Corporate
Plan
2020–23

Legal Notice

Introduction

The Corporate Plan 2020–23 has been prepared by NBN Co Limited (NBN Co) for its shareholder ministers, the Hon Paul Fletcher and Senator the Hon Mathias Cormann (Shareholder Ministers) as required by the *Public Governance, Performance and Accountability Act 2013 (Cth)* (PGPA Act) (in particular section 95(1) (b) of the PGPA Act), the *Public Governance, Performance and Accountability Rule 2014 (Cth)* (PGPA Rule), the Commonwealth Government Business Enterprise Governance and Oversight Guidelines (January 2018) (GBE Guidelines) and Australian Government policy as communicated to NBN Co by the Commonwealth from time to time (together, Reporting Obligations).

The reporting periods covered by this plan are FY20 to FY23 inclusive. The first reporting period covered by this plan is FY20. The fourth, and the last, reporting period covered by this plan is FY23.

Disclaimer

This plan contains various long-range plans, projections, high-level estimates and other forward-looking information (Estimates). Those Estimates are based on the best considered professional assessment of present economic and operating conditions, present Commonwealth Government policy, and a number of assumptions regarding future events and actions, which, at the date of this document, are expected to take place.

The Estimates involve known and unknown risks, uncertainties and other factors beyond control that may cause NBN Co's actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the Estimates.

While the Estimates are based on the best considered professional assessment, the Management team and officers (as defined in the Corporations Act) of NBN Co does not give any guarantee or assurance to any third party that the results, performance or achievements expressed or implied by the Estimates will actually occur, and the Estimates should not be relied on or considered to be a representation of what will happen by any third party.

Other than required according to Reporting Obligations, NBN Co and its officers have no obligation to update the Estimates based on circumstances, developments or events occurring after the publication date of this document.

This plan also contains Estimates in respect to periods after 30 June 2023, including in the long-term financial outlook section. Management and the Board do not give any guarantee or assurance that the results, performance or achievements expressed or implied by such Estimates will actually occur.

Contents

Part A
Overview

Part B
Plan Summary

About NBN Co

Who we are

NBN Co is the company building and operating the nation's wholesale, local access broadband network. By providing access to fast, reliable and affordable broadband services, NBN Co is helping Australian homes and businesses realise the social and economic benefits that high-speed broadband can unlock.

NBN Co's purpose is to lift the digital capability of Australia.

NBN Co is accountable to the Commonwealth Government and is working to deliver a National Broadband Network that meets the government's Statement of Expectations[1], 24 August 2016.

The Company is working to complete the network build and ensure that all Australians have access to fast broadband as soon as possible, at affordable prices, and at least cost to taxpayers.

In addition to building and maintaining a network that is resilient and secure, NBN Co is committed to delivering access to peak wholesale download speeds of at least 25 megabits per second (Mbps) to all premises, and at least 50Mbps to 90 per cent of the fixed-line premises[2]. NBN Co will ensure that upgrade paths are available for the network's multi-technology mix as required.

As the network wholesaler, NBN Co provides access to all Retail Service Providers (RSPs) on a non-discriminatory basis. This approach is intended to level the playing field in the Australian telecommunications industry, enhancing competition and providing greater choice for customers[3] across the country. It is through RSPs that customers connect to the **nbn**™ network for access to high-speed internet.

NBN Co is delivering high-speed broadband to customers across Australia over an area of more than seven million square kilometres. The Company is committed to working with Delivery Partners, RSPs and stakeholder groups to help more Australians use the network to drive positive benefits for themselves and their communities.

---

1   https://www.communications.gov.au/publications/nbnstatementofexpectations

2   This will be achieved at the end of co-existence, which refers to the period where there are active Telstra services running over the parts of the legacy Telstra network that NBN Co has acquired from Telstra.

3   Final downstream customers to NBN Co's Retail Service Providers (RSPs).

Delivering on our commitment

1
NBN Co's purpose

2
What are NBN Co's goals?

To **lift the digital capability** of Australia

Complete the build by 30 June 2020[1]

Enhance the network capability over time to meet the growing and diverse needs of Australian homes and businesses

1   NBN Co's build completion commitment is that all standard installation premises in Australia are able to connect to the **nbn**™ access network as at the build completion date. This excludes premises in future new developments which will be an ongoing activity for the Company beyond the build completion date. It also excludes a small proportion of premises defined as 'complex connections' – which includes properties that are difficult to access, culturally significant areas and heritage sites – where connection depends on factors outside of NBN Co's control such as permission from traditional owners, and where network construction to allow such premises to connect will be an ongoing activity of NBN Co beyond the build completion date.

3

What are NBN Co's priorities?

Ensure all Australians have access to **high-speed, resilient and secure broadband**

Keep NBN Co a great place to work, **underpinned by a customer-led culture**

Deliver a customer experience that drives **satisfaction, use and network preference**

Develop a product and pricing portfolio that **addresses our customers' diverse needs**

Strengthen relationships with government, industry and community to **optimise customer benefits**

Build capabilities for the future and grow profitability to **enable re-investment to benefit our customers**

4

Supported by

6,400[1]
NBN Co staff

More than 100
Retail Service Providers selling services over the **nbn**™ access network

1   This figure includes NBN Co employees and contractors.

Board and Management message

Construction of the nbn™ access network is one of the largest infrastructure projects ever undertaken in our nation's history, one that aims to lift Australia's digital capability by fundamentally changing the way we learn, do business and connect with each other.

To date, NBN Co and its Delivery Partners have rolled out more than 280,000 kilometres of fibre-optic cable across Australia, and re-purposed and upgraded existing Hybrid Fibre Coaxial (HFC) and copper technologies, bringing fast broadband at scale to many parts of metropolitan Sydney, Melbourne, Brisbane, Adelaide and Perth. The company has built a Fixed Wireless network comprising some 2,200 towers and approximately 13,000 cells, providing coverage of approximately 250,000 square kilometres, as well as launching two satellites which overlook seven million square kilometres of this great continent.

Building this vast piece of critical network infrastructure has been a complex task. As we continue to improve the way we roll out the network and run the business, we must constantly balance a range of objectives for our company, the telecommunications industry, and the connectivity goals of our nation.

Firstly, we must meet the Statement of Expectations from the Commonwealth Government to complete the build, connect Australian homes and businesses to this network, and deliver a high quality, fast broadband experience. We forecast to achieve a 3.2 per cent return on the Commonwealth's investment of $29.5 billion.

Secondly, we need to work with the telecommunications industry to create the right conditions that will allow us all to thrive and prosper in the long term. For NBN Co, this means reaching a positive annual cash flow, anticipated to be from FY23, so we can continue to reinvest in our network, our business and our products as technology and customer needs change in the decade ahead.

And most importantly – we need to ensure that we deliver the best possible experience for customers once they are connected to services over the nbn™ access network and increasingly incorporate online experiences into their daily lives.

Ten years since the formation of the National Broadband Network was first announced, we can proudly say that we have made extraordinary progress, but with lots of heavy lifting still ahead, as we strive to meet these objectives.

Progress

Over the last 12 months we have seen improving customer service yield good results. We have improved the connection and service quality of our HFC network, scaled the rollout of our Fibre-to-the-Curb (FTTC) network, launched wholesale products designed for businesses that are capable of delivering Gigabit speeds[1], and put in place better wholesale pricing options so more customers can experience higher speeds with reduced congestion during busy hours.

We have also continued to meet our construction targets with FY19 being the company's single biggest year for build and activations. On 30 June 2019, almost 10 million homes and businesses were made Ready to Connect (RTC) with more than 5.5 million premises connecting to a service over the nbn™ access network. This produced record revenue of $2.8 billion in FY19. If NBN Co's revenue continues to grow beyond $5 billion annually as forecast, it will underwrite our future investments into customer experience and a high-speed, resilient and secure network that can help enable Australia's digital needs.

Of course, as we edge closer to making 11.5 million homes and businesses ready to connect by the end of June 2020, we know we still have much work to do.

These construction and operational objectives will always be critical to our success, and connecting homes and businesses as quickly and seamlessly as possible remains core to what we do. But providing access to quality and affordable services that our customers – the people living in Australian homes and working in Australian businesses – need and deserve will be what drives us through the next phase of our evolution.

Customer led

Over the period of this Corporate Plan, we will continue to work in collaboration with our Retail Service providers (RSPs), the industry, regulators and the government to better understand customers' needs and their experience with our services. We have made strong progress over the past financial year but recognise that there is always more to do to delight customers, address negative consumer sentiment, and in doing so enhance overall customer satisfaction.

Certain things are not completely within the control of NBN Co and require us to work closely with the telecommunications industry to help ensure that the products we deliver to the market meet the expectations of all Australians – from entry-level broadband customers to business enterprises. This we are committed to do, to produce the best possible customer experience we can.

We will also continue to focus on the future, to keep up with the latest technological trends and innovations to ensure our network can be enhanced and upgraded in a cost-effective and timely manner to meet the growing and diverse connectivity needs of Australian homes and businesses.

1 Regardless of the retail service you purchase, the actual wholesale speeds delivered by the **nbn**™ Enterprise Ethernet product will be less than 1000 Mbps due to equipment and network limitations. Your experience, including the speeds actually achieved over the **nbn**™ network, depends on some factors outside our control (like your equipment quality, software, and how your service provider designs its network). If your service provider has not selected a bandwidth in the highest of three classes of service available for **nbn**™ Enterprise Ethernet, the speeds you experience may be affected by contention on the **nbn**™ network, particularly in busy periods.

Board and Management message

Driving this refreshed strategy with its focus on the customer will be a new purpose for NBN Co: to help lift the digital capability of Australia. This new purpose is about much more than simply connecting homes and businesses to a National Broadband Network. It's about providing the platform and services that will give Australians – no matter where they live, work or seek to utilise critical services such as healthcare and education – the tools, skills and access to help unlock the economic and social benefits that fast broadband can deliver.

Collaboration

We know that to deliver on our purpose to help lift the digital capability of the nation, NBN Co must not only be sustainable and successful, but so too must our retail, industry and construction partners.

Building a thriving broadband ecosystem together can only be achieved by working closely with our industry partners – and this last year has given us proof of what that success looks like when we do that.

Together we have overcome major construction challenges, built fixed-line and Fixed Wireless networks in some of the hardest to reach corners of this nation, and balanced the nation's needs for faster broadband with the needs of the internet and phone companies who retail our services to customers.

Improving customer experience requires an industry-wide, co-operative approach. At NBN Co we know what we need to do to achieve these goals but we cannot do it alone.

Over the next two years we will deepen our collaboration with retail service providers to better enable them to create great customer experiences and co-invest with them where we believe it to be beneficial, to improve broadband experience.

Challenges

But we still have much work ahead of us.

We now face our busiest construction schedule, and we will tackle new challenges as we invest to upgrade capacity and performance on the Fixed Wireless network and confront some of the most complex and hard-to-connect homes and businesses across the nation.

There will inevitably be more challenges along the way, but we will meet these with confidence that our capable and dedicated team of thousands of internal and external staff are working to make this network the best it can be for Australians.

Social and economic benefits

While we continue to rise to these new challenges, we know the return for the nation is worth it.

Our purpose is to lift the digital capability of Australia by empowering communities in regional, rural, remote and metropolitan Australia with better connectivity. This remains a driving force for our people, our company and our partners who share this ambition.

We know from the Connecting Australia Report[1] that NBN Co is delivering on this purpose by making substantial social and economic differences to the lives of Australians. The report, commissioned by NBN Co, found that by the end of the roll-out in June 2020 the **nbn**™ access network is expected to be contributing more than $10 billion a year to the economy.

However there are also other benefits that the **nbn**™ access network is delivering today. We know from this research that in **nbn**™-connected areas the average rate of growth in digital economy jobs is outpacing the national average by a factor of five and that the number of self-employed women in these regions is growing at a rate 20 times faster than in non **nbn**™-connected areas.

---

1   The *Connecting Australia* report was commissioned by NBN Co through independent research agency AlphaBeta in 2017. It combines national census data with an Ipsos survey of 3500 individuals across 1700 postcodes in metropolitan, regional and remote areas, including those connected to the **nbn**™ access network and those not connected.

The communities living in regional, rural and remote Australia are important stakeholders for ubiquitous high-speed broadband. Understanding this, NBN Co will increase its focus on those communities in the coming years. Our research estimates that the impact of the **nbn**™ access network will be to create up to 31,000 new jobs by 2021 with businesses able to thrive where they are established instead of moving to the city to access online markets. Furthermore, more regional, rural and remote Australians should have an opportunity to enrol in online education and training, helping to create opportunities for personal and career growth for young and old alike in an age where we know that lifelong learning is essential. Critical Australian industries such as agriculture and tourism are anticipated to benefit from enhanced productivity and expanded market opportunities through access to the high-speed broadband NBN Co provides.

Looking ahead

These next few years will be critical for NBN Co. Businesses are judged on how they face and overcome challenges and we know that we face complex and unique challenges on a daily basis. Our ambition to make the customer central to everything we do will not be lessened by this reality, and we will be working harder than ever to help ensure all Australians who connect to services over the **nbn**™ access network have a positive experience. NBN Co will be central to helping uplift the digital capability of Australia and in doing so, providing greater economic and social opportunities for Australians.

On behalf of the Board, we would like to acknowledge the extraordinary efforts of NBN Co's people and our industry partners. Together we have stepped up to meet this unique engineering challenge and are now within sight of a critical goal – completing our network build.

We are well advanced in planning for '**nbn**™ 3.0' when ubiquitous affordable access to high speed connectivity will further change and enhance our lives.

We foresee truly exciting times ahead.

Dr Ziggy Switkowski AO
Chairman

Stephen Rue
Chief Executive Officer

FY19 Key achievements

NBN Co has made significant progress building the nbn™ access network, growing revenue and ARPU, whilst working to improve the residential and business customer experience.

FY19 was the Company's single biggest year for the build with an additional 3.0 million new premises made Ready to Connect (RTC), and the network reaching 10.0 million premises – exceeding the Corporate Plan 2019-22 target by 0.3 million premises. As at 30 June 2019, approximately 86 per cent of Australian premises had been declared RTC, and more than 5.5 million premises were connected to a service over the nbn™ access network.

