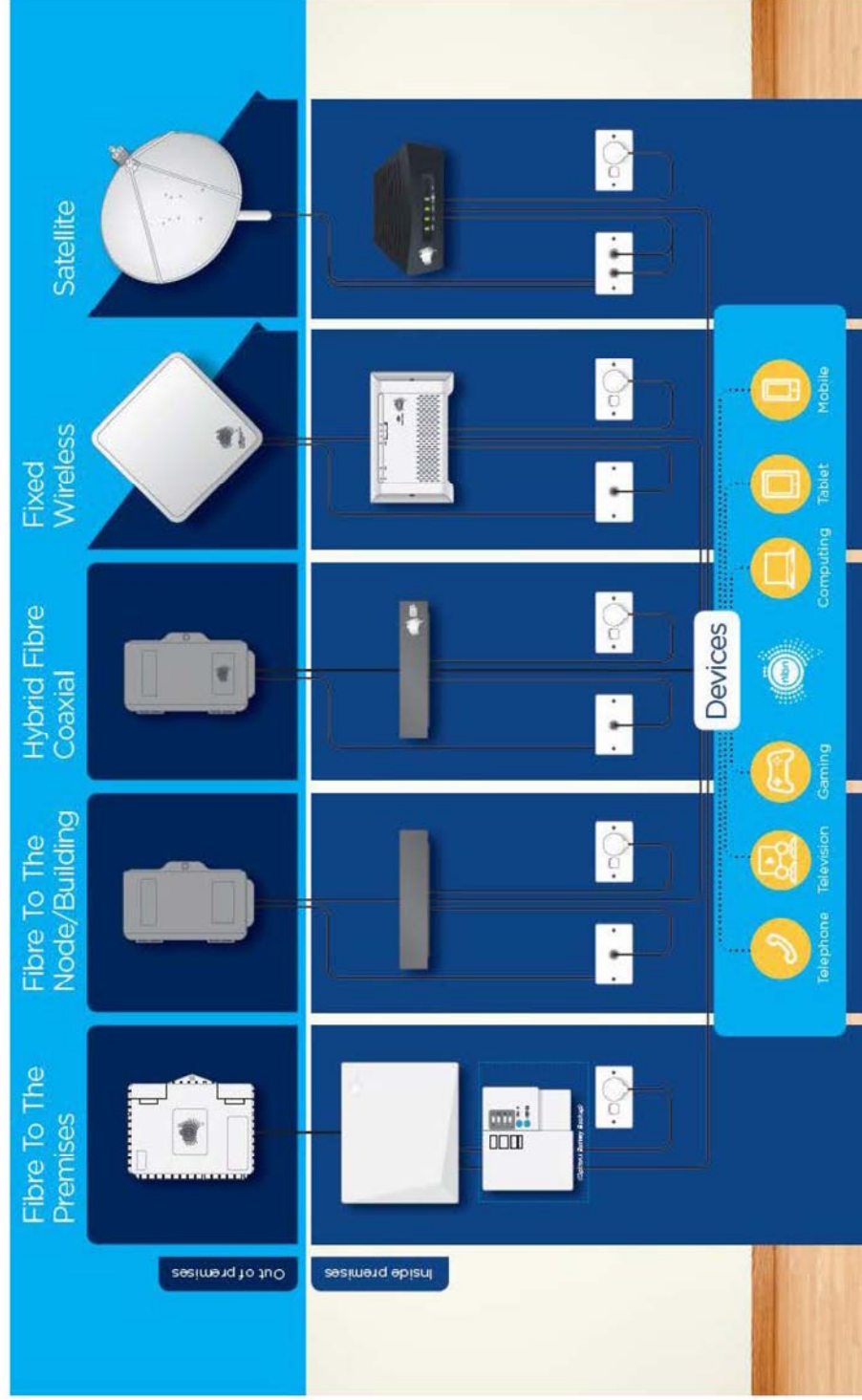
Satellite
➔ **Efficiencies, Next Gen VSAT**



Core Network
➔ **More wavelengths, higher speeds**



Technology allocation – premises equipment





Technology allocation across Australia

nbn uses a set of business rules when determining the technology for an area to meet two key objectives (among others):

- Deliver on our commitment to provide wholesale speeds of at least 25/5 MBps – as directed to us in the government’s Statement of Expectations.
- Minimise the cost per premise for the network rollout in order to keep within the finite funding envelope available – this is achieved through deploying a mix of technologies, and utilising existing infrastructure where possible.

