



Joint Standing Committee on the National Broadband Network

The rollout of the National Broadband Network

1st Report of the 45th Parliament

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Mr Andrew Broad MP	NAT, VIC
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TABLE OF CONTENTS

Committee membership	iii
Abbreviations	ix
List of recommendations	xi
Chapter 1.....	1
Introduction	1
Establishment of the Committee	1
Conduct of the inquiry.....	1
Acknowledgements	2
Note on terminology.....	2
References to Hansard.....	2
Structure of the report.....	2
Context of the inquiry.....	3
Broad overview of the NBN rollout.....	5
Statement of Expectations	11
Chapter 2.....	13
NBN Rollout Progress	13
Introduction	13
Stated goals of the rollout.....	13
Status of the rollout	14
User demand, usage patterns and trends	24
International comparisons with the NBN rollout	33
Committee view.....	36
Chapter 3.....	39
Overview of the NBN Customer Experience	39
Introduction	39
Process of getting NBN services connected and established	40
Issues with NBN service speeds and performance faults.....	52
Complaints processes and resolution	59

Committee view.....	64
Chapter 4.....	67
Sky Muster	67
Introduction	67
Customer experiences on Sky Muster	68
Opportunities for improving the Sky Muster service.....	79
Committee view.....	86
Chapter 5.....	89
Improving the NBN Customer Experience	89
Introduction of broadband service or performance guarantees	91
Role of the TIO in resolving customer complaints	94
Misleading information provided to customers and consumer education.....	100
Chapter 6.....	113
Data collection about customer satisfaction and network performance	113
Introduction	113
Customer satisfaction data captured by nbn	113
Complaints data collected by the TIO	116
Research on the customer experience by the ACMA.....	122
Committee view.....	124
Chapter 7.....	127
Industry, market and regulatory characteristics of the NBN rollout.....	127
Introduction	127
Industry characteristics	127
Market and regulatory characteristics	133
Chapter 8.....	143
Opportunities for the NBN to provide economic and social benefits	143
Introduction	143
Opportunities for economic growth and innovation.....	143
Expanding and developing the delivery of telehealth services	149
Improving digital inclusion	155
Participation in education and training.....	157
Committee view.....	161

Chair's dissenting report.....	163
Introduction	163
Performance measurement	163
Rollout progress.....	165
Meeting financial forecasts.....	168
Activations and service take-up.....	168
Upgrade paths	168
Sky Muster satellite services	169
Global comparisons	170
Serviceability of premises	173
Consumer experience	173
Appendix 1	175
Submissions received.....	175
Appendix 2	181
Tabled documents.....	181
Additional information	183
Answers to questions on notice.....	183
Appendix 3	187
Public hearings and witnesses	187

Acronyms and Abbreviations

ACCAN	Australian Communications Consumer Action Network
ACCC	Australian Competition and Consumer Commission
ACMA	Australian Communications and Media Authority
ADSL	Asymmetric Digital Subscriber Line
AVC	Access Virtual Circuit
BIRRR	Better Internet for Rural and Remote Australia
BPMR	Broadband Performance Monitoring and Reporting
CEO	Chief Executive Officer
CVC	Connectivity Virtual Charge
Department	Department of Communications and the Arts
FTTB	Fibre to the building / basement
FTTC	Fibre to the Curb/Kerb
FTTN	Fibre to the node
FTTP	Fibre to the premises
FY16	Financial year 2016
FY17	Financial year 2017
GBE	Government Business Enterprise
HFC	Hybrid Fibre Coaxial
IRCA	Indigenous Remote Communications Association
Mbps	Megabits per second
nbn	nbn co limited
NBN	National Broadband Network
RDA	Regional Development Australia

RFS	Ready For Service
RSP	Retail Service Provider
SAU	Special Access Undertaking
TIO	Telecommunications Industry Ombudsman
TPC Code	Telecommunications Consumer Protection Code
USO	Universal Services Obligation
WWSC	West Wimmera Shire Council

LIST OF RECOMMENDATIONS

Recommendation 1

2.91 The committee recommends that the Australian Government direct and enable nbn to complete as much as possible of the remaining fixed line network using FTTC at a minimum (or FTTP), and require nbn to produce a costed plan and timetable under which that would be achieved.

Recommendation 2

2.92 The committee recommends, in light of recent results and developments, that the Australian Government commission an independent audit and assessment of the long-term assumptions underpinning nbn's financial projections and business case as set out in the *Corporate Plan 2018-21*.

Recommendation 3

2.94 The committee recommends that the Australian Government direct nbn to establish a regional and remote reference group to support the rollout of the NBN in rural and remote Australia. The reference group would include consumer advocate groups and departmental representation from the Department of Communications and the Arts and the Department of Infrastructure and Regional Development. Business decisions that fundamentally change the nbn experience for the end user in regional and remote communities should be referred to the reference group for consideration and analysis as to whether the decision will result in nbn not meeting its responsibilities as outlined in the Statement of Expectations.

Recommendation 4

3.104 The committee recommends the Government ensure by appropriate regulation that end users are informed of, or can easily access and are directed to, clear information about the maximum attainable layer 2 speed of their NBN infrastructure/service on a per premise basis.

Recommendation 5

3.105 The committee recommends that nbn develop and implement a framework that ensures best-practice installation as part of an 'active handover' model, with reference to the approach of Chorus NZ, so that each premise is assured of network capability at the point it is ready-for-service, and repeat visits and remedial costs are avoided.

Recommendation 6

3.106 The committee recommends that nbn review and provide advice to the committee on how it:

- takes into consideration the added complexity and time requirements of installations to Service Class 0 and Service Class 10 premises, or equivalent areas, when calculating its progress towards completion goals; and

- **prioritises connections to areas that currently have no access to internet.**

Recommendation 7

4.98 The committee recommends that the Australian Government require nbn to identify and disclose all areas that are currently designated to be served by a satellite connection that previously were set to receive the NBN by FTTN or fixed wireless, and explain why the change has occurred.

Recommendation 8

4.99 The committee recommends that the Australian Government require nbn to develop a plan that would provide access to nbn's fixed wireless towers for the provision of mobile telephony.

Recommendation 9

4.100 The committee recommends that the Australian Government ask nbn to consider providing the capacity for separate business and residential Sky Muster plans to be made available at the same location when business grade plans are introduced in 2018.

Recommendation 10

4.101 The committee recommends that the Australian Government set a benchmark for reasonable data allowance on Sky Muster plans, by reference to average data use across the fixed line network.

Recommendation 11

4.102 The committee recommends that the Australian Government ask nbn to establish a rural and regional reference group (see recommendation 3) and that nbn consult on Sky Muster services and changes to policy and rollout plans.

Recommendation 12

5.21 The committee recommends that the regulation of broadband wholesale services be overhauled to establish clear rights and protections for suppliers and end users of NBN broadband services. This framework should include: service connection and fault repair timeframes; minimum network performance and reliability; and compensation arrangements when these standards are not met. The committee requests that the Department brief the committee on progress in developing these protections by December 2017.

Recommendation 13

5.22 The committee recommends that nbn and RSPs develop business grade products specifically designed for the small business market which provide service guarantees and remedies. The committee requests that nbn and the Communications Alliance report back to the committee on progress in developing these products by December 2017.

Recommendation 14

5.41 The committee recommends that the Telecommunications Consumer Protection Code be amended to require that customers lodging a complaint with their retail service provider are specifically made aware of external dispute resolution options including the Telecommunications Industry Ombudsman at the time they initially lodge the complaint.

Recommendation 15

5.46 The committee recommends that the Telecommunications Industry Ombudsman be empowered to compel any relevant parties to a complaint to meet together or otherwise cooperate in order to facilitate the resolution of that complaint within a set reasonable timeframe.

Recommendation 16

5.48 The committee recommends that the Australian Government direct nbn to clearly identify the complaint handling process for consumers, including: complaint resolution processes and timeframes, and internal and external complaint escalation processes. This information must be provided by nbn in a way that meets Australian Government accessibility guidelines.

Recommendation 17

5.66 The committee recommends that the Australian Communications and Media Authority develop and introduce an updated Telecommunications Consumer Protections Code that specifically addresses issues raised in relation to customer experiences with NBN services. This should include mandatory, enforceable standards to regulate the marketing of broadband speeds, in line with the recent principles and industry guidance released by the Australian Competition and Consumer Commission. The updated instrument must ensure that end users have rights and accessible procedures to enforce those rights.

Recommendation 18

5.67 The committee recommends that the ACMA consider introducing an updated statutory determination, applicable to all NBN technology types, to require retail service providers to inform customers of any critical service issues and line impairments to ensure the customer has understood these issues, prior to a service commencing.

Recommendation 19

6.45 The committee recommends that nbn publish prominently on its website, monthly information relating to its end user satisfaction metrics, including:

- its overall net promoter score as measured each month;
- the overall net promoter score for each technology type as measured each month;
- relevant disaggregated information about end user satisfaction metrics in relation to each RSP; and

- any relevant disaggregated information about end user satisfaction metrics in specific geographic areas, such as:
 - data broken down by state and territory; and
 - data relating to each fixed-line area in the rollout footprint, as areas are designated Ready for Service.

Recommendation 20

6.48 The committee recommends that the scope, function, and operation of the Telecommunications Industry Ombudsman (TIO) be expanded so that, among other improvements determined through the current review process, the TIO should keep data according to technology type, and should record and report multiple issues as separate items, especially where nbn and an RSP are both involved.

Recommendation 21

6.52 The committee recommends that the Department of Communications and the Arts publish the data it receives from nbn as part of its monthly reporting regime, including data relating to:

- network fault restoration;
- service fault restoration;
- connection performance, such as right first time activations; and
- activities undertaken in accordance with service level agreement.

Recommendation 22

7.25 The committee requests that nbn review and provide advice to the committee on its processes and conduct with regard to the engagement, training, coordination and dispute resolution with subcontractors, in accordance with global best-practice.

Recommendation 23

8.67 The committee recommends that the Australian Government ensure that digital inclusion is measured and reported. It has been suggested that the Productivity Commission assess and report on income and wealth inequality in Australia, and it may be worth including the measurement and reporting of digital inequality, as the two areas are likely to be increasingly related.

Chapter 1

Introduction

Establishment of the Committee

1.1 The Parliamentary Joint Committee on the National Broadband Network (the committee) was established on 14 September 2016, pursuant to the agreement of the House of Representatives and the Senate, to inquire into and report on the rollout of the National Broadband Network.

1.2 The committee's establishing resolutions require the committee to report annually to each House of the Parliament until the National Broadband Network is declared built and fully operational on:

- (a) rollout progress with particular regard to the NBN Co Limited Statement of Expectations issued by Shareholder Ministers on 24 August 2016;
- (b) utilisation of the national broadband network in connected localities in both metropolitan and regional areas, and the identification of opportunities to enhance economic and social benefits;
- (c) Australia's comparative global position with regard to residential broadband infrastructure; particularly relative to other large, developed economies;
- (d) national broadband network activation rates, user demand, usage patterns and trends, and any identified impediments to the take-up of national broadband network services;
- (e) any market, industry, or regulatory characteristics that may impede the efficient and cost-effective rollout of the national broadband network; and
- (f) any other matter pertaining to the national broadband network rollout that the committee considers relevant.

Conduct of the inquiry

1.3 Details of the inquiry were placed on the committee's website. The committee also wrote to individuals and organisations, inviting submissions by 31 March 2017. The committee continued to accept submissions until August 2017.

1.4 The committee received 191 submissions to its inquiry from a range of individuals and organisations. A list of the submissions received by the committee is provided at Appendix 1. Other documents authorised for publication, including answers to questions taken on notice, are listed at Appendix 2.

1.5 The committee held 15 public hearings and took evidence from every state and territory. In developing its public hearing program, the committee recognised the importance of taking evidence in regional areas as well as capital cities. A list of witnesses who appeared at the hearings is at Appendix 3.

1.6 The committee also undertook three site visits to inform its inquiry: nbn Discovery Centre in Sydney, Innovation NQ in Townsville and the Royal Flying Doctor Service base in Port Augusta. The committee thanks those three organisations for hosting the site visits.

Acknowledgements

1.7 The committee thanks the individuals and organisations who contributed to the inquiry. In particular, the committee notes the witnesses who travelled to give evidence at public hearings and the individuals who provided detailed submissions about their experiences related to the NBN rollout.

Note on terminology

1.8 The company named nbn co limited was established in 2009 to design, build and operate Australia's new high-speed broadband network. References to the company name throughout the report will be abbreviated to the lower case nbn. Quotations and other sources that use variations of the company name will remain in their original form.

1.9 The acronym NBN will be used throughout the report when referring to the National Broadband Network.

References to Hansard

1.10 Some of the references in this report are to *Proof Hansard* transcripts. Page numbers may vary between the proof and the official *Hansard* transcript.

Structure of the report

1.11 The report is divided into the following chapters:

- Chapter 1 provides some context and background information about the development and rollout of the NBN;
- Chapter 2 provides detail about the current status of the rollout, including future planning and upgrade pathways;
- Chapter 3 provides evidence about the consumer experience when connecting to and using an NBN service;
- Chapter 4 focuses on the experience of consumers using the Sky Muster satellite service;
- Chapter 5 brings together the evidence received about the customer experience and proposes some actions to enhance the customer experience;
- Chapter 6 provides detail about the faults and customer data currently available and how this could be better collected and analysed;
- Chapter 7 discusses the evidence received about the market, industry and regulatory characteristics of the rollout; and
- Chapter 8 provides evidence about the future opportunities of the NBN, including a discussion about the innovation already achieved on the network.

Context of the inquiry

1.12 nbn was established in 2009 to design, build and operate Australia's new high-speed broadband network. nbn is wholly owned by the Commonwealth of Australia as a Government Business Enterprise (GBE) and is accountable to two Shareholder Ministers: the Minister for Communications and the Minister for Finance.

1.13 The nbn regulatory framework came into force in April 2011 and was set up by two Acts: *National Broadband Network Companies Act 2011* and *Telecommunications Legislation Amendment (National Broadband Network Measures—Access Arrangements) Act 2011*.

1.14 In addition to the two establishing Acts, nbn operates in accordance with a range of other legislation including: *Corporations Act 2001*, *Public Governance, Performance and Accountability Act 2013*, *Competition and Consumer Act 2010* and the *Telecommunications Act 1997*.

1.15 The delivery of the NBN to the Australian community in accordance with the legislative framework requires interaction with a range of stakeholders in the telecommunications industry. In its submission to the inquiry, the Telecommunications Industry Ombudsman (TIO) provided the following table explaining the different roles and responsibilities of government, regulators, consumer representatives and industry associations.

Table 1.1: Roles and responsibilities in the telecommunications industry¹

GOVERNMENT	REGULATORS	CONSUMER REPRESENTATIVES	INDUSTRY ASSOCIATIONS	DISPUTE RESOLUTION
<p>Federal Minister for Communications</p> <p>Federal Minister for Regional Communications</p> <p>Department of Communications and the Arts</p> <ul style="list-style-type: none"> • collectively responsible for setting overarching telecommunications policy and coordinating implementation • administers the mobile blackspot funding program <p>State/Territory Governments</p> <ul style="list-style-type: none"> • some contribute to mobile black spot funding 	<p>ACMA</p> <ul style="list-style-type: none"> • administers the telecommunications licensing and conduct regime • enforces compliance with TIO scheme membership and Ombudsman decisions • approves industry codes <p>ACCC</p> <ul style="list-style-type: none"> • regulates the network and market competition • administers the Australian Consumer Law, including ensuring fair market practices 	<p>Australian Communications Consumer Action Network (ACCAN)</p> <ul style="list-style-type: none"> • peak body for consumer education, advocacy and research (telecommunications specific) <p>Financial Counselling Australia (FCA)</p> <ul style="list-style-type: none"> • consumer case work and advice • contributes to policy debates; hardship and debt focus <p>Other Consumer Law Centres</p> <ul style="list-style-type: none"> • consumer case work and legal advice <p>CHOICE and Consumers Federation of Australia</p>	<p>Communications Alliance</p> <ul style="list-style-type: none"> • develops industry codes, standards and guidelines • advocates for industry <p>Communications Compliance</p> <ul style="list-style-type: none"> • monitors compliance of industry codes <p>Other associations for internet and mobile</p>	<p>Telecommunications Industry Ombudsman</p> <ul style="list-style-type: none"> • facilitates the resolution of residential and small business consumer complaints • identifies and resolves broader issues • makes determinations on land access objections

¹ Source: Telecommunications Industry Ombudsman, *Submission 115*, p. 2.

1.16 A broad overview of the activities undertaken by these stakeholders is provided later in this chapter.

Previous parliamentary inquiries

1.17 Since the establishment of nbn, there has been a number of parliamentary committees established to inquire into various aspects of the NBN: a Joint Standing Committee in the 43rd Parliament and Senate Select Committees in the 42nd and 44th Parliaments.

1.18 Whilst noting the previous parliamentary inquiries, the primary focus of this report is the evidence gathered throughout the current inquiry.

Activities throughout the inquiry process

1.19 The committee notes that it is conducting a 'live' inquiry about the rollout of the NBN. As this report is being tabled, NBN infrastructure is being constructed and NBN customers are choosing plans from their Retail Service Providers (RSPs).

1.20 As such, the committee is aware that new policies and changes to the rollout schedule have been occurring at the same time that the committee has been taking evidence about the rollout experience from individuals and organisations.

1.21 In addition to specific NBN rollout activities and announcements, the committee notes other reviews currently underway or recently completed related to matters that fall under the broad scope of the committee's terms of reference including:

- the independent review of the Telecommunications Industry Ombudsman (TIO) Scheme in accordance with the *Telecommunications (Consumer Protection and Service Standards) Act 1999*. The review report is due to the Ombudsman by 29 August 2017;
- the Productivity Commission (PC) review into the Universal Services Obligation, referred to the PC by the Government in April 2016. This inquiry analysed what changes may be required to support universal access to a minimum level of retail telecommunications services. When releasing the PC report on 19 June 2017, Senator the Hon. Mitch Fifield, Minister for Communications noted that the Government is considering the PC report and will undertake targeted consultations to inform the Government's response;²
- the Review of the *Migration Assurance Framework* being undertaken by the Department of Communications and the Arts;
- the legislation presented to the House of Representatives on 22 June 2017: Telecommunications (Regional Broadband Scheme) Charge Bill 2017 and Telecommunications Legislation Amendment (Competition and Consumer) Bill 2017. The Senate Environment and Communications Legislation

2 Senator the Hon. Mitch Fifield, Minister for Communications, 'Government releases Productivity Commission report into the Universal Service Obligation', *Media release*, 19 June 2017.

Committee conducted an inquiry on these bills and tabled its report on 6 September 2017;³ and

- the consideration by the Australian Competition and Consumer Commission (ACCC) of nbn's variation to its Special Access Undertaking (SAU) which was resubmitted to the ACCC on 27 June 2017. The ACCC published a consultation paper on 2 August 2017 and invited submissions by 25 August 2017.

1.22 Whilst providing some context, this report will primarily refer to these reviews as they relate to evidence received throughout the inquiry.

Broad overview of the NBN rollout

1.23 nbn is a government owned entity which is providing the infrastructure to enable the Australian community to connect to the NBN. nbn is party to an Equity Funding Agreement with the Commonwealth, which formalises the intention of the Commonwealth to provide equity funding to nbn.

1.24 This Agreement imposes a cap on the maximum amount of equity funding that will be provided by the Government of \$29.5 billion. On 18 November 2016, the Government announced that nbn would be provided a loan of \$19.5 billion on commercial terms to fund the remainder of the rollout.

1.25 As a wholesale operator, nbn sells capacity on the network to RSPs who then enter into contracts with consumers (individuals and businesses) to provide broadband internet and phone services.

1.26 nbn is deploying a range of technologies to deliver the NBN to premises across Australia. The technology types are summarised in the table below.

3 Senate Environment and Communications Legislation Committee, *Telecommunications Legislation Amendment (Competition and Consumer) Bill 2017 [Provisions] and Telecommunications (Regional Broadband Scheme) Charge Bill 2017 [Provisions]*, 6 September 2017, available at: http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/TelcoBills2017/Report.

Table 1.2: NBN rollout—network technology⁴

Fixed line network—93 per cent of premises	Fibre to the Premises (FTTP)	FTTP deploys fibre optic cable to the household or business.
	Fibre to the Node (FTTN)	FTTN deploys fibre into neighbourhoods and then uses existing copper infrastructure to the premises.
	Fibre to the Basement/distribution point (FTTB/dp)	FTTB deploys fibre optic cable to the basement of a building, utilising existing wiring in the building for connections to apartments or offices.
	Fibre to the Curb/Kerb (FTTC)	FTTC deploys fibre to a footpath telecom pit and then uses existing copper infrastructure to the premises.
	Hybrid Fibre Coaxial (HFC)	A HFC connection uses existing 'pay TV' or cable network to deliver fast broadband. A HFC line will be run from the nearest available fibre node, to the premises.
Outside fixed line network	Fixed Wireless	Fixed wireless transmits data from towers to a rooftop antenna using radio signals.
	Satellite	Two Sky Muster satellites deliver broadband to premises outside the fixed line network.

1.27 The decision to deliver the NBN through a multi-technology mix was a policy shift that occurred with the election of the Coalition government in 2013. Prior to that, nbn was rolling out a fixed line network using fibre-to-the-premise technology.

1.28 The shift away from FTTP was informed first by the Strategic Review (December 2013), and then by the subsequent Vertigan review (October 2014), which argued there was some prospect that an FTTP network would be surplus to Australia's broadband needs and would, therefore, represent a waste of capital expenditure.

1.29 Under the *Migration Assurance Framework*, once an area is designated as Ready For Service (RFS), customers have 18 months to migrate to the NBN before the existing copper network is switched off. Fixed line broadband services will replace existing landlines. A separate landline service will continue to be available on the copper network for NBN consumers on fixed wireless and satellite services.

1.30 As the wholesaler, nbn has a number of responsibilities including to build and operate the network, ensure open access to the network through non-discriminatory treatment of retailers, regulate wholesale access prices, and provide public information about migration responsibilities.

1.31 RSPs are the first point of contact for individual and business customers. RSPs are responsible for setting retail prices and selling services to the public, as well as providing equipment such as modems.⁵

4 Source: adapted from *nbn 2017 Corporate Plan* (pp. 12-13) and nbn *The nbn Multi Technology Mix (MTM)*, <http://www.nbnco.com.au/learn-about-the-nbn/network-technology.html>.

1.32 The delivery of the NBN rollout requires a major transformational change in the telecommunications industry. In order to facilitate this transformation and enable a competitive market, a range of regulatory and oversight mechanisms have been established. An overview of these activities is provided in the next section.

Department of Communications and the Arts

1.33 The Department of Communications and the Arts (the Department) advises the Government about ensuring that all Australians have access to high quality, reliable and affordable internet services. The Department has a key oversight role to monitor the activities of the NBN rollout.⁶

1.34 As one of the shareholder departments (as well as the Department of Finance), the Department provides government with an independent assessment and advises government on nbn's Corporate Plan.⁷

Australian Competition and Consumer Commission

1.35 The Australian Competition and Consumer Commission (ACCC) has a number of regulation responsibilities in accordance with the *Competition and Consumer Act 2010*, including determining the terms and conditions of access to services provided over the NBN, and publishing and maintaining explanatory material about the non-discrimination obligations that apply to nbn.⁸

1.36 The nbn Special Access Undertaking (the SAU) is a key part of the regulatory framework that governs the prices that nbn, as a wholesale open access telecommunications network, can charge for the services it supplies to RSPs, as well as other terms.

1.37 The SAU is considered and approved by the ACCC. The current SAU was accepted by the ACCC in December 2013 following an assessment and consultation process.

1.38 The SAU works in conjunction with the Wholesale Broadband Agreement (WBA). The SAU will shape price and non-price terms until 2040, while the WBA is a commercial contract between nbn and its customers, and currently has a standard term of 2 years.

1.39 The ACCC issues industry guidance to assist RSPs to comply with their legal obligations under Australian Consumer Law. Building on the industry guidance for

5 nbn, *The network explained*, <http://www.nbnco.com.au/learn-about-the-nbn/how-the-network-comes-together.html> and nbn, *How your broadband gets to you*, <http://www.nbnco.com.au/learn-about-the-nbn/how-the-nbn-network-gets-to-you.html>.

6 Department of Communications and the Arts, *What we do*, <https://www.communications.gov.au/what-we-do>.

7 Mr Andrew Madsen, Assistant Secretary, Broadband Implementation Branch, Department of Communications and the Arts, *Proof Committee Hansard*, 1 August 2017, p. 24.

8 Australian Competition and Consumer Commission, *National Broadband Network (NBN)*, <https://www.accc.gov.au/regulated-infrastructure/communications/national-broadband-network-nbn>.

RSPs it issued in 2007 and 2011, in February 2017 the ACCC published the [*Broadband Speed Claims—consultation outcomes report*](#) summarising the outcomes of its 2016 consultation about advertising of retail fixed-line broadband speeds.

1.40 The Broadband Speed Claims report included principles to guide RSPs in informing consumers of the speeds that they typically deliver on their broadband plans:

1. Consumers should be provided with accurate information about typical busy period speeds that the average consumer on a broadband plan can expect to receive.
2. Wholesale network speeds or theoretical speeds taken from technical specifications should not be advertised without reference to typical busy period speeds.
3. Information about the performance of promoted applications should be accurate and sufficiently prominent.
4. Factors known to affect service performance should be disclosed to consumers.
5. Performance information should be presented in a manner that is easily comparable by consumers, for example by adopting standard descriptive terms that can be readily understood and recognised, and
6. RSPs should have systems in place to diagnose and resolve broadband speed issues.⁹

1.41 On 21 August 2017, the ACCC released detailed industry guidance on implementing its six principles concerning the marketing of broadband speeds. Further detail is provided in Chapter 5 of the report.

1.42 On 23 March 2017, the committee wrote to the Minister for Communications asking whether the Government was intending to support and resource the Broadband Performance Monitoring and Reporting Program (BPMR) proposed by the ACCC.

1.43 On 24 March 2017, the ACCC appeared before the committee at a public hearing in Canberra and gave evidence about the successful 2015 trial of a broadband speed monitoring program which had since been proposed as the BPMR to the government.

1.44 On 7 April 2017 the Minister for Communications, Senator the Hon. Mitch Fifield, announced that the ACCC would be implementing the BPMR program.

1.45 Evidence received about the regulatory responsibilities of the ACCC will be discussed in further detail in Chapters 5 and 7 of the report.

9 Australian Competition and Consumer Commission, *Broadband Speed Claims—Consultation outcomes report*, February 2017, p. 1.

Australian Communications and Media Authority

1.46 The Australian Communications and Media Authority (ACMA) is an independent statutory authority tasked with ensuring most elements of Australia's media and communications legislation, related regulations, and numerous derived standards and codes of practice operate effectively and efficiently, and in the public interest.¹⁰

1.47 With respect to its telecommunications role, the ACMA administers and enforces rules for all businesses in the telecommunications industry. These rules may be technical in nature and relate to operational activities (such as building infrastructure) or consumer focused with respect to the relationship between consumers and RSPs.

1.48 The ACMA described their activities in relation to the NBN:

To date, the ACMA has supported the NBN rollout by planning and allocating spectrum and licenses for satellite and fixed wireless services, through making or registering various code based rules that apply to participants in the industry, by providing information on the NBN via our website, by focusing our Telecommunications Consumer Protections Code compliance work on issues that we see have a real NBN relevance and also by conducting research.¹¹

1.49 Furthermore, on 1 August 2017, the ACMA advised its intention to commission research to examine the current consumer experience before, during and after migration to the NBN.¹²

1.50 This research will update and build on research published in 2016 titled *Migrating to the NBN—The experience of Australian consumers*, but will be the first survey of customer experience of the multi-technology mix. The 2016 research focused exclusively on FTTP connections, and found that three-quarters of residents connected to the NBN within three months of a service being becoming available and eight in 10 businesses connected within six months. The 2016 report also found that consumers would have a more positive service experience if further information was made available about: (a) how to get connected, (b) when the NBN is available in an area, and (c) the effect of connecting on landline and other services.¹³

1.51 Additionally, the ACMA will also collect information from businesses across the NBN supply chain. Twenty one industry participants including retailers, wholesale providers and nbn will receive notices seeking a range of data on issues such as fault

10 Australian Communications and Media Authority, *Introduction to the ACMA*, <http://www.acma.gov.au/theACMA/About/Corporate/Authority/introduction-to-the-acma>.

11 Ms Jennifer McNeill, General Manager, Content Consumer and Citizen Division, Australian Communications and Media Authority, *Proof Committee Hansard*, 1 August 2017, p. 9.

12 Ms Jennifer McNeill, General Manager, Content Consumer and Citizen Division, Australian Communications and Media Authority, *Proof Committee Hansard*, 1 August 2017, p. 9.

13 Australian Communications and Media Authority, *Migrating to the NBN, The experience of Australian consumers*, December 2016, p. 1.

handling, connection timeframes, appointment keeping, telephone number porting, and more.¹⁴

Communications Alliance

1.52 The Communications Alliance is the telecommunications industry association and has both an advocacy and co-regulatory role. The Communications Alliance engages with industry and nbn on a range of matters and coordinates nine working parties and committees to develop industry codes, guidelines and standards, 'with an overall objective to assist in facilitation the effective rollout of the NBN'.¹⁵

1.53 In consultation with the Department, the ACCC, ACMA and the TIO, the Communications Alliance has developed an online broadband education package to assist the community to make more informed choices when choosing broadband services.¹⁶

Australian Communications Consumer Action Network

1.54 The Australian Communications Consumer Action Network (ACCAN) is the peak communications consumer organisation representing individuals, small businesses and not-for-profit groups as consumers of communications products and services. ACCAN receives funding from the Commonwealth Government under section 593 of the *Telecommunications Act 1997*. This funding is recovered from charges to telecommunications carriers.¹⁷

1.55 In addition to ACCAN, the committee notes there are a number of organisations representing and advocating for consumers with respect to the NBN. Evidence about the consumer experience will be discussed in Chapter 3.

Telecommunications Industry Ombudsman

1.56 The TIO is an independent dispute resolution service for the telecommunications industry. The TIO does not regulate or monitor the performance of the NBN rollout.

1.57 In its submission, the TIO explained its activities in relation to complaints about services delivered over the NBN:

In the context of services delivered over the NBN, the TIO records and resolves complaints between consumers and their retail service providers, based on the consumer's contract for the provision of services. The TIO also

14 Senator the Hon. Mitch Fifield, Minister for Communications, Turnbull Government bolsters NBN customer experience program, *Media release*, 1 August 2017.

15 Communications Alliance, *Submission 11*, p. 1.

16 Mr John Stanton, Chief Executive Officer, Communications Alliance, *Proof Committee Hansard*, 23 June 2017, p. 33.

17 Australian Communications Consumer Action Network, *About ACCAN*, <http://accan.org.au/about>.

resolves complaints against NBN Co Ltd (nbn) for certain issues such as entry onto land and property damage.¹⁸

1.58 As well as resolving individual complaints, an additional function of the TIO is to undertake investigations of systemic issues it identifies with a particular provider or providers.¹⁹

1.59 The investigation and resolution of complaints received by the TIO with respect to NBN services will be explored in more detail in later chapters of the report.

Statement of Expectations

1.60 In addition to the legislation outlined above, nbn must also have regard to the Statement of Expectations issued by Shareholder Ministers. The Statement of Expectations provides guidance to nbn 'to help ensure its strategic direction aligns with the government's objectives for the delivery of the network'.²⁰ The Statement of Expectations is updated as required to reflect any ongoing decisions made by the Government. The current Statement of Expectations was issued on 24 August 2016 with previous statements issued on 8 April 2014, 24 September 2013 and 20 December 2010.

18 Telecommunications Industry Ombudsman, *Submission 115*, p. 6.

19 Telecommunications Industry Ombudsman, 'Systemic Issues', <https://www.tio.com.au/about-us/policies-and-procedures/systemic-problem-investigation>.

20 *Statement of Expectations*, 24 August 2016, p. 1, accessible at: <https://www.communications.gov.au/file/19556/download?token=Q7Pg2NPu>.

Chapter 2

NBN Rollout Progress

Introduction

2.1 This chapter provides an overview about the current status of the National Broadband Network (NBN) rollout, drawing on information from the nbn *Corporate Plan 2017*, *Corporate Plan 2018-21* and other reports published by nbn. With particular reference to the Statement of Expectations, the chapter also outlines the evidence received about progress of the rollout, activations rates, and planning and prioritisation of the rollout.

Stated goals of the rollout

2.2 nbn's Statement of Expectations, issued by the two Shareholder Ministers on 24 August 2016, outlines the overarching policy objectives for the rollout of the NBN:

The Government is committed to completing the network and ensuring that all Australians have access to very fast broadband as soon as possible, at affordable prices, and at least cost to taxpayers. The Government expects the network will provide peak wholesale download data rates (and proportionate upload rates) of at least 25 megabits per second to all premises, and at least 50 megabits per second to 90 per cent of fixed line premises as soon as possible. nbn should ensure that its wholesale services enable retail service providers to supply services that meet the needs of end users.

To achieve these objectives nbn should roll out a multi-technology mix network and build the network in a cost effective way using the technology best matched to each area of Australia. nbn will ensure upgrade paths are available as required.¹

2.3 According to nbn's *Corporate Plan 2018-21*, nbn's key goal is to activate 8.6 million homes and businesses to the NBN by 2021, with a Ready for Service (RFS) footprint of 11.7 million premises.² The estimated number of RFS premises by the end of FY2020 has been revised downward by 0.3 million from the figure included in the *Corporate Plan 2017*.³

2.4 On 1 August, representatives of the Department of Communications and the Arts (the Department) stated:

In the government's statement of expectations to the company, the parameters that have been set—which the company is designing its network to comply with—are the delivery of 25 megabits per second to all Australians, and the availability of 50 megabits per second or more to 90

1 *Statement of Expectations*, 24 August 2016, p. 1.

2 nbn, *Corporate Plan 2018-21*, p. 36.

3 nbn, *Corporate Plan 2017*, p. 19.

per cent of the fixed line network. They are the firm parameters in the statement of expectations.⁴

2.5 It is interesting to note that in answers to questions on notice, nbn has advised that 35 per cent of FTTN premises are getting 50 megabits per second or less.⁵ If this ratio is extrapolated it will ultimately equate to 1.61 million premises and means that 15 per cent of the 10.7 million fixed line premises will receive 50 megabits per second or less. On that basis the network will not comply with the government's Statement of Expectations.