The Company generated revenue of $2.8 billion in FY19, a 43 per cent increase compared to FY18. This was primarily driven by a significant increase in the number of premises activated and business revenue of $388 million. The upgrading of customers to faster speeds and a sustained trend towards greater data transmission have helped lift residential Average Revenue per User (ARPU) to $44, $1 increase on FY18.

The Company also lifted its focus on quality of service to customers and will continue to do so over the next few years.

NBN Co's performance was underpinned by several key milestones during the year, including:

Customer

Wholesale pricing construct and initiatives have resulted in 64 per cent of homes and businesses on peak wholesale download speed plans of 50Mbps or higher

• • •

Launched **Enterprise Ethernet, delivering 1 Gigabit per second (Gbps)[1]** wholesale symmetrical services to government and enterprise customers

• • •

Introduced **Business Bundles tailored to the needs of small to medium businesses** and focused on improving the customer experience

• • •

Opened the **Business Operation Centre** to provide tailored services and **streamline the process of migrating businesses to the nbn™** access network

1   Regardless of the retail service you purchase, the actual wholesale speeds delivered by the nbn™ Enterprise Ethernet product will be less than 1Gbps due to equipment and network limitations. Your experience, including the speeds actually achieved over the nbn™ broadband access network, depends on the configuration over which services are delivered to your premises, whether you are using the service during the busy period, and some factors outside NBN Co's control (like your equipment quality, software, chosen broadband plan or how your service provider designs its network). If your service provider has not selected a bandwidth in the highest of three classes of service available for nbn™ Enterprise Ethernet, the speeds you experience may be affected by contention on the nbn™ network, particularly in busy periods.

Network

Scaling of Fibre-to-the-Curb (FTTC) footprint with more than 600,000 premises declared RTC

• • •

Released optimised HFC footprint with more than 2 million **premises declared RTC,** which includes all premises impacted by the HFC pause in FY18

• • •

Started implementing a **DOCSIS 3.1®** **upgrade** across the HFC network, enabling the **nbn**™ access cable network to **deliver faster wholesale speeds in the future**, provide significant capacity uplifts, and improve service reliability and availability

• • •

Commenced HFC Gigabit trials to identify and prove viability of upgrade path to accommodate customers' future broadband requirements

Financials

$2.8b ↑ **43%**
Generated revenue of $2.8 billion, an increase of 43 per cent compared to FY18

• • •

$232m
Achieved earnings before interest, tax, depreciation, and amortisation (EBITDA) before subscriber payments of $232 million in FY19 compared to the Corporate Plan 2019-22 target of $29 million. On a statutory basis EBITDA before subscriber payments for FY19 was $608 million, as reported on page 48

• • •

$44 ↑ **$1**
Increased residential ARPU to $44, up from $43 in FY18

Our future focus

Almost one hundred per cent of Australia's **nbn**™ access network is already completed, in build or in design. More than 5.5 million homes and businesses are now experiencing the benefits of the network every day and, as the Company progresses at pace with the metropolitan rollout, around 40,000 new residential and business premises are being connected to the **nbn**™ access network each week.

As NBN Co approaches the final stages of construction, the Company is strengthening its focus on becoming a full-scale service delivery organisation. The Company has brought into sharper focus the needs and expectations of NBN Co's customers: the people who use the **nbn**™ network in homes and businesses across Australia.

NBN Co is working to lift the digital capability of Australia and this purpose is underpinned by six pillars:

1. **Ensure all Australians have access to high-speed, resilient and secure broadband**
    The Company is striving for excellence in delivering a resilient and secure broadband network, while also taking a long-term approach to enhance network capability over time. Initially this will involve completing the network build to deliver a minimum of 11.5 million RTC homes and businesses by 30 June 2020.

2. **Keep NBN Co a great place to work, underpinned by a customer-led culture**
    The Company's culture will evolve to build expertise, work practices and capabilities that support an analytical, customer-focused mindset. Long-term customer benefit measures will increasingly be embedded into the Company's operating plan, key performance indicators, and employee incentives.

3. **Deliver a customer experience that drives satisfaction, use and network preference**
    NBN Co and its Delivery Partners are leveraging deep customer experience insights from Connection to Use and focusing on improved responsiveness to deliver more rapid issues resolution. NBN Co will continue to focus on the Use experience, concentrating on factors such as network reliability and availability, capacity management, and the minimisation of outages. The Company will also work more closely with NBN Co's RSPs and the industry broadly to positively influence aspects of the customer experience within its collective control such as modem capability, in-home and in-business setup, Wi-Fi capability and issues resolution. Targeted communication with residential and business customers will ensure accurate information is provided at every stage of their network connection and on-boarding process and at key stages during their experience and upgrade journey.

4. **Develop a product and pricing portfolio that addresses our customers' diverse needs**

   NBN Co's product portfolio will adapt to become more responsive to the evolving needs of all customers, from entry-level to high-speed, high-use residential and business enterprise customers. The Company also recognises the importance of RSPs who deliver NBN Co's products to customers, and will be working closely with them to ensure the right products are developed for their needs. This will include increasing the focus on serving low income segments of the population through affordable products, and investigating solutions for other underserved segments.

5. **Strengthen relationships with government, industry and community to optimise customer benefits**

   NBN Co will seek to maximise the benefits delivered to all customers of the **nbn**™ access network through direct consultation with government bodies, regulators, RSPs and local communities to drive transparency and better customer outcomes. This will include expanding the Company's capability to support communities with ongoing local needs, in sectors such as health, education and for small businesses and throughout regional and rural communities.

6. **Build capabilities for the future and grow profitability to enable re-investment to benefit our customers**

   NBN Co aims to create a sustainable business to enable reinvestment in network upgrades and operations and to continuously improve and evolve its products, processes and technologies.

   NBN Co is also continuing to drive a dedicated business customer experience program to improve the Connect, Use and Fix experience for businesses thereby streamlining business users' transition to the **nbn**™ access network and optimising network availability, reliability and security.

Customer experience strategy

NBN Co's strategy places customers at the centre, with focus on improving their experience and in turn, ensuring the full benefits of the **nbn**™ access network can be realised.

NBN Co's customer experience strategy sets clear expectations for the Company to meet as customers are connected, as well as improving their everyday experience and ensuring any issues are resolved promptly. The Company also recognises that effective collaboration with RSPs is essential to delivering the Company's ability to serve customers well, so it remains committed to working with them and the broader telecommunications industry to improve customers' overall experience in terms of their awareness about the choices that are available to them when connecting to the **nbn**™ access network, their use of the service, and NBN Co's ability to fix problems and resolve issues. Accordingly, the Company will continue to drive its comprehensive customer program in collaboration with the industry across the four stages of a customer's experience: Aware, Connect, Use and Fix.

Aware

NBN Co will help Australians to understand what they need to do to sign up to the **nbn**™ access network and choose the plan that is right for them. The Company will clarify its role and the role of RSPs, and support customers to make sure their service is fit for their needs.

Connect

NBN Co aims to provide all customers with on-time and convenient connections, reducing wait time and resolving issues relating to connection. The Company is working with Delivery Partners to improve service to customers. The goal is to ensure installations of **nbn**™ equipment are complete right the first time and we minimise the incidence of delayed or missed appointments.

The Company will continue to increase business connections. We have dedicated staff resources and improved processes, together with RSP partners, to improve the experience of connection for business customers.

Use

NBN Co recognises that the most important element for customers is the quality of their usage experience. The introduction of bundled AVC and CVC wholesale discounts improved customers' experience of **nbn**™ in FY19. Rehabilitation, remediation and augmentation of existing infrastructure continue to be an important focus. NBN Co will continue to reduce network down time where possible and drive better communication to customers during outages, as well as helping customers by advising them on how to improve their in-home set-up and the benefits and suitability of various technologies and speed tiers.
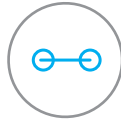
Fix

NBN Co will progressively target and reduce the time it takes to resolve issues within its control and fix problems within agreed timeframes. The Company is focused on working with its partners to improve processes for resolving issues. This will include the development of new tools to deliver better outcomes for customers.
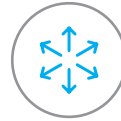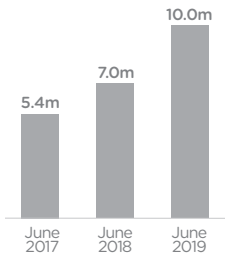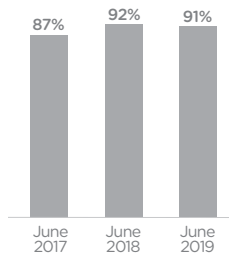
Progress

Connect

Use

Homes and businesses ready to connect[1]

10.0m

7.0m

5.4m

June 2017

June 2018

June 2019

Right first time installations of nbn™ equipment[3]

87%

92%

91%

June 2017

June 2018

June 2019

Average network bandwidth congestion (per week)[5]

323 mins

25 mins

50 mins

June 2017

June 2018

June 2019
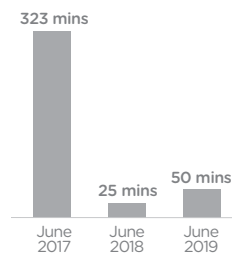
Homes and businesses connected[2]

5.5m

4.0m

2.4m

June 2017

June 2018

June 2019

Meeting agreed installation times[4]

92%

95%

96%

June 2017

June 2018

June 2019

Fixed-line network congestion[6,13]

0.25%

0.08%

0.04%

June 2017

June 2018

June 2019
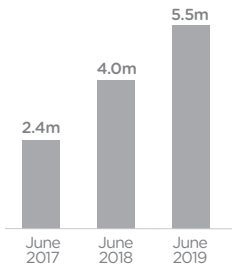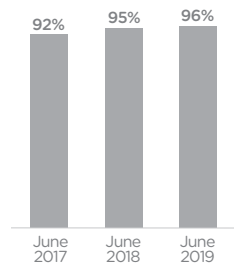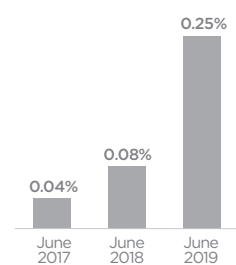
1,2   Cumulative number of premises ready to connect and connected homes and businesses.

3,4,5,6,7,8,9,10,11,12   Refer to pages 60 and 61 for further details on how the performance against key metrics has been calculated.

13   While there were record low levels of bandwidth congestion experienced on the fixed-line network in FY18, it was anticipated that these levels would fluctuate as promotional discounts ended in October 2018, and as NBN Co helps RSPs adopt the new wholesale discount bundles. The Company continues to closely monitor network demand and data flow across the network and to work closely with RSPs to help them manage their capacity.

Fix
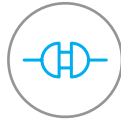
Uptake to higher wholesale plans (50Mbps or higher plans[7])
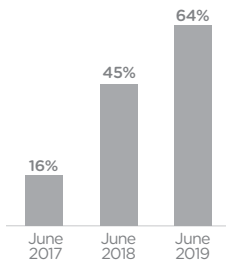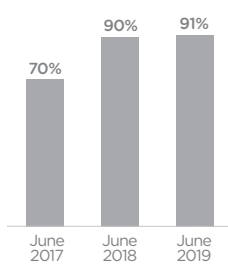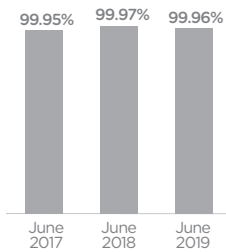
16% — June 2017
45% — June 2018
64% — June 2019

Meeting agreed fault restoration times[9]

70% — June 2017
90% — June 2018
91% — June 2019

Network availability[8]

99.95% — June 2017
99.97% — June 2018
99.96% — June 2019

Faults after connection completed (per 100 connected homes and businesses)[10]

1.0 — June 2017
0.8 — June 2018
0.6 — June 2019
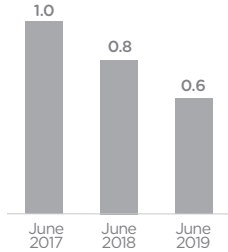
Fixed Wireless busy hour

June 2019

96.7%
cell performance[11]

91.7%
backhaul performance[12]
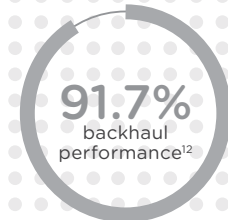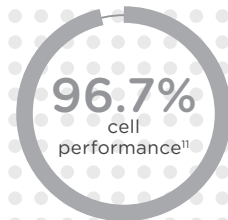
Broader industry engagement

Delivering a great customer experience will involve working with the industry – RSPs, universities, research partners and regulators – and customers to maximise the benefits of the **nbn**™ access network.

NBN Co will:

- Consult with RSPs to further optimise wholesale service standards through a revised Wholesale Broadband Agreement (WBA) contract. The agreement is designed to ensure clear lines of responsibility for the different parts of the end-to-end service between NBN Co and the RSPs.

- Deepen the collaboration with RSPs and regulators to drive customer experience, such as by continuing to innovate on products that reduce congestion, and better meet customer needs.

- Continue to collaborate with universities and research partners, to develop new technologies that will improve the customer experience of the **nbn**™ access network. NBN Co has established formal innovation partnerships with the University of Technology Sydney (UTS), the University of Melbourne research partners, and its key network and systems suppliers. These partnerships enable NBN Co to explore technology developments that further leverage the Company's assets in the systems, network and operational domains such as Software Defined Networking, Machine Learning/Artificial Intelligence and evolutions in access network technologies.