Considerations:

- Density of premises
- Proximity to **nbn**TM infrastructure – backhaul, transit and exchange availability, etc.
- Utilisation of the Sky MusterTM satellite to make best use of this resource
- Optimising the technology mix nationwide to make best use of funding and available infrastructure.



Why do I need to connect?

The **nbn**[™] network is Australia's new fixed phone and internet network, replacing most existing landline phone and internet services.

In fixed line areas, connecting to the **nbn**[™] network is mandatory if you wish to keep your existing phone and internet services. Existing services in fixed line areas will be switched off 18 months after the **nbn**[™] network is available.

The **nbn**[™] network is not just about the internet – it's your landline phone too. It's critical that you talk to your device providers for any other landline services such as medical alarms, eftpos, fire and lift, or fax machines. If you have a medical alarm, make sure you register it with **nbn** at www.nbnco.com.au/medicalregister.

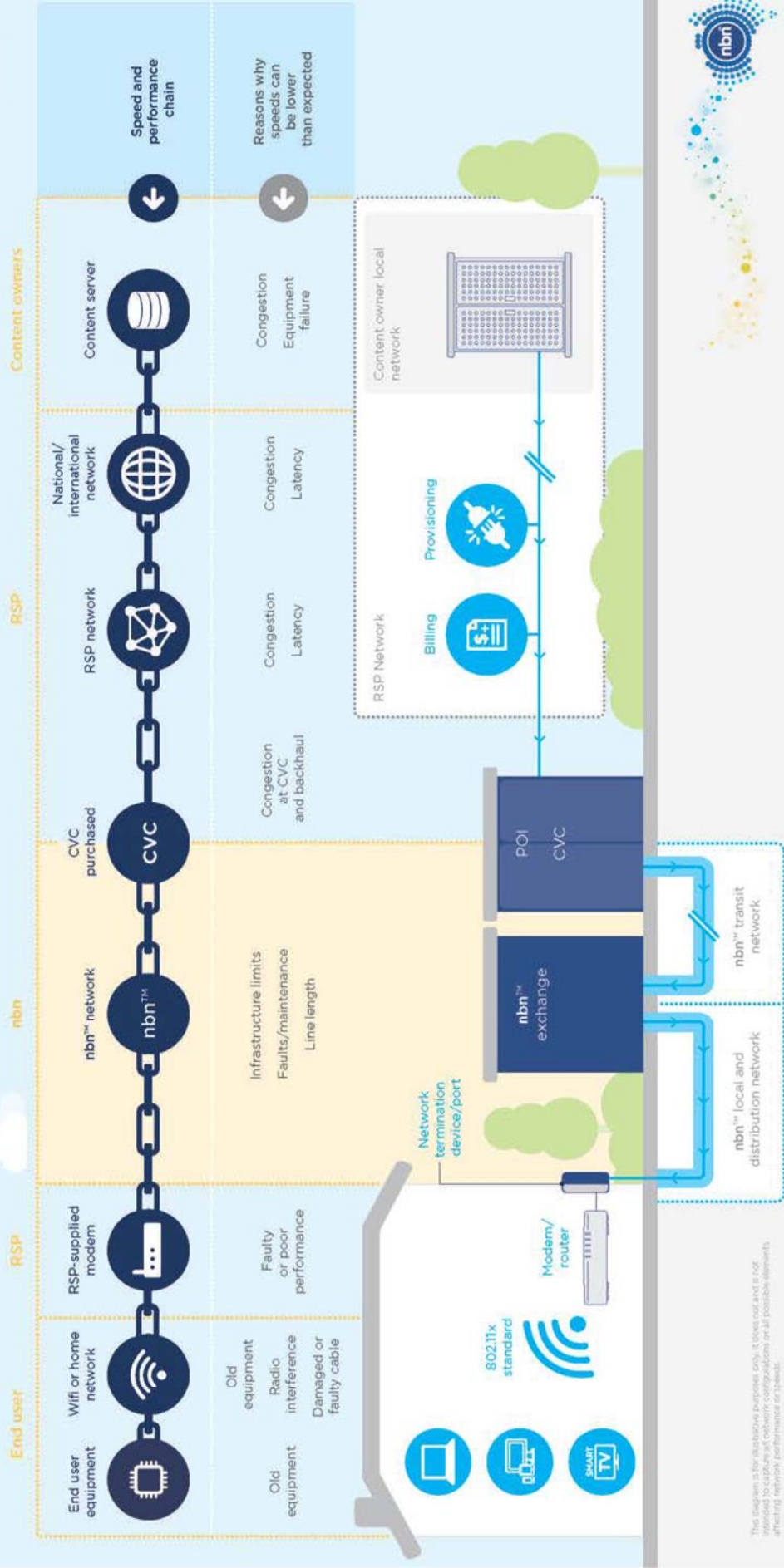


How do I connect?