2.6 This forecast is based on an assumed take-up rate across residential and business areas by 30 June 2020 to be at approximately 70 per cent which is a greater take-up rate than is currently being met across all platforms. The *Corporate Plan 2017* notes that full take up is constrained by factors such as: proportion of people requiring mobile-only products, vacant premises and fibre alternatives. nbn also forecasts that beyond financial year 2020 (FY20), take-up rate will increase to 73 – 75 per cent.⁶

Status of the rollout

2.7 nbn publishes data about the NBN rollout in weekly progress reports, annual reports and corporate plans. The progress of the rollout is primarily monitored in two ways:

- number of premises Ready For Service (RFS)—premises passed by the active NBN and are available for connection by consumers; and
- number of activations—premises where a customer has signed up to an NBN service.

2.8 This next section provides information about the status of the rollout, using RFS and activation figures as published in the *Corporate Plan 2017, Half Year Report 2017, Third Quarter Results, Full year results 2017* and *Corporate Plan 2018-21*.

Rollout progress to 30 June 2016

2.9 nbn's *Corporate Plan 2017* reported figures for financial year 2016 (1 July 2015 to 30 June 2016):

- Cumulative figures to the end of financial year 2016 (FY2016):
 - 2,893,000 premises categorised as RFS; and
 - 1,099,000 premises activated.
- Annual figures for financial year 2016:

4 Mr Andrew Madsen, Assistant Secretary, Broadband Implementation Branch, Department of Communications and the Arts, *Proof Committee Hansard*, 23 June 2017, p. 30.

5 Budget Estimates 2017-18 Answers to questions on notice, provided to the Senate Environment and Communications Legislation Committee, Question 213, available at http://www.aph.gov.au/Parliamentary_Business/Senate_Estimates/ecctte/estimates/bud1718/CommunicationsandtheArts/index. nbn noted that these speed distributions are as at 18 June 2017, based on all active FTTN services where data had been successfully collected.

6 nbn, *Corporate Plan 2017*, pp. 39-40.

- 1,700,000 premises categorised as RFS; and
- more than 600,000 premises activated.

Projections for Financial Year 2017

2.10 The *Corporate Plan 2017* included projections for rollout progress at the end of Financial Year 2017 (FY17) and until the end of the rollout in 2020. According to the nbn projections, a total 5.4 million premises would be RFS and 2.3 million premises activated by the end of FY17.⁷

2.11 The number of premises RFS and activated would vary across technology type, as detailed in Table 2.1.

Table 2.1: Premises Ready for Service and activated—technology type⁸

	Premises RFS – cumulative (millions)		Premises activated – cumulative (millions)	
	FY16 (A)	FY17	FY16 (A)	FY17
FTTP Brownfields	1.1	1.1	0.7	0.8
FTTP Greenfields	0.3	0.4	0.2	0.2
FTTN	0.7	2.1	0.1	0.9
HFC	0.0	0.9	0.0	0.1
Fixed Wireless	0.4	0.5	0.1	0.2
Satellite	0.4	0.4	0.0	0.1
Total	2.9	5.4	1.1	2.3

Note: (A) denotes actual figures from FY16

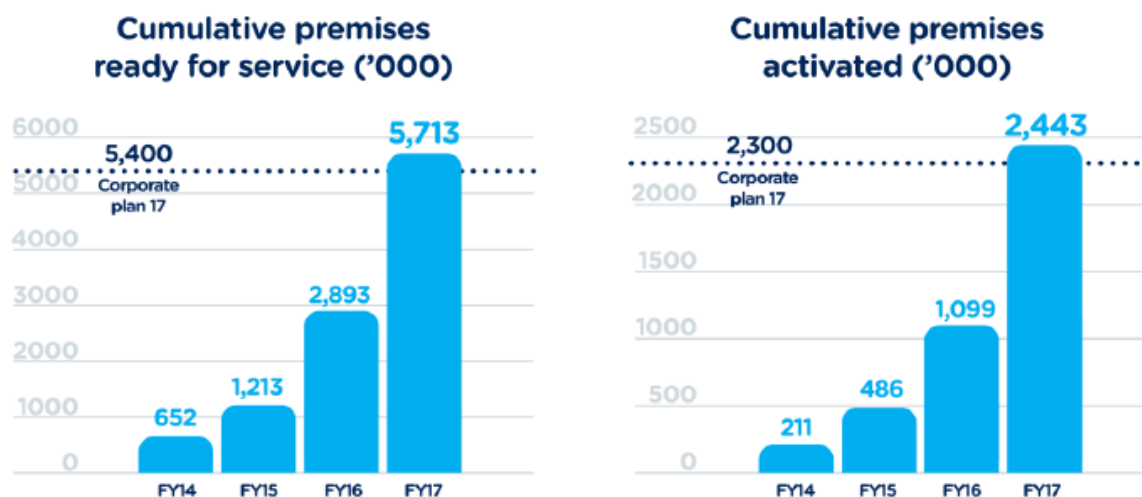
7 nbn, *Half Year 2017 Presentation*, 9 February 2017, <http://www.nbnco.com.au/content/dam/nbnco2/documents/nbn-financial-results-HY2017-presentation.pdf>.

8 Source: Adapted from nbn, *Corporate Plan 2017*, pp. 47 and 50.

Current figures—Rollout progress to 30 June 2017

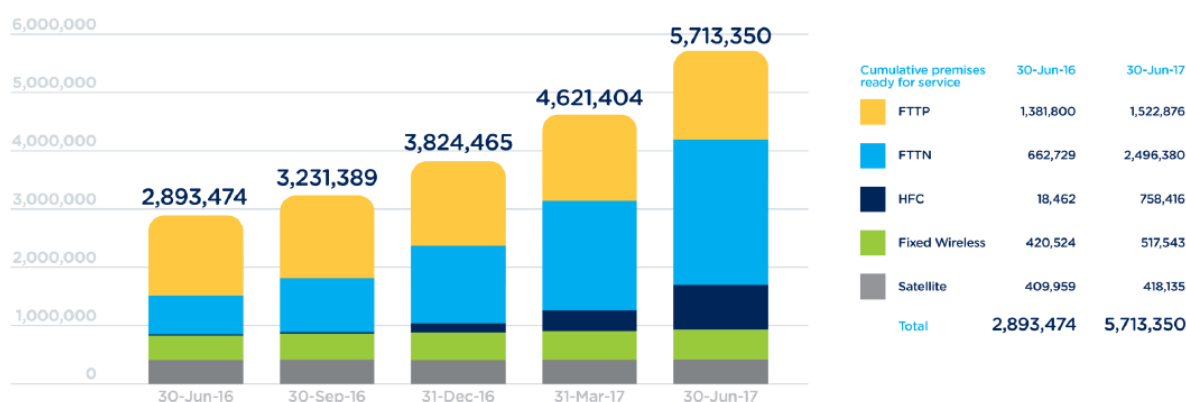
2.12 NBN rollout figures to the end of FY17 report that 5,713,000 premises are RFS and 2,443,000 premises have been activated. Figure 2.1 provides the cumulative RFS and activation figures for the 2014, 2015, 2016 and 2017 financial years as well as the projected figure included in the *Corporate Plan 2017*.

Figure 2.1: Cumulative premises RFS and activated⁹



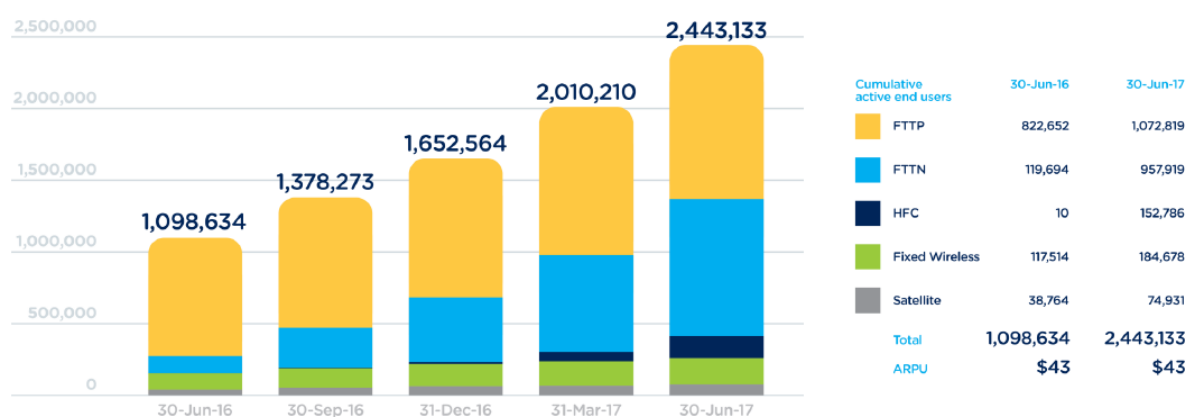
2.13 Figures 2.2 and 2.3 below provide the quarterly cumulative RFS and activation figures from the end of FY16 to the end of FY17 by technology.

Figure 2.2: Cumulative premises ready for service by quarter (by technology)¹⁰



⁹ Source: nbn, *Full year results 2017*, p. 6.

¹⁰ Source: nbn, *Full year results 2017*, p. 11.

Figure 2.3: Cumulative active end users by quarter (by technology)¹¹**Projections for Financial Year 2018 and beyond**

2.14 The *Corporate Plan 2018-21* includes projections for rollout progress for the end of Financial Year 2018 (FY18) and beyond. The number of premises RFS and activated would vary across technology type as detailed in Table 2.2 and 2.3.

Table 2.2–Premises Ready for Service by technology type¹²

	FY17(A)	FY18	FY19	FY20	FY21
Premises RFS - cumulative (millions)					
FTTP Brownfields	1.1	1.2	1.2	1.2	1.2
FTTP Greenfields	0.4	0.5	0.6	0.7	0.8
FTTN/B	2.5	3.8	4.5	4.6	4.6
FTTC	0.0	0.3	0.9	1.0	1.0
HFC	0.8	1.9	3.0	3.1	3.1
Fixed Wireless	0.5	0.6	0.6	0.6	0.6
Satellite	0.4	0.4	0.4	0.4	0.4
	5.7	8.7	11.2	11.6	11.7
Total % of initial build¹³	50%	76%	97%	100%	100%

Note: The numbers presented in this table correspond to the base case consistent with the ranges represented in Table 5 but may vary significantly over time.

11 Source: nbn, *Full year results 2017*, p. 9.

12 Source: nbn, *Corporate Plan 2018-21*, p. 36.

Table 2.3–Premises activated by technology type¹³

	FY17(A)	FY18	FY19	FY20	FY21
Premises Activated - cumulative (millions)					
FTTP Brownfields	0.8	0.9	0.9	0.9	0.9
FTTP Greenfields	0.2	0.3	0.4	0.5	0.6
FTTN/B	0.9	2.1	3.0	3.2	3.4
FTTC	0.0	0.0	0.3	0.6	0.8
HFC	0.2	0.7	1.8	2.3	2.3
Fixed Wireless	0.2	0.3	0.3	0.4	0.4
Satellite	0.1	0.1	0.2	0.2	0.2
	2.4	4.4	6.9	8.1	8.6

Note: The numbers presented in this table correspond to the RFS base case consistent with the ranges represented in Table 5 but may vary significantly over time.

2.15 At the public hearing in Canberra on 23 June 2017, the committee discussed with officers from the Department the risks to the project in terms of the rollout:

In terms of the rollout, the risks would relate to maintaining the run rate that the company has achieved. Over time, in order to reach its target of connecting all customers by 2020, the company has needed to increase the deployment rate it has achieved on a regular basis. It is now improving that run rate up to the point at which it is deploying to customers. Maintaining that high speed of deployment will be one of the key objectives of the company.¹⁴

Rate of activation

2.16 According to nbn, once an area reaches the disconnect date (that is, 18 months after it becomes ready for service), approximately 75 per cent of consumers able to connect to the NBN are connecting. The take up percentage is similar for FTTP and FTTN premises.¹⁵ At that point, a person who hasn't switched to the NBN would have no access to line broadband or an ADSL telephone connection, and could only be relying on mobile telephony and data.

2.17 However, at 30 June 2017, according to the *Corporate Plan 2018-2021*, there were 2.4 million activated premises out of the 5.7 million premises that are ready for service, which is an activation rate of only 42 per cent.¹⁶

13 Source: nbn, *Corporate Plan 2018-21*, p. 39.

14 Mr Andrew Madsen, Assistant Secretary, Broadband Implementation Branch, Department of Communications and the Arts, *Proof Committee Hansard*, 23 June 2017, p. 51.

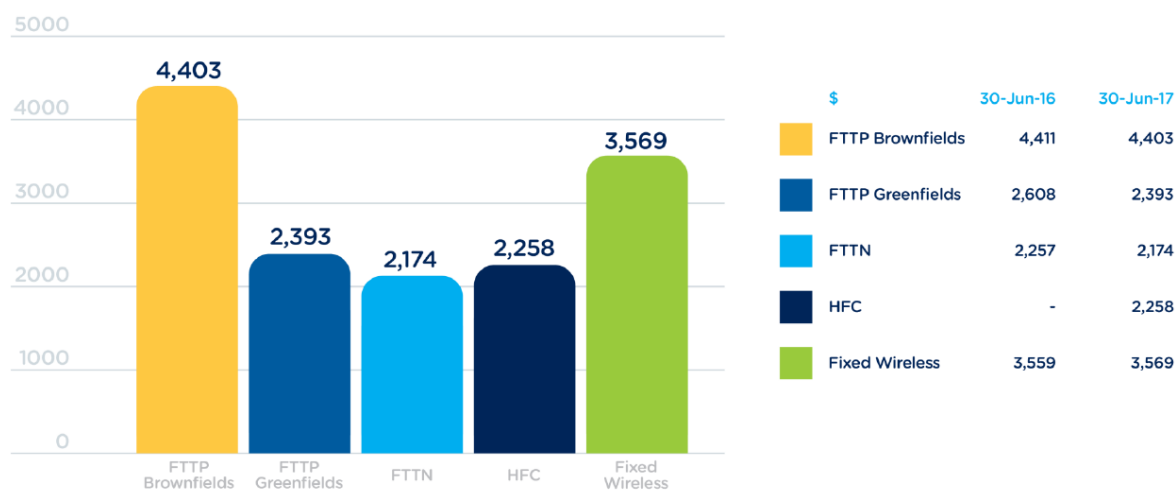
15 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, pp. 81–82.

16 nbn, *Corporate Plan 2018-21*, p. 39.

Cost per premise per technology

2.18 In the *Full Year Results 2017*, nbn reported the cost per premises for each technology for FY16 and FY17.

Figure 2.4: Cost per premises¹⁷



2.19 With respect to the cost per premise for FTTC, nbn advised the committee that the company estimates that the cost will be approximately \$2,800-\$2,900 per premise.¹⁸

Progress of rollout and revenue generation

2.20 In meeting the policy objectives outlined in the Statement of Expectations, nbn is required to 'operate its business on a commercial basis'.¹⁹

2.21 The committee heard evidence about the need for nbn to encourage take up, in particular on higher speed plans, in order to facilitate cost recovery and returning a profit. Mr Bill Morrow, Chief Executive Officer, nbn, stated:

Building a network quickly at a lower capital cost and bringing forward revenue has huge advantages not only for Australians getting a service sooner but also for the NBN in terms of the economics. We can use that revenue to fund future upgrades if and when the demand emerges.²⁰

2.22 Mr Andrew Madsen, Assistant Secretary, Broadband Implementation Branch, Department of Communications and the Arts also provided evidence about nbn's revenue:

There is a lot happening there in terms of how NBN produces revenue. Certainly the rate of the rollout and the period at which people sign up and then start paying costs to their retail service provider and that revenue is

¹⁷ Source: nbn, *Full year results 2017*, p. 13.

¹⁸ Mr Stephen Rue, Chief Financial Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 54.

¹⁹ *Statement of Expectations*, 24 August 2016, p. 1.

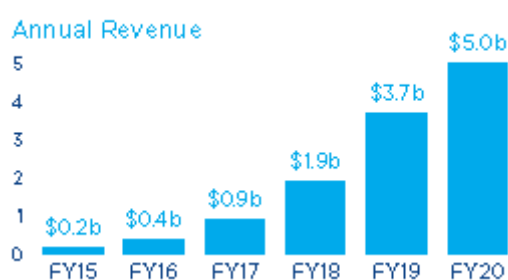
²⁰ Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 40.

then collected by the company is one factor. But at the same time the company is also developing new products, it is expanding the services it is providing into the business market, and also, as well as the level of activation increasing significantly, the other factor we are seeing is that there is more data being used by consumers and as a consequence more data that needs to be purchased by retail service providers. So the revenue per user is growing at the same time that the number of users on the network is growing as well.²¹

2.23 In the *Corporate Plan 2017*, nbn reported FY16 revenue of \$421 million which was a 157 per cent increase compared to FY15. nbn also projected that by FY20, revenue will have grown by 12 times compared to FY16, as shown in Figure 2.5 below.

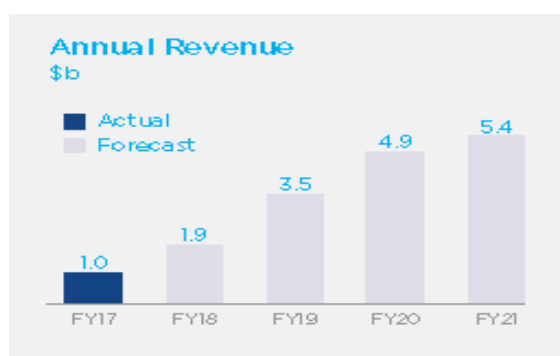
2.24 It is notable, however, that CEO Bill Morrow has publicly expressed concern about future revenue, and, in the *Corporate Plan 2018-21* the forecast revenue for FY19 is revised down to \$3.5b and the forecast revenue for FY20 is revised down to \$4.9b.²²

Figure 2.5: Revenue projection published in *Corporate Plan 2017*²³



2.25 The *Corporate Plan 2018-21* provides updated revenue projections.

Figure 2.6: Revenue projection published in *Corporate Plan 2018-21*²⁴



21 Mr Andrew Madsen, Assistant Secretary, Broadband Implementation Branch, Department of Communications and the Arts, *Proof Committee Hansard*, 1 August 2017, p. 30.

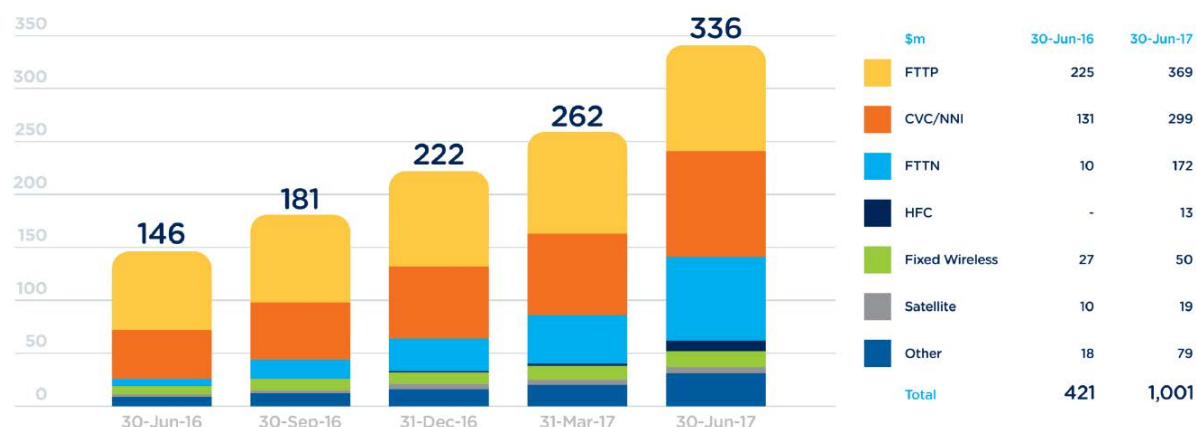
22 nbn, *Corporate Plan 2018-21*, p. 9.

23 Source: nbn, *Corporate Plan 2017*, p. 11.

24 Source: nbn, *Corporate Plan 2018-21*, p. 9.

2.26 In the *Full year results 2017*, nbn reported FY17 revenue of \$1,001 million which was a 138 per cent increase on FY16. Total revenue by quarter by technology is shown in Figure 2.7.

Figure 2.7: Total revenue by quarter (by technology type)²⁵



2.27 When asked to assess whether FTTN or FTTC deliver a higher net present value in terms of the incremental investment over the life of the asset, Mr Stephen Rue, Chief Financial Officer, nbn advised:

Without having figures in front of me, I would venture to say FTTN would, because, the quicker the revenue comes on board it enables us to upgrade as and when consumers are willing to pay more because they need higher speeds.²⁶

2.28 While a clear answer could not be given as to whether it was more costly in terms of capital expenditure to rollout FTTN and subsequently fund an upgrade, as opposed to delivering FTTC or FTTP at the outset, nbn CEO Bill Morrow suggested it would be more costly:

I think you've got to look at the full context of that. It would be silly for somebody to say that those two costs added together are cheaper, but it is an issue around where the cash flow management is coming from, or it should be.²⁷

2.29 Mr Morrow confirmed that nbn had not made provision for a network upgrade within the existing funding envelope.²⁸

²⁵ Source: nbn, *Full year results 2017*, p. 8.

²⁶ Mr Stephen Rue, Chief Financial Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 74.

²⁷ Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 54.

²⁸ Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 52.

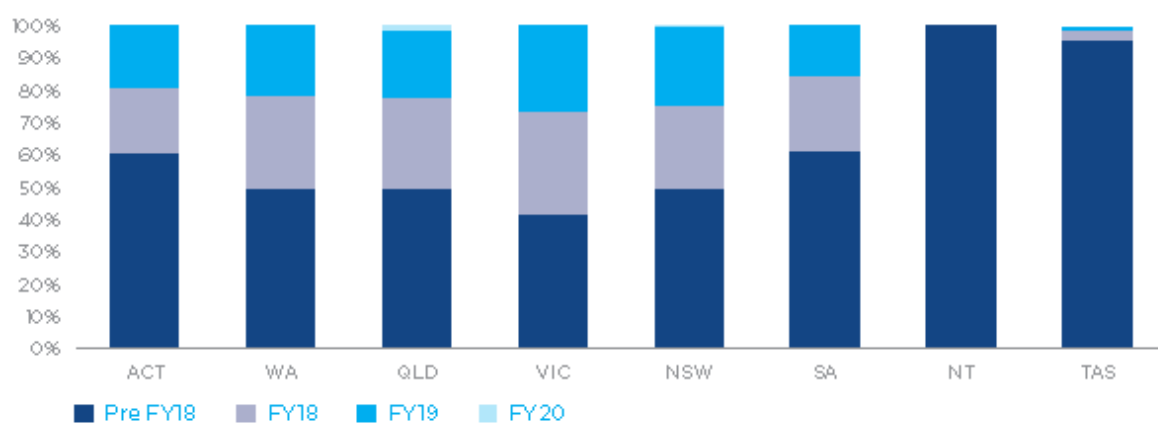
2.30 The committee heard evidence from a number of witnesses to the effect that the cost-per-premise of FTTP has decreased by as much as 40 per cent in the course of the rollout in other countries.²⁹ It appears the per premise cost that nbn attributes to FTTP has not changed since 2013.³⁰

2.31 Revenue projections with respect to upgrade pathways are discussed later in this chapter.

Progress of rollout by jurisdiction

2.32 Figure 2.8 below shows the progress of the rollout by jurisdiction as set out in the *Corporate Plan 2018-21*.

Figure 2.8–Progress of rollout by jurisdiction³¹



2.33 Evidence to the inquiry described variations in rollout progress and technology composition across jurisdictions.

2.34 The Northern Territory Government advised:

Looking at that in percentages of the population terms and comparing it to the rest of the Australian population: 93 per cent of the population nationally has a terrestrial connection, and it will be 65 per cent of the Northern Territory population; three per cent nationally have a fixed wireless connection, and it is going to be six per cent in the Northern Territory; and four per cent nationally have a satellite connection, and it will be 29 per cent of our population in the Northern Territory. That means for us that 71 per cent of the Northern Territory's population will receive high-speed, high-capacity broadband services and almost one-third of Northern Territory residents will need to rely on satellite services in the future.³²

29 Mr Kurt Rodgers, Network Strategy Manager, Chorus NZ, *Proof Committee Hansard*, 23 June 2017, p. 3. See also: Professor Rodney Tucker, *Committee Hansard*, 19 April 2017, p. 35.

30 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 66.

31 Source: nbn, *Corporate Plan 2018-21*, p. 38.

32 Ms Kathleen Robinson, Chief Executive, Department of Corporate and Information Services, Northern Territory, *Proof Committee Hansard*, 28 June 2017, p. 1.

2.35 In its submission the Queensland Government stated:

As at 16 February 2017 (the latest NBN Co. roll out information), 597,203 premises in Queensland have been declared Ready for Service by the NBN Co. and 270,132 (45 percent) premises have been activated using FttP, FttN and HFC technologies.

...

At 16 February 2017, 33 per cent of the premises covered by wireless in Queensland have been activated. The fixed wireless roll-out is reported to be generally reliable, and on, or ahead of schedule. The reported speeds are very close to what customers have been promised by service providers.

At 16 February 2017, 16 per cent of the premises covered by satellite in Queensland have been activated.³³

2.36 The ACT Government's submission to the inquiry expressed concern about the pace of the rollout in the ACT which is 'resulting in a rising degree of frustration from Canberra businesses and residents'. The submission noted:

As of 23 June 2016, NBN has rolled out its FTTN and satellite technology to 54,123 premises around the ACT, and by January 2017 around 42,000 premises had active NBN connections. This is an increase of just 22,000 premises over three years since December 2013. While these connections are a mixture of FTTN and FTTP technologies, it has been determined that FTTN technology will be used in future ACT NBN installations.³⁴

2.37 The South Australian Government submitted:

In a South Australian context, at the end of 2016, more than 308,000 premises had access to the NBN, of which 38 per cent (118,000 premises) have taken up an NBN service. While the take-up rate in SA is slightly lower than the national rate, it is pleasing to see that the rate of service availability in South Australia is on a par (32 per cent nationally versus 31 per cent in SA) with the national rollout after an initial slow start in this State.³⁵

2.38 The Western Australian Government provided evidence about the rollout in that state:

In the last few months, while the rollout has progressed in Western Australia, the take-up rate has dropped. From almost 42 per cent in April, it is now 39 per cent in July. In the same period, the number of homes rated as service class 0 has increased from 3.1 per cent to 4.7 per cent. Now over 23,000 homes are unable to get any services at all, and the number increases at around 2,000 homes per week.³⁶

33 Queensland Government, *Submission 21*, pp. 13 and 14.

34 ACT Government, *Submission 5*, p. 2.

35 South Australian Government, *Submission 102*, pp. 2–3.

36 Mr Andrew Cann, Chief Technology Officer, Office of the Government Chief Information Officer, Western Australia, *Proof Committee Hansard*, 17 July 2017, p. 46.

User demand, usage patterns and trends

2.39 In April 2017 the Australian Bureau of Statistics (ABS) released its Internet Activity Report for the three months to 31 December 2016, detailing the extent of internet connections in Australia:

There were approximately 13.5 million internet subscribers in Australia at the end of December 2016. This is an increase of 4.7% from the end of December 2015. Fibre continues to be the fastest growing type of internet connection in both percentage terms and subscriber numbers. The number of fibre connections increased to more than 1.4 million connections, which is an increase of 122% in the year between December 2015 and December 2016.³⁷

2.40 In terms of the volumes of data downloaded, the ABS found:

The total volume of data downloaded in the three months ended 31 December 2016 was 2.6 million Terabytes (or 2.6 Exabytes). This is a 23.3% increase in data downloads when compared with the three months ended 30 June 2016 and a 50.8% increase in the year between December 2015 and December 2016.

Data downloaded via fixed line broadband (2.5 million Terabytes) accounted for 98% of all internet downloads in the three months ended 31 December 2016.³⁸

2.41 Concurrently with the release of the ABS's Internet Activity Report, nbn also released information about downloads on the NBN. nbn noted that the average home was downloading 117GB per month, however:

Homes connected to services over the [NBN] are downloading around 144GB of data each month which is a 32 per cent year-on-year increase and around 1.2 times the national fixed-line average and 76 times the mobile average.³⁹

2.42 The committee received evidence from individuals and organisations about how they are using the NBN and the internet more broadly. Witnesses and submitters discussed activities such as internet banking, accessing government services,

37 Australian Bureau of Statistics, *Internet Activity*, December 2016, Type of Access Connection, available at: <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/8153.0Main%20Features1December%202016?opendocument&tabname=Summary&prodno=8153.0&issue=December%202016&num=&view=>.

38 Australian Bureau of Statistics, *Internet Activity*, December 2016, Volume of Data Downloaded.

39 nbn, 'NBN connected Aussies gobble up 23 per cent more data per year than the average home', *Media Release*, 5 April 2017, available at: <http://www.nbnco.com.au/corporate-information/media-centre/media-releases/nbn-connected-Aussies-gobble-up-23-per-cent-more-data-per-year-than-the-average-home.html>.

connecting with family and friends via social media as well as running a small business and completing school and university studies.⁴⁰

2.43 The Queensland Government submitted:

The NBN is also used for entertainment and recreation services such as downloading movies (e.g. Netflix, Foxtel), and this is sometimes dismissed as an inappropriate or unimportant usage of the NBN. However, just as the use of road and transport infrastructure for the purposes of entertainment or recreation is completely acceptable, use of the NBN for these purposes can be an important social good.⁴¹

2.44 The committee also received evidence that the community is increasingly using the NBN for uploading as well as downloading including: cloud based applications, such as accounting packages, agricultural and harvest recording as well as cloud storage.⁴²

2.45 Ms Louise Denoon, Executive Director, Regional Access and Public Libraries, State Library of Queensland, explained that a high volume of content at some libraries is accessed online:

... the State Library of Queensland, for instance, with its collections that it provides—that is different to public libraries—would be in the order of 90 per cent accessed online and digitally compared to using physical resources. It still means the libraries are very busy places where a lot happens, but accessing information happens, and people want it anytime, anywhere.⁴³

2.46 Further evidence about the utilisation of the NBN is discussed further in Chapters 3, 4 and 8 of the report.

Choice of plan

2.47 Consumers signing up to a NBN service are required to choose a service based on the speeds available for download and upload. This option has not previously been available on ASDL services. Table 2.4 shows the plan speeds currently available and the take up rate across fixed line, fixed wireless and satellite (as at 30 June 2016 and 30 June 2017).

40 See for example, Mr Andrew Russell, *Submission 148*, p. 2, Mr Andre Biganovsky, Business Technology Adviser, Plastyk Studios, *Proof Committee Hansard*, 27 June 2017, pp. 16–17, State Library of Queensland, answers to questions on notice, 6 April 2017, (received on 6 and 27 April 2017).

41 Queensland Government, *Submission 21*, p. 15.

42 Mr Bruce Bebbington, *Submission 151*, pp. 8–9.

43 Ms Louise Denoon, Executive Director, Regional Access and Public Libraries, State Library of Queensland, *Committee Hansard*, 6 April 2017, p. 3.

Table 2.4: Percentage of users on available speed tier plans⁴⁴

Speed tier mix (Mbps)	Fixed line		Fixed wireless		Sky Muster	
	30/6/16	30/6/17	30/6/16	30/6/17	30/6/16	30/6/17
12/1	32%	29%	16%	16%	26%	34%
25/5	49%	53%	81%	78%	74%	66%
25/10	1%	1%	N/A	N/A	N/A	N/A
50/20	4%	4%	3%	6%	N/A	N/A
100/40	14%	13%	N/A	N/A	N/A	N/A

2.48 At the public hearing in Sydney, Mr Bill Morrow, Chief Executive Officer, nbn, emphasised that the majority of consumers are signing a contract for an NBN service on a plan for 25Mbps or less:

People say they would be happy with 25 [Mbps]. Remember, 30 per cent of the people on the network are only getting 12 and another 50 per cent are getting 25. And 25, typically, is sufficient for most.⁴⁵

2.49 When discussing the range of speed options available to consumers, Mr Morrow advised that the 12 Mbps product was never designed for broadband:

It was designed for a voice-based product in case somebody in a home says: 'I don't want to surf the internet over that network; I'll use my mobile device or nothing. I just want a phone service.' The 12-meg [Mbps] product was created for that. Now it's suddenly being used because it is cheaper than a 25 product, as this is your high-speed broadband NBN-enabled product out there, and I can actually have a lower cost because I'm only paying NBN \$24 a month for this versus \$27 to ratchet up to a 25 meg [Mbps].⁴⁶

Rollout timetable and prioritisation

2.50 The Statement of Expectations includes the following requirements for planning the rollout:

When planning the rollout, nbn should prioritise locations that are poorly served, to the extent commercially and operationally feasible. During the rollout, nbn should be guided by the following goals: service quality and continuity for consumers; certainty for retail service providers and construction partners; and achievement of rollout objectives as cost-

44 Adapted from: nbn, *Full year results 2017*, p. 10.

45 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 45.

46 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 47.

effectively and seamlessly as possible. nbn should apply the Government's new developments policy.⁴⁷

2.51 nbn estimates there are approximately 1.8 million premises that are underserved primarily located in regional and remote areas or in 'small pockets of poor service in metropolitan areas'.⁴⁸

2.52 The *Corporate Plan 2017* outlines nbn's planning approach:

The nbn planning approach determines which technologies are utilised on an area-by-area basis so as to minimise peak funding, maximise speed of rollout, optimise economic returns and enhance the viability of nbn. The multitechnology approach provides the flexibility for nbn to select the most cost-effective and efficient technology for each area. This leads to a faster rollout, which brings forward revenue and minimises funding requirements. The anticipated technology to be deployed in communities may change depending on a number of factors during the design and construction phase, and also as new technologies or processes emerge. Some areas may be serviced by multiple technologies.⁴⁹

2.53 In accordance with the Statement of Expectations, the NBN rollout is providing broadband services using a suite of technologies. nbn announced in 2016 that FTTC would be included in the rollout. A FTTC trial has commenced in Coburg, a suburb outside Melbourne, to test the construction and installation of FTTC deployment.