It is important to note that while NBN Co continues to focus on customer experience, the **nbn**™ access network is only one part of a complex value chain that influences the service and satisfaction of customers. Customers may still be impacted by the state of wiring inside their homes, the quality of their networking equipment (including routers and modems) and the strength of Wi-Fi signal available on their devices – matters which are ordinarily addressed through direct customer interactions with their RSPs.
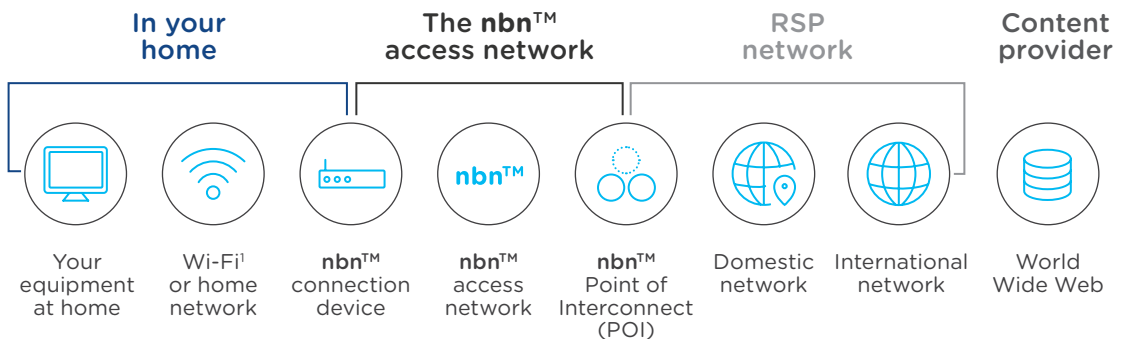
Customers' experiences of the **nbn**™ access network will also be influenced by the amount of connectivity virtual circuit (CVC) purchased by their RSPs, which will affect the performance of their service during peak time. Therefore, NBN Co will drive a joint industry agenda, collaborating with RSPs, regulators, policymakers, and broader industry stakeholders to drive improved customer outcomes, including addressing factors that are outside NBN Co's control but nevertheless impact customer experience. In collaboration with the industry, any gaps will be identified and a program of works implemented for the benefit of the wide range of customers using the **nbn**™ access network.

In your home		The **nbn**™ access network			RSP network		Content provider
Your equipment at home	Wi-Fi[1] or home network	**nbn**™ connection device	**nbn**™ access network	**nbn**™ Point of Interconnect (POI)	Domestic network	International network	World Wide Web

● Managed by you   ● Managed by NBN Co   ● Managed by Retail Service Provider (RSP)

1 Your Wi-Fi device may be provided by your RSP or you can choose to purchase your own. The quality or type of device may affect your experience.

Business segment strategy

NBN Co is committed to providing access to high-speed broadband to Australian businesses to support the creation of new jobs, expand businesses and support productivity. In pursuit of this ambition, NBN Co is enhancing competition and broadband access to meeting the needs of the business market. The Company's business strategy is dedicated to creating wholesale products and services options designed to help RSPs meet the various needs of Australian business under the banner of business **nbn**™.

This year, the Company developed new innovative business grade capabilities, products and services to help businesses unlock the full capability of the **nbn**™ access network. These include:

• Products that prioritise improved service assurance, high speeds and committed bandwidth for businesses connecting to and using services over the **nbn**™ access network. The introduction of new business **nbn**™ Bundles combine these elements at a discounted wholesale charge to support RSPs to deliver a differentiated and improved service experience for customers.

• business **nbn**™ Enterprise Ethernet was built in recognition of the fact that businesses, particularly large organisations, typically have higher levels of corporate data requirements due to large-scale distributed workforces, operating data-hungry applications and a higher incidence of mission-critical systems such as enterprise network systems and cloud-based solutions. **nbn**™ Enterprise Ethernet is designed to support these needs, providing simple integration for sites across broad geographies and bandwidth scalable up to 1Gbps[1].

• business **nbn**™ Fibre Expansion Program extends the existing fibre infrastructure to help RSPs develop new opportunities in selected areas with a high business density. By extending the reach of existing fibre links, the Company can better meet growing demand from Australian businesses for consistent high-speed committed bandwidth and business-grade service levels. The first 50,000 sites have been made available to RSPs, who will make use of a new online ordering platform – 'nbn™ Select' – to purchase a change of access technology to FTTP. The program is expected to complement sales of the recently launched business **nbn**™ Bundles and is planned to reach more than 200,000 premises by the end of FY21.

• The new **nbn**™ Business Operations Centre (BOC) facilitates enhanced service levels for business **nbn**™ solutions. A dedicated team of more than 100 experts provide specialist technical support, including a range of service continuity options to suit the different requirements of businesses, as well as enhanced connection arrangements to minimise customer disruption. For larger business customers with multiple sites to be migrated to the **nbn**™, the Company introduced service delivery managers to work collaboratively with RSPs and customers to ensure an optimal migration experience.

1 Regardless of the retail service you purchase, the actual wholesale speeds delivered by the **nbn**™ Enterprise Ethernet product will be less than 1Gbps due to equipment and network limitations. Your experience, including the speeds actually achieved over the **nbn**™ broadband access network, depends on the configuration over which services are delivered to your premises, whether you are using the service during the busy period, and some factors outside NBN Co's control (like your equipment quality, software, chosen broadband plan or how your service provider designs its network). If your service provider has not selected a bandwidth in the highest of three classes of service available for **nbn**™ Enterprise Ethernet, the speeds you experience may be affected by congestion on the **nbn**™ network, particularly in busy periods.

- NBN Co's upcoming launch of business **nbn**™ Satellite Services (BSS) will open up connectivity options to businesses in regional and remote Australia. BSS is specifically designed for this market with a range of options for different use cases such as high bandwidth 'best effort' information rates for remote crew welfare, and Committed Information Rates (CIR) to help extend the corporate network to remote sites that enable flexible terms for exploration, seasonal industries and disaster recovery.

In addition to developing better suited solutions for businesses, NBN Co is also driving awareness through education to make business customers aware of the options available to help enhance connectivity and deliver on needs now and into the future. Further, NBN Co seeks to prepare businesses with their migration to the **nbn**™ access network for an improved overall customer experience. These include:

- A dedicated team of engagement consultants are available to provide advice and help consult on the design, rollout, and migration of **nbn**™ access network for businesses. They can help facilitate an informed discussion between business customers and their preferred RSP.

- The business **nbn**™ ICT Channel program was created in April 2018, as a dedicated program focused on equipping technology advisers with the knowledge and tools they need to help Australian businesses make the most of the opportunities that access to fast and reliable broadband brings. The business **nbn**™ ICT accredited advisers offer a variety of services, including reviewing a business's IT hardware and software requirements and connecting this back to network needs. From this, they can advise on possible benefits business can realise from services over the **nbn**™ access network and the wholesale features of plans powered by business **nbn**™.

- The Solution Finder, which is an online tool designed to educate, inform and recommend a suitable **nbn**™ offering for businesses to discuss with their RSP. It helps customers better understand their current and future needs, and recommends a wholesale business **nbn**™ Bundle with different bandwidth and support services aimed to suit their requirements. Solution Finder was developed in recognition of extensive research of Australian businesses and internet providers that found that many businesses may not be connected to the right broadband plan to meet their needs.

- In FY20, NBN Co will look to support the growing connectivity needs of local communities and will do so by driving the benefits of connectivity through **nbn**™ local stakeholder engagement team and targeted business outreach initiatives.

The team is committed to meeting the growing needs of the business market by developing improved product and service offerings that are reliable and to making **nbn**™ the network of choice to help drive the lift in digital capabilities of Australian businesses.

Lifting Australia's digital capability

Maintaining progress and meeting future expectations

NBN Co is dedicated to the deployment of a secure and reliable network, with agreed wholesale network performance and stability measures for customers.

NBN Co has undertaken a number of network improvement initiatives this year to raise the quality and performance of the network, including HFC optimisation, FTTC serviceability and Fixed Wireless capacity upgrades.

The Company expects to complete the build[1] by 30 June 2020 but has amended its activation targets for FY20. Given the current priority on network optimisation and the degree of civil build required for FTTC, there has been a shift in phasing during FY20 for the deployment and activations.

This extended the end point for the respective 18-month migration periods for some customers beyond the previously forecast timing. The Company therefore now expects to connect 8.1 million premises by 30 June 2021, approximately six months later than foreshadowed in previous Corporate Plans.

1   NBN Co's build completion commitment is that all standard installation premises in Australia are able to connect to the **nbn**™ access network as at the build completion date. This excludes premises in future new developments which will be an ongoing activity for the Company beyond the build completion date. It also excludes a small proportion of premises defined as 'complex connections' – which includes properties that are difficult to access, culturally significant areas and heritage sites – where connection depends on factors outside of NBN Co's control such as permission from traditional owners, and where network construction to allow such premises to connect will be an ongoing activity of NBN Co beyond the build completion date.

Delivered

To be delivered

Cumulative RTC Premises (million)

FY17	FY18	FY19		FY19	FY20	FY21	FY22	FY23
5.4	7.0	10.0	9.7	10.0	11.5	11.7	11.8	12.0
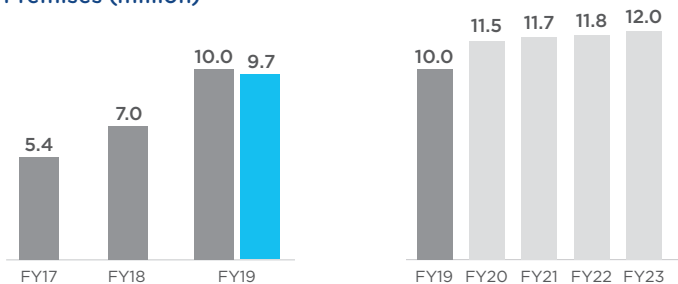
Cumulative Activations Premises (million)

FY17	FY18	FY19		FY19	FY20	FY21	FY22	FY23
2.4	4.0	5.5	5.5	5.5	7.0	8.1	8.4	8.6

Annual Revenue ($ billion)

FY17	FY18	FY19		FY19	FY20	FY21	FY22	FY23
1.0	2.0	2.8	2.6	2.8	3.7	4.9	5.6	5.9
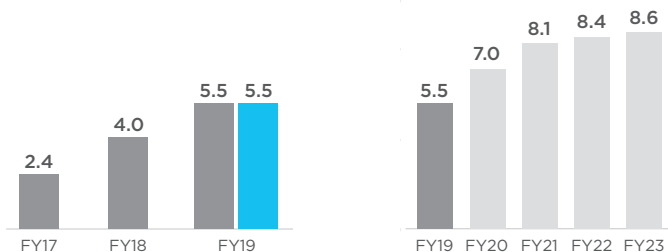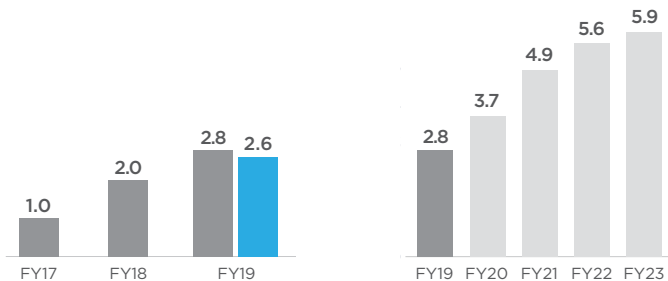
■ Actual
■ Corporate Plan 2019–22
■ Forecast

23

Australia's data demand

Data consumption continues to grow in Australia as more customers connect to the **nbn**™ access network and as the adoption of data-intensive applications, like streaming video services, continues to gather pace.

NBN Co has put in place new systems and processes to provide deeper insights and analytics to better understand Australia's data needs now and into the future. Having a deep understanding of how, when and why customers use the network, as well

as changes in underlying technologies, such as video compression and traffic protocols, helps the Company keep up with growing data demand and deliver network improvements to meet the future needs of all Australians.

Customer demand for data continued to grow strongly throughout FY19, with **nbn**™ customers' average monthly data downloads growing 27 per cent over the last 12 months to 255GB per user per month in FY19 compared to 201GB per user per month in FY18.

Average monthly data usage for June 2019[1]

NT 265GB (+21%)

QLD 274GB (+24%)

WA 259GB (+24%)

SA 239GB (+23%)

NSW 251GB (+21%)

ACT 260GB (+16%)

VIC 255GB (+22%)

TAS 231GB (+21%)

National average 255GB (+27%)

The majority of traffic consumption on NBN Co's networks comes from video streaming and web browsing
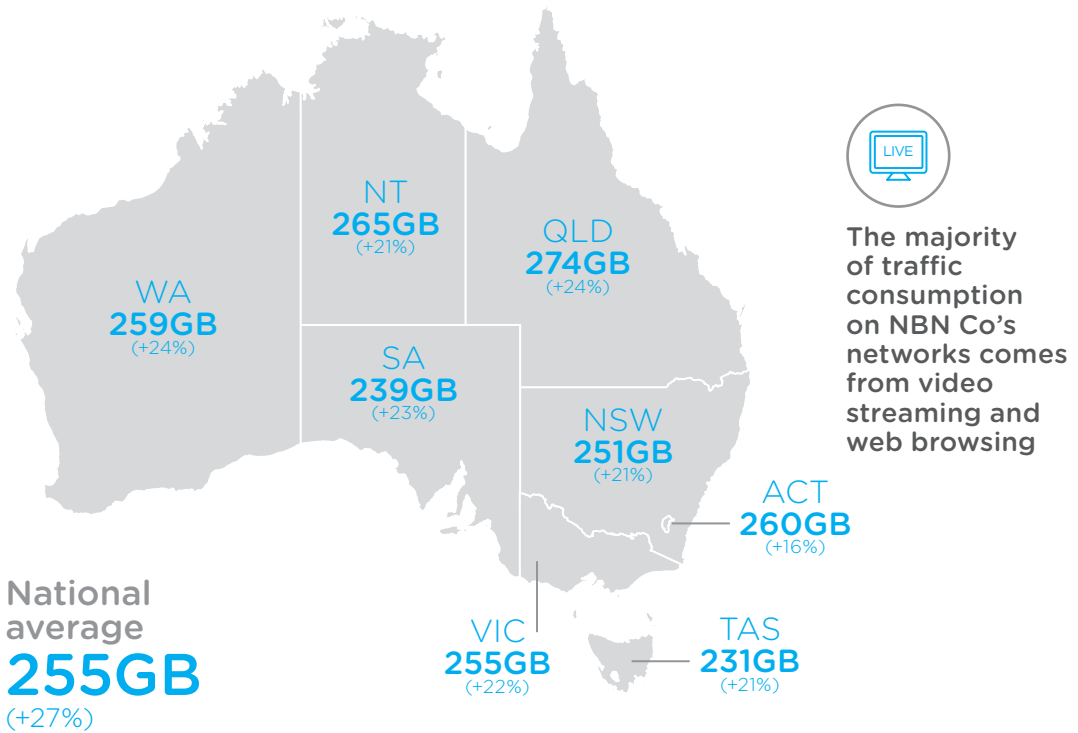
1   Figures include year-on-year increases and are based on NBN Co data for June 2018 and June 2019. Excludes satellite usage.