1. Check if your home is ready to connect
 - www.nbn.com.au/check
 - Keep an eye out for a letter from **nbn**
 - Marketing material from providers
2. Consider what services you need to migrate to the **nbn™** network.
3. Contact a phone or internet provider to discuss your options. They will help you choose a plan that suits you:
 - Landline phone only, Fixed broadband only, or Landline phone and fixed broadband bundles
 - Speed tier (www.nbn.com.au/speed)

Factors affecting internet speed and performance





Wholesaler and retailer relationship

nbn responsibilities:

- Build and operate Layer 2 network – the traffic layer, not the applications layer
- Operate IT systems and business-to-business portal for retailer orders
- Open access, non-discriminatory treatment of retailers
- Support retail-based competition
- Regulated wholesale access prices
- Provide wholesale speed access to 25/5Mbps everywhere, and 50Mbps to 90% of fixed-line footprint
- Technology agnostic
- Deliver ordered wholesale speeds to the network boundary e.g. first socket in an FTTN premises
- Deliver target installation and service assurance timeframes
- Public information on fixed-line migration responsibilities

Retailer responsibilities:

- Sell retail services to the public
- Set retail prices
- Service end users – be the contact point for orders and fault enquiries
- Provide end user premises equipment, e.g. gateways/WiFi
- Provide additional network and service elements, and construct and configure a retail service

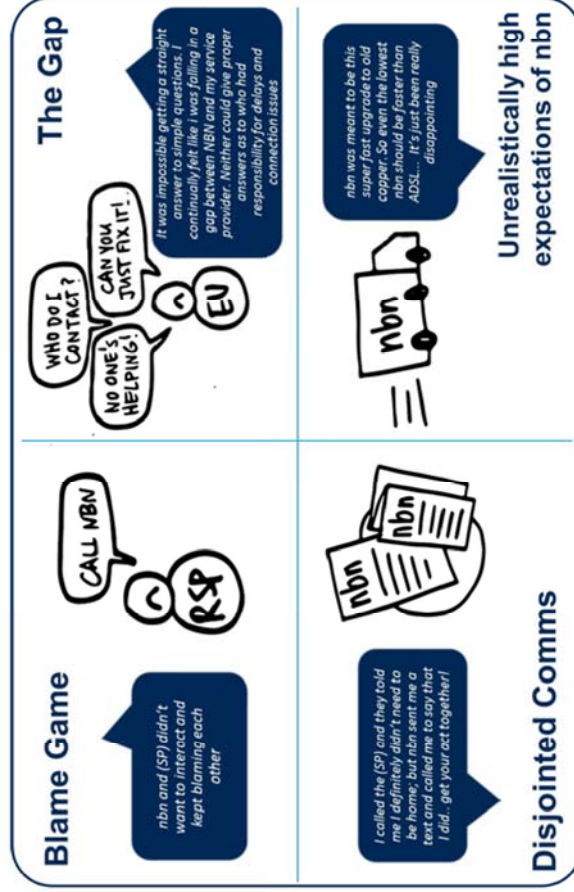
Challenges:

- nbn has no access to end user customer data e.g. names and addresses, only our nbn™ Location ID
- It is critical nbn does not compromise the commercial relationship between retailer and end user



Wholesaler and retailer relationship

nbn is working closely with our Retail Service Providers to improve the end user experience.



"To be clear, the end-user experience is important to every company involved in building, selling, and servicing this broadband internet access. We evaluate and analyse third party independent surveys and our own internal metrics and from this, I can report that the majority of our 1.8 million are happy with their broadband experience powered by nbn. This is whether it is having the service installed or using the network. End user satisfaction score remains stable at around 7/10 and the Net Promoter Score continues to be positive. These scores are a reflection of both the service provider and nbn activities."

Bill Morrow
nbn CEO

Senate Estimates, 28 February 2017



Who do I go to when?

Queries to direct to the constituent's Retail Service Provider / device provider:

- Anything to do with a plan – inclusions, cost, service level agreements, compensation, etc.
- Device compatibility with the **nbn**TM network – *will my 'x' device work on the nbnTM network?*
- Service issues (drop outs, slow speeds, reliability issues, etc) – If a constituent is having trouble with their connection, they should contact their Retail Service Provider, who has the tools to troubleshoot and determine if and where a fault may lie. If the fault is detected in the **nbn**TM network, providers have direct access to **nbn** and we will work together to restore the service.