2.54 Since first announcing that FTTC would be added to the rollout, the number of premises slated to receive this technology has varied. During the committee's inquiry, nbn advised that approximately one million premises would receive FTTC by the time the rollout was completed in 2020.⁵⁰ The *Corporate Plan 2018-21* says that FTTC will be delivered to 1 million households.⁵¹

2.55 In the hearing on 1 August 2017, nbn CEO Bill Morrow acknowledged that a further 1 million households could receive FTTC for an additional capital expenditure in the order of \$1 billion.⁵²

47 The *Telecommunications infrastructure in new developments* policy (effective from 1 March 2015) sets out the Australian Government's revised policy on the provision of telecommunications infrastructure in new developments. The policy's fundamental objective is to increase efficiency and broaden choice in the provision of telecommunications in these areas by encouraging fair competition and ensuring some recovery of costs up front.

48 nbn, *Corporate Plan 2017*, August 2016, p. 49.

49 nbn, *Corporate Plan 2017*, p. 40.

50 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 53; See also: nbn, answer to questions on notice, 1 August 2017 (received 28 August 2017), Question No. 6, pp. 1–8 for a list of areas likely to be served with FTTC.

51 nbn, *Corporate Plan 2018-2021*, p. 44

52 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 77.

2.56 The Department emphasised that decisions about prioritising the rollout are made by nbn:

The company makes decisions about how to prioritise the rollout of the network....it does that based on guidance from the government, where the government asks the company to prioritise underserved areas and to design the network with the objective of managing cost and making the most effective use of technology and its resources. We see a number of regions write to the company or write to the government to ask a similar question about why one region is prioritised over another. I think the company has said that it is not possible to prioritise everywhere first; there have to be some decisions made about the order in which the rollout progresses.⁵³

Prioritising rollout locations

2.57 The committee received evidence questioning the prioritisation of rollout locations. For example, the ACT Government questioned whether the ACT rollout is being prioritised in the most equitable way:

NBN is currently installing FTTN networks in inner North Canberra as it is deemed 'not adequately served', even though these areas already possess NBN level internet speeds over the TransACT FTTN network. In comparison, parts of Canberra that receive internet speeds of less than 2Mbps are yet to appear on the NBN's rollout schedule.⁵⁴

2.58 In particular, the ACT Government is concerned that the current rollout schedule in Canberra does not adequately address the needs of the most technologically disadvantaged areas. The submission also noted:

...research indicates that a delay in NBN allocation for these areas will create increasing social and economic disparity compared to areas with priority access. For example, despite having some of the poorest broadband ratings in the country, ACT suburbs Monash and Theodore [in Tuggeranong] are not currently listed on the NBN rollout plan to commence construction prior to 2018.⁵⁵

2.59 The submission argued that the ACT is being de-prioritised in the NBN rollout due to the high quality of the existing TransACT high-speed broadband network. Furthermore, those areas of the ACT that are being prioritised for the rollout already have an existing good quality network:

53 Mr Andrew Madsen, Assistant Secretary, Broadband Implementation Branch, Department of Communications and the Arts, *Proof Committee Hansard*, 23 June 2017, pp. 60–61.

54 ACT Government, *Submission 5*, p. 2.

55 ACT Government, *Submission 5*, p. 2.

While some areas of TransACT have been purchased by NBN, the price of purchasing the entire network from TPG was not considered cost-effective. As a result, some areas of TransACT will be duplicated by the NBN network. As these areas already receive high quality internet connectivity, the resources for duplication would be more economically beneficial if reallocated to disadvantaged suburbs where it will provide a substantial upgrade compared to existing internet infrastructure.⁵⁶

2.60 Miss Lara Kirkwood, Vice President, Community of Aubin Grove stated that 'the NBN needs to be rolled out first to suburbs that have absolutely nothing or few services available to them'.⁵⁷ In relation to the question of different technology options, Ms Kirkwood said she believed people were prepared to wait for a better quality technology outcome:

Ideally, I think they would like it done properly the first time, so they would be more than happy to wait if the service was at its best. They don't want a service to be rolled out that's going to have issues, where they cannot connect to their home line and it's worse than ADSL. That's not going to achieve anything, even though there are still lots of people with absolutely no internet.⁵⁸

2.61 The State Library of Queensland advocated for prioritising the NBN rollout to Queensland public libraries and remote and rural communities to 'enable economic development and create opportunities to improve digital inclusion and literacy...'.⁵⁹

2.62 On many occasions, the committee heard testimony about the balance to be struck between delay and the quality of the technology rolled out, with the prevailing sentiment being 'Do it once; do it right'.⁶⁰

Availability of information about network planning

2.63 Several witnesses highlighted challenges to access information about the rollout and explained that the timetable could be confusing due to the frequency of changes.

2.64 Mr Andre Biganovsky, a business owner in Adelaide explained that a number of their business clients are optimistic about the NBN but are frustrated about the information available about the rollout schedule:

...I think a lot of them are looking at it from the point of view of: 'It will enable me to grow my business. I'll be able to transact more online. I'll be able to do more of this cloud based integration.' But a lot of them are obviously on ADSL, are hobbled and do not have a time frame, or it is

56 ACT Government, *Submission 5*, p. 3.

57 Miss Lara Kirkwood, Vice President, Community of Aubin Grove, *Proof Committee Hansard*, 17 July 2017, p. 21.

58 Miss Lara Kirkwood, Vice President, Community of Aubin Grove, *Proof Committee Hansard*, 17 July 2017, p. 24.

59 State Library of Queensland, *Submission 6*, p. 2.

60 See for example: Mr Darren Alexander, AuTech, *Proof Committee Hansard*, 25 July 2017, p. 42.

X years out and the date keeps changing. A lot of them are disappointed: 'The date's changed three or four times now; I don't even bother checking it anymore, because I'm afraid to see what it's going to say my delivery time frame is now for my NBN services'.⁶¹

2.65 The Western Australian Government submitted that rollout progress is difficult to track due to limited information:

Limited information and communication from NBN Co has made it difficult to track the progress of the overall rollout of the NBN. Perhaps the greatest example of this is the fact that the full three-year rollout plan for the NBN was removed from the NBN Co website in December 2016.⁶²

2.66 Mr Wayne Carter, Member, Morley Internet Action Group also highlighted challenges with information provided by nbn:

NBN's website is not particularly helpful in trying to get some details of what exactly is happening and when. It's fairly generic. I spent an hour or so looking at it last night just to refresh myself. There seemed to be more spin than substance in a lot of it. I understand it's probably a marketing tool in most cases, so you have to accept a bit of that.⁶³

Planning network upgrades

2.67 The Statement of Expectations specifies that 'nbn will ensure upgrade paths are available as required'.⁶⁴ Planning for upgrades to the network, with a particular focus on options to upgrade from FTTN, was discussed during the inquiry.

2.68 Internet Australia expressed concern about the feasibility of an upgrade pathway on FTTN:

There really isn't an upgrade path for FTTN, because the speeds are set by the location of the node towards the house. The speeds you can get on a copper line are dictated by the length of the copper line. The house isn't going to get up and move closer to the node, so the node has to get up and move closer to the house. So the upgrade process for fibre to the node is, effectively, to scrap the node, move fibre from the node further up the street towards the houses, and move into a fibre-to-the-curb type architecture, which is, essentially, a very small node DSLAM [Digital Subscriber Line Access Multiplexer]⁶⁵ located in the pit at the bottom of the driveway with a smaller number of ports but a much smaller run of copper from that node to the house. Because the length of the line is short, you can get faster speeds out of it.

61 Mr Andre Biganovsky, Plastyk Studios, *Proof Committee Hansard*, 27 June 2017, p. 24.

62 Western Australian Government, *Submission 180*, p. 4.

63 Mr Wayne Carter, Member, Morley Internet Action Group, *Proof Committee Hansard*, 17 July 2017, pp. 26–27.

64 *Statement of Expectations*, 24 August 2016, p. 1.

65 A DSLAM is a network device, usually at a telephone company central office, that receives signals from multiple customer Digital Subscriber Line (DSL) connections and puts the signals on a high-speed backbone line using multiplexing techniques.

For a fibre-to-the-node architecture, where the length of the copper run to a typical house is in the order of hundreds of metres—up to 400-odd metres before the technology becomes effectively unusable—there is little more prospect than anything more than a 30 to 40 per cent increase, at best, for people who are very close to the node if you were to change the flavour of VDSL [Very high bitrate Digital Subscriber Line]⁶⁶ cards in the node cabinet from one flavour to another. At the end of the day, you are limited by the length of the copper line from the node to the house and unless you move one of those you are not going to get a speed increase.⁶⁷

2.69 nbn refuted the evidence from Internet Australia that there is no upgrade pathway for FTTN:

We have looked at every one of the five different access technologies that we are employing in the multi-technology mix. In each one of them is a way to increase the speed and the volume of capacity to run over that network. Each one of them requires some additional capital cost to be able to go forward on it. Sometimes additional fibre is necessary. Sometimes additional electronics are necessary for each of these. And sometimes it is even tweaking the parameters to optimise the capability. We do that across the board.⁶⁸

2.70 Further to this, Mr Morrow also outlined some of the technical considerations with respect to upgrading FTTN:

There are a couple of variants in this. Firstly I think it is important to try and articulate the current architecture. From the big transit ring that is going around the nation that keeps the backbone there, fibre will go out to a neighbourhood entry point—and I'm over simplifying it for any of the techies who are going to want to make a point on this. At that point we stand up a piece of outdoor furniture, as we call it, which is a node. This is the cabinet that you see on the street. We run commercial power to the cabinet and we put electronics in it, which is the classic DSLAM for anybody who recalls that term. We then tap into the copper network that runs inside the house and we put a modem that decodes the signal that goes between that DSLAM and the house itself. The upgrade can come in the form of adding electronics to each side of that. As an option, there are a variety of G.fast, NG-fast and some other capabilities that are able to lift the speeds. Some countries—for example, BT has announced this in the UK—do a variety of these upgrades to get more speed out of it.⁶⁹

66 VDSL is a form of broadband internet that runs over existing copper phone lines.

67 Dr Paul Brooks, Vice Chair, Internet Australia, *Proof Committee Hansard*, 1 August 2017, p. 21.

68 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 42.

69 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 52.

2.71 On the question of what additional speeds might be made available using the upgrade pathway described above, Mr Morrow responded:

On those I was referring to, not much. That is a potential upgrade on a case-by-case basis. The bigger upgrade is pushing fibre further down the street. We talked about the micronodes, and I explained how, if you push fibre further down, you have a shorter copper distance, which raises your speed, and therefore you can get more speed out of it. The old nomenclature of fibre to the distribution point, or fibre to the curb, is the most worldwide common terminology for that. That has a micronode, which is even more micro, that serves four to six homes. That is usually in front of or very close to one's house, and you have even more fibre and shorter copper loop links that then carry that signal and push that speed up.

If you do an upgrade like that, when you put some G.fast electronics and some other technologies on it, essentially what we are talking about is that—what's the best way to answer your question on the 90 per cent having 50 or better? Take the four million homes that are slated for fibre to the node, with, let's call it, an average of 60 or 70 megabits per second, which is what we are seeing today. Those that are close to the node will have 100 megabits per second and those that are far from the node will have 25 megabits per second. The average of that is 60 megabits per second. But if you had fibre to the curb architecture in place, that would bump your average into the multiple hundreds of megabits per second.⁷⁰

2.72 When asked whether nbn has prepared a plan, including cost estimates, for a FTTC overbuild of the FTTN fixed line footprint, Mr Morrow advised the committee:

Holistically, no. But we are always looking...we are constantly asking: how can we reduce the cost of these more fibre intensive types of network architectures and reduce the time it takes to build them but still get the nation built early and keep the cost down so we don't require any more debt or taxpayer money? If we find solutions, like we have with fibre to the curb—as you recall, there was very little mention of that in the early plans a few years ago. Now we are putting fibre to the curb on a million homes, which is replacing some of the HFC and a lot of the planned FTTN circuits. They are now going to go on FTTC. We are always looking. I've thrown the gauntlet down to challenge the team: can we double that? Can we get two million homes on FTTC without changing the price and economics and which keeps the build in accordance with our current schedule?⁷¹

2.73 The committee also sought evidence from the Department about work undertaken by nbn on a cost estimate to upgrade the network:

NBN has factored that into its planning for the future rollout. When we [the Department] look at their corporate plan [for 2018] and how they anticipate that they'll meet the request from the government to be able to upgrade the

70 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 52.

71 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 52.

network over time, it incorporates consideration of what technologies they would use and the ability to transition to those technologies over time.⁷²

2.74 With respect to the feasibility of upgrading premises already identified to receive FTTN to instead receive FTTC, Mr Morrow outlined considerations such as additional cost, loss of revenue and delay in deployment.⁷³

2.75 When asked why nbn has not planned for more than one million premises to receive FTTC, Mr Morrow advised:

Economics, until we can find a way to get fibre to the curb even cheaper than we already have been able to reduce it and a faster deployment, even with the improvements that we've made in the speed of the deployment, and we're working towards that. Again, we have a challenge internal to NBN, saying, 'Let's bust through this and see if we can have more breakthroughs so we can put more fibre to the curb in the ground and still stay within the remit that the government has given us with the fastest and least cost and most upgradable path.'⁷⁴

2.76 With respect to wider deployment of FTTC, Mr Morrow observed that, whilst nbn are positive about the technology, a degree of caution is required:

I will say that, if in the future we find ways to improve speed and cost, you're going to see more fibre to the curb. I like the technology from what we've seen so far, but it's still early days. We should all be a little bit cautious that these distribution point units will be put in a footpath in a box in front of a house. We're going to do this in large quantities and we have to make sure that works properly. We're not completely out of the danger zone in terms of having the refinedness to ensure that it works carefully.⁷⁵

International comparisons with the NBN rollout

2.77 A number of witnesses and submissions drew comparisons between the rollout of the NBN and the installation of fibre networks in other countries.

2.78 Representatives from Chorus NZ appeared at the public hearing in Canberra in June and explained the rollout of ultra-fast broadband in NZ:

Chorus are a publicly listed company on the New Zealand stock exchange. We are an open access, wholesale-only broadband infrastructure provider.

...

The ultra-fast broadband initiative is a pure fibre-to-the-home technology solution, which targets 75 per cent of population coverage by 2020. We are

72 Mr Andrew Madsen, Assistant Secretary, Broadband Implementation Branch, Department of Communications and the Arts, *Proof Committee Hansard*, 1 August 2017, p. 29.

73 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 57.

74 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 57.

75 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 58.

six years through a nine-year program and have completed 73 per cent of the build so far. The rural broadband initiative was about delivering broadband and mobile in rural New Zealand. That was completed in June 2016, and Chorus's involvement in that was expanding fibre-to-the-node coverage out to more than 95 per cent of the New Zealand population in rural areas.⁷⁶

2.79 Representatives of Chorus NZ made it clear that when the broadband technology being deployed allowed for higher speed, this was readily adopted by the community:

There are three or four really key points that we can see in the market. There is the demand for higher value capability plans. Right now, more than 90 per cent of new fibre connections are opting for 100 megabits per second or more. We do have one entry-level product that is a 30-megabit per second product, but now there are only two players in the market offering that. Pretty much the 100-megabit option is becoming the norm. It is now 56 per cent of our fibre base. We have also got residential gigabit banks, and there are about 13½ thousand gigabit connections in the country as well. This is being driven by demand in a highly competitive retail market. The fibre is actually at the same entry level price now as a basic copper connection and ADSL connection, so that is really helping to drive demand.⁷⁷

2.80 At the public hearing in Melbourne, Associate Professor Mark Gregory outlined the main advantage that he saw to the approach in New Zealand:

[The] key thing about the New Zealand approach is that Chorus [the wholesaler] actually goes into homes and does the connection right into the home. Chorus connects everything in the home to the system before it hands it over to the retail service provider.⁷⁸

2.81 It was brought to the committee's attention on a number of occasions that Australia's broadband speed performance is currently 54th in the world, and has continued to fall since 2013.⁷⁹

2.82 The submission by the ACT Government drew comparisons with a number of other countries:

In comparison to Australia's Multi Technology Mix approach, South Korea and Hong Kong utilise solely FTTP NBN networks and are at the forefront of the world's fastest internet connections. Similarly, nine US states are currently trialling FTTP infrastructure and have achieved gigabit

76 Mr Kurt Rodgers, Network Strategy Manager, Chorus NZ, *Proof Committee Hansard*, 23 June 2017, p. 1. The committee draws on comparisons with the New Zealand model in relation to specific aspects of the customer experience in Chapter 3.

77 Ms Rosalie Nelson, Head of Insights, Chorus NZ, *Proof Committee Hansard*, 23 June 2017, p. 2.

78 Associate Professor Mark Gregory, *Committee Hansard*, 19 April 2017, p. 15.

79 See, for example: City of Adelaide, *Submission 179*, p. 4; ACT Government, *Submission 5*, p. 1.

(1000 megabytes) transmission rates, over 100 times Australia's goal of 50mb. FTTP connections are preferred in New Zealand, Canada, France, and urban China, while even developing economies in India, Indonesia, South Africa, and Brazil are focusing on FTTP connections...⁸⁰

2.83 However, Mr John Stanton, Chief Executive Officer of the Communications Alliance, noted that it could be difficult to draw direct comparisons with other countries:

The challenges around the world are very different typically to that in Australia. I have heard the committee's discussion around the fact that New Zealand fits into Australia 29 times or thereabouts, and that is quite relevant when it comes to rolling out a ubiquitous, fast network right across the nation. But it is not just that; it is also about population density. If you look at some of the other countries around the world to which Australia tends to be compared and look at the population density—people per square kilometre—you see that in Singapore there are 7,800 people per square kilometre; in Hong Kong it is just under 7,000; in South Korea it is more than 500; in Japan it is 350; in the USA it is at 35; and in New Zealand, which we talk about a lot, the population density is 17. In Australia, it is a touch over three people per square kilometre. So here we are, a country the size of the USA with a very, very low population density trying to run a ubiquitous high-speed network and expecting it to create a commercial return. That is an incredible challenge.⁸¹

2.84 Mr Stanton continued:

Probably the only other Western developed economy that has a population density analogous to Australia is Canada, where it is 3.7 people per square kilometre. The Canadian experience in terms of where we are up to in broadband rollout for high-speed services is pretty similar to Australia's. The regulator there had a target of a minimum of 25 megabits per second downloads for 90 per cent of the population by the end of last year. They have recently revised that to a target of 50 down and 10 up by 2021. So you can see that in countries that share the same geographical challenges as us we are not miles away from their experience. Of course, Canada have taken a different route in terms of funding the broadband rollout there. They have recently announced a \$750 million fund to improve services in remote communities, where they have some of the same sorts of challenges as Australia.⁸²

80 ACT Government, *Submission 5*, p. 1.

81 Mr John Stanton, Chief Executive Officer, Communications Alliance, *Proof Committee Hansard*, 23 June 2017, p. 34.

82 Mr John Stanton, Chief Executive Officer, Communications Alliance, *Proof Committee Hansard*, 23 June 2017, p. 34.

Committee view

2.85 As specified in the Statement of Expectations, nbn is tasked with rolling out the NBN to 'provide peak wholesale download data rates (and proportionate upload rates) of at least 25 megabits per second to all premises, and at least 50 megabits per second to 90 per cent of fixed line premises as soon as possible'.

2.86 Evidence provided by nbn through the Senate Estimates process suggests this expectation is not being met, and on current indications there will be 15 per cent of households with fixed line NBN who will only receive 50 megabits per second or less.

2.87 The NBN is being rolled out ahead of schedule. nbn, in its *Corporate Plan 2017*, projected that by 30 June 2017, 5.4 million premises would be RFS and there would be 2.3 million activated premises. As reported in the *Full year results 2017*, these projections have been exceeded: 5.713 million premises are RFS and there are 2.4 million activated premises. There are approximately 100, 000 new premises RFS each week.

2.88 The committee notes the Statement of Expectations requires that an upgrade pathway be available. Evidence to the inquiry indicates that nbn is cognisant of the need for upgrade pathways, but regards such upgrades as being dependent on market conditions rather than a matter of fundamental infrastructure quality, and has made no specific provision in terms of planning or funding for any such upgrade.

2.89 All the evidence strongly suggests that speed and data requirements of Australian households and business will continue to grow rapidly. While nbn has outlined the framework they are working from to be able to deliver an upgrade as the market demands it, this 'user pays' approach runs the risk of creating a digital divide in which low socioeconomic areas with poor NBN are not upgraded because the demand and matching revenue will not meet the nbn upgrade model. As it stands, Australia will not be provided with a fast, affordable, ubiquitous, and fair broadband network.

2.90 The committee notes that much of the FTTN network will likely need to be substantially upgraded in the short term, and nbn has made it clear this will more costly than delivering a future-proofed technology (FTTC or FTTP) in the rollout phase.

Recommendation 1

2.91 The committee recommends that the Australian Government direct and enable nbn to complete as much as possible of the remaining fixed line network using FTTC at a minimum (or FTTP), and require nbn to produce a costed plan and timetable under which that would be achieved.

Recommendation 2

2.92 The committee recommends, in light of recent results and developments, that the Australian Government commission an independent audit and assessment of the long-term assumptions underpinning nbn's financial projections and business case as set out in the *Corporate Plan 2018-21*.

2.93 The committee notes the Statement of Expectations requires nbn to engage proactively with those in regional and remote Australia, who have historically been at

access disadvantage. The committee also notes that the NBN is designed to bridge the digital divide and deliver economic and social benefits for all Australians. Evidence provided through the submission and public hearing process suggests that regional and remote communities are amongst the least satisfied and most frustrated with their NBN experience, citing: changing technology mixes and rollout timeframes, missed and cancelled appointments, and lack of clarity of responsibility between RSPs and nbn. These factors are further compounded when geographic isolation means contractors are travelling hundreds of kilometres to address the same issue multiple times.

Recommendation 3

2.94 The committee recommends that the Australian Government direct nbn to establish a regional and remote reference group to support the rollout of the NBN in rural and remote Australia. The reference group would include consumer advocate groups and departmental representation from the Department of Communications and the Arts and the Department of Infrastructure and Regional Development. Business decisions that fundamentally change the nbn experience for the end user in regional and remote communities should be referred to the reference group for consideration and analysis as to whether the decision will result in nbn not meeting its responsibilities as outlined in the Statement of Expectations.

Chapter 3

Overview of the NBN Customer Experience

Introduction

3.1 A key focus of the committee during its first year of operation has been the experience of consumers in getting connected to the NBN and using these services. The committee has heard a broad range of evidence covering all aspects of the NBN consumer experience.

3.2 As the rate of the NBN rollout continues to rapidly increase, ensuring that customers are well informed about the implications and timing of the NBN rollout in their area, and have a hassle-free experience in transitioning to the NBN, will be critical to the overall success of the project.

3.3 This chapter examines the different aspects of the consumer experience, focusing in particular on common areas of complaint from consumers, as well as the current processes for resolving such complaints. Chapter 5 will then discuss possible improvements to enhance all aspects of the customer experience during the remainder of the NBN rollout.

3.4 The Department of Communications and the Arts (the Department) stated in evidence to the committee that it has four key areas of focus in relation to the NBN customer experience:

- Customers should have accurate information to make informed choices.
- Retailer and nbn systems and processes should be optimised to support consumers as they connect to a new NBN service.
- Consumers should receive a reliable service and get the plan they paid for.
- Clear processes should be in place to efficiently address consumer queries and complaints.¹

3.5 The committee has heard significant evidence about shortcomings in each of these areas as customers migrate to the NBN from other broadband services. The Australian Communications Consumer Action Network (ACCAN) provided a broad summary of these difficulties as follows:

It is fair to say that for a number of consumers the rollout has not been 'seamless'... [C]onsumers have reported confusion and encountered problems at every stage. From understanding how and when they will be affected, to choosing providers and plans, arranging connection, overcoming difficulties of complex connections, using the service, to finding causes and solutions to faults and outages; the span of issues is vast. Most of the concerns are not standard complaints about services, which

1 Department of Communications and the Arts, answers to questions on notice, 23 June 2017 (received 28 July 2017), question no. 9, p. 1.

would fall under the jurisdiction of the Telecommunications Industry Ombudsman. These are often problems that consumers are unsure who to go to for answers, or are unaware that there are answers. Consumers end up searching for answers from multiple sources or are passed between nbn, RSPs, local councils, federal and state parliamentarians, community groups and complaint handling bodies.²

3.6 These various issues are examined in turn in the remainder of this chapter.

Process of getting NBN services connected and established

3.7 The committee heard a wide range of evidence in relation to the processes associated with the migration of customers to NBN services. Representatives of the Department noted in May 2017:

[T]he customer experience on connecting to the NBN involves myriad aspects, and there are a number of things that could happen in that process that could cause some sort of issue that leads a customer to make a complaint or to be unhappy around their service.³

3.8 The Telecommunications Industry Ombudsman (TIO) noted in its submission that complaints relating to connection issues were the most prominent category of NBN-related issues in 2016, with 5,548 complaints on connection issues lodged in the calendar year (representing 41.4% of all NBN complaints).⁴

3.9 The TIO noted that in its 'connections' complaint category, 90 per cent of these complaint issues related to delays in the connection process, with key issues contributing to these delays including missed technician appointments, infrastructure, and the complexity of some installations.⁵

3.10 Figure 3.1, provided by the TIO, shows the rate of complaints about connection delay issues on NBN services versus the overall number of NBN-activated premises over time, showing a slight decrease in the rate of complaints relative to the number of activated premises since early 2016.

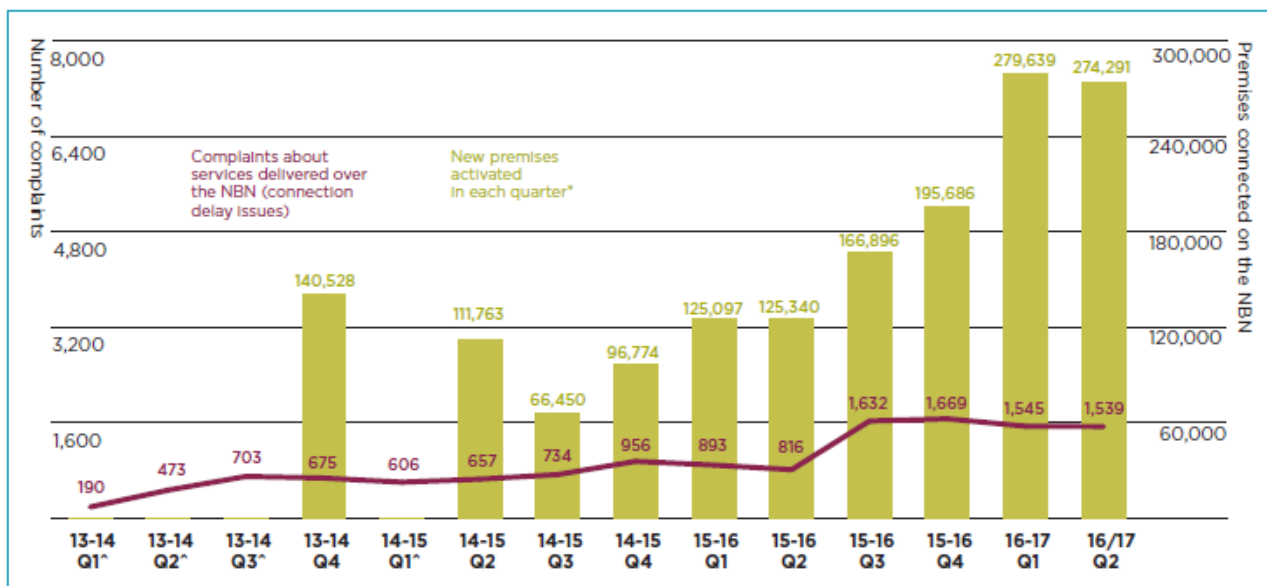
2 Australian Communications Consumer Action Network (ACCAN), *Submission 22*, p. 4.

3 Ms Mary Balzary, First Assistant Secretary, Infrastructure and Consumer Division, Department of Communications and the Arts, *Senate Environment and Communications Committee Estimates Transcript*, 24 May 2017, p. 13.

4 Telecommunications Industry Ombudsman, *Submission 115*, p. 10.

5 Telecommunications Industry Ombudsman, *Submission 115*, p. 11.

Figure 3.1 Connection delay complaints vs. number of newly activated premises per quarter⁶



Provision of information about the rollout and how to sign up to services

3.11 Some submitters argued that when the NBN rollout is active in an area, many customers still have very little understanding about what the NBN network is, how to get connected, how their existing services will be affected, and what their new NBN services will provide. Better Internet for Regional, Rural and Remote Australia (BIRRR) submitted that the NBN 'is a very complex network and initially there is a considerable amount of customer confusion about how to get connected'.⁷

3.12 ACCAN noted that switching services to nbn is not automatic, and that consumers have a number of responsibilities placed upon them in the switch over, including: informing themselves of the need to migrate; identifying equipment needed to migrate; and arranging and covering costs associated with any additional upgrading of wiring or end user premises equipment that may be required.⁸ ACCAN argued:

These can be near impossible tasks for some consumers. If a consumer does not understand these responsibilities they may be put in a vulnerable position. They may lose services altogether by failing to switch before the legacy network is switched off. Alternatively they may switch but their services may not work as they expected. Equipment such as handsets and medical alarms may not be updated, putting these services at risk.⁹

3.13 The Queensland Government noted in its submission that provision of clear information was particularly important for disadvantaged or vulnerable groups:

⁶ Source: Telecommunications Industry Ombudsman, *Submission 115*, p. 11.

⁷ Better Internet for Regional, Rural and Remote Australia, *Submission 101*, p. 28.

⁸ ACCAN, *Submission 22*, p. 10.

⁹ ACCAN, *Submission 22*, p. 10.

Information about how to sign up to the NBN in a range of formats such as easy English, Auslan, large print, and key languages, would greatly benefit people with a disability, people with literacy difficulties, people from culturally and linguistically diverse backgrounds, young people and older people.¹⁰

Confusion around role of nbn, subcontractors and RSPs during installation and connection processes

3.14 The committee heard evidence that the involvement of multiple parties during the installation and connection process (for example, nbn representatives, installers contracted by nbn or by contracted delivery partners, and RSP technicians and sales representatives) has the potential to cause considerable confusion among customers, particularly when there are delays or problems with the installation process. This is compounded by the fact that installation processes often vary depending on the technology type and location involved.

3.15 Ms Teresa Corbin, CEO of ACCAN, told the committee that these factors made it challenging for ACCAN to provide accurate advice to consumers who came to them with questions about the rollout process:

It makes it very, very difficult to explain it to the customer. We have had situations where people have reported to us that they had problems with their installation. They say that NBN Co came out with a few extra people who were from NBN Co, as well as the contractor. The contractor was wearing a vest that said 'NBN'. The report is that nothing can be done by the NBN; it is something that the retail service provider will have to solve. They went away, and later that day the same person with a different vest, a different van and a different logo rocked up and said, 'Okay, I'm the retail service provider for this half of the day. I've been contracted for that, and now I can fix the service.' For the customer, that is just so confusing.¹¹

3.16 Ms Jo Shannon, a representative from Rural Councils Victoria, related to the committee an example of a family that has experienced significant difficulties establishing their NBN connection, involving multiple missed appointments from technicians, incorrectly working modems provided by the RSP, and various periods without a functional landline phone or internet service. Ms Shannon described the confusion about responsibility between nbn and the RSP during the latter stage of this experience:

...Four weeks later the NBN man arrived and did something to the external connection, and they were back to having no phone and no internet. The matter was again escalated to the Telstra regional manager. Telstra advised it was an NBN issue, and NBN advised it was a Telstra issue. The customer ended up calling Telstra to be told again it is an NBN issue. During that call, they put NBN on hold and called Telstra and connected them up so there was a three-way conversation between all the parties to resolve the

10 Queensland Government, *Submission 12*, p. 7.

11 Ms Teresa Corbin, CEO, ACCAN, *Committee Hansard*, 19 April 2017, p. 5.

issue. There was still finger pointing about who is responsible—which party has responsibility for getting this service operational. That call was earlier this week and it is still not resolved...This is a simple connection to an NBN system, but now there is no internet and no phone.¹²

3.17 Ms Shannon argued that customers do not necessarily care who is involved in getting their service connected, but rather just want their service to work correctly:

When people commission a service they expect to get the service that was committed. When I connect to the electricity, I do not particularly care that there is an electricity generator, distributor and retailer; I just want electricity connected to my property. When I connect to water, I do not particularly care that there is a government water wholesaler and a separate retailer; I just want water to my property. It is the same with phone and internet. There needs to be a more seamless approach to providing what is now an essential utility for Australian families.¹³

3.18 Mr Andrew Connor, Spokesperson for Digital Tasmania, argued that at least in the initial connection phase, nbn had to take ultimate responsibility for getting services established:

There is, no doubt, a circle of blame that can exist between NBN and RSPs. They can be equally to blame. But, ultimately, the buck needs to stop with someone. The NBN Co is the one providing this network, ultimately, to the clients. The RSPs are not quite a dime a dozen, but there are 160 odd—at the last count that I saw. So the NBN does need to take this as the final stop. They need to make sure that connection works to the client—at least initially to get it going.¹⁴

Delays and other problems with installations

3.19 Various individuals and groups noted to the committee that significant delays and other problems can occur in a variety of circumstances during the NBN rollout to an area, causing significant impacts to individuals and businesses. Some individual examples are included in this section to illustrate the issues presented to the committee.

3.20 Mr Matthew Leggett, who operates a caravan park in Mansfield, Victoria, related his story to the committee attempting to get an NBN connection established at his business:

I made the biggest mistake in 15 years of operating my business in September, 2016, when I decided to contact my phone/ internet provider, Dodo, to ask about going to the NBN network.

12 Ms Jo Shannon, Secretariat, Rural Councils Victoria, *Committee Hansard*, 20 April 2017, p. 48.

13 Ms Jo Shannon, Secretariat, Rural Councils Victoria, *Committee Hansard*, 20 April 2017, pp. 48-49.

14 Mr Andrew Connor, Spokesperson, Digital Tasmania, *Proof Committee Hansard*, 25 July 2017, p. 61.

2 weeks later on the 29th September, 2016, my land line was turned off leaving me with no phone or internet services the day before a long weekend. We were fully booked that weekend and had no access to our booking system.¹⁵

3.21 Mr Leggett stated that problems arose in relation to his RSP not coordinating with NBN to ensure that both the NBN household box and the RSP modem were at the premises, and the RSP refusing to recognise that there were multiple residents living at the caravan park who needed separate addresses and connection points. Mr Leggett continued:

Over the next few weeks I spent hundreds of hours on the phone trying to solve the problem. NBN corporation would not talk to me saying I had to go through my phone provider. Dodo kept insisting that I had a NBN box and should plug into that. The Ombudsman took up the complaint but dropped it as 'resolved' when Dodo moved the matter to their NBN complaints office.