As a point of comparison, when non-**nbn**™ broadband services (including ADSL connections and private network operators) are considered in the technology mix, Australia's total fixed-line broadband users downloaded an average of 212GB per month in December 2018, according to the ACCC[1]. The same ACCC report revealed that fixed-line broadband networks continue to carry the vast majority of internet traffic in Australia, accounting for almost 90 per cent of all downloads during the reported period.

The introduction of new wholesale discounts – which for the first time packaged together an access charge with a bandwidth charge in one simple price – has helped increase the take-up of peak wholesale speed plans of 50Mbps or higher (download), excluding Satellite products, which now make up 64 per cent of all plans accessed over the **nbn**™ access network.

What are the future network demands?

Examples

One 4K device per house by 2020, growing to two 4K devices by 2025.

Higher peak speeds

More smart devices per household
15 per Australian house in 2019, growing to 35 by 2023.

Higher data volumes, faster speeds

Augmented and Virtual Reality
Application penetration at 15% in 2019, growing to 30% by 2023.

Lower latency and jitter

Business Services
Growing market segment.

High service availability, Symmetric Rates

nbn™ **2023**

1   ACCC, *Internet Activity Record Keeping Rule* (RKR) December 2018 report.

Australia's data usage

NBN Co's analysis of data usage and customer behaviours shows there are distinct patterns of use throughout each day and at varying times of the year. Data demand continues to be at its highest during the January and April holiday periods when customers have more leisure time to use their internet services. On a weekly level, downloads are highest on Saturday and Sunday, while on a daily basis the Company continues to see peak demand between the hours of 8pm and 9pm.

Average data volume (GB) per AVC per month[1]

9.2x increase since 2012

37.4% CAGR
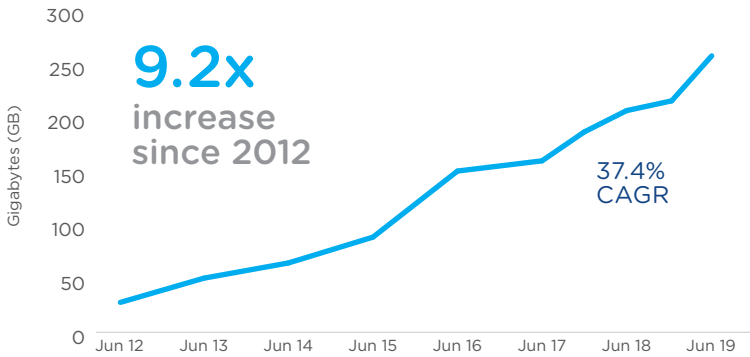
Average day download behaviour[1]

6–7am Online day starts

3–4pm Kids home from school

8–9pm Busiest hour

2019 Downstream   2018 Downstream
2019 Upstream   2018 Upstream
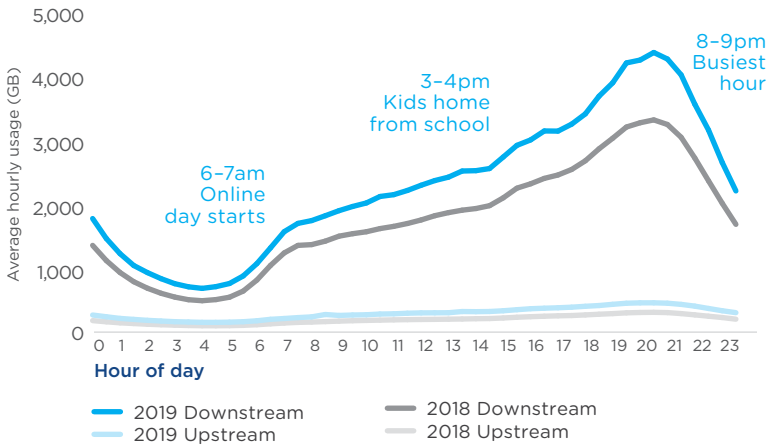
1 NBN Co traffic/data analysis.

Driving penetration through industry collaboration

NBN Co wholesale broadband products and services are offered on a non-discriminatory basis to enhance competition and provide greater choice for customers. NBN Co's core wholesale product construct (Access Virtual Circuit and Connectivity Virtual Circuit) continues to underpin the product offering, while the introduction of enhanced offerings such as bundled symmetrical committed bandwidth and enhanced service levels, is designed to help support the needs of businesses. New products are also being developed to help cater to the specific needs of businesses.

Enterprise Ethernet is a new offering designed to help support the complex needs of larger businesses, and Business Satellite Services, currently in development, aims to open up connectivity options to businesses in regional and remote Australia.

In December 2017, wholesale pricing bundled discounts on **nbn**™ Ethernet, excluding Satellite products, were introduced to provide a simple pricing construct. These combine the access charge (AVC) with the bandwidth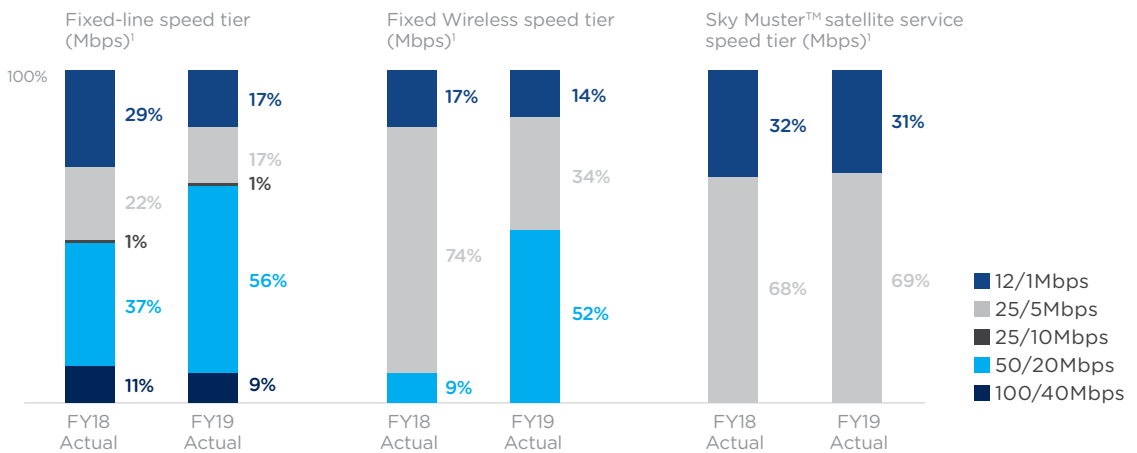 charge (CVC). The discounts have helped shift 64 per cent of the combined fixed-line and Fixed Wireless customers to peak wholesale speed plans of 50Mbps or higher (download). The wholesale speed tier mix of customers across NBN Co's fixed-line services (inclusive of FTTP, FTTN/B, HFC and FTTC), Fixed Wireless and Satellite services is illustrated below. Furthermore, NBN Co also introduced Business **nbn**™ Bundles that incorporate committed bandwidth and enhanced service restoration times designed to help meet the needs of small to medium businesses and large enterprises.

NBN Co will continue to evolve its product and pricing strategy in consultation with the industry, based on growth in applications, and changes in the industry and the market.

Fixed-line speed tier (Mbps)[1]

	FY18 Actual	FY19 Actual
100/40Mbps	29%	17%
25/5Mbps	22%	17%
25/10Mbps	1%	1%
50/20Mbps	37%	56%
12/1Mbps	11%	9%

Fixed Wireless speed tier (Mbps)[1]

	FY18 Actual	FY19 Actual
100/40Mbps	17%	14%
25/5Mbps	74%	34%
50/20Mbps	9%	52%

Sky Muster™ satellite service speed tier (Mbps)[1]

	FY18 Actual	FY19 Actual
12/1Mbps	32%	31%
25/5Mbps	68%	69%

Legend:
- 12/1Mbps
- 25/5Mbps
- 25/10Mbps
- 50/20Mbps
- 100/40Mbps

1   Based on the Monthly Progress Report June 2019. This includes wholesale plans available to RSPs, with download speeds of 50Mbps and 25-50Mbps. The **nbn**™ access network is being designed to provide these peak wholesale speeds to NBN Co's RSPs at NBN Co's network boundary. The **nbn**™ wholesale speed tiers available to RSPs vary depending on the **nbn**™ access network technology in your area. Refer to the uptake to higher wholesale plans footnote on page 60 for further details on how this metric is calculated.

Future technology roadmap

Current wholesale products[1]

Potential upgrade path →

Potential mid-term upgrade path peak download speed[3]

Fibre-to-the-Premises (FTTP)

Deploys fibre optic cable all the way to premises. Available in a variety of existing locations as well as most large new developments, and to customers who can select FTTP through the Technology Choice program.

Up to 1Gbps/ 400Mbps

nbn™ exchange

XGS-PON / NG-PON2

Up to 10Gbps

Fibre-to-the-Node/Building/Curb (FTTN[2]/B/C)

Deploys fibre near to premises and then makes use of the existing copper into the premises.

Up to 100/ 40Mbps

nbn™ exchange

G.fast, G.mgfast

Up to 5Gbps

Hybrid Fibre Coaxial (HFC)

Leverages existing networks of fibre and coaxial cable, coupled with DOCSIS® technology, to deliver broadband services into the premises.

Up to 100/ 40Mbps

DOCSIS 4.0®[4]

Up to 10Gbps
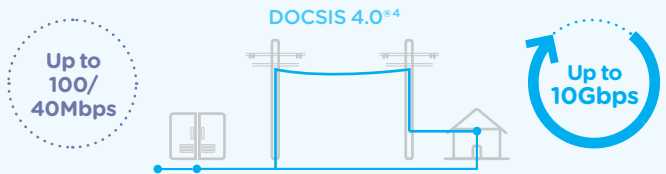
Fixed Wireless

Largely targeted at regional communities and provides the means for fast broadband to extend to Australians outside the reach of the nbn™ fixed-line network.

FW Plus

Optimising utilisation of current spectrum holdings

Future capability being explored

Sky Muster™ satellite

Among the world's largest and most advanced communication satellites. The satellite service allows the nbn™ network to reach remote areas.

Up to 25/ 5Mbps

Next Gen VSAT

Future capability being explored

1   Your experience, including the speeds actually achieved over the nbn™ access network, depends on the configuration over which services are delivered to your premises, how far away your premise is located from nbn™ network equipment, your equipment quality, software, broadband plans, signal reception, the plan you choose from your provider, the performance of your modem, Wi-Fi, cabling, other devices in your premises and how your service provider designs its network. Speeds may be impacted by network congestion on the nbn™ network, including during busy periods.

2   To achieve maximum attainable speeds available through G.fast/G.mgfast, technology upgrades may be required.

3   NBN Co is investigating potential technological developments that may be available to deploy in the nbn™ network in the next 5-10 years. The download speeds referenced here were achieved in the context of trials conducted by the Company or third parties, and are not necessarily reflective of the speeds that will be experienced on the nbn™ network. The Company will conduct further due diligence on the optional upgrade paths and demand at the time these future technologies are closer to mass market availability to determine the most effective approach in delivering ultra high-speed services over the nbn™ network.

4   DOCSIS 4.0® comprises of DOCSIS® 3.1, Full Duplex DOCSIS® 3.1, and Extended Spectrum DOCSIS® (ESD).

Future technology roadmap

XGS-PON and NG-PON2

The Company is steadily transitioning to a full-scale service delivery organisation, optimising the end-to-end performance of the nbn™ access network wherever possible.

This approach includes a commitment to continually evolve the product portfolio to meet changing customer demands. NBN Co has identified a potential upgrade path for each access technology that could enable the provision of greater speed and capacity over time as demand increases.

NBN Co continues to track and evaluate the evolution of FTTP technology. New technologies such as XGS-PON and NG-PON2 are being developed to leverage the significant untapped capacity of optical fibre.

This could help deliver additional capacity beyond residential consumer demand, for others such as enterprise businesses and mobile backhaul.

NBN Co's Chief Technology Office continues to evaluate these technology options in concert with the broader telecommunications technology industry.

G.fast

HFC network upgrades and evolution

The G.fast protocol is a future evolution from the existing Very-High-Bit-Rate Digital Subscriber Line (VDSL) technology currently used by FTTN, FTTB and FTTC. The G.fast protocol is being deployed within the FTTC network and is expected to provide up to Gigabit capable wholesale speeds in the future when available to market. To achieve maximum attainable speeds available through G.fast/G.mfast, technology upgrades may be required.

G.fast provides greater bandwidth and improved noise mitigation on the copper pair network, and is able to achieve speeds up to 1Gbps over the shorter copper distances in typical FTTC deployments.

As G.fast can be deployed on existing copper networks, it is a viable alternative where fibre into the premises is too costly or difficult to deploy.

NBN Co has been steadily deploying G.fast capable distribution point units (DPUs) in the FTTC footprint since the end of 2018. Trials will soon commence to test this product's performance with RSPs and customers connected to the **nbn**™ access network.

As with the introduction of VDSL, G.fast will see Australia's legacy copper network carry many times more bandwidth than it was required to support for the decades with voice, dial-up and ADSL. The higher frequencies employed invariably expose new network characteristics, not all of which can be forecast and simulated in the lab. NBN Co will also evaluate the next generation of G.fast, which has achieved speeds of 5Gbps over 70 metre copper lines in lab trials.