Queries to direct to nbn:

- [REDACTED]
- Availability of the **nbn**TM network at their premise, and Retail Service Providers:
 - www.nbn.com.au/check / www.nbn.com.au/rolloutmap
- Preparing to connect to the **nbn**TM network:
 - www.nbn.com.au/speed
 - <http://www.nbnco.com.au/learn-about-the-nbn/speed/making-the-most-of-your-internet-connection.html>
- Feedback regarding **nbn**TM provided equipment – location, maintenance, etc:
 - 1800 OUR NBN (1800 687 626) or complaints@nbnco.com.au
- Technology Choice program: www.nbn.com.au/technologychoice
- Registering a medical alarm: www.nbnco.com.au/medicalregister

Queries to direct to the Minister's Office or Department of Communications:

- Policy and legislation: the Statement of Expectations, USO, Telecommunications Infrastructure in New Developments (TIND) Policy, Infrastructure Provider of Last Resort, etc.



Escalation paths: Retail Service Providers

Escalation paths for Members and Senators offices within Retail Service Provider organisations is at their discretion.

Escalation paths currently known to **nbn**:

- Telstra: [REDACTED]
- Optus: [REDACTED]
- TPG: [REDACTED]
- iiNet: [REDACTED]
- Southern Phone: [REDACTED]
- Exetel: [REDACTED]

Remember, **nbn** does not have access to end user / customer details. When referring cases to **nbn**, please ensure to include:

- Name and contact details for the end user
- Location details – street address or coordinates
- Details of their Retail Service Provider
- **nbn** case reference number
- Retail Service Provider reference details or the **nbn**™ Location ID (which is visible to the provider).



Resources

- www.nbn.com.au
 - www.nbn.com.au/check - **nbn**TM network availability at your premise + choosing a provider
 - www.nbn.com.au/rolloutmap - **nbn**TM network coverage area
 - www.nbn.com.au/blog - case studies, industry news, etc
 - <http://www.nbnco.com.au/blog/the-nbn-project/understanding-the-nbn-network-model.html>
 - <http://www.nbnco.com.au/blog/the-nbn-project/gigabit-broadband-the-facts.html>
 - <http://www.nbnco.com.au/blog/the-nbn-project/setting-the-facts-straight-on-fibre-to-the-node.html>
- www.nbn.com.au/learn
 - www.nbn.com.au/speed – choosing the right speed on the **nbn**TM network
 - www.nbn.com.au/congestion – understanding provider congestion
 - www.nbnco.com.au/evolution – understanding the evolution of the internet over the past 20 years in Australia.
 - <http://www.nbnco.com.au/learn-about-the-nbn/network-technology.html> – understanding the different **nbn**TM technologies.
- www.nbn.com.au/power – power requirements and the **nbn**TM network
- www.nbn.com.au/landline – understanding why landline phone (and internet) services on the **nbn**TM network will not work in a power outage.
- www.nbn.com.au/business – information for businesses to prepare for connecting to the **nbn**TM network
- <http://www.nbnco.com.au/corporate-information/about-nbn-co/policies/telecommunications-policies.html> – key policies applying to the provision of telecommunications in Australia



And finally...



Thank you for your patience while we roll out the nbn™ network across Australia.

“Remember, this is a challenge no other country has undertaken to the scope or complexity of what we are doing in Australia right now. We have had to build and learn simultaneously. We have had to launch technologies to market, and learn and adjust as we go to smooth out integration issues for a strong end-to-end experience. This has meant network adjustments. It has required process and systems overhauls and alignments. We have worked together with our partners across the industry to test and check and improve as we work our way up the business maturity curve.

We have a landmass of 7.6 million kilometres squared. It has mountains. A lot is desert. Australia has extreme weather conditions that differ across the states and territories, and many important sacred sites.

To put things into perspective, South Australia alone is 10 times larger than South Korea who currently has the fastest internet speeds in the world.

Our cities are isolated from one another, with Darwin closer to neighbouring countries such as Indonesia or Papua New Guinea, than it is to Adelaide.

It is the country’s largest and most complex infrastructure deployment that impacts every home and business in Australia. And we are not only building the network, we are simultaneously operating it too...”

Stephen Rue

nbn Chief Financial Officer