... For the last six months we have been using the neighbours internet to conduct our business. For weeks I had no eftpos facility until I worked out a deal with my neighbour to use their phone line each night to process credit cards....we could not offer any eftpos transactions through savings or cheque accounts to our customers. This continued for nearly 3 months until we were able to get a landline reinstalled to our office.¹⁶

3.22 Mr Leggett was then forced to change service providers in order to be able to keep his existing landline number, which he had used for his business for over 15 years. Unable to revert to an ADSL service, Mr Leggett then had to transfer to a third RSP to establish an NBN service, with the same issues that had arisen during the initial attempt to get connected subsequently recurring, before a connection was finally established in April 2017.¹⁷ Mr Leggett summarised his frustrations as follows:

I regret so much the initial phone call I made last September to enquire about this NBN thing. As a result I have had no phone line for 3 months, no eftpos facility for 3 months and no internet to my business for over 6 months.

It is impossible to work out how much business I have lost in that time due to lack of communications but my figures are down about 15% over that time.

I have had to spend hours every week on the phone (mobile) to resolve every issue as it has occurred. It would add up to well over 300 hours in the 6 months, which is 300 hours I could not spend operating the day to day needs of the business.¹⁸

15 Mr Matthew Leggett, *Submission 99*, p. 1.

16 Mr Matthew Leggett, *Submission 99*, p. 2.

17 Mr Matthew Leggett, *Submission 99*, p. 3; Mr Matthew Leggett, *Committee Hansard*, 20 April 2017, p. 59.

18 Mr Matthew Leggett, *Submission 99*, p. 3.

3.23 Mr Damian Ivereigh, CEO of Launtel, an internet service provider based in Launceston, commented that the process of connecting business clients to the NBN was often particularly problematic:

We found, particularly in the business world, that the large carriers spectacularly mismanage it, often leading to significant outages and downtime and businesses unable to receive calls. There's no question that is a big problem.

...

It's simply because...you have several different parts to the whole process. You have to think about phone systems. You have to think about IT systems. You have to think about alarm systems. You have to think about printing, faxing, photocopying and the like. All those integrate with the internet in some way or another. So there are easily three or four parties involved in this transition. It has to be carefully managed as to exactly what happens when, because if it's done in the wrong order then suddenly their phone won't work or whatever. Big telcos often are around saving costs. They try to do whatever they can not to engage with anybody else. They want to talk to the customer, and that's it, so they will come up with a solution that will work most of the time as long as the process is exactly followed and nothing goes wrong. We've had issues where NBN is scheduled to turn up for a particular date to do the install and they set the port date, which is the date that the telephone numbers get moved over from one network, on the same day. That makes sense, except that sometimes there are technical issues, NBN cannot complete, the port goes through and the number's now disconnected...[T]hat's a simple, obvious thing that we saw happening time and time again.¹⁹

Service class zero premises and provision of service to new estates

3.24 One issue discussed was nbn's practice of designating premises with complex or unusual installation features as Service Class 0 (or the related service classes 10 and 20)²⁰ and then leaving the installation at these premises until after other installations in the area have been completed, leading to delays of months or more for these premises to receive a service. Mr Mike Hendry, South West Independent NBN Adviser for Regional Development Australia-South West, argued at the committee's Perth public hearing that providing greater transparency about these premises would ameliorate some of the concern around this issue:

There is a need for greater transparency with service class 0 and service class 10 premises. Essentially with the rollout, for various reasons up to 10 per cent of each area does not go live when the rest of the community does so. The delay in getting these premises information and connection

19 Mr Damian Ivereigh, Chief Executive Officer, Launtel, *Proof Committee Hansard*, 25 July 2017, pp. 13–14.

20 Service Class 0 (SC0) relates to premises due to receive a FTTP premises, while SC10 is the equivalent class for premises in FTTN/FTTB areas and Service Class 20 is the equivalent for premises in HFC areas.

causes great concern across the community with this 10 per cent greatly reflecting on the performance of NBN. A slight upgrade to the ability of the website that NBN have that would show what the problem is and the projected remediation date would be a great help.²¹

3.25 ACCAN highlighted a separate issue that has arisen in some newly constructed housing estates where nbn is responsible for providing internet services. ACCAN pointed to an example where, due to delays in nbn's local network build, residents in a new estate were left for months without any internet connection, services, or knowledge about what was occurring.²²

Missed and delayed appointments

3.26 The committee heard evidence from individuals and groups about problems with technician appointments being missed, delayed or cancelled during the process of connecting NBN services, and when attempting to resolve faults in established services. Mr Andrew Conner of Digital Tasmania described situations 'where people book time off weeks in advance, stay home for the morning or afternoon, but see no-one rock up to install the NBN'.²³ The committee heard many examples of missed or cancelled appointments causing significant difficulties for individuals and businesses, in terms of lost time and money.²⁴

3.27 Mr Kenneth Knight, an artist residing on the Central Coast of NSW, provided one such example at a public hearing of the committee. Mr Knight stated that he had been left without an internet service between early November and late December 2016, having been forced to take up an NBN service due to his copper service being decommissioned.²⁵ The gap in service cost Mr Knight an estimated \$60,000 to \$70,000 in business during the busy pre-Christmas period. Mr Knight then experienced continuous problems with his internet connection during January and February 2017, before the connection was lost completely for almost a month in March 2017 before being re-established. Mr Knight told the committee:

I have spent an estimated 28 hours on the phone. The ineptitude, indecision and inaction by Telstra and NBN, particularly relating to unreturned phone calls and cancelled appointments, has been exasperating. I have felt a significant sense of hopelessness and frustration. From my experience, the

21 Mr Mike Hendry, South West Independent National Broadband Network Adviser, Regional Development Australia-South West, *Proof Committee Hansard*, 17 July 2017, p. 39.

22 ACCAN, *Submission 22*, p. 7.

23 Mr Andrew Connor, Spokesperson, Digital Tasmania, *Proof Committee Hansard*, 25 July 2017, p. 59.

24 See, for example: Mr John Banks, Chief Executive Officer, Port Augusta City Council, *Proof Committee Hansard*, 26 June 2017, pp. 1-2; Mr Andrew Cottrill, Team Leader Economic Development Team, Albury City, *Committee Hansard*, 20 April 2017, pp. 11-12; Mr Mike Hendry, South West Independent National Broadband Network Adviser, Regional Development Australia-South West, *Proof Committee Hansard*, 17 July 2017, p. 39; Mr Brett Smith, CEO, Cradle Coast Authority, *Proof Committee Hansard*, 26 July 2017, p. 5.

25 Mr Kenneth Knight, *Proof Committee Hansard*, 2 August 2017, p. 18.

wrong team was frequently sent out. NBN appointments were cancelled without explanation and with very short notice.²⁶

3.28 Mr Bill Morrow, Chief Executive Officer, nbn, stated publicly in June 2017 that 90 per cent of activated premises have the appointments met right the first time, leaving about 10 per cent of connections involving some form of missed appointment.²⁷ Mr Morrow advised that there were 82,552 missed appointments in total for the calendar year 2016.²⁸

3.29 Providing apparently contradictory information, nbn noted further that, as at 14 June 2017, the average rate of missed appointments due to nbn rescheduling in the course of the 2017 calendar year is 1 per 100 activations.²⁹

3.30 When asked about what requirements or guidelines are in place concerning how to deal with missed appointments, the Department stated:

Commercial agreements between NBN Co Limited (nbn) and retail service providers (RSPs) include processes and performance indicators relating to customer appointments.

nbn is working closely with RSPs on a strategic program of work to improve the quality of the consumer experience. This program includes working with delivery partners to increase the number of appointments where installation is completed on the first visit and a strategy to ensure timely communication with customers.³⁰

3.31 As these commercial agreements between nbn and RSPs do not create any contractual rights or obligations that are of benefit to end-users, the solutions and remedies have been difficult for consumers to pursue and obtain. This is a systemic shortcoming that is only likely to be cured by effective regulation.

3.32 Mr Morrow advised at a public hearing of the committee in August 2017 that nbn is actively working with RSPs to improve installation processes and will continue to collaborate on these issues:

[There] is a vast amount of collaboration between us and the retailers around how we can each perfect our processes for a better installation experience—whether it is the time between when a consumer orders the service and when it actually gets installed, missed appointments or the

26 Mr Kenneth Knight, *Proof Committee Hansard*, 2 August 2017, p. 18.

27 Mr Bill Morrow, Chief Executive Officer, nbn, *Senate Environment and Communications Committee Estimates Transcript*, 15 June 2017, p. 39.

28 Mr Bill Morrow, Chief Executive Officer, nbn, *Senate Environment and Communications Committee Estimates Transcript*, 15 June 2017, p. 39.

29 Budget Estimates 2017-18 Answers to questions on notice, provided to the Senate Environment and Communications Legislation Committee, Question 274, available at http://www.aph.gov.au/Parliamentary_Business/Senate_Estimates/ecctte/estimates/bud1718/CommunicationsandtheArts/index.

30 Department of Communications and the Arts, answers to questions on notice, 1 August 2017 (received 16 August 2017), Question 13, p. 1.

length of time it takes to get that up and working. The issues are both related to NBN processes and retail processes. This is where we are saying we should collaborate and figure out new ways of doing things so we can make it better overall for the end-user.³¹

3.33 Mr John Stanton, Chief Executive Officer of the Communications Alliance, contended that the customer migration process is still working well overall, given the scale and complexity of the rollout:

Please try to recognise that creating a new network and migrating a nation to it is one of the most complex and disruptive activities you could hope to undertake in the telco space. The vast majority of times, that process is working well and is delivering a reasonable result to consumers—typically a much improved result. In an environment where you have got so many moving parts and so many potential points of failure—some of them within the control of NBN Co, some of them within the control of RSPs, some of them within the control of the consumer—there will always be points at which it is hard to diagnose the nature of a problem. I think everybody who is a stakeholder here recognises the need to get better at that and to minimise the number of instances in which those difficulties are occurring. But you will never eliminate them completely. Such is the nature of an operational rollout.³²

Installation standards

3.34 Mr Michael Schuman, Chief Information Officer at Townsville City Council, said the quality of service appeared to be dependent on the subcontractor installing the last connection point. He gave evidence about the inconsistent and sometimes substandard quality of work by some NBN sub-contractors:

That last bit of connectivity from where it hits your premises to where it terminates at the box inside your home is all done by subcontractors. We have had reports that the quality of those subcontractors is shoddy. I personally had a couple of lovely young blokes come into my house and do an amazing job, very neat and very tidy, but then I can go to somebody else's house and see galvanised staples, where they have taken a piece of optical fibre and stapled it to the side of the house to get it in. Now, any time you are working with optical fibre, that is a delicate operation; stapling is not advised in the first instance, not to mention that it is very untidy and there are all kinds of opportunities for that to lead to quality issues.³³

3.35 Mr Keith Green, the manager of Arid Land Communications, provided photographic evidence to demonstrate poor workmanship following weekend installations down his main street:

31 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 42.

32 Mr John Stanton, Chief Executive Officer, Communications Alliance, *Proof Committee Hansard*, 23 June 2017, p. 37.

33 Mr Michael Schuman, Chief Information Officer, Townsville City Council, *Committee Hansard*, 7 April 2017, p. 2.

If you have a look there [at supplied photographs], you have exposed cables, you have conduit doing really weird things, you have penetrations of asbestos and you have a cable box mounted at chest height with the cables exposed where they can just be grabbed by anybody.³⁴

3.36 Other witnesses mentioned that the location of the installation was sometimes problematic, with rushed installers opting for the easiest placement rather than the resident's preferred placement. For example, Mr John Banks, the CEO of Port Augusta City Council, said people "had boxes installed in areas that they thought were inappropriate—within their bedrooms".³⁵

3.37 Poor organisation and time-management among sub-contractors also appeared to be an issue, leading to missed appointments or multiple visits to the same address to install a service.

3.38 Mrs Joanna Gibson from the Isolated Children's Parents' Association of Australia cited the case of a South Australian member, who had three different technicians visit her remote property over 10 months (following numerous cancellations) to have the service installed, followed by four technician visits when the dishes moved on a windy day:

Installers who do not know what they are doing or are incorrectly installing the equipment [means that] the next person who comes out has to fix it. Also installers are travelling huge amounts of kilometres to do one thing and then a couple of days later someone else comes to do the same thing—and it is the same property, just a different building.³⁶

Alternate models for installation processes

3.39 The committee heard evidence about the installation process utilised by Chorus NZ in its rollout of high speed broadband in New Zealand. Representatives from Chorus NZ informed the committee that, following a customer ordering a broadband service through an RSP, a three stage installation process occurs, involving two or more visits where the homeowner needs to be present:

- a scoping visit where a technician will meet with the householder to talk about what the installation will look like and where the customer would like to have the optical network terminal (ONT) placed inside the home (generally in the lounge behind the customer's TV);
- an external build process, connecting the fibre infrastructure from the street to an external termination point on the customer's property; and

34 Mr Keith Green, Manager, Arid Land Communications, *Proof Committee Hansard*, 26 June 2017, p. 41.

35 Mr John Banks, Chief Executive Officer, Port Augusta City Council, *Proof Committee Hansard*, 26 June 2017, p. 7.

36 Mrs Joanna Gibson, Communications Portfolio Leader, Federal Council, Isolated Children's Parents' Association of Australia, *Proof Committee Hansard*, 26 June 2017, p. 22.

- an internal installation visit where the service is connected within the home to the ONT, and testing occurs to ensure the service is working properly.³⁷

3.40 Mr Kurt Rodgers, Network Strategy Manager for Chorus NZ, explained that the final installation appointment ensures the customer's product is functioning properly before responsibility for the service is handed over to the RSP:

For some retail service providers, we actually stock their residential gateways. So our technician will install the ONT, plug in the residential gateway, plug in a laptop and then do a speed test and validate that it is all working. For other retail service providers, they send the wi-fi router to the consumer by courier. Again, we coordinate that and install it. In some cases we also install and connect set-top boxes. Our policy is not to leave until the consumer's internet is working awesomely.³⁸

3.41 Mr Rodgers stated that the final step in this process is not overly complicated:

[A]ll our technician is doing is literally plugging their wi-fi router in and turning it on. We have worked over the years with retail service providers to ensure that is all plug-and-play. We have allocated a 15-minute timeslot there, once the ONT is installed, to ethernet plug the router in, plug a laptop in, do a speed test, and that is the commissioning bit at the end. In the first few years there were a few issues about getting that all working, but now in pretty much most cases that is just a plug-and-play activity.³⁹

3.42 Associate Professor Mark Gregory suggested that nbn should investigate whether the installation process followed by Chorus in New Zealand could be applied in Australia:

All of the issues and complaints that NBN Co are suffering at the moment would be diminished if they adopted the Chorus approach—that is, that the installation team includes people that are specialists in connecting everything in the home to the broadband. They do not leave the premise until everything is connected all the way through. At that point, Chorus, the wholesaler, hands over to the retail service provider. It is a very, very positive approach that means that they are getting very few customer complaints in New Zealand, and it is something that NBN Co should look at in Australia.⁴⁰

3.43 Associate Professor Gregory argued that this approach could ultimately be a more economical installation process:

I think that [the Chorus model] would be a much simpler situation, and I believe that it would actually save NBN Co money, because they would not

37 Mr Kurt Rodgers, Network Strategy Manager and Ms Rosalie Nelson, Head of Insights, Chorus NZ, *Proof Committee Hansard*, 23 June 2017, pp. 3-4.

38 Mr Kurt Rodgers, Network Strategy Manager, Chorus NZ, *Proof Committee Hansard*, 23 June 2017, p. 4.

39 Mr Kurt Rodgers, Network Strategy Manager, Chorus NZ, *Proof Committee Hansard*, 23 June 2017, p. 7.

40 Associate Professor Mark Gregory, *Committee Hansard*, 19 April 2017, p. 15.

have all the follow-on call-outs, the truck rolls. I know people who have had trucks out to them five to 10 times. The cost of the remediation, the constant backwards and forwards, the time on the phone and the anguish is just impossible.

The actual cost of sending someone into a home to whack the modem in, connect it and then make sure that the local PC in the home and so forth is connected up to the new wi-fi modem takes no more than about half an hour. If that person is part of the installation team, you have solved all your problems. You then do an end-to-end test to make sure everything is working, and then you hand it over to the RSP.⁴¹

3.44 In June 2017, Mr Bill Morrow, nbn CEO, described possible changes to nbn's installation procedures that are under consideration to ensure customers have a better experience:

We want to move to, 'What is the end user experience like?' We are even starting to look at how we can measure whether that service is working before our technician leaves that home. In the past we would have done all of our work and left, but the service is not working, because the retailer still had a lot of work to do that they had not completed, and the end user feels like, 'The NBN technician just left, and I'm still without service; I don't feel satisfied.' That is why we are trying to readjust this.⁴²

Review of the Migration Assurance Framework

3.45 As noted in Chapter 1, the Department is currently in the process of updating the Migration Assurance Framework, a document that sets out the different roles and responsibilities in the process of connecting customers to a new NBN service. On 30 June 2017 a new draft Migration Assurance Framework was released for public consultation, with the period for public comment finishing on 28 July 2017.⁴³

3.46 A representative from the Department informed the committee at a public hearing on 1 August 2017 that the Department was currently considering the responses received from stakeholders, in order to provide advice to the Minister about the revised framework.⁴⁴ In a response provided on 16 August 2017 to a question taken on notice at the hearing, the Department stated further that consultations on the updated framework have been finalised and it 'is expected to be released shortly'.⁴⁵

41 Associate Professor Mark Gregory, *Committee Hansard*, 19 April 2017, p. 15.

42 Mr Bill Morrow, Chief Executive Officer, nbn, *Senate Environment and Communications Legislation Committee Estimates Transcript*, 15 June 2017, p. 25.

43 Department of Communications and the Arts, 'Migration Assurance Framework', <https://www.communications.gov.au/have-your-say/migration-assurance-framework>.

44 Mr Andrew Madsen, Assistant Secretary, Broadband Implementation Branch, Department of Communications and the Arts, *Proof Committee Hansard*, 1 August 2017, pp. 33.

45 Department of Communications and the Arts, answers to questions on notice, 1 August 2017, (received 16 August 2017). Question 13, p. 1.

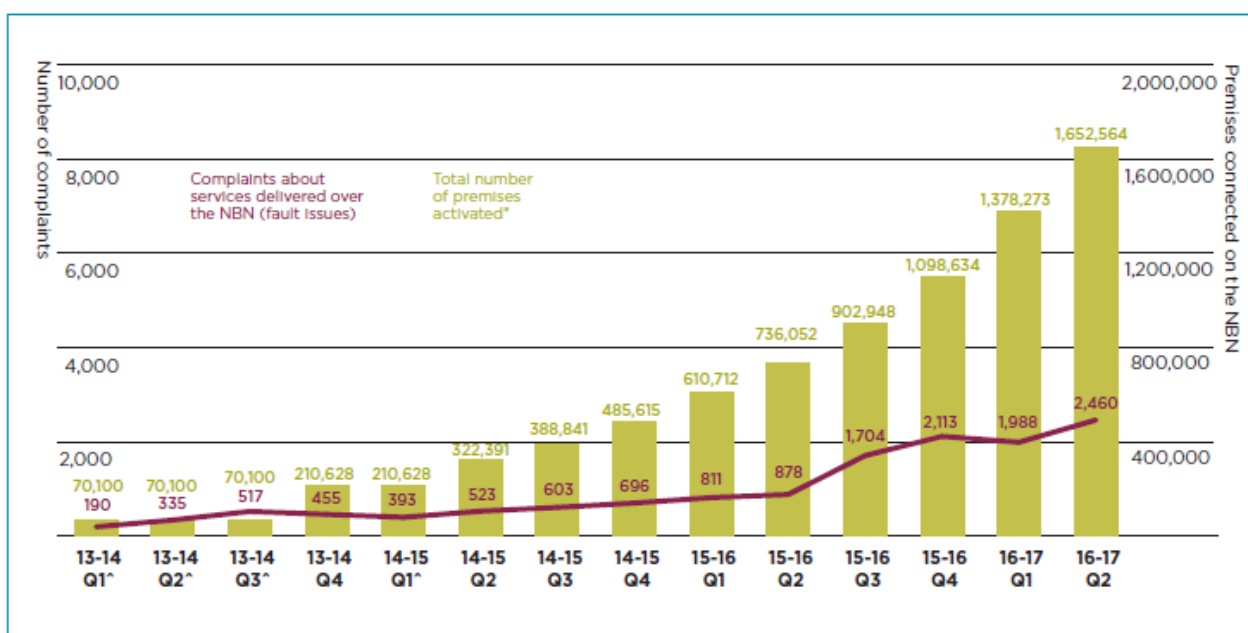
Issues with NBN service speeds and performance faults

3.47 Various issues were discussed in evidence relating to the issues experienced by customers once their NBN services were installed and activated. The primary concern raised with the committee was in relation to the speed of services provided over the NBN, with many customers unhappy with the performance of their service in this regard. Other issues included the reliability of services and dropouts; and issues with the resolution of faults in the NBN network, including lack of clarity around fault resolution processes and long timeframes for the resolution of some faults.

3.48 The TIO provided the committee with statistics on the number of fault-related complaints it received between 2013 and the end of 2016, noting that in the 2016 calendar year 5,472 complaints relating to 'fault' issues were lodged.⁴⁶ Within the faults category, subcategories include issues relating to slow data speeds, connection drop outs, and fully unusable services.⁴⁷

3.49 Figure 3.2, provided by the TIO, shows that the number of fault-related complaints has increased over time, but at a rate that appears to be slower than the rate of increase in the overall number of premises connected to the NBN.

Figure 3.2 TIO fault complaints for NBN services vs number of premises activated over time⁴⁸



46 Telecommunications Industry Ombudsman, *Submission 115*, p. 10.

47 Telecommunications Industry Ombudsman, *Submission 115*, p. 10.

48 Source: Telecommunications Industry Ombudsman, *Submission 115*, p. 12.

Issues relating to the speeds experienced by customers on the NBN

3.50 Various individuals and consumer groups that gave evidence to the committee indicated that a significant number of customers on the NBN network are not receiving the speeds they were promised, and that their service is considerably poorer than they expected. One such example was presented to the committee by Mr Neil Keele at a public hearing in August 2017:

I had the NBN connected just over 12 months ago. My expectations were that I was going to have wonderful speed and everything. I paid for the highest package available. I am getting speeds like 42 and 70 kilobits per second instead of 100 megabits per second, and that is quite regular. With the speed tests you do through your provider, if it hits a high speed for a fraction of a second, that is the speed recorded as your speed, which is far from what is actually happening.⁴⁹

3.51 The committee heard that there may be a number of reasons why some customers are having negative experiences in terms of the speed and performance of their NBN service. These issues include consumer knowledge and poor communication from RSPs, provisioning issues on the part of the RSPs and technical limitations of some NBN technologies.

Factors affecting the speed and performance of NBN services

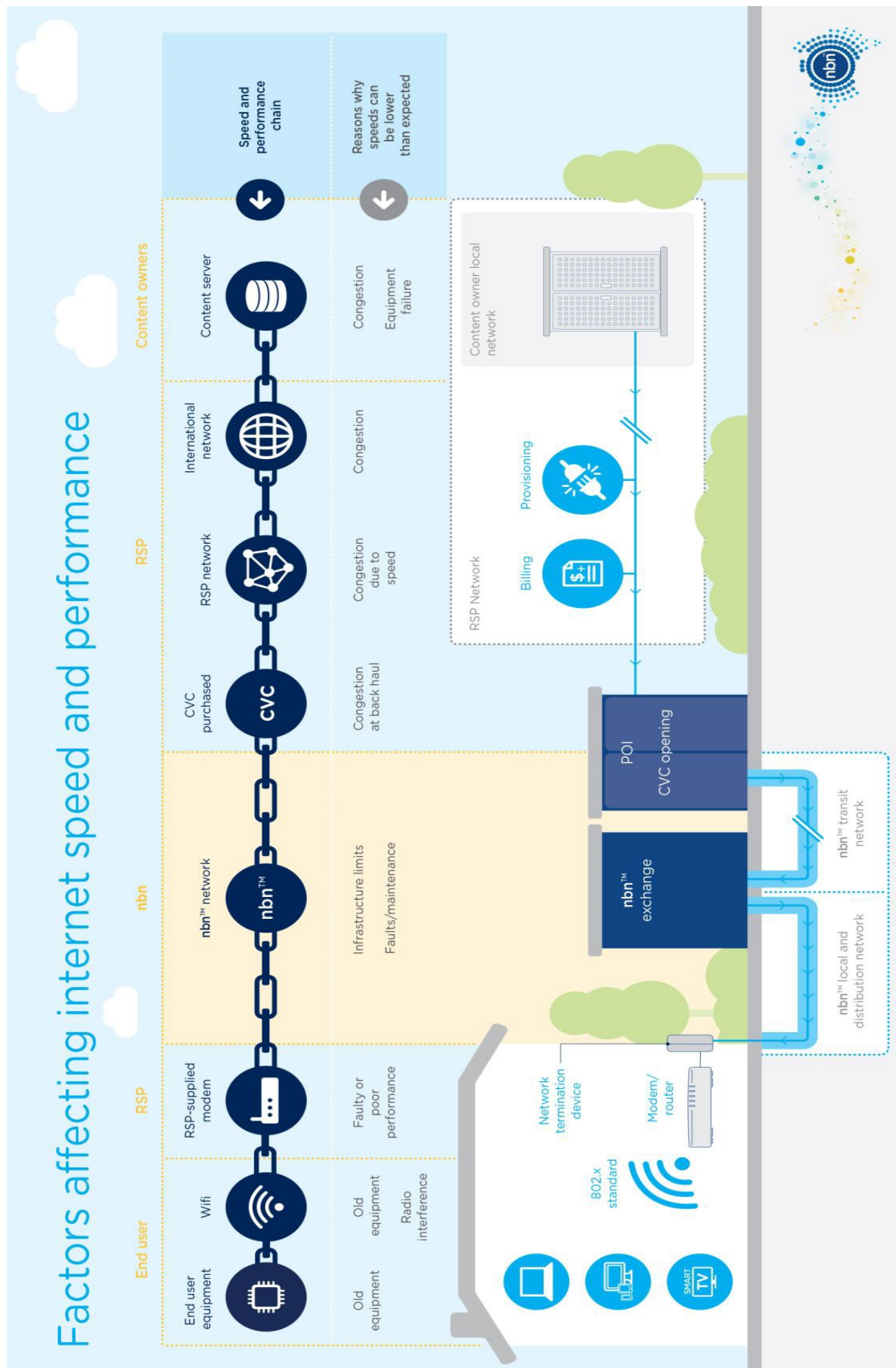
3.52 nbn provided the committee with a diagram outlining the various factors that can affect internet speed and performance over the NBN (Figure 3.3). These include:

- factors in the home controlled by the end user (e.g. state and location of in home wi-fi equipment; number of devices in use simultaneously)
- modems or other in-home equipment supplied by the RSP;
- infrastructure limits, including both the length and quality of the legacy copper that is used for FTTN, and also faults in the NBN segment of the network;
- and faults in the NBN segment of the network;
- the amount of Connectivity Virtual Charge (CVC) purchased by the RSP, which determines the amount of congestion experienced by end users over the NBN network (this is discussed further in Chapter 7); and
- congestion in the RSP-operated backhaul network and international networks.⁵⁰

49 Mr Neil Keele, *Proof Committee Hansard*, 2 August 2017, p. 9. For other examples, see: Ms Lee Longmire, Narrandera Shire Council, *Committee Hansard*, 20 April 2017, p. 25; Mr Barry Egan, *Proof Committee Hansard*, 2 August 2017, p. 14; Mr Damian Ivereigh, Chief Executive Officer, Launtel, *Proof Committee Hansard*, 25 July 2017, p. 10.

50 Figure 3.3 also available at: Mr Bill Morrow, 'Understanding the nbn network model', <http://www.nbnco.com.au/blog/the-nbn-project/understanding-the-nbn-network-model.html>.

Figure 3.3 Factors affecting internet speed and performance



General approach to provisioning speeds on the NBN

3.53 nbn's Chief Customer Officer, Mr John Simon, noted publicly in May 2017 that for broadband networks such as the NBN, RSPs generally provision their services to provide for customers to receive 90 per cent of their maximum attainable speed, 90 per cent of the time, with a worst case scenario of potentially 60 per cent of the speed level as the minimum floor during peak periods.⁵¹ Mr Simon noted this means that on the NBN's 25Mbps download / 5Mbps upload speed tier, the absolute minimum the service should operate at would be rates of 15Mbps download and 3Mbps upload.⁵²

3.54 Some of the individual stories described above indicate that this standard is not being adhered to in a significant number of instances.

Technical limitations and speed issues

3.55 One issue raised specifically in relation to the FTTN areas of the NBN rollout was whether the technical limitations of the copper component meant that customers could be signed up to NBN plans at the 50Mbps or 100Mbps speed tiers when the maximum attainable download speed could not in fact reach those levels.

3.56 nbn stated in May 2017 that the average attainable line speed for premises on the FTTN network is 67.7 Mbps, though the basis of this measure was not explained to the committee, and it is clear that the 'attainable' line speed is not based on a measure of actual network speed on a tested premise-by-premise basis.⁵³ nbn provided further information in June 2017 about the distribution profile of speeds available over the FTTN network, as shown in Table 3.1.

Table 3.1 Current attainable Rate Downstream (Mbps, Layer 2)⁵⁴

Range (Mbps)	Percentage of FTTN premises
12-25	6%
25-50	29%
50-75	33%
75-100	32%

51 Mr John Simon, Chief Customer Officer, nbn, *Senate Environment and Communications Committee Estimates Transcript*, 25 May 2017, p. 116.

52 Mr John Simon, Chief Customer Officer, nbn, *Senate Environment and Communications Committee Estimates Transcript*, 25 May 2017, p. 141.

53 Mr Bill Morrow, Chief Executive Officer, nbn, *Senate Environment and Communications Committee Estimates Transcript*, 25 May 2017, p. 154.

54 Budget Estimates 2017-18 Answers to questions on notice, provided to the Senate Environment and Communications Legislation Committee, Question 213, available at http://www.aph.gov.au/Parliamentary_Business/Senate_Estimates/ecctte/estimates/bud1718/CommunicationsandtheArts/index. nbn noted that these speed distributions are as at 18 June 2017, based on all active FTTN services where data had been successfully collected.

3.57 nbn noted that FTTN current speed results are based on the measured attainable line rate for each FTTN service, and do not reflect actual speeds experienced by end users, which are also dependent on other factors including available CVC and network bandwidth of RSPs. However, it is not clear to the committee how 'measured attainable' speed is determined. It is noted that nbn further stated:

The results are also subject to co-existence profile settings, which reduces performance to prevent interference with legacy services during the 18 month migration window. Following switch-off of legacy copper services after this period, the Layer 2 attainable bitrate (speeds) will increase. The numbers also reflect the impact of other factors such as any in-home wiring issues, which can affect attainable speeds.

Where the network is not capable of providing the minimum wholesale download speeds after coexistence has ended, nbn will take action to rectify any issues so that minimum standards are met.⁵⁵

3.58 It was reported in June 2017 that the ACCC has active investigations underway into claims that some NBN customers were paying for speeds of 100Mbps but only able to connect at less than 50Mbps, and was considering court action against some providers in relation to this issue.⁵⁶

Visibility of speed issues and provision of information to customers

3.59 Both nbn and RSPs have visibility of the speed range attainable at each premise connected to the NBN network. Mr Simon explained at an Estimates hearing in May 2017 that RSPs can obtain the necessary information from nbn to help consumers choose a speed plan in line with any technical limitations:

[W]hen a user rings up an RSP they can do a service [qualification] and they can get an estimate of the line speed there and then. At that point they get an estimated range. They can have a dialogue with the RSP about what that estimated range is, and they can make a decision on which plan they want to take. Once the order has been completed and the installation has taken place, they can also reconfirm the actual performance of that line and they can then do either of two things with the right dialogue: stay on that plan or change plans.⁵⁷

55 Budget Estimates 2017-18 Answers to questions on notice, provided to the Senate Environment and Communications Legislation Committee, Question 213.

56 Patrick Hatch, 'ACCC expects to take NBN providers to court over slow broadband', *The Canberra Times*, 1 June 2017, <http://www.canberratimes.com.au/business/consumer-affairs/accc-expects-to-take-nbn-providers-to-court-over-slow-broadband-20170531-gwh99j.html>.

57 Mr John Simon, Chief Customer Officer, nbn, *Senate Environment and Communications Legislation Committee Estimates Transcript*, 25 May 2017, p. 154.

3.60 At the public hearing in Canberra, Mr John Stanton, Chief Executive Officer, Communications Alliance, advised that members of that organisation have access to this information from nbn.⁵⁸

3.61 When questioned whether nbn should be required to give customers information on the maximum attainable line speed to their premises, rather than relying on the RSPs to deliver this information, officials from the Department maintained that it should be the role of the RSP to provide this information to the customer.⁵⁹

3.62 Mr Simon explained that RSPs also have tools available to determine where speed faults are arising and communicate this with the customer:

What should happen is your retail service provider should tell you that speed. If there is a fault in our network they have the tools to be able to diagnose and they also work with our network operating centre to see if there is a fault. If there is a fault on our side, it is our responsibility to roll a truck or do whatever has to happen to fix it if it is in the access part of the network, that is our network, from the home to that point of interface. If the fault lies from the POI [Point of Interconnect] into the transmission network of the RSP or into international capacity or voice switches the RSP fixes that, but your RSP is your point of interface.⁶⁰

Lack of consumer knowledge about broadband speeds

3.63 Several witnesses acknowledged that a significant problem in relation to NBN services not adequately meeting users' needs is that many consumers are unaware of the speed tier of their service, and more generally unaware of the factors that may affect their broadband performance. In evidence to the committee, Mr Bill Morrow cited recent survey data showing that 75 per cent of NBN customers were unaware of the speed tier for their service.⁶¹

3.64 The committee heard evidence that a significant reason customers are unaware of their speed plans and the service they should be expecting from their NBN is poor communication from RSPs in explaining the speed customers can realistically expect and how the various plans related to the data speeds offered.⁶²

3.65 Mr Casey Farrell, Director of Tasmanian technology firm Takeflight, articulated this issue well at the committee's Hobart public hearing:

58 Mr John Stanton, Chief Executive Officer, Communications Alliance, *Proof Committee Hansard*, 23 June 2017, p. 41.

59 Mr Andrew Madsen, Assistant Secretary, Broadband Implementation Branch, Department of Communications and the Arts, *Proof Committee Hansard*, 23 June 2017, p. 56.