The next generation of HFC technology, based on DOCSIS 3.1®, provides a cost-effective means to deliver significant new capacity to homes and businesses. It is expected to enable the cable network to deliver faster wholesale speeds in the future, provide significant capacity uplifts and improve service reliability and availability.

Prior to launching DOCSIS 3.1®, the only way NBN Co could increase capacity on the HFC network was by installing new optical nodes, a process known as node-splitting, to reduce the number of premises served by existing optical nodes on the network. DOCSIS 3.1® improves the spectral efficiency of the HFC network and allows NBN Co to use higher range spectrum therefore doubling the capacity available.

DOCSIS 3.1® upgrades to the downstream of the HFC network commenced in August 2018.

In FY20, NBN Co will commence the deployment of DOCSIS 3.1® in the upstream, as well as further HFC plant and spectrum upgrades to the HFC network that will enable the full deployment of DOCSIS 3.1®, including the migration off and retirement of DOCSIS 3.0®.

In the coming years, NBN Co is expected to commence the journey to the next evolution of HFC architecture, known as Distributed Access Architecture (DAA). This exciting new architecture is expected to take advantage of NBN Co's deep-fibre deployments, and provide unparalleled levels of performance, reliability, and cost efficiencies. The deep-fibre nature of this architecture will enable the Company to further exploit the spectral efficiencies of DOCSIS® technologies thereby providing significant capacity uplifts.

NBN Co will continue to assess emerging HFC technologies like Full Duplex DOCSIS 3.1®, Extended Spectrum DOCSIS® (ESD), and the recently announced DOCSIS 4.0®, which may offer upgrade paths capable of delivering low latency services and 10Gbps download speeds (and beyond) in the future.

Fixed Wireless capacity upgrade and evolution

NBN Co's commitment to connect Australians to fast broadband has seen a renewed focus on investing in upgrades to the Fixed Wireless network and enhancements to its product offerings over the past 12 months. Fixed Wireless network capacity is shared and finite. NBN Co is prioritising wholesale capacity upgrades on Fixed Wireless using the following internal thresholds:

- Cells that do not, or are forecast not to, meet NBN Co's design threshold of a 30 day average of 6Mbps download throughput in the busiest hour of the day for that cell (averaged across all active services connected to that cell in the applicable hour); and

- Backhaul links that exceed, or are forecast to exceed, NBN Co's threshold of a 28 day average of 0.25% or more packet loss in the busiest hour of the day for that link[1].

NBN Co recently launched a new wholesale speed tier, Fixed Wireless Plus. It aims to deliver the maximum potential wholesale speed that the Fixed Wireless network is capable of delivering to a particular premises at the time of use.

As NBN Co moves closer to the completion of the Fixed Wireless build program, the Company is intensifying the focus on upgrading the network to improve capacity. NBN Co will continue to assess emerging wireless technologies like 4G Massive MIMO and 5G Millimetre Wave, which may offer upgrade paths to further enhance the capacity and speeds available in the future.

Network & IT Simplification

NBN Co has developed a ten-year technology strategy to optimise the end-to-end performance of its network and systems.

Combined with continued advances in automation and analytics, this will enable dynamic, iterative changes in network maintenance, performance and operation, and provide a cost-effective means to deliver new capability that enhances customer experience. NBN Co has commenced this transition and will continue to assess the maturity of technology as the Company reduces capability duplication and moves towards open standard implementations.

---

1   These thresholds are not performance commitments of NBN Co's products, and are not indicative of actual customer experience (which depends on a wide range of factors).

Social and economic benefits

For NBN Co's customers, connection is about gaining access to the opportunities of fast broadband.

To measure the economic and social impact of Australia wide access to broadband, NBN Co has commissioned independent data and analytics firm AlphaBeta to prepare the *Connecting Australia* research report[1]. The report indicates the **nbn**™ access network is helping to reshape the way Australians live, work, learn and connect. The report refers to this impact as the '**nbn**™ effect'.

1 In FY21 NBN Co is estimated to deliver

$10.4 billion
of additional GDP in FY21

27,400–79,700
new businesses due to the **nbn**™ effect

31,000
additional jobs enabled as of end FY21

1   AlphaBeta's research report. http://www.connectingaustralia.com.au/

2   Helping Australians stay connected to family and friends

30%

nbn™-connected Australians are at least 30 per cent more likely to use the internet to stay in touch with loved ones.

3+ hours

Australians who are **nbn**™-connected are spending an additional three hours online per week keeping in touch with family and friends than those not connected.

96%[1]

nbn™-connected Australians are using the internet 96 per cent more to socialise and build relationships, compared with 74 per cent of non-**nbn**™-connected Australians.

Amanda Clark

Amanda Clark and her three children (aged 16, 14 and 9) stay connected with friends and family at their home, four hours south of Townsville, at Ibis Creek Station, thanks to the **nbn**™ access network.

Before the Sky Muster™ satellite service came to Ibis Creek Station, Amanda and her family only had access to 3G mobile internet that made it difficult to stay connected to long-distance friends, family and online educational resources.

Amanda's family were among the first in Australia to take advantage of the education offerings released by NBN Co which prioritises regional students. Amanda and her family have built their home around the connectivity that Sky Muster™ provides. Their learning room at home is the hub of their education program where her children can catch-up via video with friends and access important educational tools.

---

1   Areas not connected to the **nbn**™ are those SA2s (geographical areas with populations of about 10,000 people) where the **nbn**™ had not started in 2016; **nbn**™-connected areas are those SA2s that have a rollout index that is greater than or equal to 2. The rollout index is a function of the percentage rolled out in the SA2 and the duration that **nbn**™ has been in the region.

3 Supporting greater female workforce participation

20x

The number of self-employed women in **nbn**™ access network connected regions is growing on average 2.3 per cent a year, more than 20 times the pace of growth in the number of self-employed women in areas not yet connected to the **nbn**™ access network.

2x

Self-employed women working from home grew on average at twice the pace in **nbn**™ connected regions, compared to all other self-employed women in non-**nbn**™ network regions.

5x

Self-employed women working part-time grew on average five times the pace in regions connected to the **nbn**™ access network compared to non-**nbn**™ regions.

Heidi Begg

Heidi is the founder and chief executive of SPOT Rural, a telehealth company offering online speech therapy services to school-aged children. Growing up on remote cattle and sheep properties in Queensland, Heidi has an in-depth understanding of the challenges rural and remote Australians face when accessing health care services.

Telehealth (health services delivered online) account for over 95 per cent of SPOT Rural's service delivery. Heidi says telehealth services have become more accessible to families thanks to better internet access across the country. SPOT Rural has grown to six full-time speech pathologists in the past 12 months. SPOT Rural's mission is to provide consistency, continuity of care, and a choice of health service for every Australian at the click of a button.

4 Children engaging in online learning

Extra 220,000

Approximately 220,000 regional households with children who had below average[1] or no internet in 2014 are now connected to the **nbn**™ access network.

Engaged in learning

nbn™-connected households with primary school students spent 15 minutes more per weekday completing homework online, compared to students in non-**nbn**™-connected areas.

20% more likely

Young Australians (aged between 16 and 24) in **nbn**™-connected areas are 1.2 times more likely to use the internet for non-formal learning than those in non-**nbn**™ connected regions.

Bronwyn Covill

Bronwyn Covill is the CEO of Need a Tutor, an organisation that provides students across Australia access to world class education via online learning tools. In many cases their students are Indigenous Australians and they have an intrinsic link to land – which means they can live in incredibly remote areas such as Wellington (NSW), Tjukurla (WA) and Croker Island (NT).

Connecting to services over the **nbn**™ access network helps these students in remote communities to study online and experience a world class education as well as a traditional way of life.

"I'm passionate about education, and I want all kids to have access to the same programs. In the past that hasn't been possible. Kids living in the country, and remote areas haven't had the same sort of experience as kids in the city. The internet changes all of that – it means you can access the rest of the world, whether you're in Melbourne or Arnhem Land. It breaks down those physical boundaries."

---

1 Below average internet refers to ADSL internet ranked as below average as well as dial up and alternative broadband (not Fibre-to-the-Node/Fibre-to-the-Premises, satellite, Fixed Wireless or other ADSL).

Commitment to underserved areas

The rollout of the nbn™ access network is advancing internet services across the nation and has maintained a focus on building new services in regional and rural areas.

NBN Co has prioritised regions where internet quality and availability are lowest and classified as 'underserved', where commercially and operationally feasible. As at 30 June 2019, there are approximately:

1.5 million premises

previously identified as underserved, now have access to broadband.

Progression of the rollout in underserved vs. non-underserved areas (per cent)
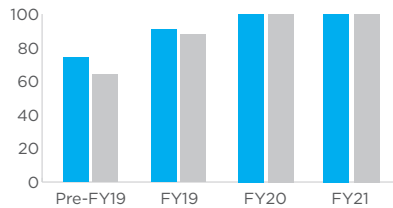
■ Underserved RFS
■ Non-underserved RFS

The graph above shows that NBN Co is rolling out its network faster in underserved areas relative to the rest of the market.

91 per cent

of premises in non-metropolitan areas[1], or 4.9 million premises, have access to the nbn™ access network. Of these premises, 78 per cent are covered by fixed-line technologies.
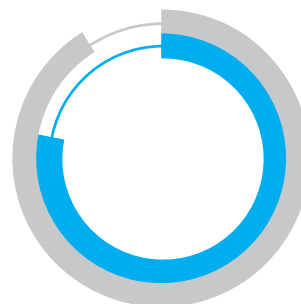
■ 91% of premises in non-metropolitan areas with access to the nbn™ access network

■ 78% of premises in non-metropolitan areas with access to the fixed-line nbn™ access network

1   Defined by ABS Urban Centre Locality (UCL) Capital Cities of Australia.

Commitment to regional Australia

NBN Co maintains a strong commitment to residential and business customers in regional Australia. The Company has made good progress in bridging the digital divide in regional, rural and remote communities. It also recognises that there is more work to be done to truly deliver on its commitment to provide consistently fast, reliable broadband services to all communities. The Company's focus on customers and communities has been enhanced by **nbn**™ local, a team of community relations specialists who work across the nation to inform and educate regional residential and business customers about the **nbn**™ access network. The team seeks to understand the telecommunications needs at the community level through relationships with regional stakeholders and community groups.

The team is very deliberately decentralised and community-based, rather than office-based, spending time listening to the needs and aspirations of local residents and business owners, and helping to provide access to fast, secure and reliable broadband services for all Australians.

nbn™ local also serves a rapid response service in times of crises. Using a fleet of four-wheel-drive, satellite-enabled Road Muster Trucks, the **nbn**™ local team has collectively clocked up more than 445,000 kilometres and visited more than 2,300 towns across Australia over the last two years, providing mobile Wi-Fi hotspots at evacuation centres as part of state government–coordinated disaster recovery efforts.

In February 2019, as Cyclone Oma tracked the Far North Queensland coast, Townsville was hit by record rains causing severe flooding, which precipitated large scale evacuations. From the very start of the disaster, NBN Co stood alongside the Queensland Government and Emergency Services to help make critical decisions around emergency communication. From providing connectivity to evacuation centres for displaced residents to contact loved ones, to helping businesses get back on their feet, to offering connectivity support to emergency services command posts, via **nbn**™ Road Muster Trucks, **nbn**™ local was on the ground when and where it mattered most.

NBN Co is committed to expanding its **nbn**™ local team.

Building a high-performing workforce

NBN Co employees are proud of their individual and collective efforts to deliver one of the largest and most complex infrastructure projects ever undertaken in Australia. Employee pride is reflected in the latest company-wide employee engagement score.

NBN Co seeks to create an environment that attracts and retains the right talent to deliver the Company's vision, while striving to remain in the top quartile engagement scores of global companies. This year, NBN Co's annual employee survey revealed an engagement score of 79 per cent, which is the Company's highest score yet.

NBN Co is committed to creating and maintaining a great working environment that respects and supports all employees.

Through an environment that supports diverse backgrounds and perspectives, NBN Co seeks to enhance innovation and problem-solving to achieve shared goals.

Workforce statistics:

6,400
employees and contractors

Employee Engagement Score:

79% ↑
FY19

74% ↑
FY18

70% ↑
FY17

68% ↑
FY16

51% ↑
FY15

44%
FY14

Diversity and inclusion

NBN Co continues to build an inclusive workplace by fostering a culture that respects and embraces differences and diversity of thought.

NBN Co is focused on five pillars that strengthen its Diversity and Inclusion strategy across the organisation:

Gender Equality	Accessibility	Culture	LGBTI Pride	First Peoples
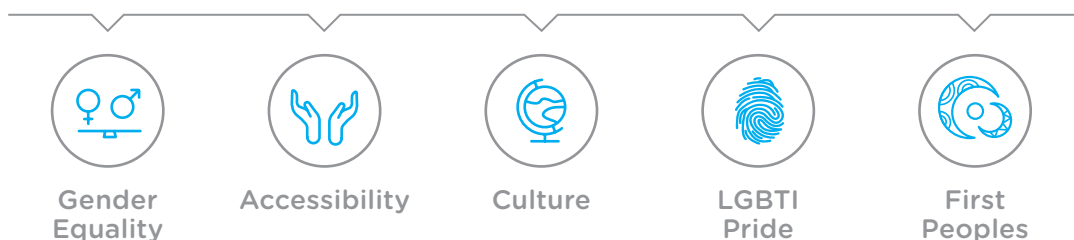
Objectives and targets for female representation

NBN Co is working towards achieving gender balance throughout the company.

Measure	Objective	Target for FY20
Female representation in management[1]	Increase representation of women in management roles	Increase representation to 33%
Employee engagement	Increase engagement of women to equal to, or greater than, that of NBN Co-wide engagement	Equal engagement of males and females
Female representation in graduate intake	Maintain female representation in graduate intake	Maintain 50% female representation

Senior Executive positions held by females (as at 30 June 2019)

Role	Percentage
Non-Executive Directors	38%
Executive Committee	36%
Senior Management	31%
Middle Management	31%

1 Including Executive, Senior and Middle Management, excluding Board.

Health, Safety and Environment (HSE)

The HSE team supports the broader NBN Co business and its partners to make tomorrow safer, healthier and more sustainable than today.