60 Mr John Simon, Chief Customer Officer, nbn, *Senate Environment and Communications Legislation Committee Estimates Transcript*, 25 May 2017, p. 117.

61 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 63.

62 See, for example: Mr Greg Williams, Business Development Manager, Regional Development Australia Far North, *Proof Committee Hansard*, 26 June 2017, p. 30.

There's also a real problem in the technology industry generally of talking about things in very technical terms. If you call up a standard person and you want to connect them to the NBN and you say to them, 'We can put you on 12 megabits a second,' that means nothing to them. You may as well say, 'We can connect you to a gherkin,' and they would probably think that that was a technological term. I think that there are a lot of problems at the moment where people are connecting to a 12-megabit connection on the NBN and then saying it's no different to how it was before, and therefore thinking, 'What's the capacity here?'⁶³

3.66 Mr Morrow expressed the view that RSPs need to do more in their pre-sale conversations with potential customers to ensure that customers are aware of the different speed options and products available, and to ensure that consumers are aware that the speed plans represent maximum available speeds, not guaranteed speeds.⁶⁴ He noted that some RSPs have already changed their communications approach to inform customers about indicative speed ranges rather than just promoting the headline maximum speed:

[Some of the retailers] are starting to change that conversation out there and saying [to customers]: 'It will range. You'll peak at 25 megabits per second, but you may drop down to 15 megabits per second or maybe to 10 megabits per second. Is that good enough for you at this price point? If not, maybe I have an upgraded product where I can give you more certainty—call it the bottom end of my speed delivery—that that will be increased because you're going to pay \$5 more a month, \$10 more a month or whatever it is I have on offer.'⁶⁵

3.67 Dr Craig Watkins argued that for customers experiencing lower than expected speeds on their NBN service, a tool to help identify which part of the network was primarily responsible would help assist consumers establish where the problem lies and how best to resolve it:

[Many], if not most, NBN users are somewhat illiterate when it comes to more detailed understanding of technology factors. Hence it would be ideal for an online tool to be able to interpret speed test results by the customer and advise if the likely cause is RSP provisioning factors. A sophisticated tool might even be able to look at where the user is attempting to stream their data from and provide insight into the likely contribution from network bottlenecks deeper into the internet.

...

From the customer perspective, it is likely that the most crucial information is what the shared access bottleneck part of the NBN is contributing (if at all) to their disappointing service, and what contribution comes from RSP

63 Mr Casey Farrell, *Proof Committee Hansard*, 24 July 2017, p. 30.

64 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, pp. 62 and 64.

65 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 62.

provisioning. A tool that provides basic information relevant to the part of the network that the customer is connected to should be able to satisfy the needs of a large proportion of end-user concerns (perhaps 90% or more).

For the remaining few percent of customer concerns, it should be possible to configure monitoring across network elements covering the NBN and RSP networks that will provide detailed information.⁶⁶

3.68 The ACCC's Broadband Performance Monitoring and Reporting Program, which is seeking to enable customers to compare speeds via independent reporting of broadband speeds, is discussed in detail in Chapter 5 of the report.

Complaints processes and resolution

3.69 In addition to highlighting the most common problems experienced by customers in establishing and using their NBN service, the question of how customers can go about lodging complaints and gaining resolution to these issues was also explored in evidence to the committee.

Process of raising complaints and resolving issues for customers

3.70 In the first instance, customers are supposed to try and resolve issues with their RSP, rather than contacting nbn directly in relation to issues with their service. The committee has heard that this delineation can be problematic in practice, particularly when it is unclear which part (or parts) of the network are responsible for the issue the customer is experiencing. If the situation is not resolved satisfactorily for the customer, they may lodge a complaint with the TIO, which then goes through a number of escalating processes if the dispute is not resolved.

Determining the responsible party and 'blame shifting' between nbn and RSPs

3.71 The committee heard that customers often face difficulties in determining who to contact about an NBN service issue, Ms Judi Jones, the current Telecommunications Industry Ombudsman, noted that some consumers are unsure which party is at fault when problems occur:

There is some confusion with some consumers about who to complain about. One example I have seen is where the problem in the connection turned out to be the fibre to the premises, which needed to be repaired. NBN Co referred the consumer back to their RSP, but the RSP cannot fix the fibre.⁶⁷

3.72 Mr Robert Smallwood, Digital Economy Strategy Manager for the Mid West Development Commission, told the committee that nbn is often blamed by the customer, regardless of the root cause of an issue:

The end users tend to blame the NBN for the problems, no matter who or what is actually responsible. Very importantly, the customers still have no

66 Dr Craig Watkins, answers to question on notice, 19 April 2017 (received 24 May 2017), p. 2.

67 Ms Judi Jones, Ombudsman, Telecommunications Industry Ombudsman, *Committee Hansard*, 24 March 2017, p. 13.

means of clearly identifying which organisation is accountable when outcomes at a user's premises fall below expectations.⁶⁸

3.73 Mr Andrew Cann, Chief Technology Officer at the Western Australian Government's Office of the Government Chief Information Officer, commented:

[T]here appears to exist a disconnect between customers, the NBN Co and retail service providers as to who is ultimately accountable and responsible for service delivery and service management quality outcomes. The NBN continually points customers to the retail service providers, and the retail service providers blame the NBN. The customer sits in the middle, with no resolution to any of the issues that they experience.⁶⁹

3.74 Mr Cann stated further:

Where customers have issues, they speak to NBN Co and then get referred to the retail service providers. In fact [NBN Co have said] that customers should speak to their retail service providers. That allows the retail service providers to then just blame the NBN.⁷⁰

3.75 Ms Jones expressed the view that the ultimate responsibility to sort out problems lies with the RSPs, who have the direct contractual relationship with the customer. Ms Jones argued that it is the RSP who needs to advocate up and down the delivery chain to ensure customer issues are resolved.⁷¹

3.76 Mr Alex Green, Chief Executive Officer, Mansfield Shire Council, commented:

People are frustrated and do not necessarily get clear answers from their providers, and so they go looking to contact NBN Co. I understand that, as a consumer, your role is to go to your provider and the provider then goes to NBN. I understand that, but I do not think the community understand that process.⁷²

3.77 When asked about the problem of blame shifting between nbn and the RSPs in resolving customer issues, Mr John Stanton, Chief Executive Officer of the Communications Alliance, took the view that 'the volume of blame shifting is

68 Mr Robert Smallwood, Digital Economy Strategy Manager, Mid West Development Commission, *Proof Committee Hansard*, 17 July 2017, p. 33.

69 Mr Andrew Cann, Chief Technology Officer, Office of the Government Chief Information Officer, *Proof Committee Hansard*, 17 July 2017, p. 46. See also: Councillor Donald Thwaites, Mayor, Kentish Council, *Proof Committee Hansard*, 25 July 2017, p. 20.

70 Mr Andrew Cann, Chief Technology Officer, Office of the Government Chief Information Officer, *Proof Committee Hansard*, 17 July 2017, p. 53.

71 Ms Judi Jones, Ombudsman, Telecommunications Industry Ombudsman, *Committee Hansard*, 24 March 2017, p. 13.

72 Mr Alex Green, Chief Executive Officer, Mansfield Shire Council, *Committee Hansard*, 20 April 2017, p. 35.

anecdotal'.⁷³ This opinion was itself offered without evidence and is contradictory to the evidence before the committee.

3.78 Mr Rob Van der End, CEO of Clear Networks, an RSP offering services including NBN Sky Muster plans, told the committee that RSPs had no motivation for trying to sheet blame unnecessarily to the nbn for customer problems, and to do so would not ultimately be helpful for his business:

[A]s an RSP you want to deal with the customer because obviously you want to keep the customer. [There is] no point trying to blame shift and get no resolution because the customer just gets upset or goes to the TIO.⁷⁴

Work of the Telecommunications Industry Ombudsman in resolving complaints

3.79 As noted in Chapter 1, the TIO is an independent dispute resolution service for the telecommunications industry. The TIO is an avenue for redress when consumers are unable to resolve their complaints with their service provider.⁷⁵

3.80 As part of its remit the TIO deals with complaints from customers experiencing issues with their NBN services. In its submission to the committee, the TIO noted that in the 2015-16 financial year, 13,406 new complaints relating to NBN services were lodged with the TIO, approximately doubling from the previous year.⁷⁶ The TIO stated that the increase in NBN-related complaints reflects the acceleration of the rollout, and that the number of complaints is expected to continue to increase as the rate of the rollout accelerates further.⁷⁷

3.81 The current Ombudsman, Ms Judi Jones, told the committee at a public hearing in March 2017 that based on the TIO's projections, it expected that the total number of NBN-related complaints for the 2016-17 financial year would be roughly double the number of 13,406 in the 2015-16 financial year.⁷⁸

3.82 The TIO emphasised in its submission that the rate of the increase in complaints appears to be slower than the rate of new premises being connected to the NBN.⁷⁹ Ms Jones stated to the committee:

It is very easy to sensationalise what happened last year as 'complaints are doubling', when the number of premises connected had more than doubled.

73 Mr John Stanton, Chief Executive Officer, Communications Alliance, *Proof Committee Hansard*, 23 June 2017, p. 34.

74 Mr Rob Van Der End, Chief Executive Officer, Clear Networks, *Committee Hansard*, 19 April 2017, p. 26.

75 Telecommunications Industry Ombudsman, *Submission 115*, p. 1.

76 Source: Telecommunications Industry Ombudsman, *Submission 115*, p. 9.

77 Telecommunications Industry Ombudsman, *Submission 115*, p. 9.

78 Ms Judi Jones, Ombudsman, Telecommunications Industry Ombudsman, *Committee Hansard*, 24 March 2017, p. 4.

79 Telecommunications Industry Ombudsman, *Submission 115*, p. 8.

So it was a good news story, I think, for NBN Co and the retail service providers.⁸⁰

Complaints handling process used by the TIO

3.83 The TIO outlined its process for handling complaints in its submission as follows:

The first stage of the TIO's complaint handling process is to refer complaints to members [most commonly the customer's retail service provider]. Members are given the opportunity to resolve complaints through their internal dispute resolution process.

Of the complaints referred to members, around 10% (approximately 11,000 in 2016) return to the TIO. These complaints are either resolved through conciliation or investigation, or by the TIO making an assessment on the merits of the case.⁸¹

3.84 The TIO has the power to issue binding determinations, including determinations about objections from land owners or occupiers to carriers entering on to land to inspect, install, or maintain low impact facilities.⁸² It has the authority to decide the resolution of a complaint, and can make legally binding damages orders of up to \$50,000 and make recommendations for damages up to \$100,000.⁸³

Awareness of the TIO scheme among consumers

3.85 A point of discussion in relation to the TIO was the extent to which consumers are actually aware of the existence of the TIO scheme and their ability to lodge complaints.

3.86 Several witnesses argued that there is a lack of awareness among consumers about the existence of the TIO scheme, and that more needs to be done to ensure that the scheme is known to consumers and easily accessible. Mrs Judith Charlton, CEO of Narrandera Shire Council, expressed the view that there is 'a low level of understanding about what people's rights are with regard to complaints', and argued that more information that is easily accessible to consumers about how to raise complaints is required.⁸⁴

3.87 Ms Corbin of ACCAN expressed the following view about the visibility of the TIO scheme:

[A] lot of people do not know about the TIO. Our level of knowledge in relation to the TIO awareness is that it is reasonably high and it has

80 Ms Judi Jones, Ombudsman, Telecommunications Industry Ombudsman, *Committee Hansard*, 24 March 2017, p. 6.

81 Telecommunications Industry Ombudsman, *Submission 115*, p. 3.

82 Telecommunications Industry Ombudsman, *Submission 115*, p. 3.

83 Telecommunications Industry Ombudsman, 'About Us', <https://www.tio.com.au/about-us>.

84 Mrs Judith Charlton, Chief Executive Officer, Narrandera Shire Council, *Committee Hansard*, 20 April 2017, p. 25. See also: Mr Alex Green, Chief Executive Officer, Mansfield Shire Council, *Committee Hansard*, 20 April 2017, p. 35.

improved over the years. We think that it is high simply because of the high levels of complaint in the telecommunications industry previously.

...

I think a lot of people do know about the ombudsman but, unfortunately, it is usually people who have had problems that know about the ombudsman. It is not people who are experiencing new problems. The thing about awareness of the ombudsman's scheme is that you have to keep promoting it. People do not take notice of it unless they have a problem and then they start to look around to see where they can go.⁸⁵

3.88 Ms Jones expressed the view that consumers are generally aware of the TIO scheme:

We certainly get a good result on Google, and we are pretty well known... [Our] last general awareness survey showed we are pretty well known in the community, and we do work on that. We work on outreach events and promotion of our service so that people do know to contact us when they have got a problem.⁸⁶

Ability for customers to gain compensation for problems caused

3.89 Some customers who have lost income and incurred other expense as a result of problems with their NBN service have attempted to seek financial compensation, either directly through their RSP or through the TIO process.

3.90 The committee heard that some individuals with complaints lodged through the TIO had been able to access some financial compensation.⁸⁷ For others, however, no financial compensation was available, either through the TIO or through their RSP.⁸⁸

3.91 Mr Kenneth Knight told the committee that when faced with tens of thousands of dollars in lost business due to outages of his NBN service at a busy time of year, he was offered only \$50 as compensation from his RSP.⁸⁹ The committee heard from several other small business owners who also had lost similar amounts of money due to service issues with the NBN, who were unable to receive appropriate recompense.⁹⁰

3.92 Mr Mark Beatson noted that while his RSP would consider providing some compensation for loss of business, there was no compensation offered for lost time,

85 Ms Teresa Corbin, Chief Executive Officer, ACCAN, *Committee Hansard*, 19 April 2017, p. 6.

86 Ms Judi Jones, Ombudsman, Telecommunications Industry Ombudsman, *Committee Hansard*, 24 March 2017, p. 13.

87 See, for example: Mr Barry Egan and Mr Gary Jackson, *Proof Committee Hansard*, 2 August 2017, p. 11.

88 See, for example: Mr Neil Keele, *Proof Committee Hansard*, 2 August 2017, p. 11.

89 Mr Kenneth Knight, *Proof Committee Hansard*, 2 August 2017, p. 18.

90 Mr Laurie O'Brien and Mr Mark Beatson, *Proof Committee Hansard*, 2 August 2017, pp. 18 and 26.

which in his case represented up to 90 hours spent by him and the staff at his small business on the phone trying to resolve issues with their NBN service.⁹¹

3.93 Mr Laurie O'Brien, who owns a financial planning business on the NSW Central Coast, noted that the process for applying for compensation through his RSP was so convoluted as to act as a significant deterrent:

I made application to Telstra for a loss of income, which I estimated at about \$50,000. The forms to be completed and queries raised prompted me to conclude that I will never get compensation because of the ridiculous data that I would have had to extract. Just to fill out the evidence of a loss of income would take me several weeks away from my core business...

The forms are so convoluted. I think they are trickery. I think they are designed to make you give up. You really have to take a lot of time off to extract all the information and prove to them that you have lost income.⁹²

3.94 Mrs Belinda Mabbott expressed similar concerns following her business's problems getting an NBN service established over a significant period of time:

I was advised by several people to put a compensation claim in, but we have not at this stage because I looked at that paperwork and thought, 'I just can't do it.' The stress of that 12 months and then that on top was too much.⁹³

3.95 Mrs Mabbott advised the committee that lodging a formal compensation claim would require additional time spent to get an accountant to tally a report on lost time and earnings, and stated:

I do not know whether the actual time, effort and stress that causes when we are trying to run a six-day a week business is worth it. I will still think about doing it. I pull out the paper and look at it. I put it back in the folder and think, 'I don't think I can do this.' It just rehashes everything too. It was just really stressful[.]⁹⁴

Committee view

3.96 The evidence presented to the committee shows that for some customers, the experience of transitioning to services on the NBN has been extremely poor. Many problems have been experienced at every stage of the migration process, from installation issues through to speed and performance faults once services are established. When serious problems have occurred, customers have rarely had the information necessary to know how to go about resolving complaints, and some customers have also been unable to gain appropriate compensation for lost income and time.

91 Mr Mark Beatson, *Proof Committee Hansard*, 2 August 2017, p. 20.

92 Mr Laurie O'Brien, *Proof Committee Hansard*, 2 August 2017, p. 21.

93 Mrs Belinda Mabbott, *Proof Committee Hansard*, 2 August 2017, p. 29.

94 Mrs Belinda Mabbott, *Proof Committee Hansard*, 2 August 2017, p. 32.

3.97 The committee is of the view that the quality and service issues identified in this report were foreseeable and should have been identified and addressed systemically a lot earlier.

3.98 In relation to the marginal improvement in the ratio of complaints to the number of services delivered, the committee believes the improvement should have been much more substantial considering the opportunity to identify and eliminate common issues.

3.99 The committee believes the contractual arrangements between nbn and the RSPs have not been effective in establishing rights and obligations that would protect consumers.

3.100 The failure to ensure end-users are in a position to navigate the NBN migration process when coupled with the quality and service issues has caused a lack of confidence in the NBN, which in turn has likely affected the public appetite for higher speed broadband packages.

3.101 One of the key shortcomings of the current approach is that consumers of fixed line broadband services are not informed, and cannot avail themselves, of the speed capacity of their NBN connection. A related shortcoming is that unlike Chorus NZ, nbn does not test the function and quality/capacity of the connection when a household or business is ready for service.

3.102 While these may represent a minority of customers overall, 1 in 10 is a significant and unacceptable ratio, and it is frustrating and disappointing for the committee to repeatedly hear of the poor treatment occurring in these individual cases. Also of particular concern is the significant impact delays in connections and missed appointments have had on small businesses attempting to use NBN services. Given the importance of the NBN as a national infrastructure project, and the great investment of taxpayer funds in this project, all customers should rightly be able to expect a basic level of service across all their interactions with the NBN.

3.103 Options for improving the consumer experience on the NBN are explored in greater detail in Chapter 5, along with recommendations to address the most common problems experienced in this area.

Recommendation 4

3.104 The committee recommends the Government ensure by appropriate regulation that end users are informed of, or can easily access and are directed to, clear information about the maximum attainable layer 2 speed of their NBN infrastructure/service on a per premise basis.

Recommendation 5

3.105 The committee recommends that nbn develop and implement a framework that ensures best-practice installation as part of an 'active handover' model, with reference to the approach of Chorus NZ, so that each premise is assured of network capability at the point it is ready-for-service, and repeat visits and remedial costs are avoided.

Recommendation 6

3.106 The committee recommends that nbn review and provide advice to the committee on how it:

- **takes into consideration the added complexity and time requirements of installations to Service Class 0 and Service Class 10 premises, or equivalent areas, when calculating its progress towards completion goals; and**
- **prioritises connections to areas that currently have no access to internet.**

Chapter 4

Sky Muster

Introduction

4.1 The previous chapter highlighted the customer experience when connecting to the National Broadband Network (NBN). Evidence to the committee drew particular attention to the experience of customers when connecting to the nbn satellite service—Sky Muster. Drawing on some themes discussed in Chapter 3, this chapter presents the committee's evidence about the customer experience as it relates to Sky Muster.

Background

4.2 nbn's Sky Muster service comprises two satellites: the first (Sky Muster) was launched in October 2015 and commenced operation in May 2016, the second (Sky Muster II) was launched in October 2016. The Sky Muster service is designed for homes and businesses in rural and remote Australia that fall outside the fixed line and fixed wireless areas.¹

4.3 The Sky Muster satellite service covers mainland Australia and Tasmania, and remote islands such as Norfolk Island, Christmas Island, Lord Howe Island and Cocos (Keeling) Islands.

4.4 Prior to Sky Muster, satellite services were provided by the Interim Satellite Service (ISS) which ceased operating in February 2017. The Department of Communications and the Arts (the Department) provided detail about how Sky Muster compares to other Australian satellite services since 2005.

Table 4.1: Australian satellite services since 2005²

	Australian Broadband Guarantee (ABG)	Interim Satellite Solution (ISS)	NBN Co Subsidy Scheme (NSS)³	nbn Sky Muster satellite service
Years	2005 – 2011	2011 – 2017	2014 – 2017	2016 onwards
Design Downlink Speed	512kbps	6 Mbps	3 Mbps	25 Mbps
Users	~100,000	48,000	9,000	>200,000 (projected)

1 nbn, *The new nbn Sky Muster service Fact Sheet*, 2016.

2 Department of Communications and the Arts, answers to questions on notice, (received 6 February 2017), p. 11.

3 The NSS provided satellite services for households and business during the period after the ISS had reached its capacity and before the Sky Muster service was operational.

Sky Muster connections and activations

4.5 In their *Full Year Results 2017*, nbn reported 418,135 premises ready for service (RFS) and 74,931 active end users connected to Sky Muster as shown below.

Table 4.2: Cumulative active end users and premises ready for service⁴

Satellite	30 June 2016	31 March 2017	30 June 2017
Cumulative active end users	38, 794	68, 735	74, 931
Cumulative premises RFS	409, 959	413, 601	418, 135

4.6 Table 4.3 below outlines satellite coverage and number of activations by jurisdiction as reported in the nbn weekly report to 31 August 2017.

Table 4.3—Sky Muster premises covered and activated by jurisdiction (as at 31 August 2017)⁵

Jurisdiction	Premises covered	Premises activated	Jurisdiction	Premises covered	Premises activated
ACT	372	66	SA	33, 663	5, 403
NSW	125, 515	27, 741	TAS	15, 078	3, 652
NT	12, 027	2, 040	VIC	75, 214	11, 890
QLD	95, 010	16, 361	WA	62, 894	11, 068

Customer experiences on Sky Muster

4.7 The committee received evidence from a range of individuals and organisations describing their experiences using the Sky Muster service. Some witnesses and submitters outlined positive experiences however, much of the evidence to the inquiry focused on the challenges to access and use Sky Muster.

4.8 When discussing a range of rollout matters, Mr Michael Hendry, South West Independent National Broadband Network Adviser, Regional Development Australia – South West observed:

...we don't have millions connected in the south-west as yet, but I have had four reports in the past three months of people being very positive about their experiences on the Sky Muster satellite, achieving speeds in the range of 22 to 23 in download, and an upload of 2½ to 3½. So, for many of those

4 Source: nbn, *Third Quarter Results 2017* and *Full year results 2017*.

5 Source: nbn, *nbn Weekly Progress Report as of 31 August 2017*.

people who've had very ordinary ADSL services in the past, they are really quite impressed with the improvement in service.⁶

4.9 Mrs Rachel Hay, Data Analyst, Better Internet for Rural, Regional and Remote Australia (BIRRR), advised that many comments included in their research say that 'when it works it is fantastic'. When the system works, the speeds achieved are appropriate but the data allowance is not.⁷

4.10 The majority of evidence about Sky Muster challenges focused on three key areas:

- installation, connections, and quality (speed and data limits) of the service once connected;
- current suite of plans not meeting the needs of the community; and
- the appropriateness of the allocation of satellite to particular areas.

Installation, connection and quality of service

4.11 As with fixed line connections, Sky Muster customers enter a contract with their preferred RSP to access satellite services on the NBN. According to nbn's website, there are currently 11 RSPs offering Sky Muster services.⁸

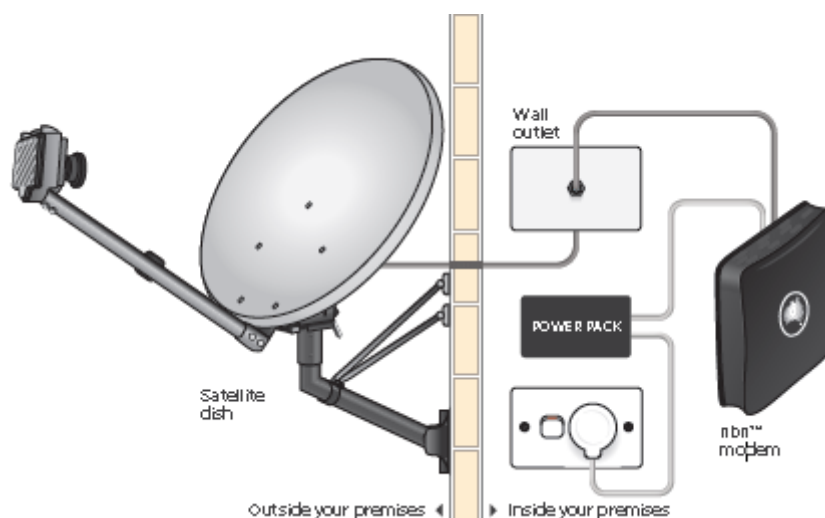
4.12 As shown in Figure 4.1, the equipment installed is comprised of three components: satellite dish and cable that connects the dish into the property, wall outlet, and nbn modem. Some installations may require a power pack, depending on the installation location.⁹

6 Mr Michael Hendry, South West Independent National Broadband Network Adviser, Regional Development Australia – South West, *Proof Committee Hansard*, 17 July 2017, p. 42.

7 Mrs Rachel Hay, Data Analyst, Better Internet for Rural, Regional and Remote Australia, *Committee Hansard*, 7 April 2017, p. 36.

8 nbn, *Choose a provider*, <http://www.nbnco.com.au/connect-home-or-business/check-your-address/choose-a-provider-sky-muster.html>.

9 nbn, *User Guide Sky Muster service*, 2016, p. 4

Figure 4.1: Sky Muster equipment¹⁰

Installation and connection

4.13 nbn's *User Guide Sky Muster service* provides information about the installation process:

Once your nbn supplied equipment has been installed and checked by the nbn approved installer, depending on your service provider, you can commence using your Sky Muster service. If you have problems connecting to the internet, you should contact your service provider to have your service activated. Once you have an active service you can connect your equipment to your nbn modem...and begin enjoying your new service over the nbn network.¹¹

4.14 The committee heard evidence that for many customers the installation and connection process had not been a smooth one, particularly in relation to missed technician appointments and poor communication about the installation and connection process. A technician failing to fulfil an installation appointment or unable to complete the installation on the first appointment is particularly problematic for customers in rural, regional and remote areas due to the distance to travel and the subsequent additional time required to undertake a follow up appointment.

4.15 Several witnesses and submitters reported multiple missed appointments.¹² BIRRR submitted that some Sky Muster customers have experienced up to 12

¹⁰ Source: nbn, *User Guide Sky Muster service*, 2016.

¹¹ nbn, *User Guide Sky Muster service*, 2016, p. 4

¹² See for example, Mrs Joanna Gibson, Communications Portfolio Leader, Federal Council, Isolated Children's Parents' Association of Australia, *Proof Committee Hansard*, 26 June 2017, p. 17.

cancelled installation appointments.¹³ The committee was also advised that there can be long delays between ordering a service and installation.¹⁴

4.16 Ms Susan Parsons, Senior Engagement Officer, Mareeba Shire Council explained a situation where an installation was unable to be completed because the contractor did not have the appropriate equipment:

In some cases there have been delays like that that we have heard of when there have been problems with installing technology and handovers between different contractors and lack of information and lack of communication between contractors. An example just this week was one contractor comes out and it is a tiled roof and he does not have the equipment and he has to go away. A second one comes out all the way from Melbourne and does not have the equipment or there was some other issue.¹⁵

4.17 The committee was also made aware of inefficiencies in the appointment making process:

Installers have had issues with orders being placed by delivery partners on a daily basis, resulting in no common sense 'milk run' installations being able to occur. Often installers are sent to install a service many hundreds of kilometres away, only to travel back along the same road two days later.¹⁶

4.18 Mrs Joanna Gibson, Communications Portfolio Leader, Federal Council, Isolated Children's Parents' Association of Australia (ICPA), provided the following observations on the appointment making process:

The number of excess kilometres travelled by installers who individually connect up NBN services on a property that may have up to four connections is appalling...

Members report the difficulty of being able to contact the individual technician prior to them travelling to remote properties. The different levels of people that need to be contacted and dealt with include the service provider, NBN, the installation company and the technician, who often do not seem to be able to see reports generated by different levels. To be asked to provide photos of equipment installed and email them to the service provider when you have no internet coverage seems to show a complete lack of understanding of where some of these locations are.¹⁷

13 Better Internet for Rural, Regional and Remote Australia, Submission 101, p. 17.

14 See, for example, Mr Rob van der End, Chief Executive Officer, Clear Networks, *Committee Hansard*, 19 April 2017, p. 32, Ms Jo Shannon, Secretariat, Rural Councils Victoria, *Committee Hansard*, 20 April 2017, p. 48,

15 Ms Susan Parsons, Senior Engagement Officer, Mareeba Shire Council, *Committee Hansard*, 7 April 2017, p. 15.

16 Better Internet for Rural, Regional and Remote Australia, *Submission 101*, p. 20.

17 Mrs Joanna Gibson, Communications Portfolio Leader, Federal Council, Isolated Children's Parents' Association of Australia, *Proof Committee Hansard*, 26 June 2017, pp. 17-18.

4.19 A survey conducted by BIRRR found that 20 per cent of Sky Muster services did not activate on installation.¹⁸

Quality of service

4.20 Submitters and witnesses highlighted issues once connected to Sky Muster including: slow download and upload speeds, frequent drop outs and intermittent service, insufficient data capacity/quotas, adverse weather conditions affecting connections and latency issues on voice services.

4.21 In its submission and at the public hearing in Townsville, BIRRR explained a number of challenges reported to their organisation.¹⁹

4.22 BIRRR advised that the current speeds on Sky Muster (i.e. 12Mbps and 25Mbps) were working well however service reliability is an ongoing issue.²⁰

4.23 Dr Greg Leach, Senior Policy Adviser, AgForce Queensland described challenges using voice services over Sky Muster:

The voice latency, particularly from Sky Muster user to Sky Muster user in different parts of rural and remote, can be quite severe, particularly for children. This has been related to me a number of times from different members who have children on distance education. When there is a latency of 1.6 seconds or so, it breaks down our human ability to communicate quickly. It staggers conversations that, previously, they had had quite easily on the copper system or on the systems that they had before.²¹

4.24 Several submitters noted they are experiencing a high frequency of drop outs, particularly in wet and stormy conditions.²²

4.25 The Northern Territory Government submitted:

The nature of extreme weather conditions common within the Northern Territory, especially in the coastal regions, makes satellite unreliable due to rain fade and loss of signal. In a natural disaster satellite communications are likely to fail precisely at the time a community needs them the most.²³

18 Better Internet for Rural, Regional and Remote Australia, *Submission 101*, p. 19. There were a total of 989 responses to the survey. See: Better Internet for Rural, Regional and Remote Australia, Sky Muster Survey Results, 2017, p. 4.

19 Better Internet for Rural, Regional and Remote Australia, *Submission 101*, pp. 17–21, Mrs Kylie Stretton, Co-Founder, Better Internet for Rural, Regional and Remote Australia, *Committee Hansard*, 7 April 2017, p. 31.

20 Mrs Kylie Stretton, Co-Founder, Better Internet for Rural, Regional and Remote Australia, *Committee Hansard*, 7 April 2017, p. 37.

21 Dr Greg Leach, Senior Policy Adviser, AgForce Queensland, *Committee Hansard*, 6 April 2017, p. 27.

22 See, for example, Mr Robert Paton, *Submission 71*, p. 1, Mr Martin Nichols, *Submission 75*, p. 1,

23 Northern Territory Government, *Submission 2*, p. 1. See also, Queensland Government, *Submission 21*, p. 30.

4.26 BIRRR's submission also discussed weather conditions and the impact on types of satellites like Sky Muster:

Issues with 'rain fade' are also a considerable impediment to take-up of nbn satellite service. Nbn Sky Muster is an all Ka band satellite system. Ku band, Very Small Aperture Terminal (VSAT) systems may provide up to 99.95% availability, while Ka band availability is generally poorer at around 99.5% for a similar VSAT cost. '99.5% availability' means that a customer can be off-line due to weather effects, for up to 50 minutes per week or greater. Sky Muster customers are recording weather-related outage events of these magnitudes on a regular basis. In addition, rain fade affects the major earth stations and not only customer dishes. When weather takes out an earth station it also takes out thousands of Sky Muster services.²⁴

4.27 The committee also received evidence describing challenges from the perspective of RSPs. Mr Rob van der End, Chief Executive Officer, Clear Networks, a RSP providing NBN services, explained some of the challenges experienced when Sky Muster service commenced:

The launch of the NBN Sky Muster program was beset with issues from the beginning, starting with the mode of how to connect customers. After launch we faced a service dogged with unreliability; daily minor outages through to major ones lasting many days; installers failing to arrive—some on multiple occasions; delays to installation; activation and dropout issues; speed and performance issues; slow or non-response to tickets; and, of course, managing the fair use policy of the NBN. Contrasting previous programs, the NBN Sky Muster program shows how industry often delivers a better service where we have control over the install process—which we do not in NBN-world—and customers do not understand this, so they always refer back to the service provider. There is very little visibility over the network and outages on other platforms were rare, and we have no control over this with the NBN.

4.28 Mr van der End went on to explain further:

As a result, over the following eight months calls to our help desk increased by 250 per cent, requiring additional staffing, training costs and placing stress on our staff, who were often without the insights or ability to control the customer-facing issue. TIOs [complaints to the TIO] increased to unprecedented levels and our reputation on social media was tarnished. I do not want to understate the reputational damage that is suffered when, as a service provider, you are left with communication tweaks to respond to customers and daily dealing with brand damage issues.²⁵

24 Better Internet for Rural, Regional and Remote Australia, *Submission 101*, p. 44.

25 Mr Rob van der End, Chief Executive Officer, Clear Networks, *Committee Hansard*, 19 April 2017, p. 24.

Current plans not meeting the needs of the community

Sky Muster plans currently available

4.29 At the wholesale level, two speed options are available to RSPs on Sky Muster: 12Mbps download with a 1Mbps upload, or 25Mbps download with a 5Mbps upload.

4.30 As detailed in the *Full year results 2017*, as at 30 June 2017, 66 per cent of Sky Muster customers have chosen the 25/5 speed plan (see below).

Table 4.4: Sky Muster speed tier mix (Mbps)²⁶

	30 June 2016	30 June 2017
12/1	26 %	34 %
25/5	74 %	66 %
Total	100 %	100 %

4.31 nbn has a *Fair Use Policy*²⁷ that applies to Sky Muster—this applies between nbn and retail service providers (RSPs). RSPs may also have a separate fair use policy which applies to households.

4.32 A nbn fact sheet about Sky Muster notes:

Satellite capacity is a finite resource and nbn plans to work closely with internet service providers to help ensure they manage capacity properly, so that everyone has access to a great online experience.²⁸

4.33 Under the *Fair Use Policy*, nbn places usage limitations on its customers (i.e. RSPs). In the event that RSPs exceed the mandated limits, they are required to pay additional charges and, in some circumstances, nbn may decline orders or suspend supply.²⁹

4.34 RSPs can request that nbn waives obligations under the *Fair Use Policy* for Public Interest Premises—a premise used for a public interest purpose including an indigenous community organisation, not-for-profit organisation, educational facility, health facility or local government facility.

4.35 Evidence to the committee noted the current range of Sky Muster products are not meeting the needs of the community, with particular reference to: cost, speed constraints, download restrictions, and the limit of one plan per premise.

4.36 Rural Councils Victoria noted that the cost of NBN services on satellite are not competitive with other technologies:

²⁶ Adapted from, nbn, *Full year results 2017*, p. 10.

²⁷ nbn, *Fair Use Policy, Wholesale Broadband Agreement*, 2016.

²⁸ nbn, *The new nbn Sky Muster service Fact Sheet*, 2016, p. 2.

²⁹ nbn, *Fair Use Policy, Wholesale Broadband Agreement*, 2016, p. 6.

NBN pricing on satellite is not seen as being as competitive with other forms of NBN service, reinforcing the idea that rural customers are paying more for an essential utility than their regional or city-based cousins. Download limits of a maximum 150 gigabytes, plus 50 gigabytes per student up to an additional 150 gigabytes per household, are in place on the Sky Muster satellite service. This does not provide modern download limits to rural areas.³⁰

4.37 Customers are currently limited to a single Sky Muster plan per premise which particularly poses challenges for residential premises who may also be operating a business.³¹

4.38 The Regional, Rural and Remote Communications Coalition submitted:

There are some limitations in the nbn design which are preventing consumers from getting full benefit from Sky Muster services. Limitations in the plans, particularly the Fair Use Policy (FUP) over Sky Muster services, are restricting use by regional, rural and remote consumers. Generally, consumers are limited to having one plan per location. This severely limits many consumers who are trying to run businesses, offer employees and tourists' data and possibly study for tertiary education qualifications as well as general residential use, all from one limited plan.³²

Limitations of the Fair Use Policy

4.39 Evidence to the committee indicated that the application of the *Fair Use Policy* is affecting people's ability to access and use their NBN service to meet their needs.³³

4.40 In its submission BIRRR explained:

...the average household monthly usage for families connected to NBN is 141 gigabytes per month. The maximum peak available to a Sky Muster user is half of that: 70 gigabytes. A survey conducted by BIRRR, in late 2016, highlighted that 51 per cent of Sky Muster is used for business. Far too many regional users are being forced onto Sky Muster, which, by any measure, falls a long way short of the capabilities promised by NBN. This is a system that frequently does not allow for the absolute basics, such as internet banking, and is not in a position to contemplate, let alone capitalise on, the technical revolutions of the future.³⁴

30 Ms Jo Shannon, Secretariat, Rural Councils Victoria, *Committee Hansard*, 20 April 2017, p. 49.

31 See for example, NSW Farmers' Association, *Submission 104*, p. 9.

32 Regional, Rural and Remote Communications Coalition, *Submission 44*, p. 3.

33 See for example, ACCAN, *Submission 22*, p. 15; Regional, Rural and Remote Communications Coalition, *Submission 44*, p. 3; Grain Growers Limited, *Submission 82*, p.3; Cotton Australia, *Submission 46*, p. 1.

34 Mrs Kylie Stretton, Co-Founder, Better Internet for Rural, Regional and Remote Australia, *Committee Hansard*, 7 April 2017, p. 31.

4.41 Respondents to a survey about Sky Muster conducted by BIRRR reported a preference to have more flexibility to perform tasks without using all of their available data during peak periods:

Some of the respondents said they want to be able to update without using all their peak data. If they want to update their programs, they have to wait until between 1 am and 7 am to try and set that up. Some of these people do not know how to use technology. They know how to turn the computer on and open their email or their browser, but they do not know how to set up something to update at a different time. A lot of them want to do research on their business. A lot of them are looking at doing webinars about how to conduct business and improve their business skills. They would like to FaceTime or Skype with people, which you cannot do currently. Nearly seven per cent of them cannot even get onto social media; they cannot even have communication with other people through social media.³⁵

4.42 ACCAN also provided evidence about the limitations on the current Sky Muster plans:

There have been a lot of problems with the rollout of Sky Muster so it has been unreliable and NBN is on the record for saying that they are having 'worse than teething problems' in addressing that. The big problem that people are experiencing with Sky Muster in remote areas is that they want more data than is being provided on the plans available and also that they are limited to off-peak and on-peak plans, which affect their usage in various different ways, particularly if they are running businesses. I am sure you have heard of the hashtag called #datadrought. There is a huge cry out that people should be able to purchase more data if it is available, particularly in very remote areas where they have no other options. Some people on Sky Muster still have mobile broadband as an option where they live so they are bolstering their usage with that. Some people are choosing to just use that and not go on Sky Muster but of course that is a more expensive service.³⁶

4.43 Witnesses explained that there is a general community expectation in rural areas that services on Sky Muster will differ from plans offered in city areas and places of high urban density.³⁷ Whilst this was noted, it was stressed that the plans on offer should not be cost prohibitive and should be structured in a way to meet the needs of the community.³⁸

35 Mrs Rachel Hay, Data Analyst, Better Internet for Rural, Regional and Remote Australia, *Committee Hansard*, 7 April 2017, p. 37.

36 Ms Teresa Corbin, Chief Executive Officer, Australian Communications Consumer Action Network, *Committee Hansard*, 19 April 2017, p. 8.

37 See for example, Mr Alex Green, Chief Executive Officer, Mansfield Shire Council, *Committee Hansard*, 20 April 2017, p. 32.

38 See for example, Mrs Kylie Stretton, Co-Founder, Better Internet for Rural, Regional and Remote Australia, *Committee Hansard*, 7 April 2017, p. 37.

4.44 In this context, the need for some restrictions to be in place to monitor individuals' use of the satellite service was acknowledged. Ms Lee Longmire, a community member from Narrandera Shire Council, told the committee:

Yes, I understand that there does need to be some sort of fair use policy, but it also needs to be fair itself. Having a fair use policy is not a problem, so long as it matches community standards and expectations of what fair use of data is. If the data that is being provided on Sky Muster is a quarter of what the average user, as NBN Co has stated, is currently consuming, then that, to me, is not right and should be rectified. We should be keeping Sky Muster to a reasonable standard from what the average user on NBN is consuming so that we can try to maintain and close the gap that is currently broadening every day. The longer that this keeps going and the less data that is rolled out for Sky Muster users, the worse off anyone in that footprint is going to be.³⁹

Eligibility criteria for Sky Muster connections

4.45 The committee notes that the rollout of the NBN always included a satellite service. Throughout the inquiry, several submitters and witnesses expressed concern about the increased number of premises assigned to Sky Muster.

4.46 At a public hearing in Townsville, Mrs Kylie Stretton, Co-Founder, BIRRR noted:

But there are way too many people who are mapped for Sky Muster. I live 11 kilometres from Charters Towers. I can pretty much see a fixed wireless tower from our roof, but it beams back over Charters Towers. I am by no means remote. I should not really be on Sky Muster; we should have more fixed wireless towers. There are whole towns being taken off ADSL and put onto Sky Muster.⁴⁰

4.47 Dr Leach, AgForce Queensland, expressed concern about the number of people being placed onto the satellite service:

We are quite alarmed that, as the program continues on, there is over-subscription on some of the sectors on the satellite. We are concerned that the people who are put onto Sky Muster are those who really need it, as opposed to shuffling people on because it is the easiest option at this point. We are firmly of the view that fixed wireless options have much greater reliability and accessibility for a large number of people that have been put onto Sky Muster.⁴¹

4.48 Mr Peter Johnson, Manager, Information, Communications and Technology, Western Australian Local Government Association told the committee:

39 Ms Lee Longmire, Community Member, *Committee Hansard*, 20 April 2017, p. 28.

40 Mrs Kylie Stretton, Co-Founder, Better Internet for Rural, Regional and Remote Australia *Committee Hansard*, 7 April 2017, p. 35.

41 Dr Greg Leach, Senior Policy Adviser, AgForce Queensland, *Committee Hansard*, 6 April 2017, p. 25.

In the original discussion around satellite it was to be a technology of last resort, not an infill mechanism. We're finding that some areas where there was an expectation for at the very least fixed wireless connections are now being coloured in on the map, if you like, as ready for service using satellite. If it's an interim measure, we can live with that and it's fantastic that those people are being connected; if it's a long-term measure then it's not fine, because that is to the detriment of those areas, particularly if you have fairly local metropolitan areas or regional centres where people aren't able to take advantage of reasonable internet.⁴²

4.49 Mrs Gibson, ICPA, explained that premises eligible for fixed wireless connections are being advised that Sky Muster is the only option:

There have also been instances of people who would like to subscribe to the NBN network being told that Sky Muster is their only option, but they are actually eligible for fixed wireless connections. Due to maps not being updated in a timely manner, their application is being refused by the RSP. This causes a lot of toing and froing, and this type of misinformation causes great confusion for members. There needs to be one point of contact who advocates for the customer during the installation or fault repair process.⁴³

4.50 Ms Lee Longmire, a community member from Nerranderra Shire Council who resides in a Sky Muster area, informed the committee she received advice from a private company that a fixed wireless signal may be available at her house despite being outside nbn's designated fixed wireless footprint area.⁴⁴

4.51 The committee heard evidence of entire communities being assigned to Sky Muster in contrast to neighbouring communities who have been assigned other technologies such as fixed wireless or FTTN.

4.52 Kaniva, a major township of West Wimmera Shire Council (WWSC) in regional Victoria, has been assigned to the Sky Muster satellite service. A number of towns surrounding Kaniva (including Bordertown and Nhill) are being connected to the NBN using either fixed wireless, or FTTC, using existing infrastructure running through the Western Highway. Kaniva's main street is the Western Highway.

4.53 WWSC has made representation to nbn and the Minister for Communications' office to seek to have the decision about the choice of technology changed.⁴⁵ The Mayor of West Wimmera Shire Council, Councillor Bruce Meyer, questioned the equity of the situation when Edenhope, another major township of WWSC, is similar

42 Mr Peter Johnson, Manager, Information, Communications and Technology, Western Australian Local Government Association, *Proof Committee Hansard*, 17 July 2017, p. 2.

43 Mrs Joanna Gibson, Communications Portfolio Leader, Federal Council, Isolated Children's Parents' Association of Australia, *Proof Committee Hansard*, 26 June 2017, p. 18.

44 Ms Lee Longmire, Community Member, *Committee Hansard*, 20 April 2017, p. 25. See also, Better Internet for Rural, Regional and Remote Australia, *Submission 101*, p. 13, who highlighted challenges with establishing fixed wireless connections.

45 West Wimmera Shire Council, *Submission 165* and *Proof Committee Hansard*, 27 June 2017, pp. 60-67.

in size and population to Kaniva, had been assigned to receive a mixture of FTTN and FTTC.⁴⁶

4.54 Mr Robert Smallwood, Digital Economy Strategy Manager, Mid West Development Commission told the committee:

There are a significant number of communities we have identified where there is fibre running through the community that is owned primarily by either Telstra or folks like Vocus where the only available NBN service is Sky Muster. We don't quite understand why these communities aren't being offered fixed line services or at least fixed wireless services rather than Sky Muster given their proximity to existing fibre.⁴⁷

4.55 Mr van der End explained that Clear Networks has expanded their fixed wireless network into Sky Muster areas:

We have actually expanded our fixed wireless network into areas that are covered by NBN's Sky Muster, so we have our own fixed wireless network. Why would you connect to that network? One is latency—that is, the responsiveness of the network is far better on a terrestrial service than having to go all the way up to the sky and back down again. The second is that you can choose the plan that suits your data limit. I think that is right. I think there are many opportunities for people to connect. If they have ADSL available and it is okay, and then you hear of some of the issues you have heard about Sky Muster, why would you change?⁴⁸

4.56 Several witnesses told the committee that people are delaying connecting to Sky Muster and waiting to see if decisions are made to provide another technology option in their area.⁴⁹

Opportunities for improving the Sky Muster service

Recent changes to the Sky Muster Service

4.57 Whilst acknowledging the challenges being experienced on Sky Muster, several witnesses observed there had been recent improvements.⁵⁰

4.58 As stated above, RSP Clear Networks experienced a significant increase in call centre calls when Sky Muster was launched. However, Mr van der End also noted that:

46 Councillor Bruce Meyer, Mayor, West Wimmera Shire Council, *Proof Committee Hansard*, 27 June 2017, p. 62.

47 Mr Robert Smallwood, Digital Economy Strategy Manager, Mid West Development Commission, *Proof Committee Hansard*, 17 July 2017, p. 34.

48 Mr Rob van der End, Chief Executive Officer, Clear Networks, *Committee Hansard*, 19 April 2017, p. 31.

49 See for example, Mrs Kylie Stretton, Co-Founder, Better Internet for Rural, Regional and Remote Australia, *Committee Hansard*, 7 April 2017, p. 35.

50 See for example, Mr Daniel Featherstone, General Manager, Indigenous Remote Communications Association, and Director, Broadband for the Bush Alliance, *Proof Committee Hansard*, 17 July 2017, p. 12,

Certainly in the last four months [prior to the public hearing in April 2017] the service has stabilised considerably, but is still the cause of much of our support efforts and complaints.⁵¹

4.59 Mr Tony Bundrock, Chief Executive Officer, Activ8me, supported the evidence from Clear Networks:

While I share many of the concerns... about the introduction of Sky Muster—and we have all experienced very similar issues—I also have to agree that the service has stabilised and the issues that were dogging us last year seem to have largely passed. We are, as a forward-looking company, looking to the future.⁵²

4.60 Evidence to the committee indicated that service improvements occurred once nbn responded to concerns being highlighted by RSPs:

A lot of the people within the Sky Muster community had round-robin discussions amongst themselves and were saying, 'This has gotten beyond acceptable', and that is when NBN management did respond with some work to look at what some of these core issues were, and that is when we saw improvement. But it was not until that happened.⁵³

4.61 Earlier in 2017, nbn introduced a dedicated 1800 number to respond exclusively to Sky Muster matters. Although this additional avenue to request assistance was welcomed, concern was raised that the community was largely unaware of the number as it was not promoted on the nbn website. Witnesses advised the committee that community members were aware of the number only after hearing about it from others.

I do know about the call centre. It is very, very hard to find their phone number... If you go online to their website, you cannot track it down... When I am getting queries from residents, I generally make sure I pass that number on. If it is a general inquiry and I can answer it then I will answer the query in the first instance, otherwise I refer them to the website and the call centre.⁵⁴

4.62 BIRRR submitted:

The development of a specific regional team within the nbn call centre has also been a welcome addition, however there needs to be much clearer communication of roles and responsibilities so it is clear which issues this

51 Mr Rob van der End, Chief Executive Officer, Clear Networks, *Committee Hansard*, 19 April 2017, p. 24.

52 Mr Tony Bundrock, Chief Executive Officer, Activ8me, *Committee Hansard*, 19 April 2017, p. 24.

53 Mr Rob van der End, Chief Executive Officer, Clear Networks, *Committee Hansard*, 19 April 2017, p. 30.

54 Ms Cherie Gerlach, Manager, Media and Communications, Port Augusta City Council, *Committee Hansard*, 26 June 2017, p. 6.

team can assist with, and which issues are specifically related to providers or end users.⁵⁵

4.63 As an extension to the call centre already established, it was suggested that nbn officials responding to Sky Muster queries on the information line should have a good understanding on the particular issues affecting rural, regional and remote communities.⁵⁶

4.64 Throughout the inquiry, witnesses and submitters recommended further action be taken to improve the customer experience when accessing Sky Muster. These recommendations focused on the following areas:

- review the plans currently available, including an ongoing review of the *Fair Use Policy*, to better meet the needs of community; and
- investigate options to ensure the capacity of the satellite, including by limiting use of the satellite to rural and remote communities and increasing the number of premises assigned to the fixed wireless footprint.

Review Sky Muster plans currently available

Review of data limits under the Fair Use Policy

4.65 Submissions and witnesses to the inquiry advocated for nbn to review its *Fair Use Policy* to increase the data available on Sky Muster plans. The committee notes the announcement by nbn on 27 June 2017:

The company today announced it will be doubling the maximum monthly wholesale data limits and increasing average peak downloads plans by up to 50 per cent on the Sky Muster™ platform. As a result, the majority of consumers and businesses on the service are expected to receive larger peak and off-peak plans from their retailer at a similar cost to what they are paying today...

The new nbn Sky Muster™ plans are expected to be available through retailers in October 2017.⁵⁷

4.66 On 13 July 2017, Senator the Hon. Fiona Nash, Minister for Regional Communications, advised that RSPs selling NBN Sky Muster plans 'will pass on the extra peak data to customers at very little cost'. Furthermore:

The result is customers will soon be able to access 60 gigabyte month peak data at very little extra cost above what a 40 gigabyte/month plan costs now. A 100 gigabyte/month peak data plan would cost only slightly more than a 65 or 70 gigabyte/month plan costs now...

55 Better Internet for Rural, Regional and Remote Australia, *Submission 101*, p. 9.

56 Mrs Kylie Stretton, Co-Founder, Better Internet for Rural, Regional and Remote Australia, *Committee Hansard*, 6 April 2017, p. 34.

57 nbn, 'nbn increases peak downloads by up to 50% and doubles the maximum plan limits on Sky Muster satellite service', *Media Release*, 27 June 2017.

An extra 35 gigabytes of peak data would allow, for example, a business to do 50 more hours of high definition videoconferencing with colleagues and clients, or a student to do 25 more hours of watching university lectures each month, or a photographer to send an extra 3500 pictures a month.⁵⁸

4.67 In this context, at the public hearing in Sydney, Mr Peter Girvan, Asia Pacific Vice President, ViaSat, advised that their organisation is in discussion with nbn about techniques to increase network capacity further:

Yes, they have recently increased them [current Sky Muster caps], but we have had discussions with them over the last couple of weeks about what techniques you could use within the network to increase them even further. We are sharing with them expertise around what we have done, the techniques we have used in the US and Europe, to make the satellite more landline like, if I could use that term. That includes things like traffic-management techniques that you can apply to your network, and there are other things you can do within the core of the network to make it look like, from a customer-experience perspective, that you have a greater capacity than is really there. The whole secret of satellite technology is to try and make the satellite technology as transparent as possible to the customer and give them as landline like an experience as possible.⁵⁹

4.68 The ability of nbn to announce increased data limits reinforces the concerns raised by a number of witnesses about the lack of transparency when it comes to Sky Muster capacity, data provisioning, and the modelling and assumptions that underlie the *Fair Use Policy*.

4.69 Witnesses who appeared at public hearings after the announcement about increasing data caps indicated their support for the increase.⁶⁰

Expanding the range of available plans

4.70 Several witnesses and submitters advocated for additional plans to be available for Sky Muster customers: allowing for multiple plans per premise as well as introducing a business plan for Sky Muster customers.

4.71 The Regional, Rural and Remote Communications Coalition submitted:

A guarantee is needed that additional Sky Muster capacity is reserved to increase data allowance to current users, and that more plans are allowed per location for business use and by students, in addition to the current education port data allowance for distance education students. This will ensure that those that rely on Sky Muster the most are able to make use of it.⁶¹

58 Senator the Hon. Fiona Nash, Minister for Regional Communications, 'Sky Muster retailers will pass on data; customers will pay very little extra', *Media Release*, 13 July 2017.

59 Mr Peter Girvan, Asia Pacific Vice President, ViaSat, *Proof Committee Hansard*, 1 August 2017, p. 3.

60 See for example, Dr Nicole Spurrier, *Proof Committee Hansard*, 27 June 2017, p. 32.

61 Regional, Rural and Remote Communications Coalition, *Submission 44*, p. 3.

4.72 Mr Alex Green, Chief Executive Officer, Mansfield Shire Council, provided an example of a resident seeking alternative working space due to the limitations of Sky Muster plans, particularly when balancing business and residential use on the same plan. On the question of whether a business plan should be made available, Mr Green told the committee:

Yes, absolutely. I think that was a really good suggestion or recommendation. The Mansfield shire and the broader Mansfield community would absolutely support having the opportunity and doing that in a way that is equitable and affordable. I think that is appropriate.⁶²

4.73 Mrs Judith Charlton, Chief Executive Officer, Narranderra Shire Council agreed that equitably priced business plans will address some of the capacity challenges on Sky Muster.⁶³

4.74 Ms Lee Longmire, a community member from Narranderra Shire Council, raised concerns with the current limit of one Sky Muster plan per premises, noting that this does not recognise the needs of farm businesses:

Currently, I have an understanding that with Sky Muster there is a prevention on having more than one plan per premises. That will be a fundamental thing that needs to be looked at being shifted and adjusted to recognise that for anything to do with, say, farmhouses like mine, we need to be able to possibly bundle a plan that can access more data so that we are not restricted to only being able to operate our farm and still say to the kids: 'I'm sorry, that's the farm data. You still can't use it.' That needs to be recognised, I think. It needs to be multipurpose.⁶⁴

4.75 During an Estimates hearing, Mr John Simon, Chief Customer Officer, nbn, provided evidence to the Senate Environment and Arts Legislation Committee that Sky Muster business grade services are not currently available but are on the 'horizon'. Further to this, Mr Simon advised:

It is on our product roadmap and we will see that happen in calendar year [2018]. That would be standard stuff from emails through to web browsing. It would also clearly be some using it to download content, videos, and it would even be to stream videos...

It has always been on the agenda and where we are heading because clearly businesses, rural properties, require capabilities. These are applications that would be used during the day, so outside of the peak busy period that business can use it..⁶⁵

62 Mr Alex Green, Chief Executive Officer, Mansfield Shire Council, *Committee Hansard*, 20 April 2017, p. 34.

63 Mrs Judith Charlton, Chief Executive Officer, Narranderra Shire Council, *Committee Hansard*, 20 April 2017, p. 30.

64 Ms Lee Longmire, Community Member, Narranderra Shire Council, *Committee Hansard*, 20 April 2017, p. 31.

65 Mr John Simon, Chief Customer Officer, nbn, *Senate Environment and Communications Legislation Committee Estimates Hansard*, 25 May 2017, p. 126.

Future proofing the capacity of Sky Muster

4.76 A variety of views were presented to the committee suggesting options for ensuring ongoing capacity of Sky Muster services including reducing the number of people on satellite and extending the fixed wireless footprint.

4.77 The South Australian Government submitted that satellite services should be deployed only when no other fixed-line options are feasible:

To maximise equity and to ensure that farmers and other regional Australians can enjoy the benefits of an NBN service that is comparable to that provided to metropolitan residents, the South Australian Government requests that satellite connections only be deployed as a technology of last resort when no other fixed-line options are feasible.⁶⁶

4.78 Evidence from the NSW Farmers' Association suggested that more rural and regional customers should be assigned to a fixed wireless network to reduce further strain on Sky Muster satellites.⁶⁷ Similarly, at the public hearing in Adelaide, Professor Reg Coutts stated:

...while I think fixed wireless has been a success and is an Australian first—and I think NBN Co should be congratulated on that—I would like to see it more widely deployed to actually take the pressure off satellite where satellite is really not the best solution.⁶⁸

4.79 Further to this, Professor Coutts noted:

Unfortunately, I think, to a degree, the fixed wireless has not been explored. As I understand it, if there aren't sufficient premises within the fixed wireless cell, then they recommend satellite. The most obvious thing might be—and this is just my idea—that initially someone would be provided with satellite but with the option, when there are sufficient numbers, to move to fixed wireless—in other words, some idea of really addressing the infrastructure and the demand in a particular area which is not so much, shall we say, dictated by, 'You'll have satellite and you will have fixed wireless'.⁶⁹

4.80 Ms Lee Longmire, a community member from the Narrandera Shire Council, provided the following assessment of the current extent of Sky Muster coverage:

There are people on the urban fridges of Melbourne and Sydney who are put onto Sky Muster. I do not understand that. To me, that is crazy. Why is the Sky Muster service being chewed up by people who live in an urban fringe? To me, that is not right. I think the original intention—from when Sky Muster was being rolled out—has been sort of smooshed around a bit

66 South Australian Government, *Submission 102*, p. 4.

67 See for example, NSW Farmers' Association, *Submission 104*, p. 12.

68 Professor Reginald Coutts, Managing Director, Coutts Communications, *Proof Committee Hansard*, 27 June 2017, p. 9.

69 Professor Reginald Coutts, Managing Director, Coutts Communications, *Proof Committee Hansard*, 27 June 2017, p. 11.

and used as Spakfilla for all these gaps that cannot actually be filled, because it costs too much to put a fixed wireless tower up...What Sky Muster seemed to have been originally touted as has now been morphed into this bigger thing, and I do not think the capacity is there to support it, especially if we have such tiny data allowances associated with it.⁷⁰

4.81 It is submission, the Australian Medical Association also addressed this issue:

The AMA believes there should be much greater focus by the Government on finding ways to extend the boundaries of the NBN's fibre and fixed wireless footprints into the satellite footprint wherever possible to lessen the reliance on satellite for those living in rural and remote Australia and to address the increase in internet usage over time.⁷¹

Fixed wireless network and mobile phone towers

4.82 In order to improve telecommunications to regional areas more broadly, Mr Peter Girvan, Asia Pacific Vice President, ViaSat suggested that consideration be given for the fixed wireless network to be used to support mobile services:

When we go into regional Australia to towns that see a new tower going right up on the edge of town, an NBN fixed wireless tower, we often get the question, 'Why can't that also deliver a mobile signal? Why have we as taxpayers invested in that tower yet we don't seem to be getting the services we want and need?' The answer is: it could deliver that. It is simply a question of whether there is an expansion of focus, an examination of the ways in which NBN could deliver enhanced services for regional Australia.⁷²

4.83 At the public hearing in Sydney, Mr Bill Morrow, Chief Executive Officer, nbn, noted that while nbn towers were being used for shared services with mobile companies, nbn was not considering delivering a wholesale mobile service via the fixed wireless infrastructure.⁷³

4.84 Another suggestion to increase satellite capacity was for nbn to purchase an additional satellite. Associate Professor Mark Gregory stated:

I have been calling for four years for a third satellite to be ordered. The third satellite should provide telephone services. We have heard a lot of issues about the Sky Musters being Ka data satellites. The new satellite should be a combination of data and voice, in that it will provide single-hop voice, but it should also, because of the changes in technology, be able to provide as much as both of the existing Sky Muster satellites. For the cost of one Sky Muster satellite, we can double capacity. Satellites have a

70 Ms Lee Longmire, Community Member, Narranderra Shire Council, *Committee Hansard*, 20 April 2017, p. 25.

71 Australian Medical Association, *Submission 3*, p. 2.

72 Mr Peter Girvan, Asia Pacific Vice President, ViaSat, *Proof Committee Hansard*, 1 August 2017, p. 2.

73 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 66.

15-year life. By the time the NBN is over, one of those satellites will be one-third of the way through its life. Ten more years and those two satellites will be gone. If we do not order another satellite now, then we are going to have a big problem.⁷⁴

4.85 Mr Girvan of ViaSat advised the committee that their organisations owns and operates four high capacity satellites and plans to launch at least three even higher capacity satellites in 2019. Mr Girvan also explained their relationship with nbn:

We're the ground station infrastructure partner of NBN, having built its 10 satellite gateways or ground stations, it's two data processing centres, and to date we've supplied over 80,000 residential modems and dishes to users across the country. We're helping NBN on their mission to ensure a connected Australia.⁷⁵

4.86 nbn told the committee that they have discussed satellite capacity with ViaSat but that no decisions have been made about the feasibility of using some of their capacity:

We are having discussions about what the possibilities are [with ViaSat about using their satellite capacity]. There are no plans. There is no budget, to be perfectly clear. However, we are always looking for how to be able to meet this very important part of the country's digital needs if it goes beyond the 25-meg limitation that exists with our satellites today. So what are our options? Could we use third-party satellites? Should we deploy a new satellite? Should we put more fixed wireless in these congested beams that we are seeing today? We consider all of these options for what is the upgrade path...⁷⁶

Committee view

4.87 The committee notes that the provision of a satellite service to premises outside the fixed line footprint has been an accepted part of the NBN since the project's inception, but was always intended to be a technology of last resort.

4.88 The committee accepts the evidence which shows the implementation of Sky Muster has been beset with problems including through the initial installation, in fault rectification, and in network stability. These issues should have been anticipated.

4.89 Evidence before the committee suggests that the current rollout is not proceeding by allocating satellite broadband as a 'technology of last resort'. The committee notes the evidence that Sky Muster is being used to serve areas that were previously intended to receive NBN through fixed wireless or some form of fixed line broadband. In addition to delivering satellite broadband to areas that could be served

74 Associate Professor Mark Gregory, *Committee Hansard*, 19 April 2017, p. 17.

75 Mr Peter Girvan, Asia Pacific Vice President, ViaSat, *Proof Committee Hansard*, 1 August 2017, p. 1.

76 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 47.

by a better technology, this approach will dilute the satellite capacity for those who are reliant on this form of broadband.

4.90 The committee emphasises that satellite broadband is clearly a last resort technology and it should be applied as sparingly as possible in order to avoid exacerbating the existing digital inequality between metropolitan communities, on the one hand, and rural, regional, and remote communities on the other.

4.91 Evidence to the inquiry indicated that a number of Sky Muster customers have experienced challenges with their service. The committee heard that the application of nbn's *Fair Use Policy* is impacting the ability of Sky Muster customers to use the NBN to its full potential. The committee believes there should be a benchmark for a reasonable data allowance, perhaps by reference to average data use across the fixed line network.

4.92 The committee welcomes the announcement by nbn to increase the data allowance and notes that these new allowances will take effect at the wholesale level in October 2017. The committee notes assurances given by RSPs that the increased allowances will be available to customers at minimal additional cost.

4.93 The committee is of the view that there needs to be greater consultation with rural and regional end users in the development of nbn usage policy and nbn rollout plans. Establishing a rural and regional reference group would be an important step in improving the end user experience and increasing transparency.

4.94 The committee believes there is clear and compelling public interest in greater transparency and disclosure from nbn in relation to the satellite capacity, current data provisioning, and the underlying modelling and assumptions which determined data rationing under the Fair Use Policy. The nbn should provide this information to the public, and the committee will seek this information from the nbn.

4.95 The committee also welcomes the evidence from nbn that Sky Muster business grade plans will be available in 2018, but believes there should be an appropriately structured opportunity for an additional business service per premise. The committee will monitor this matter throughout the inquiry and will continue to seek assurances from nbn that Sky Muster plans are meeting the needs of the community.

4.96 The committee notes the evidence provided and the suggestions made about future proofing the Sky Muster service, with particular reference to increasing the number of premises assigned to fixed wireless. It is the view of the committee that there is merit in nbn undertaking some analysis about increasing the number of premises in the fixed wireless footprint.

4.97 It should be noted however, that an increase in the number of premises connected to fixed wireless will not be budget neutral due to the cost of that option in comparison to satellite.

Recommendation 7

4.98 The committee recommends that the Australian Government require nbn to identify and disclose all areas that are currently designated to be served by a satellite connection that previously were set to receive the NBN by FTTN or fixed wireless, and explain why the change has occurred.

Recommendation 8

4.99 The committee recommends that the Australian Government require nbn to develop a plan that would provide access to nbn's fixed wireless towers for the provision of mobile telephony.

Recommendation 9

4.100 The committee recommends that the Australian Government ask nbn to consider providing the capacity for separate business and residential Sky Muster plans to be made available at the same location when business grade plans are introduced in 2018.

Recommendation 10

4.101 The committee recommends that the Australian Government set a benchmark for reasonable data allowance on Sky Muster plans, by reference to average data use across the fixed line network.

Recommendation 11

4.102 The committee recommends that the Australian Government ask nbn to establish a rural and regional reference group (see recommendation 3) and that nbn consult on Sky Muster services and changes to policy and rollout plans.

Chapter 5

Improving the NBN Customer Experience

5.1 This chapter examines various proposals for regulatory and practical changes aimed at improving the end-to-end experience of consumers on the NBN. A primary point of focus is consideration of proposals designed to give consumers clearer and more accurate information about NBN services at all relevant points of contact. These would allow consumers to make better choices about which service provider and which plan will meet their needs, and ensure that all pertinent information is disclosed by RSPs in their interactions with customers.

5.2 The chapter also examines the need for the introduction of broadband or service performance guarantees, which would ensure that consumers and other players in the supply chain have clear, enforceable rights in respect of the timeliness and quality of their service. The role of the Telecommunications Industry Ombudsman (TIO) in resolving NBN complaints is also considered, with suggestions made relating to the scope of the TIO's powers in resolving complaints.

5.3 nbn has advised the committee that the rollout of its network is now more than halfway through. Given the significant experience now inside the nbn, the RSPs, the regulators and the Department of Communications and the Arts (the Department), the committee believes that many of the common complaints driven by systemic inadequacies would have been rectified by now.

5.4 In previous chapters the committee has referred to evidence about consumer complaints. They can be grouped as follows:

- (a) The initial connection (Migration Experience):
 - (i) delays in connection once an area is declared ready for service;
 - (ii) absence of a plan to connect premises that are declared 'Service Class 0' or equivalent;
 - (iii) missed appointments and multiple call backs;
 - (iv) poor coordination between nbn and RSPs;
 - (v) blame shifting between nbn and RSPs for failure in initial connections; and
 - (vi) poor back of house procedures in RSPs for dealing with complaints.
- (b) Network Reliability and Network Performance:
 - (i) loss of service; and
 - (ii) customers not getting the speeds that they thought they were paying for.
- (c) Transparency and the Adequacy of Information:
 - (i) information about network performance at a per premises level;

- (ii) marketing practices of RSPs; and
- (iii) awareness of consumer rights and dispute resolution processes.