The HSE team provides HSE strategy, processes, systems, support and programs that aim to enhance the physical health and mental wellbeing of NBN Co's people, ensure the safety of everyone every day and the safety of the **nbn**™ access network and associated infrastructure. HSE also aims to preserve and minimise the impact on the natural environment, reduce NBN Co's overall energy consumption and preserve sites of cultural and heritage significance.

In FY20, NBN Co will establish a program that aims to reduce greenhouse gas emissions by a cumulative total of 91kt over a three-year period, and result in a 15 per cent reduction in the FY23 forecast emissions.

NBN Co aims to increase the maturity of the HSE culture, addressing not only current challenges but positioning NBN Co for the future. In the year ahead, to further strengthen controls and shift performance, HSE will maintain the focus on embedding the HSE Critical Controls and new IT platform, further engage with Delivery Partners through industry collaboration, uplift both internal and industry HSE capability, and align HSE systems and processes to changing business requirements.

Board of Directors and NBN Co Management team

The experienced Board behind NBN Co

1. Dr Ziggy Switkowski AO
Chairman/Non-Executive Director
Appointed in October 2013
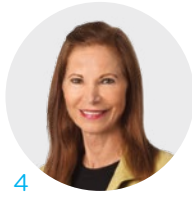
2. Drew Clarke AO PSM
Non-Executive Director
Appointed in August 2017

3. Patrick Flannigan
Non-Executive Director
Appointed in November 2013

4. Shirley In't Veld
Non-Executive Director
Appointed in December 2015

5. Michael Malone
Non-Executive Director
Appointed in April 2016

6. Zoe McKenzie
Non-Executive Director
Appointed in July 2018

7. Justin Milne
Non-Executive Director
Appointed in November 2013

8. Stephen Rue
Managing Director and
Chief Executive Officer
Appointed in September 2018

9. Dr Kerry Schott AO
Non-Executive Director
Appointed in September 2012

A dedicated Management team

1. Stephen Rue
Chief Executive Officer
Joined NBN Co in July 2014

2. Philip Knox
Chief Financial Officer
Joined NBN Co in February 2019

3. Kathrine Dyer
Chief Network Deployment Officer
Joined NBN Co in November 2010

4. Justin Forsell
Chief Legal Counsel
Joined NBN Co in March 2010
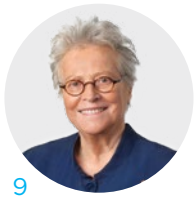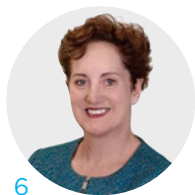
5. Will Irving
Chief Strategy & Transformation Officer
Effective 1st October 2019

6. Sally Kincaid
Chief People and Culture Officer
Joined NBN Co in May 2019

7. Felicity Ross
Chief Corporate Affairs Officer
Joined NBN Co in July 2018

8. JB Rousselot
Chief Strategy Officer
Departing in October 2019
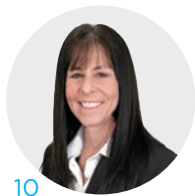
9. Peter Ryan
Chief Network Engineering Officer
Joined NBN Co in January 2013

10. Debbie Taylor
Chief Information Officer
Joined NBN Co in May 2014
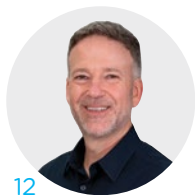
11. Paul Tyler
Chief Customer Officer – Business
Joined NBN Co in February 2018

12. Brad Whitcomb
Chief Customer Officer – Residential
Joined NBN Co in May 2014

Part B

Plan
Summary

The Corporate Plan 2020–23 aligns to NBN Co's purpose to lift the digital capability of Australia, and implement a company customer-led strategy.

The plan continues to support a peak funding forecast of $51 billion. Revenue is forecast to grow from $2.8 billion in FY19 to $3.7 billion in FY20 with the re-phasing of the network activations. Post FY20, this plan forecasts a reduction in capex alongside the completion of the build and an increase in annual revenue to $5.9 billion by FY23, with the increased footprint and activated premises. Positive cash flow is forecast to be achieved in FY23.

Throughout the plan, NBN Co's focus is on meeting the requirements of the Statement of Expectations (SoE) while sustaining customer experience, brand and reputation, transitioning the business to a full-scale service delivery organisation, as well as ensuring the flexibility to upgrade the network when demand arises and where commercially viable.

The plan is based on operational and financial forecasts, and represents the best estimates and information available as at 30 June 2019. A diverse set of dependencies and risks could impact the plan. These include scaling internal processes and systems to support peak HFC and FTTC deployment, maintaining sustainable Delivery Partner capacity to achieve network build targets, delivering a network experience that meets customer expectations, monitoring market developments and infrastructure competition, as well as managing the security and resilience of NBN Co's network.

Where feasible, these risks have been assessed and reflected in the delivery timing and forecast of peak funding. Management will continue to evaluate the plan and forecasts, particularly in FY22 and onwards, as the market and technological innovation continues to rapidly evolve.

Operational and financial forecasts

Table 1: Key financials

$ billions	FY19(A)	FY20	FY21	FY22	FY23
Revenue	2.8	3.7	4.9	5.6	5.9
Operating Expenses	(2.6)	(2.9)	(2.9)	(2.8)	(2.7)
EBITDA before Subscriber Payments	**0.2**	**0.8**	**2.1**	**2.8**	**3.2**
Subscriber payments	(1.9)	(2.3)	(1.3)	(0.4)	0.0
EBITDA	**(1.7)**	**(1.4)**	**0.8**	**2.4**	**3.2**
Capital Expenditure	(5.9)	(4.3)	(1.7)	(1.4)	(1.4)
Interest and Working Capital	0.1	(0.5)	(1.2)	(1.2)	(1.1)
Cash flow	**(7.5)**	**(6.1)**	**(2.1)**	**(0.2)**	**0.7**

Peak funding

	FY19(A)	FY20	FY21	FY22	FY23
Equity funding	29.5	29.5	29.5	29.5	29.5
Debt funding	13.1	19.2	21.3	21.5	20.8
	42.6	**48.7**	**50.8**	**51.0**	**50.3**

Note: For corporate planning and internal reporting purposes, NBN Co treats certain asset leasing arrangements as operating expenses. For statutory reporting purposes, these arrangements are treated as finance leases and accordingly are capitalised and amortised over their relevant useful lives, as disclosed in NBN Co's financial statements. A reconciliation of the Corporate Plan EBITDA before subscriber payments to the Statutory Financial Statements is included in Table 2: EBITDA before subscriber payments reconciliation.

Due to rounding, numbers presented may not add up precisely to the totals.

Table 2: EBITDA before subscriber payments reconciliation

$ billions	FY19(A)	FY20	FY21	FY22	FY23
EBITDA before subscriber payments per Corporate Plan	**0.2**	**0.8**	**2.1**	**2.8**	**3.2**
Statutory Lease Adjustments	0.4	0.7	1.0	1.1	1.1
EBITDA before subscriber payments per Statutory Financial Statements	**0.6**	**1.5**	**3.1**	**3.9**	**4.3**

Note: Due to rounding, numbers presented may not add up precisely to the totals.

Ready to connect and activations

The RTC measure reflects a point in time when residents and businesses can place an order for an **nbn**™ service.

Strong partnerships with Delivery Partners have helped the Company achieve its biggest deployment year, expanding the RTC footprint to 10.0 million premises in FY19, an increase of 41 per cent year-on-year. The expansion of the network footprint means that approximately 86 per cent of Australian premises can now order a service over the **nbn**™ access network.

Table 3: RTC profiles

Premises RTC – cumulative (millions)	FY19(A)	FY20	FY21	FY22	FY23
FTTP Brownfields	1.1	1.1	1.1	1.1	1.1
FTTP Greenfields	0.7	0.8	0.9	1.0	1.1
FTTN/B	4.3	4.7	4.7	4.7	4.7
FTTC	0.7	1.3	1.4	1.4	1.4
HFC	2.0	2.5	2.5	2.5	2.5
Fixed Wireless[a]	0.7	0.6	0.6	0.6	0.6
Satellite[a]	0.4	0.4	0.4	0.4	0.4
Total	**10.0**	**11.5**	**11.7**	**11.8**	**12.0**

a. Forecast RTC numbers include the impact of premises dilution in the non-fixed-line footprint, which will be applied following a full analysis of available premises data for these areas in FY20. This is expected to have the impact of reducing the relevant number of premises that exist within the Fixed Wireless and Satellite footprints.

Note: Due to rounding, numbers presented may not add up precisely to the totals.

Premises activated is the number of premises connected to a service over the **nbn**™ access network. Together with RSPs, NBN Co activated broadband services over the **nbn**™ access network to 5.5 million premises as of 30 June 2019. NBN Co expects to activate an incremental 1.5 million premises in FY20 in line with FY19 incremental volumes.

Given the complexity of build expected through FY20, there has been a shift in phasing for activations in FY20 and through FY21. The Company expects to connect 8.1 million customers by 30 June 2021.

Table 4: Activations profiles

Premises Activated – cumulative (millions)	FY19(A)	FY20	FY21	FY22	FY23
FTTP Brownfields	0.9	0.9	0.9	0.9	0.9
FTTP Greenfields	0.4	0.5	0.6	0.8	0.9
FTTN/B	2.7	3.0	3.2	3.3	3.3
FTTC	0.2	0.7	1.0	1.1	1.1
HFC	0.9	1.6	1.9	1.9	2.0
Fixed Wireless	0.3	0.3	0.3	0.3	0.3
Satellite	0.1	0.1	0.1	0.1	0.1
Total	**5.5**	**7.0**	**8.1**	**8.4**	**8.6**

Note: Due to rounding, numbers presented may not add up precisely to the totals.

Operational and financial forecasts

Revenue and ARPU

Table 5: Revenue

Total Revenue ($ billions)	FY19(A)	FY20	FY21	FY22	FY23
Residential	2.4	3.2	4.1	4.5	4.7
Business	0.4	0.5	0.9	1.1	1.2
Total Revenue	**2.8**	**3.7**	**4.9**	**5.6**	**5.9**

Note: Due to rounding, numbers presented may not add up precisely to the totals.

Revenue is expected to increase from $2.8 billion in FY19 to $5.9 billion in FY23. Revenue from business is anticipated to exceed $1 billion in FY22.

By FY23, NBN Co forecasts overall take-up of 73–75 per cent in fixed-line areas, depending on the prevalence of vacant premises, mobile-only households and any alternative fast broadband network providers. These forecasts are consistent with the penetration observed in fixed-line areas which have progressed through the mandatory disconnection process. This may be subject to change as the industry and market evolve.

As the rollout progresses the increase in customer take-up of services over the **nbn**™ access network, increased data usage, higher wholesale speed tier mix and focus on business segment products will drive revenue growth.

Residential ARPU is expected to grow from $44 in FY19 to $49 in FY23, stimulated by an expected increase in customer take-up of plans based on higher wholesale speed tiers and increased customer data consumption.

NBN Co will continue to monitor market developments closely and refine its wholesale pricing construct to optimise customer, RSP and NBN Co outcomes.

Operating expenses and subscriber payments

Subscriber costs primarily reflect contractual payments to Telstra for the disconnection of existing services and to Optus for the migration of subscribers to services over the **nbn**™ access network.

NBN Co has entered into strategic agreements with Telstra to provide NBN Co with the required infrastructure to deliver fast broadband to all Australians. These strategic agreements are essential to NBN Co in regard to its ability to achieve its short and long-term objectives. The Telstra Revised Definitive Agreement (RDA) provides NBN Co access to certain Telstra network infrastructure including ducts, pits, exchange rack space and dark fibre to facilitate the efficient rollout of the **nbn**™ access network.

Infrastructure-related costs primarily represent the contractual payments for accessing Telstra's infrastructure. These costs are forecast to increase with the rollout of the network to June 2020. The presentation of these operating costs for management and corporate planning purposes is not in accordance with Australian GAAP. This differs from quarterly and annual statutory reporting where these costs are accounted for as finance leases, which are accordingly capitalised and amortised over a 35-year period.

Other operating costs include staff-related costs, network operations, assurance, restoration and maintenance, IT costs, marketing and communication, leasing and other overheads.

Table 6: Operating expenses and subscriber payments

Opex ($ billions)	FY19(A)	FY20	FY21	FY22	FY23
Infrastructure Related Costs	0.5	0.6	1.0	1.0	1.0
Other Opex	2.1	2.3	1.9	1.8	1.7
Total Operating Expenses	**2.6**	**2.9**	**2.9**	**2.8**	**2.7**
Subscriber payments	**1.9**	**2.3**	**1.3**	**0.4**	**0.0**

Note: Due to rounding, numbers presented may not add up precisely to the totals.
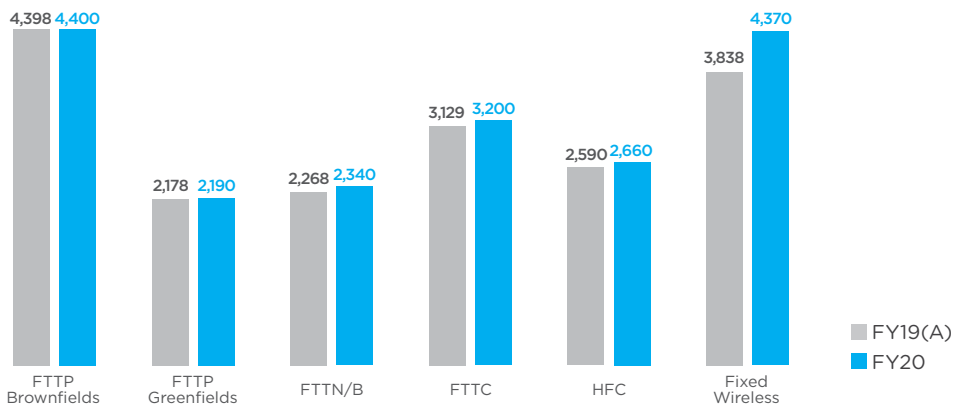
Operational and financial forecasts

Cost per Premises

The Cost per Premises (CPP) is an internal management calculation used to assess the comparative incremental costs of initial construction of each access technology.