5.5 The committee has heard some evidence from the Department, nbn, and others regarding attempts to implement measures that will improve the NBN customer experience. The material before the committee to date indicates that these measures fall short of what is needed.

5.6 Officials from the Department noted the following at a public hearing of the committee in June 2017:

[nbn] is taking steps to address its engagement with retail service providers and end users to improve the overall customer experience. Recently the company announced a restructure where it established two executives with a customer focus: one focused on residential customers and one focused on business customers. The company has also established a program specifically to look at the end user experience to see how its systems and processes interacts with the retail service providers to improve the flow of information and the speed at which it can provide connections to end users. The company has through that process written out to its major retail service providers, and they have started a series of mutual discussions to look at how their systems can be redesigned to aim to address those issues that are causing delays or lack of information for the consumers.¹

5.7 Mr Bill Morrow, Chief Executive Officer, nbn, stated further at the committee's Sydney public hearing:

We have a company-wide focus on customer experience, so working with the industry to rectify this is clearly a top priority for the company. We look at the root causes of issues and identify how we are going to fix them. In doing so, we look at what NBN is responsible for and what sits outside of NBN's responsibilities with RSPs or with delivery partners, and of course we look to collaborate with all of them to help fix the issue and make this a far simpler, more straightforward process for the end users.²

5.8 A Departmental official commented in May 2017 that the Department is taking a coordinating role in attempting to drive change in this area:

Importantly we are looking at developing sets metrics so that we can accurately report on improvements in customer service at NBN level and also the retail service provider end... [We] very much see it as our role to draw together all of the work that has been done at the retail service provider end, very closely work with the NBN and understand improvements and changes in their service standards at the NBN end, and work with the ACMA, the ACCC and the TIO and the sector on where improvements can be made. So there is not a single approach that we could

1 Mr Andrew Madsen, Assistant Secretary, Broadband Implementation Branch, Department of Communications and the Arts, *Proof Committee Hansard*, 23 June 2017, pp. 51–52.

2 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 40.

take that will necessarily solve the problem. It needs to be industry, government and the NBN working together to resolve the issues.³

5.9 The committee's recommendations in this chapter are aimed at improving services and consumers rights for end users of the NBN.

Introduction of broadband service or performance guarantees

5.10 As discussed in Chapters 3 and 4, many customers have had extremely poor experiences during the installation and connection process, as well as encountering difficulties when attempting to have faults with their NBN service rectified.

5.11 Several submitters and witnesses suggested that enforceable service or performance guarantees should be introduced in order to protect consumers connecting to and using the NBN network. For example, the Regional, Rural and Remote Communications Coalition submitted:

There are no guaranteed service connection or fault repair timeframes for broadband services; nor are there any independent reliability measures. This creates a gap in policy and puts all consumers in a vulnerable position. Already the lack of service guarantees and safeguards are leading to complaints, concerns and debates about NBN services. This is more evident for regional and rural consumers for whom nbn does not offer any guarantees, even though they may rely solely on nbn services for their communication needs.

In an environment where consumers are passed between retail service providers and nbn, it is vital that lines of accountability between the wholesale provider and a consumer are established. In order for consumers to use and benefit from services, there must be a minimum level of service. Establishing this would provide the transparency and accountability which is currently missing. Additionally, regulatory bodies such as the ACMA should have oversight of the performance of the network and the powers to determine service levels and rebates when the network does not perform.⁴

5.12 ACCAN noted that while there are contractual arrangements between RSPs and nbn (through the Wholesale Broadband Agreement), these 'do not provide a safeguard for consumers and their services'. It argued:

There needs to be clear lines of responsibility and standards which set out acceptable levels of network operations and services. Creating lines of accountability between the wholesale provider and a consumer is more likely to create a network responsive to consumer needs.⁵

3 Ms Mary Balzary, First Assistant Secretary, Infrastructure and Consumer Division, Department of Communications and the Arts, *Senate Environment and Communications Committee Estimates Transcript*, 24 May 2017, p. 13.

4 Regional, Rural and Remote Communications Coalition, *Submission 44*, p. 2.

5 ACCAN, *Submission 22*, p. 9.

5.13 ACCAN argued that the changes required include:

- wholesale service obligations setting timeframes for connections, fault repairs, and network reliability benchmarks;
- arrangements to deal with the tension between wholesale and retail end user obligations; and
- incentives to comply in the form of end user compensation, penalties and wholesale pricing considerations.⁶

5.14 Ms Rachel Thomas, Policy Officer for ACCAN argued that these measures would reduce the ability of nbn and the RSPs to blame shift on customer issues:

So what our service standards recommendation and policy position relates to is making sure that there are clear standards on each level and that consumers know what to expect from their service. It reduces that finger pointing because they will know exactly when the connection time frame is supposed to happen, what kind of level of reliability they can expect and how many moments of outages there possibly will be on the service. At the moment, from a consumer's point of view, that is very vague.⁷

Extension of the existing Telecommunications Customer Service Guarantee

5.15 The existing Telecommunications Customer Service Guarantee Standard applies to telephone services, and specifies time frames for the connection of specified services, the repair of faults and the attendance of appointments by service providers. Customers are entitled to compensation if these time frames are not met.⁸ Several submitters argued that this guarantee should be extended, or a separate guarantee introduced, to cover broadband services. For example, the Queensland Government stated:

The current Customer Service Guarantee for telecommunications is a standard designed to encourage service improvement and guard against poor service. Phone companies are required to meet minimum performance requirements for specified services and compensate customers when these are not met. Similar guarantees are currently unavailable for broadband services. This situation needs to be updated to reflect the new telecommunications model that is being implemented through the NBN.⁹

5.16 Better Internet for Rural, Regional & Remote Australia argued that an updated Customer Service Guarantee should deal with issues including: minimum data

6 ACCAN, *Submission 22*, p. 9.

7 Ms Rachel Thomas, Policy Officer, ACCAN, *Committee Hansard*, 19 April 2017, p. 3.

8 See: The Australian Communications and Media Authority (ACMA), 'About the Customer Service Guarantee', <http://www.acma.gov.au/Industry/Telco/Carriers-and-service-providers/Obligations/about-the-customer-service-guarantee-carriers-service-providers-acma>.

9 Queensland Government, *Submission 21*, p. 8. See also: ACCAN, *Submission 22*, p. 9; Regional, Rural and Remote Communications Coalition, *Submission 44*, p. 1; National Farmers Federation, *Submission 45*, p. 3; Cotton Australia, *Submission 46*, pp. 1–2.

allowances; availability; accessibility; affordability; upload and download speeds; quality of service; and customer service and repair timeframes.¹⁰

5.17 A representative of the Department noted in May 2017 that a departmental review of consumer safeguards in the telecommunications industry is currently in progress. This review comes in the context of the Productivity Commission's report to government on the future of the Telecommunications Universal Service Obligation (USO):

The consumer safeguards review has been contemplated...as a response to the [2015] regional telecommunications inquiry. It is also something referenced by the PC's review of the USO. We have a number of moving parts in this space. Consumer safeguards are seen as probably the last piece that will consider the entirety of the findings of the USO review and then how that plays out in an NBN environment. The consumer safeguards review is an internal department process, but there will be consultation with industry and stakeholders about how we position a consumer framework in the future to make sure it is effective and relevant to consumers.¹¹

5.18 It was noted that the future of the Customer Service Guarantee would be considered as part of this review:

We expect that [the review] will be done in phases. We are looking at having short term, medium term and long term. We are ultimately looking at taking the consumer framework to be as relevant as possible in a post-NBN environment. So we are looking at the period of the rest of the rollout to prepare and gradually implement changes to ensure that the framework suits the needs of consumers in that environment.

... [The Customer Service Guarantee] will be part of the review in terms of discussing with consumers, industry et cetera how we make the protections and the guarantees involved in that CSG relevant in a post-NBN environment. Is it something consumers value, do we want to take it forward, and how should it be shaped?¹²

Committee view

5.19 The committee believe that access to affordable reliable broadband services are essential to participation in modern society and to running a business. The lack of enforceable rights and protections for consumers is a significant regulatory deficiency that cannot be allowed to continue. Examples cited in Chapter 3 show that delays in fault rectification and disruptions to service can have a significant monetary cost to individual customers and small business operators relying on the NBN. Businesses

10 Better Internet for Rural, Regional and Remote Australia, *Submission 101*, p. 5.

11 Ms Kathleen Sillieri, Assistant Secretary, Consumer Safeguards Branch, Department of Communications and the Arts, *Senate Environment and Communications Legislation Committee Estimates Hansard*, 24 May 2017, pp. 15–16.

12 Ms Kathleen Sillieri, Assistant Secretary, Consumer Safeguards Branch, Department of Communications and the Arts, *Senate Environment and Communications Legislation Committee Estimates Hansard*, 24 May 2017, p. 16.

and their representatives have raised the concerns about the lack of business grade products which would provide service rights and remedies in the business environment. Customers have found it difficult to resolve complaints; are subject to onerous requirements in terms of proving economic loss; and have often been unable to gain any financial compensation.

5.20 The committee notes the Department has been reviewing consumer safeguards in the telecommunications sector for some time. The committee believes that lack of progress in developing new consumer protections is leaving business and residential consumers at risk. Appropriate customer protections must be established for broadband services, including: service connection and fault repair timeframes; minimum network performance and reliability; and compensation arrangements when these standards are not met.

Recommendation 12

5.21 The committee recommends that the regulation of broadband wholesale services be overhauled to establish clear rights and protections for suppliers and end users of NBN broadband services. This framework should include: service connection and fault repair timeframes; minimum network performance and reliability; and compensation arrangements when these standards are not met. The committee requests that the Department brief the committee on progress in developing these protections by December 2017.

Recommendation 13

5.22 The committee recommends that nbn and RSPs develop business grade products specifically designed for the small business market which provide service guarantees and remedies. The committee requests that nbn and the Communications Alliance report back to the committee on progress in developing these products by December 2017.

Role of the TIO in resolving customer complaints

5.23 The committee heard evidence from some stakeholders that specific changes to the role and function of the TIO may enhance the resolution of customer complaints relating to the NBN.

Capacity for the TIO to play a 'broker' role between nbn and RSPs to resolve complaints

5.24 The capacity of the TIO to force nbn and RSPs to meet in order to resolve complaints was discussed at several public hearings of the committee.

5.25 The current Ombudsman, Ms Judi Jones, stated that while the TIO is working on getting nbn actively involved in resolving complaints, it does not have formal powers to coerce nbn and RSPs to meet in order to resolve issues.¹³ When asked about occasions where there are multiple parties involved in a complaint issue (for example,

13 Ms Judi Jones, Ombudsman, Telecommunications Industry Ombudsman, *Committee Hansard*, 24 March 2017, p. 22.

nbn, delivery contractors and an RSP) and blame-shifting is occurring about who is responsible, Ms Jones expressed the view that it would be helpful for the TIO to be able to get all the parties involved in the resolution of the complaint.¹⁴

5.26 In a further response to a question on notice about what the TIO required in order to better be able to resolve complaints, the TIO stated that having 'the authority to require all the relevant parties in the supply chain to cooperate with the TIO and to provide information to the TIO would assist the resolution of complaints'.¹⁵

5.27 Several other witnesses who gave evidence to the committee agreed with the proposition that the TIO should be given formal powers to compel nbn and RSPs to meet in order to resolve complaints. For example, Mr Alex Green from Mansfield Shire Council stated that in the absence of such a mechanism, it 'would seem to allow the buck-passing to continue' between nbn and RSPs.¹⁶

5.28 When questioned on whether the TIO's remit should be expanded to allow it to convene meetings of nbn and RSPs in order to resolve complaints, a representative of the ACMA expressed the view that in cases where the practical solution for the consumer is outside the control of the RSP, it may be appropriate for the TIO to be able to engage whoever is best placed to resolve the practical problem.¹⁷

To what degree should nbn be subject to the TIO scheme?

5.29 Under the current operation of the TIO scheme, complaints are only registered directly against nbn in a limited number of circumstances, namely: where the complaint relates to nbn's entry onto land to install equipment; and where the complaint pertains to property damage by nbn.¹⁸ All other complaints are registered against the customer's RSP. Ms Jones explained in evidence to the committee why almost all complaints are logged against the RSP:

The consumer, whether a residential consumer or a small business consumer, has their primary contract with the retail service provider. Behind that there will be contractual arrangements perhaps with a wholesaler or an aggregator, and through that or directly a contract with NBN Co. When we register complaints we register them against the retail service provider, even those that may be a complaint about a service

14 Ms Judi Jones, Ombudsman, Telecommunications Industry Ombudsman, *Committee Hansard*, 24 March 2017, p. 13.

15 Telecommunications Industry Ombudsman, answers to questions on notice, 24 March 2017, (received 1 May 2017), p. 5.

16 Mr Alex Green, Chief Executive Officer, Mansfield Shire Council, *Committee Hansard*, 20 April 2017, p. 38.

17 Ms Jennifer McNeill, General Manager Content Consumer and Citizen Division, Australian Communications and Media Authority, *Proof Committee Hansard*, 1 August 2017, p. 12.

18 Telecommunications Industry Ombudsman, *Submission 115*, p. 6.

delivered over the National Broadband Network, and NBN Co may have a part to play in it, because that is where the contractual relationship lies.¹⁹

5.30 The committee heard evidence of cases where the inability to lodge complaints against nbn had resulted in customers being unable to gain a resolution from the TIO.²⁰ Some stakeholders expressed the view that the TIO should be able to register complaints directly against nbn in cases where it is responsible for the issues underlying a complaint. For example, Mrs Kylie Stretton, Co-Founder of Better Internet for Rural, Regional and Remote Australia told the committee:

[We are aware of the TIO], but unfortunately NBN are not touchable by them, because they are a wholesaler and not a retailer. A lot of our members say, 'We'll just ring the TIO.' When they do that and they lodge a complaint then the retail service provider is immediately slugged with a fine and it may not always be their fault. It might be NBN's fault, but they are untouchable by the TIO at the moment. Even though it is a good thing that they can lodge a complaint, it is not fair on the retail service providers if it is not their fault and they get a fine because, to us, that is less money that they have to put towards customer service.²¹

5.31 The ACMA has stated publicly that the TIO arguably should be given the power to make determinations and resolve complaints where wholesale providers such as nbn are at fault:

Recently, the ACMA has seen an increase in the number of consumers referred to the ACMA because the TIO is unable to handle their complaint. Typically, these complaints involve a 'wholesale' provider (most commonly nbn) with whom the complaining consumer has no direct relationship.

Consideration should be given to modifying the TIO scheme so that the TIO can deal with complaints across the supply chain.

If the 'root case' of a consumer or small business problem lies at the wholesale level, it is arguable that the TIO should be able to make a determination that binds the wholesale level provider (for example, a determination requiring the wholesaler to compensate the consumer or reimburse the retailer). Arguably, the TIO should also be able to apportion its complaint handling costs to the party or parties best placed to resolve the complaint.

19 Ms Judi Jones, Ombudsman, Telecommunications Industry Ombudsman, *Committee Hansard*, 24 March 2017, p. 1.

20 See, for example: Ms Kathie Heyman, Business Manager, Albury Northside Chamber of Commerce, *Committee Hansard*, 20 April 2017, p. 14.

21 Mrs Kylie Stretton, Co-Founder, Better Internet for Rural, Regional and Remote Australia, *Committee Hansard*, 7 April 2017, p. 32.

Such an institutional change is likely to strengthen the incentives for wholesalers to address problems promptly even without TIO intervention.²²

5.32 At a public hearing in August 2017, nbn CEO Mr Bill Morrow expressed the contrary view that nbn should not be subject to the TIO scheme in the same way as retailers are.²³ Mr Morrow argued that this is because the TIO cannot differentiate as to which company is at fault in most complaints, elaborating as follows:

It's too complicated to isolate it and say, 'Okay, give us your opinion on just the NBN bit of this', and I think the TIO recognise that. They tried to do this, in terms of the fault found or discovered. If a complaint comes through and they don't know, they send it to RSP X and NBN. It comes back and NBN raise their hand and say: 'We fouled up on this. We didn't get out there at the time we told the customer. It's rectified, and we'll be out there Tuesday to get this sorted.' The TIO can do a check mark and say, 'Okay, that one clearly is an NBN related issue.' But that's the minority of cases, not the majority; hence the complexity and difficulty in being able to say, 'We're going to determine NBN Co related faults for a national broadband network issue' when they can't differentiate.²⁴

5.33 Mr Morrow did state, however, that in the minority of cases where it is clearly established that nbn is responsible for the cause of the complaint, nbn should take responsibility for paying the TIO costs associated with that dispute, rather than the RSP paying those costs as is current practice.²⁵

Current independent review of the TIO

5.34 It was noted during the committee's inquiry that the TIO is currently undergoing an independent review, in accordance with legislative provisions that require a review of the TIO every five years.²⁶ The review is being undertaken by an independent consultancy firm and is considering various issues relating to the TIO's role and powers, including:

- the effectiveness of the TIO's complaint resolution processes, systems and resources;
- the effectiveness of the TIO's approach to systemic issues in improving telecommunications provider practices;

22 The ACMA's submission to the Independent review of the Telecommunications Industry Ombudsman, June 2017, p. 2, available at <https://www.tio.com.au/about-us/independent-review>.

23 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, pp. 47–48.

24 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 48.

25 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 49.

26 Telecommunications Industry Ombudsman, 'Independent Review', <https://www.tio.com.au/about-us/independent-review>.

- the adequacy of the TIO's authorising environment (including the legislative framework and the TIO's Constitution and Terms of Reference); and
- the effectiveness of the TIO's engagement with government, regulators, consumers, industry and other stakeholders.²⁷

5.35 The TIO published an issues paper relating to the review in May 2017, and has received 22 submissions to the review. The report of the review was due to be provided to the Ombudsman by 29 August 2017.²⁸

Proposed changes to TIO terms of reference

5.36 On 23 August 2017, the TIO announced proposed changes to its terms of reference. These changes would:

- reflect the legislative requirement for carriers and intermediaries in the supply of telecommunications services (such as aggregators) to belong to the TIO scheme;
- strengthen the obligation on members to provide information requested by the TIO in order to resolve a complaint; and
- strengthen the obligation on members to cooperate with TIO decisions.²⁹

5.37 In relation to the provision of information, the proposed changes would make it clear that the TIO can obtain information from any TIO member in relation to a complaint, not just the RSP against which the complaint has been raised.³⁰

5.38 Similarly, the changes to the cooperation provisions would ensure that the TIO can require members other than the RSP against whom the complaint is made to cooperate with the TIO's decisions and recommendations, in cases where the TIO considers the other member needs to take action to resolve a complaint.³¹

Committee view

Timeframes for complaints resolution and role of the TIO

5.39 The committee is particularly concerned at the length of time taken to resolve some complaints and get NBN services working properly, especially where this delay has a monetary impact on small businesses or presents a health and safety risk for

27 Telecommunications Industry Ombudsman, *Telecommunications Industry Ombudsman Independent Review Issues Paper*, May 2017, pp. 1–2.

28 Telecommunications Industry Ombudsman, 'Independent Review', <https://www.tio.com.au/about-us/independent-review>.

29 Telecommunications Industry Ombudsman, 'Terms of Reference Change', 23 August 2017, <https://www.tio.com.au/publications/news/terms-of-reference-change>.

30 Telecommunications Industry Ombudsman, *Proposed changes to the Telecommunications Industry Ombudsman's Terms of Reference Consultation Paper*, p. 3.

31 Telecommunications Industry Ombudsman, *Proposed changes to the Telecommunications Industry Ombudsman's Terms of Reference Consultation Paper*, p. 3.

households. All parties involved, including nbn, RSPs and the TIO, must improve their focus on resolving issues as quickly as possible.

5.40 The committee notes that the Telecommunications Consumer Protection Code, an enforceable code administered by the ACMA, does not currently specifically require consumers to be made aware of the TIO scheme when they lodge an internal complaint with their RSP.³² The committee considers that bringing this information to customers' attention at the time of lodging a complaint with their RSP will ensure that RSPs do their utmost to resolve complaints speedily.

Recommendation 14

5.41 The committee recommends that the Telecommunications Consumer Protection Code be amended to require that customers lodging a complaint with their retail service provider are specifically made aware of external dispute resolution options including the Telecommunications Industry Ombudsman at the time they initially lodge the complaint.

Role of the TIO in resolving disputes

5.42 The committee agrees with the TIO's stated view that it should be given the authority to require all relevant parties in the supply chain to cooperate with the TIO and provide information to the TIO in order to resolve customer complaints.

5.43 The committee agrees further, that the TIO should be able to require representatives from nbn, RSPs and any other relevant parties to meet together or otherwise cooperate in order to resolve a customer complaint, in cases where the TIO deems this to be necessary. This position appears to be broadly supported by the ACMA.

5.44 On the question of whether nbn should be fully subject to the TIO scheme, the committee considers that there is no compelling reason why nbn should not be subject to the scheme in cases where it can clearly be identified as the party at fault for a customer complaint. While in many cases it is not possible to attribute fault in this way, in the minority of cases where this attribution is more straightforward, the TIO should have the ability to register complaints directly against nbn, with nbn then responsible for paying the fees associated with that complaint.

5.45 The committee notes the current independent review of the TIO now taking place, and notes further the proposed changes to the TIO's Terms of Reference released in August 2017. Any changes implemented to the TIO's Terms of Reference and operations must specifically ensure that it has the ability to require all relevant

32 The current provisions of the TCP Code state that an RSP must advise the customer of the availability of the TIO scheme: if it expects the customer's complaint will take more than 25 working days to resolve; if the customer is unhappy with the internal prioritisation and escalation processes already used by the RSP in relation to the complaint; or if the customer specifically tells the supplier that they are dissatisfied with the progress or resolution of a complaint or asks about their options to pursue a complaint further. See section 8.2.1 of the TCP Code, available at <http://www.acma.gov.au/Industry/Telco/Reconnecting-the-customer/TCP-code/the-tcp-code-telecommunications-consumer-protections-code-acma>.

parties to meet in order to conciliate and resolve complaints, where the TIO deems this to be necessary.

Recommendation 15

5.46 The committee recommends that the Telecommunications Industry Ombudsman be empowered to compel any relevant parties to a complaint to meet together or otherwise cooperate in order to facilitate the resolution of that complaint within a set reasonable timeframe.

5.47 The committee notes that there are significant inadequacies in resolving customer complaints, notably lack of direct access with nbn and a gap in the knowledge of available avenues for complaint and dispute resolution. Noting these issues cross wholesale and retail providers there is a need for a single agency to provide this information to ensure uniformity and consistency of message and advice.

Recommendation 16

5.48 The committee recommends that the Australian Government direct nbn to clearly identify the complaint handling process for consumers, including: complaint resolution processes and timeframes, and internal and external complaint escalation processes. This information must be provided by nbn in a way that meets Australian Government accessibility guidelines.

Misleading information provided to customers and consumer education

5.49 A key theme emerging in evidence to the committee was the need for better information to be provided to customers at every stage of interaction with the NBN. Specific issues examined included the information provided by RSPs in their marketing and signup processes, as well as what general information about the performance of NBN products is available to promote consumer choice.

Information provided to consumers in marketing materials and at the point of sale

5.50 Several proposals were raised with the committee that would seek to prevent misleading information being presented to consumers by RSPs, in marketing in their NBN products and during the signup process.

ACCC principles on broadband speeds marketing and related issues

5.51 As noted in Chapter 1, in February 2017 the ACCC released a set of six principles to guide RSPs in informing consumers of the speeds that they typically deliver on their broadband plans. The principles are as follows:

1. Consumers should be provided with accurate information about typical busy period speeds that the average consumer on a broadband plan can expect to receive.
2. Wholesale network speeds or theoretical speeds taken from technical specifications should not be advertised without reference to typical busy period speeds.
3. Information about the performance of promoted applications should be accurate and sufficiently prominent.

4. Factors known to affect service performance should be disclosed to consumers.
5. Performance information should be presented in a manner that is easily comparable by consumers, for example by adopting standard descriptive terms that can be readily understood and recognised.
6. RSPs should have systems in place to diagnose and resolve broadband speed issues.³³

5.52 The ACCC's rationale for issuing these principles is stated in its consultation outcomes report:

The ACCC is issuing these principles as consumers have limited information and support in identifying broadband plans that meet their speed requirements. This is raising consumer search costs, inhibiting competition and feeding into an increasing level of consumer complaint.

In this regard, over 80 per cent of consumers that participated in the ACCC consultation stated it is difficult to ascertain and compare the speeds available across RSPs and plans, and that RSPs could assist them by providing readily-comparable information about the speeds they typically deliver.³⁴

5.53 At the committee's Canberra public hearing in March 2017, officials of the ACCC noted that the principles are to be adhered to on an 'opt-in' basis by RSPs, while noting that the ACCC would take into account a provider's compliance with the principles in the event that complaints are raised against that provider.³⁵

5.54 When questioned whether these guidelines should be binding on RSPs, an ACCC representative stated that its approach is to watch the industry's response to the principles and then consider whether enforcement mechanisms are necessary:

[W]e have said to the industry: 'You always ask us for guidance. We've given you guidance. We've given you principles. We've given you an opportunity to contribute to those principles. We'll give you guidance, and then we can make a determination as to in what way we make that guidance stick.' Whether that is enforceability for a code or another mechanism we will see, but I want to encourage them, at the moment, to engage in this process, and premature discussions around enforceability may not do that.³⁶

33 Australian Competition and Consumer Commission, *Broadband Speed Claims: Consultation outcomes report*, February 2017, p. 1.

34 Australian Competition and Consumer Commission, *Broadband Speed Claims: Consultation outcomes report*, February 2017, p. 1.

35 Mr Sean Riordan, General Manager, Industry Structure and Compliance, Australian Competition and Consumer Commission, *Committee Hansard*, 23 March 2017, pp. 35–36.

36 Mr Michael Cosgrave, Executive General Manager, Infrastructure Regulation Division, Australian Competition and Consumer Commission, *Committee Hansard*, 23 March 2017, p. 36.

5.55 Ms Clare O'Reilly of the ACCC noted that if necessary, the principles could ultimately be incorporated into the Telecommunications Consumer Protections Code (TCP Code), which is an enforceable code administered by the ACMA:

The industry has signed up to a code which covers consumer protection matters, and one of the requirements of that code is that an RSP has to provide a customer information statement at the time of purchase or at the time that a consumer is looking to purchase a particular service. That customer information statement has to be consistent across all industries so you are comparing apples with apples, and it includes such things as price and the central elements of the service that is being offered. The TCP Code is up for review this year and, although it is under the Australian Communications and Media Authority, which is our fellow regulator, the ACCC obviously has an interest in how that code is developed and in making sure that it includes things that have changed since the last code review.

We understand that NBN matters are to be included in that code. They are not at the moment but they will be... [O]ne of the things we would be looking for is that the principles we have announced are incorporated in some way in that code. That code is enforceable, and I suppose that is the advantage: it is proactive; it tells RSPs about the standards and behaviours that are expected. With the [Australian Consumer Law] we have to wait for a problem to arise before we can take action.³⁷

5.56 Representatives from the ACMA confirmed for the committee that the TCP Code is being reviewed in the second half of 2017.³⁸ Ms Jennifer McNeill, General Manager Content Consumer and Citizen Division at the ACMA, told the committee that the review may lead to changes in the TCP Code to address NBN-specific issues:

We have been reflecting very carefully on whether [the TCP Code] is specific enough to deal with the NBN issues that consumers are confronting. As a regulator, it's generally, in our view, preferable to have an approach which is focused on objectives and delivering outcomes than necessarily looking at technologies or particular incidents or events such as the rollout, which will have a limited duration. If we can put in place lasting and relevant protections that apply, irrespective of the technology, irrespective of how the NBN is delivered, then that is obviously a better thing to do.³⁹

5.57 When asked about the recent guidance issued by the ACCC, an official from the Department stated that it will be very useful in terms of helping the industry

37 Ms Clare O'Reilly, General Manager, Mobiles, Transmission and Consumer, Australian Competition and Consumer Commission, *Committee Hansard*, 24 March 2017, p. 33.

38 Ms Jennifer McNeill, General Manager Content Consumer and Citizen Division, Australian Communications and Media Authority, *Proof Committee Hansard*, 1 August 2017, p. 10.

39 Ms Jennifer McNeill, General Manager Content Consumer and Citizen Division, Australian Communications and Media Authority, *Proof Committee Hansard*, 1 August 2017, p. 10.

respond to the current issues being faced, and that the Department's expectation is that the guidance will be adhered to by the industry.⁴⁰

Further ACCC guidance released in August 2017

5.58 On 21 August 2017, the ACCC released detailed industry guidance on implementing its six principles concerning the marketing of broadband speeds. It outlined four key imperatives for RSPs, which are that RSPs should:

- indicate, in their plan descriptions and when marketing broadband plans that they supply over the NBN, the speeds at which the plans typically operate during the busy evening period;
- in order to assist consumers to readily compare plans, adopt a standardised labelling system (basic evening speed, standard evening speed, standard plus evening speed and premium evening speed) that indicates a minimum 'typical busy period speed' for the plan;
- take steps to provide remedies to those customers that cannot obtain the speeds at which their selected plan typically operates due to their particular network connection. This may include taking steps to deliver the speeds promised under the plan, providing billing refunds and reductions, supplying a more appropriate plan and/or offering to those customers the option to exit the contract without penalty; and
- for services supplied over FTTB and FTTN connections, where there is clear potential for some consumers to not receive typical plan speeds, RSPs should include clear and prominent disclosure in product descriptions and marketing, and give point of sale or post sale information and assistance to affected customers.⁴¹

5.59 The ACCC noted that its guidance would be reviewed in 12 months to ascertain whether it has been effective in addressing consumer concerns.⁴² It stated:

The ACCC recognises this is a voluntary and best practice guide. However, given the significant consumer detriment currently being reported in relation to these issues, the ACCC encourages RSPs to immediately implement measures in accordance with this guide, save for those elements of the guide that are informed by network, which testing may require up to 3 months to implement.⁴³

Existing ACMA determination on provision of information to FTTP customers

5.60 ACCAN noted in its submission that the ACMA made a statutory determination in 2014 requiring RSPs to discuss particular information with

40 Ms Kathleen Silleri, Assistant Secretary, Consumer Safeguards Branch, Department of Communications and the Arts, *Proof Committee Hansard*, 23 June 2017, p. 52.

41 ACCC, *Broadband Speed Claims Industry Guidance*, August 2017, p. 1.

42 ACCC, *Broadband Speed Claims Industry Guidance*, August 2017, p. 1.

43 ACCC, *Broadband Speed Claims Industry Guidance*, August 2017, p. 17.

customers signing up to a FTTP service on the NBN, including information around how the customer uses telecommunications services and their options in case of medical needs and power outages.⁴⁴ ACCAN argued that a new determination is required to ensure that RSPs are appropriately discussing matters with consumers regardless of which NBN technology they are being connected to:

As consumers need to order services through an RSP, it is right that responsibility is on the RSP to inform consumers and ensure they understand. A code is needed, as RSPs may not wish to do this themselves, as it may put consumers off purchasing services from them. Requiring RSPs to gain informed consent across all technologies would ensure consumers receive consistent advice and can make informed decisions about their services. Therefore we believe that a determination should be made that requires RSPs to gain informed consent on all services switching to nbn.⁴⁵

Committee view

5.61 The committee considers that improving the quality, clarity and timeliness of information provided to consumers about NBN products is critical to enhancing the overall consumer experience.

5.62 The committee believes the principles released by the ACCC in February 2017 concerning the marketing of broadband speeds, and the extensive industry guidance supporting these principles released in August 2017 have the potential to improve selling practices in the industry. On their own they are not sufficient to deal with the problems the committee has identified. These principles represent voluntary, best practice guidance, and are not enforceable. Mandated standards are required to ensure all relevant information is disclosed to consumers.

5.63 The committee notes the ACMA's current review of the TCP Code, and considers that a revised TCP Code should incorporate the broadband speed marketing principles released by the ACCC together with the matters identified in this report. This should include specific requirements to ensure that critical information about the expected speed of services is provided to customers before and at the point of sale.

5.64 In particular, the NBN must provide information about actual attainable line speed to RSPs on a per premises basis. RSPs must be required to provide information to the consumer about the actual attainable line speed at their specific address, both before customers sign up to a service, and by confirming this information once the service has commenced.

5.65 The committee also notes ACCAN's suggestion that an additional ACMA determination should be made to ensure that relevant issues (not just relating to performance speeds) are disclosed to customers prior to a service being purchased,

44 ACCAN, *Submission 22*, pp. 10-11. The ACMA determination is the *Telecommunications (Battery Power and Informed Decisions) Service Provider Determination 2014*, available at <https://www.legislation.gov.au/Details/F2014L01097>.

45 ACCAN, *Submission 22*, p. 11.

across all NBN technology types. The committee agrees that relevant disclosure requirements, currently only applicable to FTTP services, need to be extended to all NBN services, and that the ACMA should investigate whether this would best be accomplished through a revised statutory determination, or through updates to the TCP Code.

Recommendation 17

5.66 The committee recommends that the Australian Communications and Media Authority develop and introduce an updated Telecommunications Consumer Protections Code that specifically addresses issues raised in relation to customer experiences with NBN services. This should include mandatory, enforceable standards to regulate the marketing of broadband speeds, in line with the recent principles and industry guidance released by the Australian Competition and Consumer Commission. The updated instrument must ensure that end users have rights and accessible procedures to enforce those rights.

Recommendation 18

5.67 The committee recommends that the ACMA consider introducing an updated statutory determination, applicable to all NBN technology types, to require retail service providers to inform customers of any critical service issues and line impairments to ensure the customer has understood these issues, prior to a service commencing.

Broadband Performance Monitoring and Reporting Program

5.68 On 7 April 2017 the Minister for Communications, Senator the Hon. Mitch Fifield, announced that the ACCC would be implementing a Broadband Performance Monitoring and Reporting (BPMR) program for fixed-line NBN broadband services. The announcement by the Minister stated:

The BPMR program will enable consumers to compare speeds delivered in peak periods via independent reporting of broadband speeds.