- The CPP reports a weighted average over the full period of the build and depends on some factors such as geographic build conditions, distances from exchanges, the population density of the area considered, the number of premises per multi-dwelling unit and the extent of re-use of the existing infrastructure.

- The CPP reflects the capital and lease costs associated with the initial construction of the access network, which includes certain capital costs incurred within the co-existence period.

- The CPP excludes common capex (such as IT and transit network), and subsequent capital investment in the network capacity. It also excludes net operating losses.

- The CPP reflects the sum of underlying rates for individual elements of construction, which relate to the volume of technology build, premises connected or activated as relevant.

- The CPP excludes certain costs such as the impact of initial trial arrangements, where costs are not in line with long-term expectations (due to low volume, and bespoke commercial and delivery arrangements).

- Infrastructure leases are included in the CPP calculation based on an NPV of minimum future payments over the expected lease term and consist of certain infrastructure assets used in the fixed-line network such as ducts, wireless towers and ground leases. While not reported as capital costs in the Corporate Plan, these outlays represent necessary and incremental costs for construction of each access network technology.

Cost per Premises ($)

	FTTP Brownfields	FTTP Greenfields	FTTN/B	FTTC	HFC	Fixed Wireless
FY19(A)	4,398	2,178	2,268	3,129	2,590	3,838
FY20	4,400	2,190	2,340	3,200	2,660	4,370

FTTP Brownfields and Greenfields

As at FY19, CPP for FTTP Brownfields was $4,398 and FTTP Greenfields was $2,178. At the end of the build period these are expected to be $4,400 and $2,190 respectively.

FTTN/B

As at FY19, FTTN/B CPP was $2,268 and is expected to increase to the end of the build to $2,340 due to ongoing copper rehabilitation and higher connection costs for future activations. FTTN/B CPP includes a blend of the cost for premises delivered using both FTTN and FTTB technologies.

FTTC

As at FY19, FTTC CPP was $3,129 and is expected to increase to the end of the build to $3,200. The increase is due to greater civil works required in the build and higher customer connection costs.

HFC

As at FY19, HFC CPP was $2,590 and is expected to increase to the end of the build to $2,660. The increase in CPP to $2,660 is due to greater civil works, volume of new lead-in conduits required to be built and the reduced number of self-install connections anticipated.

Fixed Wireless

As at FY19, Fixed Wireless CPP was $3,838 and is expected to increase to $4,370 primarily due to premises dilution. This will be applied following a full analysis of available premises data for these areas in FY20.

Operational and financial forecasts

Peak funding and sensitivities

The Corporate Plan 2020–23 forecasts peak capital funding of $51 billion, inclusive of equity of $29.5 billion and debt funding of $21.5 billion. This represents NBN Co's view of the most likely outcome after considering ongoing challenges and opportunities ahead. Sensitivities have been tested to identify the impact on cash flows.

Table 7: Scenario analysis of key sensitivities

	FY23 Cash flow impact ($ millions)
ARPU shift by $1	100
1 percentage point permanent change to penetration rate	80
10 per cent change in operating expenditure (excluding leases)	170
10 per cent change to ongoing capital expenditure	140

Sources of funding

NBN Co has flexibility and discretion in operational, technology and network design decisions within the constraints of a public equity funding commitment of $29.5 billion and a Commonwealth Government loan facility of up to $19.5 billion. The loan agreement sets out the terms of the commercial facility that will be available to NBN Co for up to $19.5 billion to 30 June 2024. The Commonwealth loan agreement has a fixed interest rate of 3.96 per cent, with interest payable monthly over the life of the facility.

The Commonwealth Government has agreed to allow NBN Co to access up to $2 billion of private sector long-term debt. The terms for the private debt are subject to the approval of the Commonwealth Government.

Long-term financial outlook

In a dynamic market, Management and the Board face inherent uncertainty in accurately forecasting long-term financial prospects. NBN Co has a limited factual and operational base for financial projections due to uncertainty in the long-term market structure and competitive landscape, network usage, regulatory policy, innovation and other potentially disruptive events. This gives rise to a range of possible financial outcomes.

Management has forecast a peak funding of $51 billion. The IRR is 3.2 per cent, which is calculated based on estimates in respect to long-term cash flows, including ongoing growth in greenfields, applying inflation to revenue and costs, assuming steady state capital spend based on industry benchmarking, and a terminal value of 6x EBITDA. These assumptions are consistent with those applied to the previous Corporate Plans issued by NBN Co since its inception.

Management and the Board do not give any guarantee or assurance that the results, performance or achievements expressed or implied by these Estimates will actually occur.

Subsidiaries

The subsidiaries of NBN Co are listed in the table below. It is the intention of the Company to liquidate its two subsidiaries to simplify the operations of the Company.

Table 8: Subsidiaries of NBN Co[1]

Name of entity	Country of Incorporation	Class of Shares	Equity Holding
NBN Tasmania Limited	Australia	Ordinary	100 per cent
NBN Co Spectrum Pty Ltd	Australia	Ordinary	100 per cent

1   NBN Co Limited and NBN Tasmania Limited are parties to a deed of cross guarantee under which each company guarantees the debts of the other. NBN Tasmania Limited is a non-operating company and its business is exclusively operated by NBN Co Limited. NBN Co Spectrum Pty Ltd is a non-operating company that holds spectrum licences for NBN Co Limited and its business is exclusively operated by NBN Co Limited.

Risk management

The current Corporate Plan identifies a number of risk themes that remain consistent with those identified in previous years. In particular, scaling internal processes and systems to support peak HFC and FTTC deployment, maintaining sustainable Delivery Partner capacity to achieve network build targets and delivering a network experience that meets customer expectations.

These deployment risks are amplified by a highly dynamic operating environment, with NBN Co also actively managing challenges associated with rapidly evolving technology, market dynamics and competition. The Company's revenue forecasts remain sensitive to changes in take-up and data growth usage assumptions. While 5G is not expected to reach scale before the initial network rollout is complete, continued wireless development by mobile operators means mobile substitution will remain a potential threat to long-term revenue for the foreseeable future. These complex challenges must also be managed in the context of meeting peak funding and delivering on rollout objectives, whilst transitioning the Company's business model from deployment focus to operation of the **nbn**™ access network.

Key risk	How the risk is managed
Health and safety of staff, contractors and customers NBN Co and its Delivery Partners (DPs) must construct, activate, operate and maintain a network in a manner that prioritises the prevention of material HSE failures impacting staff, contractors, public and customers.	NBN Co takes a rigorous risk based approach to its HSE controls, with systematic and regular testing of DPs and internal practices. A similar focus is given to the welfare of customers, with formal processes in place to manage migration and disconnection activities.
Rapidly evolving technology and market dynamics Aggressive infrastructure competition and industry developments in wireless substitution (i.e. 5G) may impact business and residential product offerings and pricing constructs, and ability to secure long-term revenue.	NBN Co has dedicated capabilities tasked with actively monitoring the external environment and assessing the opportunities and threats of technology and market developments, and pivoting product constructs in response. These activities underpin regular reviews of the Company's strategy by the Executive Committee and the Board.

Key risk	How the risk is managed
Enhancing customer experience and market sentiment NBN Co must build, operate and maintain a network that enables a positive customer experience and enhances the Company's brand and reputation to achieve ARPU, take-up and long-term revenue.	NBN Co continues to enhance its understanding of the customer experience and market sentiment through independent research and data analytics. Subsequent insights and metrics are applied by Management to the design of operational processes, network performance requirements, and product and pricing constructs.
Maintaining sustainable operations Maintaining scale of internal processes, systems and workforce to meet short-term deployment milestones, and ensuring sustainable operate capabilities that will underpin long-term EBITDA and future cash flow.	NBN Co continues to mature its network operating environment through the Company's business process excellence model, with a particular focus on streamlining functional activities, simplifying technology and enhancing automation. These activities are designed and phased to support the sustainable operations of the company in the short and medium term.
Managing DP resourcing Ensuring DPs maintain scale for peak deployment activities and for future work, whilst limiting resource contention as industry winds down its workforce commitments to the **nbn**™ access network rollout.	NBN Co undertakes extensive industry consultation to ensure appropriate technical skills are available, while also working collaboratively with individual DPs to ensure workforce resources are available in line with deployment forecasts. Emerging resourcing challenges are overseen by Executive Management, with a whole-of-company approach taken to prioritisation deployment activities.
Security of network assets, people and information NBN Co must manage exposure to cyber and physical threats that could compromise the security of critical network infrastructure, the welfare and safety of staff, and the confidentiality, integrity and availability of sensitive information.	NBN Co operates a converged security model, with aligned security structures, processes and systems designed to secure critical network assets, people and information. Third-party practices are actively managed, while the external and internal environment are continuously monitored, with new security measures deployed in response to emerging threats.

Risk management

Key risk	How the risk is managed
Resilience of the network and operating environment to adverse events As an operator of critical communications infrastructure, NBN Co must design resilience into its network, IT systems and business operations to safeguard people, assets, systems and processes against adverse events such as extreme weather.	NBN Co adopts a business resilience focus to managing the impact of adverse events. This holistic approach emphasises robust continuity plans for critical business processes, with clear incident and emergency management structures to coordinate responses to major network, IT and third-party disruptions and incidents impacting staff and contractors. These arrangements are regularly tested.
Operating model transformation and optimisation Transforming network build–focused capabilities, including workforce, technology and processes, into a full-scale service delivery organisation that has a competitive cost base, agile digitally-enabled processes, customer-led workforce and simplified technology environment.	NBN Co aligns deployment and operation of the **nbn**™ network requirements and competing priorities through its strategy and corporate planning cycle, with transformation and optimisation objectives delivered through cross company business initiatives that are tightly governed by the Executive Committee.
Completion of the network rollout within funding and time constraints Final **nbn**™ access network rollout costs may be higher than estimates as NBN Co completes the more complex final milestone of the build, Fixed Wireless customer data consumption and concurrency grows and unanticipated construction challenges emerge. Further timings of build completion may have a negative impact on revenue.	NBN Co applies a range of processes and practices designed to ensure costs remain within plan. Performance metrics and risks are actively monitored, with deployment strategies being regularly adjusted to address emerging connection and activation challenges. Despite these mitigations, unforeseen circumstances could impact the Company's ability to meet plan forecasts.
Regulatory environment constrains commercial opportunities A complex regulatory landscape, with increased scrutiny and adverse regulatory action may lead to substantial compliance burdens or constrain the ability of NBN Co to pursue commercial opportunities and achieve long-term revenue and cash flow.	NBN Co maintains strong relationships with key regulatory and government stakeholders, with an emphasis on proactive engagement on current and emerging issues and opportunities. This proactive approach is supported by formal compliance management requirements, with material obligations being actively managed by business owners.

Key risk	How the risk is managed
Managing network capacity for HFC and Transit Network As data consumption and concurrency grows, NBN Co must ensure current and future network performance meets expectations, whilst delivering upgrades within economic constraints.	NBN Co has dedicated teams that deploy extensive data analytics, performance monitoring tools and industry research to develop the Company's future network upgrade path.
Meeting Fixed Wireless commitments within economic constraints Cost of capacity management in the Fixed Wireless network, including additional spectrum requirements, may increase significantly from Corporate Plan estimates as consumer data consumption and concurrency grows.	NBN Co pursues commercial and technology strategies to inform Fixed Wireless decisions, including spectrum management plans, long-range usage forecasts and alternative technology trials to manage the impact that planned versus acquired spectrum will have on future network strategies.

Additional footnotes

Outlined below are footnotes in respect to customer experience metrics disclosed on pages 16 and 17. These footnotes further explain what each metric is measuring and how each metric has been calculated for June of each applicable year. These metrics do not cover services supplied by RSPs to customers. This is a guide only, and relate only to the areas in which NBN Co are taking action. All of the metrics are based on averages, summaries and simplifications – what customers experience may vary considerably – and may fluctuate over time. The graphs on pages 16 and 17 plot performance at different points in time. Performance between these points may vary.

Right first time installations of nbn™ equipment

3. The percentage of homes and businesses that have their **nbn**™ equipment installed without additional work from NBN Co the first time the installation is attempted. Typically NBN Co excludes customer cancellations, customer or RSP initiated reschedules, customer premises 'shortfalls' and other things outside of NBN Co's control such as bad weather. This measure covers the installation of equipment that does not require more than one appointment. It does not cover successful connections to a plan over the **nbn**™ access network through an RSP.

Meeting agreed installation times

4. The percentage of premises that NBN Co connects to the **nbn**™ access network within target timeframes with Retail Service Providers. The target timeframes vary by **nbn**™ access network type and available infrastructure at the premises. This measure does not include Priority Assistance connections or Accelerated Connections.

Average network bandwidth congestion (per week)

5. The average number of minutes of bandwidth congestion per week/per service. This is calculated across all bandwidth purchased by all Retail Service Providers across the entire network (CVC congestion). Please note that while bandwidth congestion is caused by the level of provisioning of capacity by the Retail Service Provider, there are also other types of congestion which may occur on the **nbn**™ access network.

Fixed-line network congestion

6. This metric reflects the estimated monthly average percentage of homes and businesses that experience **nbn**™ access network congestion (as per NBN Co's congestion measures for fixed-line networks). Congestion metrics vary between fixed-line technologies. This excludes **nbn**™ Fixed Wireless and Sky Muster™ satellite. These are calculated based on the utilisation of certain parts of the **nbn**™ fixed-line access network that are shared by RSPs. The speeds actually achieved over the **nbn**™ access network also depend on factors outside NBN Co's control including customer equipment quality, software, signal quality, broadband plans and how the customer's RSP designs its network.

Uptake to higher wholesale plans

7. This includes wholesale plans available to RSPs with download speeds of 50Mbps and 25–50Mbps. The **nbn**™ wholesale speed tiers available to RSPs vary depending on the **nbn**™ access network technology in your area. Your experience, including the speeds actually achieved over the **nbn**™ network, depends on the **nbn**™ access network technology and configuration over which services are delivered to your premises, whether you are using the internet during the busy period, and some factors outside NBN Co's control (like your equipment quality, software, broadband plans, signal reception and how your RSP designs its network). Speeds may be impacted by network congestion on the **nbn**™ Fixed Wireless network, including during busy periods. Satellite users may experience latency.

Network availability

8. Percentage of time the **nbn**™ access network is available and operating. For this measure, the network is considered 'unavailable' during the time NBN Co is restoring services following the raising of a fault. It does not include periods where the network is unavailable due to operational outages for network upgrades and improvements or events beyond NBN Co's control.

Meeting agreed fault restoration times

9. The percentage of time NBN Co resolves accepted faults within NBN Co's target timeframes with RSPs. This measure tracks individual service faults, not network related faults which are tracked separately. The fault restoration measure does not include restoration for faults reported to NBN Co relating to Priority Assistance Faults or Enhanced Faults, network upgrades and improvements, and events beyond NBN Co's control. NBN Co's target timeframes apply to faults raised by RSPs and accepted by NBN Co and vary depending on the location of the premises, and are different for the Sky Muster™ satellite network.

Faults after connection completed (per 100 connected homes and businesses)

10. The number of faults on the **nbn**™ access network per 100 premises per month (excluding faults within 10 business days of the connection). This measure tracks individual service faults, not network related faults which are tracked separately. It excludes faults not related to the **nbn**™ access network. The calculation of this metric has changed from October 2018. The new calculation of this metric excludes faults within 10 business days of the connection. This provides a better representation of the performance of the network post any connection related issues. The historical figures have been recalculated using this new metric. This metric should not be compared with the old 'Faults per 100 connected homes and businesses' metric as contained in previous monthly progress reports.

Fixed Wireless busy hour cell performance

11. The percentage of **nbn**™ Fixed Wireless network cells that do not, or are forecast not to, meet the Company's design threshold of a 30 day average of 6Mbps download throughput in the busiest hour of the day for that cell (averaged across all active services connected to that cell in the applicable hour). This metric is used to prioritise NBN Co's Fixed Wireless capacity upgrade program and does not reflect any performance commitments of the Company's products. It is not indicative of actual customer experience (which depends on a wide range of factors).

Fixed Wireless busy hour backhaul performance

12. The percentage of **nbn**™ Fixed Wireless network cells that connect via backhaul links that exceed, or are forecast to exceed, the Company's threshold of a 28 day average of 0.25% or more packet loss in the busiest hour of the day for that link. This metric is used to prioritise NBN Co's Fixed Wireless capacity upgrade program and does not reflect any performance commitments of the Company's products. It is not indicative of actual customer experience (which depends on a wide range of factors).

Glossary

Abbreviation or term	Definition
ABS	Australian Bureau of Statistics.
ACCC	Australian Competition and Consumer Commission.
Access Seeker	A Retail Service Provider acquiring NBN Co wholesale services with the intention to supply broadband services to Service Providers or customers.
Access Technology	The technology used by NBN Co to deliver the **nbn**™ access network from the exchange location to the network distribution point.
Access Virtual Circuit (AVC)	The bandwidth acquired by Retail Service Providers which can be allocated to customers' premises. The AVC is a virtual point-to-point connection from NBN Co's network boundary point associated with customer premises back to the POI.
ACMA	Australian Communications and Media Authority.
ADSL	Asymmetric Digital Subscriber Line is a type of broadband communications technology that uses copper lines to connect to the Internet.
Australia's broadband network	The nation-wide wholesale-only access network, available on non-discriminatory terms to all access seekers, that will be deployed by NBN Co and third parties engaged on behalf of NBN Co.
Average Revenue Per User (ARPU)	Calculations include all telecommunications revenue generated including AVC, CVC and other products.
Brownfields	Pre-existing premises.
Business Satellite Services	Services providing Sky Muster™ capacity for remote businesses and enterprise customers.
CAGR	Compound Annual Growth Rate
Capital Expenditure (Capex)	The cost of purchasing tangible and intangible assets.
Committed Information Rate (CIR)	The bandwidth (usually expressed in kilobits per second) guaranteed under a certain service level agreement.
Connectivity Serving Area (CSA)	A logical collection of customer premises defined by NBN Co. Each CSA has approximately the same number of customer premises.
Connectivity Virtual Circuit (CVC)	Determines the capacity of Retail Service Providers (RSPs) to be able to service each CSA. The CVC is virtual Ethernet broadband capacity acquired by an RSP that can be allocated by them to their aggregated AVCs at a CSA.
Copper Network	Telstra's copper-based customer access network, which is used to deliver standard voice telephony and broadband services.

Abbreviation or term	Definition
Cost per Premises (CPP)	An internal NBN Co management calculation used to assess the comparative incremental costs of construction of each access technology.
Customer	Final downstream customer to NBN Co's Retail Service Providers.
Dark Fibre	Optical fibre with no active electronics attached.
Data Over Cable Service Interface Specification (DOCSIS®)	A telecommunications standard that permits the addition of high-speed data transfer and internet access through HFC infrastructure.
Delivery Partner (DP)	A third party involved in the build of the **nbn**™ access network. A Delivery Partner is a contractor, which has a contract with NBN Co for the delivery of a certain amount of work/activities in relation to the build and operation of the **nbn**™ access network.
Distribution Point Unit (DPU)	The DPU is one of the main components used in FTTC architecture. A DPU is typically connected to a GPON network and uses either VDSL2 or G.fast technology for the last run of copper into the premises.
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortisation.
Engagement score	Measure of the total number of engaged employees as a percentage of the total number of respondents to a bi-annual engagement survey. NBN Co's engagement surveys are undertaken by Culture Amp, allowing NBN Co to benchmark itself against other enterprises.
Enterprise Ethernet	Is a layer 2 wholesale broadband product that is designed to provide access to the speed, quality and service needs of enterprise end customers.
Fibre Network	NBN Co's optical fibre telecommunications network that is owned or controlled by NBN Co and which has been accepted into service, ready for the provision of commercial (non-trial) **nbn**™ access network services.
Fibre-to-the-Building (FTTB)	Network design in which the Fibre Network is deployed to the basement of a building and copper lines are used for the connection to the customer premises.
Fibre-to-the-Curb (FTTC)	Network design in which the Fibre Network is deployed to a distribution point near the premises and copper lines are used for the connection between the distribution point and the premises.
Fibre-to-the-Node (FTTN)	Network design in which the Fibre Network is deployed to the node (i.e. a VDSL cabinet), while copper lines are used for the connection between the node and the premises.

Glossary

Abbreviation or term	Definition
Fibre-to-the-Premises (FTTP)	Network design in which the Fibre Network is deployed to each premises. It involves connecting homes and businesses with an optical fibre cable which can be used to provide a range of high-speed broadband services and phone services.
Fixed-line	Delivery of voice, data and broadband services over a physical line from the exchange location to the customer premises (with termination at that premises).
Fixed Wireless	Network design in which network connections are provided through radio signals.
FYXX	The financial year ending 30 June 20XX.
FY19(A)	Actuals for the financial year ending 30 June 2019.
GAAP	Generally Accepted Accounting Principles.
G.fast or G.mgfast	The letter 'G' in G.fast stands for the ITU-T G series of recommendations; fast is an acronym for fast access to subscriber terminals. The 'mg' in G.mgfast stands for multi-gigabit.

A technology similar to DSL for carrying broadband signals over copper pairs. It uses different signalling method and much higher frequency spectrum to deliver potential speeds higher than traditional DSL. |
Gigabit Passive Optical Networks (GPON)	Is a point-to-multi point access technology that is used in fibre optic networks to serve multiple homes and small businesses.
Gigabits Per Second (Gbps)	A unit of measurement of transmission speeds equal to one billion bits per second. X/YGbps means a maximum downstream speed of XGbps and a maximum upstream speed of YGbps.
Government	Reference to the Commonwealth or Cth is used interchangeably with Government.
Government Business Enterprise (GBE)	Commonwealth entity or wholly-owned Commonwealth company as defined by the PGPA Act and as prescribed as a GBE under the PGPA Rule.
Greenfields	Can be either new developments or infills. Greenfields developments represent the growth of the premises market.
Health, Safety & Environment (HSE)	The activities responsible for establishing and maintaining policies regarding employee health, safety and environment issues.
Hybrid Fibre Coaxial (HFC) Cable Networks	Networks utilising both optical fibre and coaxial cable for the delivery of Pay TV, internet and voice services.

Abbreviation or term	Definition
Infills	A type of Greenfields development where new premises or a development (i.e. demolition and rebuild) are planned to be built on currently developed land that is surrounded by established areas, where Telstra copper services are currently unavailable.
Information Technology (IT)	Underlying operating and business systems and processes providing the platform and flow of information through NBN Co to enable the deployment, activation and operation of Australia's broadband network.
Internal Rate of Return (IRR)	The average annual total return from the cash investment over a specified time period, used to measure and compare the profitability of the investment.
Internet of Things (IoT)	The Internet of Things (IoT) is an evolution of machine to machine (M2M) connectivity, a network of physical devices, vehicles, home appliances, and other items embedded with electronics, software and sensors.
Lead-in	The part of the network from the pit in the street to the customer premises.
Local Network	The part of the network from the Fibre Distribution Hub down each street.
Megabits Per Second (Mbps)	A unit of measurement of transmission speeds equal to one million bits per second. X/YMbps means a maximum downstream speed of XMbps and a maximum upstream speed of YMbps.
Multi-Technology Mix (MTM)	An approach used to determine which technologies to be utilised on an area-by-area basis to maximise the speed of the rollout and build the network most effectively.
NBN Co	NBN Co Limited.
Network Engineering Operations (NEO)	The NBN Co team responsible for the operation and activation of **nbn**™ services on the **nbn**™ access network.
New Developments (Greenfields Estates)	An estate that complies with the New Development Policy statements released by the Government. New Developments includes commercial, industrial and residential estates comprising of more than 100 lots with development approval to be released within a three year period located in NBN Co's long-term Fibre Footprint. For the role of NBN Co with regards to Greenfields developments, refer to the appropriate policy as befitting the circumstance.
Next Generation Passive Optical Network (NG-PON)	A telecommunications network standard capable of increasing speeds over the fibre cables.
NG-PON2	Next generation passive optical network (version 2) is the next evolution of FTTP technology.

Glossary

Abbreviation or term	Definition
Operating Expenditure (Opex)	The ongoing cost of running a business, system or product, including payments under lease agreements. For the purpose of the Corporate Plan, Operating Expenditure includes all nominal payments, such as nominal payments under finance lease agreements. This nominal view of costs incurred may differ from the accounting treatment under statutory accounting rules.
Over the Top (OTT) Entertainment Services	Entertainment Services (audio, video, and other media) delivered directly to the consumer via the internet, without requiring users to subscribe to a traditional communication, cable or broadcast television service providers.
Point of Interconnect (POI)	The connection point that allows RSPs and WSPs to connect to the **nbn**™ access network access capability. In the field, this is the physical port on the Ethernet Fanout Switch (EFS) switch located at the **nbn**™ access network's POI, where an Access Seeker connects to establish exchange of traffic with the **nbn**™ access network.
Premises	A premises which NBN Co is required to connect is: 1. an addressable location currently used on an ongoing basis for residential, business (whether for profit or not), government, health or educational purposes; 2. a school as defined by the Department of Education, Employment and Workplace Relations; 3. within a new development at an addressable location for which NBN Co is the wholesale provider of last resort; or 4. a standard telephone service activated in compliance with the USO.
Premises activated	Refers to premises which have an active service installed. Premises are activated after receiving and provisioning a service order from a RSP to install a new service at the premises.
Product Development Forum	See http://www.nbnco.com.au/industry/service-providers/industry-consultation/product-development-forum.html.
Ready for Service (RFS)	A Rollout Region is Ready for Service (RFS) when the majority of premises are passed by the **nbn**™ access network and RSPs are able to begin selling services over the **nbn**™ access network in that Rollout Region.

Abbreviation or term	Definition
Ready to Connect (RTC)	A premises is Ready to Connect (RTC) when an **nbn**™ service order can be placed, and the service can be connected within an area that has been declared Ready for Service.
Retail Service Provider (RSP)	A third-party provider of retail broadband services to customers.
Robotics	Robotic technology that helps to generate efficiencies through the use of automation.
Rollout Region	A region served by the **nbn**™ access network.
Service providers	A third-party provider of broadband services whether to customers and/or Retail Service Providers.
Sky Muster™ satellite service	NBN Co satellite service which will provide broadband services to Australians in predominantly rural locations.
Statement of Expectations (SoE)	See https://www.communications.gov.au/publications/nbnstatementofexpectations
Subscriber Payments	Subscriber-related costs primarily reflect contractual payments to Telstra regarding the disconnection of existing services and to Optus regarding the migration of subscribers to services over the **nbn**™ access network.
Systems Engineering Operations (SEO)	The NBN Co team that provides converged network and information technology (IT) engineering solutions to digitally enable NBN Co's customers.
Technology Choice Program	A program which provides individual or groups of premises with the option to pay for a switch to a different **nbn**™ access network technology.
VDSL	Very-High-Bit-Rate Digital Subscriber Line.
Virtual Private Network (VPN)	A private server run by a third-party provider to access the internet.
Wholesale Broadband Agreement (WBA)	A document which sets out NBN Co's supply terms for the **nbn**™ Ethernet Bitstream Service and other related products and services.
Wholesale Service Provider (WSP)	A provider of wholesale services to Service Providers, NBN Co is the Wholesale Service Provider (WSP) on-selling National Broadband Network access to Retail Service Providers (RSP).
XGS-PON	10 Gigabit per second symmetrical passive optical network is the next generation of FTTP technology.
4K/8K TV	Ultra High Definition of video content: 4000 pixels (4K UHD) or 8000 pixels (8K UHD).
5G	Fifth-generation wireless technology.