Performance information is a key factor for consumers when purchasing plans from a retail service provider. The Government acknowledges that this will be vital as demand for data grows.

By collecting and publishing information about the speed and reliability of broadband packages, consumers will be better placed to choose a plan that is right for them. It will also encourage retailers to compete on the quality of their broadband plans.⁴⁶

5.69 The announcement noted that the program was being introduced following a successful pilot program in 2015, and is modelled on similar successful schemes in the UK and the US. It stated that the ACCC will implement the scheme by sourcing performance data from around 4,000 volunteer customers of retail service providers

46 Senator the Hon. Mitch Fifield, Minister for Communications, 'ACCC to monitor broadband performance', *Media Release*, 7 April 2017.

across the country, and that \$7 million would be provided to the ACCC over four years from 1 July 2017 to implement the program.⁴⁷

The BPRM program

5.70 At the committee's public hearing in Melbourne on 19 April 2017, the committee discussed the details of BPRM program with representatives from the ACCC. Mr Sean Riordan, General Manager, Industry Structure and Compliance, ACCC, explained how the program would operate:

In very broad terms, a volunteer panel is called for. Those volunteers are issued with a testing device, which they connect to the modem in their house. The modem is programmed to generate test signals, which go to a test server. It does that in a very systematic and programmed manner, so that at the end of a particular period we have recorded how well the broadband connection has operated—that is, the speed at which test communications have been conveyed across the connection and other characteristics like how long the return path has taken for the communication to go there and back.⁴⁸

5.71 In terms of the reports for the BPRM program, the committee was informed:

At the end of [the reporting] period you can then aggregate up the results and get a view as to what the typical performance was for the volunteers that were on, say, the Telstra plans, the Optus plans, the TPG plans, the various focused brands and other key entrants that may come into the market and take up a significant share of the services. Then that information can be presented back to the consumers through a statistical model to show that, in general terms, if you were on that particular plan in the last quarter, you could have reasonably expected to have received this level of performance. The consumers can then make a decision as to whether they want to continue to pay for the top speed service, if that is what they originally selected, or whether they want to migrate down to a more reasonably-priced service if they do not think they are getting value out of that higher-priced service. Or they may shop around the next time their contract is up and think, 'Here's a service provider that looks to have been doing better in their plans in delivering the speeds to the consumer, so I'll choose that particular service provider next time.'⁴⁹

5.72 In terms of the frequency and nature of reports for the BPRM program, Mr Riordan told the committee:

What is envisaged is a quarterly snapshot report, which would give a view as to the typical performance of the key retail plans that are in the market

47 Senator the Hon. Mitch Fifield, Minister for Communications, 'ACCC to monitor broadband performance', *Media Release*, 7 April 2017.

48 Mr Sean Riordan, Executive General Manager, Competition Enforcement, ACCC, *Committee Hansard*, 19 April 2017, p. 55.

49 Mr Sean Riordan, Executive General Manager, Competition Enforcement, ACCC, *Committee Hansard*, 19 April 2017, p. 55.

over the NBN. Our [ACCC's] planning to date has focused on the mass market of NBN retail broadband plans. We have been looking at the fixed line technologies, which make up the bulk of those connections. The information...will be collated specifically to the retail broadband plan, so you might see statistics or information relevant to, say, the Telstra 25/5 plan, or the Optus or TPG plan over the specific speed tier so that the consumer will be given a snapshot of how that service was performing during the quarter.⁵⁰

5.73 Further, in terms of publication and access to the reports, the committee was informed:

You could expect that that snapshot would be placed on the ACCC's website and you could expect, particularly with the first number of releases of that, that there would be an appropriate measure released to ensure that people were aware of its existence.⁵¹

5.74 At the time of the committee's hearing in April, ACCC were preparing documentation to approach the market:

We anticipate the end of May, early June being the time that we will formally commence that tender process. We will follow a standard government procurement process for a contract of that size so it will meet the relevant publication requirements and the minimum time frames that are required to allow people to submit their bids. And then we will go through the government's framework to make sure that a fair process and value for money considerations are brought to bear in awarding that contract.⁵²

5.75 ACCC anticipated that from the time of the announcement in April, it would take three to four months to settle terms with the testing provider:

From that time, it would just be a matter of how quickly the testing provider could mobilise and issue the testing devices to the volunteers. At the same time as approaching the market for the testing service provider, we are also going to approach the market of volunteers to come forward and nominate, so that we are quickly in a position to filter out which of those applicants are suitable for appointment to the testing panel, so that the devices can be issued directly to them at that time.⁵³

50 Mr Sean Riordan, Executive General Manager, Competition Enforcement, ACCC, *Committee Hansard*, 19 April 2017, p. 53.

51 Mr Michael Cosgrave, Executive General Manager, Infrastructure Regulation Division, ACCC, *Committee Hansard*, 19 April 2017, p. 53.

52 Mr Sean Riordan, Executive General Manager, Competition Enforcement, ACCC, *Committee Hansard*, 19 April 2017, p. 53.

53 Mr Sean Riordan, Executive General Manager, Competition Enforcement, ACCC, *Committee Hansard*, 19 April 2017, p. 53.

5.76 The request for tender for the testing services was published on AusTender on 30 May 2017.⁵⁴ In June 2017 the ACCC called for volunteers for the BPMR program.⁵⁵

Stakeholder views on the BPMR

5.77 ACCAN expressed support for the introduction of a broadband performance monitoring and reporting program. It advocated, however, that the program be sufficiently resourced to monitor all NBN technologies rather than just fixed line services.⁵⁶

5.78 The Communications Alliance took a different view, however. Whilst stating that the program could be potentially useful in providing high-level transparency about the performance of different RSPs, the Communications Alliance raised a number of issues in relation to its implementation:

This project was originally envisaged as something that would provide consumers with comparative information about the performance of RSPs in a given location. So, if I was moving cities or suburbs, I would be able to compare who was the best performing or most suitable ISP for me in that area before signing a contract with them. The project cannot deliver that. When you break down the number of probes that the ACCC proposes to have in place and you divide that by the number of service providers it proposes to monitor—the number of products and the number of speed tiers—if you do the maths on all of that, you can end up with the given RSP having only two points of data measurement in a state for a given technology for a given speed tier. So the chances of it being able to be used for comparative data in that way are virtually nil.

There are a range of other concerns that have been raised about the program by industry. One of those was the fear that it could create an anticompetitive effect, in the sense that a relatively small number of service providers will be measured by the program and there will inevitably be a fair degree of public focus on those results and how they would look. Service providers who are likely to be outside the program have expressed concern that the limelight will focus on those inside it, and whoever looks good out of those results will tend to draw customers away from those who might be performing just as well but are not inside the program.⁵⁷

54 See: ACCC website, Broadband performance monitoring and reporting program: Request for Tender published on Austender, 30 May 2017, available at: <https://www.accc.gov.au/regulated-infrastructure/communications/monitoring-reporting/broadband-performance-monitoring-reporting-program/request-for-tender-published-on-austender>.

55 ACCC, 'ACCC calls on Australians to sign up for broadband speed testing', *Media Release*, 16 June 2017, available at: <https://www.accc.gov.au/media-release/accc-calls-on-australians-to-sign-up-for-broadband-speed-testing>.

56 ACCAN, *Submission 22*, pp. 12-13; Ms Teresa Corbin, Chief Executive Officer, ACCAN, *Committee Hansard*, 19 April 2017, p. 3.

57 Mr John Stanton, Chief Executive Officer, Communications Alliance, *Proof Committee Hansard*, 23 June 2017, p. 35.

Committee view

5.79 The committee welcomes the introduction of the Broadband Performance Monitoring and Reporting Program, but notes that it was successfully trialled in 2015, and it's likely that a number of problems with the NBN rollout could have been avoided or identified sooner if the BPMR program had been implemented earlier. The BPMR program will provide consumers with valuable information when considering which retail service provider and service plan to sign up for on the NBN. The committee will continue to examine the implementation of the program in the year ahead.

5.80 The BPMR program will work best in combination with the requirement that nbn disclose the infrastructure speed capacity of each connection, and with effective regulation that requires RSPs to disclose their peak/congested speeds.

General consumer education issues

5.81 The committee heard that the level of consumer education and awareness in relation to the NBN and broadband issues generally needs to be improved to ensure that the benefits of the NBN are realised.⁵⁸

5.82 Various resources are already available to the public in relation to the NBN and broadband services. For example, the Communications Alliance drew the committee's attention to an online broadband education package available on its website, designed to help consumers understand the factors that influence their broadband, and help consumers to optimise the performance of the service they receive.⁵⁹ ACCAN also provided the committee with copies of consumer information guides it provides in relation to broadband services.⁶⁰

5.83 nbn has recently launched a new national media campaign aimed at raising awareness about what Australians need to do to before signing-up to retail services over the network and how to get the best out of their broadband service.⁶¹ It has also introduced a consumer guide to the NBN network, *nbn's guide to Australia's new broadband*, which is available prominently on the nbn website homepage.⁶²

5.84 Ms Teresa Corbin from ACCAN argued that it is important that consumers are receiving consistent information about these issues in a format that is easily consumed:

58 ACCAN, *Submission 22*, p. 18.

59 Mr John Stanton, CEO, Communications Alliance, *Proof Committee Hansard*, 23 June 2017, p. 33. The Communication Alliance's broadband education package is available at: <http://www.commsalliance.com.au/BEP>.

60 For example: 'What affects the quality of my broadband?' ACCAN, tabled by ACCAN at a Public hearing in Melbourne on 19 April 2017.

61 nbn, 'Ready, set, connect: how to get up to speed on the nbn network', <http://www.nbnco.com.au/corporate-information/media-centre/media-releases/ready-set-connect.html>.

62 nbn, *nbn's guide to Australia's new broadband*, available at <http://www.nbnco.com.au/>.

I think that no one area should be responsible for all of the information provision, but what would be very useful is uniformity in the messaging that gets out there because, at the moment, that is a real problem... [W]hilst ACCAN plays a role in providing information, we cannot do it on our own. It is a question of testing things to make sure it is simple enough so that consumers will take the time to read it. It is not that they will not understand it; it is more that they feel attracted to give the time to it, because people are very time poor and while they do not necessarily not want to know, they just do not have the time to give to it.⁶³

5.85 ACCAN recommended that to aid with general consumer awareness and education, a grants program should be established for independent digital technical support and capacity building.⁶⁴

A role for independent local advisors on NBN consumer issues

5.86 At the public hearing in Perth, the committee heard from Mr Michael Hendry, the South West Independent National Broadband Network Adviser for Regional Development Australia-South West. Mr Hendry explained to the committee the context for the creation of his role:

The creation of this advisory position came from discussions between the South West Development Commission, Regional Development Australia-South West and local business organisations. During the early part of the NBN rollout in the South West, it was noted that some retail service providers were giving advice that was either inaccurate or incomplete. After initial discussions, it was agreed that Regional Development Australia would manage a program to implement the South West independent NBN advisor role for a period of 18 months, commencing in August 2016...The NBN advisor position was created as a partnership between the South West Development Commission, Regional Development Australia-South West, NBN Co, Business South West and the South West Chamber of Commerce and Industry.

The purpose is to provide independent, impartial and accurate advice on what needs to be considered when transitioning to the NBN, primarily targeting the small business sector, not-for-profit organisations and the regional community. Given that many of these people and organisations are generally time-poor and not tech savvy, this program has provided a much needed point of contact for all NBN related matters. It has been about providing people with the right information so that they can make the best decisions for their own circumstances.⁶⁵

5.87 Mr Hendry stated that as the NBN adviser, he is responsible for planning, coordinating and delivering information to all community segments affected by the NBN:

63 Ms Teresa Corbin, Chief Executive Officer, ACCAN, *Committee Hansard*, 19 April 2017, p. 3.

64 ACCAN, *Submission 22*, p. 18.

65 Mr Michael Hendry, South West Independent National Broadband Network Adviser, Regional Development Australia-South West, *Proof Committee Hansard*, 17 July 2017, p. 39.

To this end, I have consulted with many other like-minded groups, such as ACCAN, BIRRR Aus, the ACCC, the Telecommunications Industry Ombudsman and RSPs to ensure an accurate and consistent message....I've developed a four-page information brochure, which I've provided, to assist people in asking their provider the right questions. I've planned, organised and delivered over 100 public presentations to more than 2,500 participants in most towns of the South West, both business and consumer. I've provided advice to consumers by phone, email and in person. I've also undertaken numerous cold-calls on local South West business owners; maintained an NBN advice website with useful information, brochures and links; participated in regular Q&A on local ABC talkback radio; and drafted timely press releases to local media on relevant issues.⁶⁶

5.88 At subsequent hearings, the committee sought the view of witnesses as to whether there may be benefit in having regional independent advisors. At the Launceston public hearing, Mr Damien Ivereigh, Chief Executive Office, Launtel agreed that such a person may be of great assistance, particularly in relation to technical matters.⁶⁷ At the public hearing in Burnie, Mr Rodney Greene, Director, Community and Economic Development, Burnie City Council, was uncertain that such an independent adviser would be helpful, noting that people were already overwhelmed by the number of different companies they had to deal with:

Of course, that allows then for people to blame one another. Whether that would be resolved by having a key person who can go and be a mediator between all of these different groups, I'm not sure. It seems that, when you're trying to give the perception of efficient service delivery but you have all these different people and you're on the phone to different companies and it takes days between when you ask for a service to be connected and when it's finally delivered or when a problem is identified it takes a while to work out who's actually responsible to fix it, that's where you get some of those service concerns.⁶⁸

5.89 At the Central Coast hearing, Mr David Abrahams, President, Central Coast Start IT, an industry group promoting telecommunications investment, noted that his group had already made a similar suggestion to nbn senior managers:

Another thing that we would like to specifically recommend, as we have directly to NBN Co senior managers, is the instigation of a regional independent issues agent to take the pressure off the local members and senators and the flood of complaints and other issues that come through the door. You could refer them to an independent issues agent that would report directly to the NBN Co. It would summarise those reports to the local members and the parliamentary committees so that we create some sort of

66 Mr Michael Hendry, South West Independent National Broadband Network Adviser, Regional Development Australia-South West, *Proof Committee Hansard*, 17 July 2017, p. 39.

67 Mr Damien Ivereigh, Chief Executive Officer, Launtel, *Proof Committee Hansard*, 25 July 2017, pp 13–14.

68 Mr Rodney Greene, Director, Community and Economic Development, Burnie City Council, and Chair, Tas Communications, *Proof Committee Hansard*, 26 July 2017, p. 27.

healthy tension there and alleviate some of the workload that must be inside these parliamentary offices. It must be enormous in this regard.⁶⁹

Committee view

5.90 The committee notes the work being done by nbn and other bodies including ACCAN and the Communications Alliance in order to enhance the level of consumer awareness and education about the NBN, but on current evidence these efforts have not been sufficient.

5.91 It is clear that this is an area which should be improved considerably. As such, the Australian Government should consider providing additional funding to assist raising the level of consumer education about the NBN. This could consist of grant funding to aid digital technical support and capacity building, and could also provide funding towards regional initiatives such as the introduction of local NBN advisory roles.

⁶⁹ Mr David Abrahams, President, Central Coast Start IT, *Proof Committee Hansard*, 2 August 2017, p. 23.

Chapter 6

Data collection about customer satisfaction and network performance

Introduction

6.1 The picture painted in evidence to this committee and in the broader public discussion of the NBN is that the project is beset with issues relating to poor customer experiences. It is difficult to ascertain however, just how representative this is of the overall experience for customers. Some submitters and witnesses argued that notwithstanding the issues experienced by a significant number of customers, the overall satisfaction level of people connected to the NBN is high.¹

6.2 There are several sources of information that were brought to the committee's attention that provide some level of data on these issues, namely: data collected by nbn; complaints data from the TIO; and research data from the ACMA.

Customer satisfaction data captured by nbn

6.3 Mr Bill Morrow, CEO of nbn, stated in May 2017 that the overall rate of satisfaction for customers remains positive, with over 85 per cent of end users surveyed by nbn stating that their NBN service meets or exceeds their expectations.² Mr Morrow stated:

[T]he vast majority of people using the NBN are satisfied but they are also a silent majority. Nobody calls their local MP or talkback radio to say, 'Everything is wonderful' or, 'Everything is working fine.'

...The people who call are having problems and we acknowledge there are too many. We are working hard on this but remember this is a small percentage of a very large number. Across all of our technologies we average 21 faults for every 10,000 active premises.³

6.4 Representatives from nbn explained to the committee that nbn surveys customer satisfaction by asking its end users to rate their satisfaction with their NBN service on an 11 point scale from zero to ten; where response scores of eight to 10 represent customers being satisfied or extremely satisfied, scores of zero to four

1 See, for example: Mr John Stanton, Chief Executive Officer, Communications Alliance, *Proof Committee Hansard*, 23 June 2017, p. 34; Regional Development Australia Midwest Gascoyne, *Submission 25*, p. 1.

2 Mr Bill Morrow, Chief Executive Officer, nbn, *Senate Environment and Communications Legislation Committee Estimates Transcript*, 25 May 2017, p. 56.

3 Mr Bill Morrow, Chief Executive Officer, nbn, *Senate Environment and Communications Legislation Committee Estimates Transcript*, 25 May 2017, p. 56.

represent dissatisfied customers, and scores of five to seven represent customers who feel neutral about their service.⁴

6.5 An overall 'net promoter score' for customers is calculated by subtracting the number of dissatisfied customers from the number of satisfied customers to provide a rough idea as to whether the overall response is positive or negative.⁵

6.6 On the issue of nbn's customer satisfaction data and net promoter score, ACCAN submitted that this information should be published on a regular basis:

nbn surveys all customers on their experience of switching and using the network. They previously released this 'Net Promoter Score' information on a technology basis, but do not release it regularly. If nbn named areas, technologies or RSPs which scored below 7 on the Net Promoter Score it would provide visibility about those that are not having a good experience connecting and using services.⁶

Monthly reports to the Department of Communications and the Arts

6.7 At the public hearing in Canberra in June, the committee questioned officers from the Department of Communications and the Arts (Department) about the information that nbn provides to the Department. However, the Department does receive monthly reports from nbn on the 'consumer experience':

The sorts of metrics [the Department] receive relate to customer satisfaction and how that changes over time ... [the Department] receive periodic reports from the company on other aspects of performance. For example, you have had a range of evidence that goes to the performance experienced on the Sky Muster service. It is well documented that that service has provided an inadequate quality of service, particularly towards the end of 2016 and the early parts of this year. So in relation to that, the government sought a number of briefings from [nbn] to understand the nature of those issues and what steps the company was taking to improve service quality. So through those briefings, there was information provided about the number of faults, the connection time frames and other factors.⁷

6.8 On notice, the Department provided the following summary of the information that it receives from nbn and the frequency of reporting:

NBN Co Limited (nbn) is required to maintain a high degree of transparency and engage closely with Shareholder Ministers and Departments, including by providing monthly progress reports, publishing online weekly progress reporting of network deployment and active services, and delivering quarterly management briefings to the public,

4 Mr Bill Morrow, Chief Executive Officer and Mr Stephen Rue, Chief Financial Officer, nbn, *Proof Committee Hansard*, 1 August, p. 60.

5 Mr Bill Morrow, Chief Executive Officer nbn, *Proof Committee Hansard*, 1 August, p. 60.

6 ACCAN, *Submission 22*, p. 13.

7 Mr Andrew Madsen, Assistant Secretary, Broadband Implementation Branch, Department of Communications and the Arts, *Proof Committee Hansard*, 23 June 2017, p. 49.

including detailed financial and operational information. Additionally, nbn is also required to publish information that details how it has addressed the Government's objectives in the Statement of Expectations, in its Corporate Plan and Annual Report.⁸

6.9 During hearings the committee was informed that the Department did not receive information about faults within the NBN on a regular basis. This evidence was at odds with the Department's response to questions on notice where it advised:

As part of a monthly reporting regime, the Department receives data from nbn on network fault restoration, service fault restoration, connection performance such as right first time activations, and activities undertaken in accordance with service level agreement.

nbn also regularly provides the Department with information on consumer satisfaction which includes data collected regarding connection processes, the network usage experience, and issue resolution.⁹

6.10 Mr Andrew Madsen, Assistant Secretary of the Broadband Implementation Branch of the Department, was not able to confirm whether this reporting by nbn was required, instead stating:

It has been the practice of the company to provide those reports consistently.

...

I think it would be the expectation of the shareholder ministers that the company [nbn] provides those regular reports.¹⁰

6.11 The committee was advised that the source of the information in the reports that the Department received is 'the company itself, from its own tracking of its performance and reporting from its delivery partners'.¹¹

6.12 The committee continued this line of questioning with officers from the Department at the public hearing in Sydney. The committee requested a copy of the most recent monthly report and was informed that it was a commercial-in-confidence document.¹² The committee also asked Mr Bill Morrow, Chief Executive Officer, nbn,

8 Department of Communications and the Arts, answers to questions on notice, 23 June 2017 (received 28 July 2017), Question no. 1, p. 1.

9 Department of Communications and the Arts, answers to questions on notice, 23 June 2017 (received 28 July 2017), Question no. 1, pp. 1–2.

10 Mr Andrew Madsen, Assistant Secretary, Broadband Implementation Branch, Department of Communications and the Arts, *Proof Committee Hansard*, 23 June 2017, p. 59.

11 Mr Andrew Madsen, Assistant Secretary, Broadband Implementation Branch, Department of Communications and the Arts, *Proof Committee Hansard*, 23 June 2017, p. 50.

12 Mr Andrew Madsen, Assistant Secretary, Broadband Implementation Branch, Department of Communications and the Arts, *Proof Committee Hansard*, 1 August 2017, p. 32.

if he was able to provide that report to the committee. Mr Morrow deferred to the government to decide whether to make the information available.¹³

6.13 In terms of the information received from RSPs, the Department does not receive formal reports from RSPs, however:

...[the Department] talk to them about their experience of interacting with NBN, the work they are doing in the rollout their services as the NBN is deployed and the products they are developing.¹⁴

Complaints data collected by the TIO

6.14 In addition to information collected and reported to the Department by nbn, the committee also sought information from the Telecommunications Industry Ombudsman (TIO) about the complaints information collected by the TIO. In particular, the committee explored in some detail what information is collected by the TIO, and whether the TIO should collect more information from complainants in order to provide a better statistical snapshot of NBN complaints and inform the TIO's ability to raise systemic issues that arise with government and the industry.

Information collected by the TIO during complaints resolution process

6.15 The TIO noted that it categorises complaint issues relating to NBN services in broad first-tier categories (including 'connections', 'faults', 'customer service', and 'complaint handling'), and then in second tier categories. The TIO noted that for complaints about services delivered over the NBN in 2016, the highest ranked first tier issues were 'Connections' and 'Faults'.¹⁵

6.16 The TIO emphasised in its submission that its primary purpose in collecting information from customers is on ensuring there is sufficient information recorded to facilitate resolution of the complaint.¹⁶ The TIO stated:

The primary role of the TIO is to facilitate the resolution of complaints. In accordance with Treasury's Benchmarks and Key Practices for Industry-based Customer Dispute Resolution, the TIO must be efficient, accessible to all Australian consumers, and the dispute resolution processes must be easy to use.

This requires engaging with consumers in a way that makes lodging a dispute easy and shows we are listening. The TIO must not put up barriers or require technical information that the consumer does not have or is unable to provide, for any purpose other than resolving their dispute.¹⁷

13 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 49.

14 Mr Andrew Madsen, Assistant Secretary, Broadband Implementation Branch, Department of Communications and the Arts, *Proof Committee Hansard*, 23 June 2017, p. 50.

15 Telecommunications Industry Ombudsman, *Submission 115*, p. 10.

16 Telecommunications Industry Ombudsman, *Submission 115*, p. 4.

17 Telecommunications Industry Ombudsman, *Submission 115*, p. 4.

6.17 Ms Teresa Corbin of ACCAN suggested that the complaints data collected by the TIO should be viewed cautiously in terms of using them to draw conclusions about the overall level of issues being experienced on the NBN:

I think that the issue with the TIO statistics is that it is very difficult to gauge from them whether in fact there are issues with NBN. ...I do not think that it is adequate to say that the number of complaints only a small percentage of connections at the moment, because the truth of the matter is we have not reached the peak time for connections. They are likely to increase over the next six months, and then into next year will be the major time when we are connecting a lot of new people. Any one complaint could be a reflection of many other complaints; it is just that nobody spoke up or nobody knew about the TIO. We need to be quite careful with those complaint statistics and be aware that they are really just an indicative thing. They are not going to be comprehensive.¹⁸

6.18 When asked whether conclusions could be drawn about the performance of particular RSPs based on the number of complaints against each RSP lodged with the TIO, the current Ombudsman, Ms Judi Jones, commented that simply looking at the raw complaints numbers for each RSP would not paint an accurate picture, without also understanding the number of NBN customers each RSP has connected.¹⁹ Ms Jones noted that the TIO does not have access to the data about the number of connections for each RSP that would allow for meaningful analysis of complaints statistics on an RSP basis.²⁰

Data on the number of missed appointments

6.19 The Ombudsman also confirmed that the way the TIO records complaints means that the data also could not be used to calculate matters such as the total number of missed appointments by NBN technicians, as one customer's case would be logged as a single complaint relating to the connection of a service, even if the case involved multiple instances of missed appointments with NBN technicians or RSP representatives.²¹

6.20 When questioned whether the TIO should collect information so as to enable visibility of the number of missed or rescheduled appointments, Ms Jones argued that any data provided by the TIO on this issue would be incomplete, and that nbn would have access to the full number of missed appointments across the nbn rollout.²² The TIO expanded on this issue in response to a question on notice:

18 Ms Teresa Corbin, Chief Executive Officer, ACCAN, *Committee Hansard*, 19 April 2017, p. 6.

19 Ms Judi Jones, Ombudsman, Telecommunications Industry Ombudsman, *Committee Hansard*, 24 March 2017, p. 5.

20 Ms Judi Jones, Ombudsman, Telecommunications Industry Ombudsman, *Committee Hansard*, 24 March 2017, p. 5.

21 Ms Judi Jones, Ombudsman, Telecommunications Industry Ombudsman, *Committee Hansard*, 24 March 2017, p. 9.

22 Ms Judi Jones, Ombudsman, Telecommunications Industry Ombudsman, *Committee Hansard*, 24 March 2017, p. 11.

Out of a total of 7,948 connection issues reported in the 2016 financial year about services delivered over the NBN, 1,066 involved missed appointments... [T]he TIO does not quantitatively report on the number of visits nor the number of missed appointments. This is because the TIO does not award punitive damages based on the number of missed appointments. Instead, the TIO's focus is on facilitating the connection to be established, in order to reduce the ongoing consumer detriment.²³

Collecting information about the underlying causes of complaints and responsible parties

6.21 A question raised throughout the committee's inquiry was whether the TIO should collect more information relating to the underlying causes of complaints made to the TIO, including identifying where the issue has originated and who is responsible for addressing it.

6.22 Ms Kathleen Silleri, Assistant Secretary Consumer Safeguards Branch at the Department, stated that the TIO would ideally collect more information about the causes of complaints:

[W]hat we would like the TIO to do is to provide a very accurate picture of what exactly is occurring in the industry. If that means we need to determine exactly who is to blame for an issue that is being experienced by a consumer, and then incentivise that not to occur by either being very public about it or reporting exactly where the problems are, that would be a good thing.²⁴

6.23 Ms Silleri noted ongoing discussions between the Department and the TIO on this issue, and explained the importance of getting clearer information on this point:

We are talking with the TIO about how we determine what is actually occurring in a situation where a consumer has lost service, has been unable to get a service or has issues with that service. The first issue that is encountered, generally, from our perspective...is the way that they record the initial contact with the consumer, and it becomes a route that is set from the initial contact. The threshold question then almost determines what the nature of the complaint is. There is also an issue that follows on from that. If the TIO is not understanding exactly what is occurring when a consumer is experiencing a fault, nobody is ever going to get to the bottom of it and be able to solve it for a consumer.²⁵

6.24 Ms Silleri elaborated on this point further at a later public hearing in Sydney:

We think the fundamental issue is that, when somebody rings with a complaint, they are ringing to advise what isn't working. From that, the TIO

23 Telecommunications Industry Ombudsman, answers to questions on notice, 24 March 2017 (received 1 May 2017), p. 1.

24 Ms Kathleen Silleri, Assistant Secretary, Consumer Safeguards Branch, Department of Communications and the Arts, *Proof Committee Hansard*, 23 June 2017, p. 64.

25 Ms Kathleen Silleri, Assistant Secretary, Consumer Safeguards Branch, Department of Communications and the Arts, *Proof Committee Hansard*, 23 June 2017, p. 64.

complaints officer goes down a path set by various keywords. It would be useful to think about what is most illustrative of the actual problem in identifying what those keywords would be. For example, I think the TIO at the moment asks whether it's a problem with your landline, mobile or internet. Your internet problem could be caused by your landline or mobile, so that doesn't take you anywhere. It would be very useful to understand whether it's a problem with an existing connection or a new connection and whether or not that problem has occurred as a result of transition to a new network. Those are the sorts of things we would've encouraged the TIO to consider.²⁶

6.25 On the issue of identifying who is ultimately responsible for the problems being raised in a complaint, the current Ombudsman, Ms Judi Jones, outlined the complexity in some cases of the TIO trying to attribute responsibility for a complaint to a single party:

[I]n the vast number of complaints we do not find out what the problem was. It is not just the distinction between what the RSP is contributing and what NBN Co is contributing. There may be things related to the wholesaler or aggregator or things on the consumer's premises.²⁷

6.26 Ms Jones cited the example of a specific case to highlight the difficulties involved in classifying complex complaints:

A consumer had an appointment to connect to the NBN, and an NBN Co technician arrived. When they arrived they found there were problems with the consumer's internal wiring and so could not connect them. The consumer went away and fixed the wiring problems, and later in that same month an NBN technician attended again. That time the technician identified there were problems with aerial cabling and he did not have the necessary equipment to fix that, so he had to go away. After three more appointments with NBN Co technicians, the work was unable to be completed. There was another technician that missed an appointment, without any information to the consumer about why. So six scheduled appointments and the consumer was still not connected to the national broadband network. In that there is a combination of problems: a problem on the consumer's premises and a problem with the appointment-keeping or work to be done by NBN Co. It is not always easy, even when we do look at those complaints, to say that it was a single fault, that it was the fault of either the RSP or NBN Co.²⁸

6.27 Ms Jones reiterated in evidence to the committee that because most complaints to the TIO are resolved simply by referral back to the RSP, the TIO does

26 Ms Kathleen Sillieri, Assistant Secretary, Consumer Safeguards Branch, Department of Communications and the Arts, *Proof Committee Hansard*, 1 August 2017, p. 23.

27 Ms Judi Jones, Ombudsman, Telecommunications Industry Ombudsman, *Committee Hansard*, 24 March 2017, p. 7.

28 Ms Judi Jones, Ombudsman, Telecommunications Industry Ombudsman, *Committee Hansard*, 24 March 2017, p. 7.

not generally know the root cause of these complaints.²⁹ Ms Jones explained that in the majority of cases, while customers do describe the problem that has occurred to the TIO, there will not necessarily be an explanation or understanding in this initial phase of what has caused the problem.³⁰

6.28 When questioned whether RSPs should be required after the fact to advise the TIO what the cause of the problem was and how it was resolved, Ms Jones contended that this would add a significant cost to the TIO's operations:

[When] you are looking at 112,000 complaints [in the 2015-16 financial year], to have every retail service provider ring us and get us to record the outcome would be an extraordinary burden on cost. At the end of the day—let's be real—consumers pay the cost even though the members fund the scheme. That would be an enormous impost, I think.³¹

Collecting information by technology type

6.29 The committee discussed with the TIO the issue of whether it could record NBN complaint data by technology type, to enable analysis about any specific issues affecting customers on the different NBN technologies.

6.30 The TIO stated in its submission that it does not routinely record the technology type for the consumer's connection to the NBN. It stated there are a number of reasons for this practice, arguing as follows:

- consumers do not generally know the technology type;
- where the complaint is being made by a referral agency (e.g. financial counsellor), the referral agency is unlikely to know the technology type;
- requiring a consumer to identify the technology type before accepting the complaint would introduce an unreasonable barrier to making a complaint to the TIO – and not align with the TIO's requirement to provide an accessible service;
- it is not necessary to know the technology type to effectively refer complaints to the member for resolution – the vast majority of complaints (90 per cent) are resolved by referral back to the member, without the TIO providing the technology type;
- identifying and recording the technology type would take additional resources, without a clear dispute resolution benefit; and
- it is currently not possible to automate the collection of this information.³²

29 Ms Judi Jones, Ombudsman, Telecommunications Industry Ombudsman, *Committee Hansard*, 24 March 2017, pp. 3 and 16.

30 Ms Judi Jones, Ombudsman, Telecommunications Industry Ombudsman, *Committee Hansard*, 24 March 2017, p. 16.

31 Ms Judi Jones, Ombudsman, Telecommunications Industry Ombudsman, *Committee Hansard*, 24 March 2017, p. 16

32 Telecommunications Industry Ombudsman, *Submission 115*, p. 7.

6.31 Representatives from the ACMA expressed the view that the TIO should ideally collect information on the technology type underlying complaints made to the TIO, but acknowledged that the TIO's primary purpose was to resolve issues rather than analyse their causes, and that consumers often were not even aware of the technology type in place at their premises.³³

6.32 Ms Silleri from the Department informed the committee that it would be supportive of the TIO capturing complaints by technology type.³⁴

Publication of data collected by the TIO

6.33 Representatives from the ACMA informed the committee that it is provided with raw complaints statistics each month by the TIO on a confidential basis, to allow it to get a sense of emerging issues in a timely manner.³⁵

6.34 Ms Jones noted at a public hearing in March 2017 that the TIO only currently publically reports complaints statistics annually, but stated that the TIO is looking at potentially publishing data six-monthly, depending on the availability of rollout data from nbn:

I think it is always important with complaints about services delivered over the National Broadband Network that we do it in context to the rollout. We are just reviewing our reporting across the organisation, trying to look at the effort that is required for the reporting. It might sound like it is just a matter of pushing a button, but there is a lot of checking and quality assurance and giving people guidance on how to interpret the data as well—so effort and value. We expect to have finished that work by the end of March and then we will go back into more regular reporting. With services delivered over the NBN you really need the number of premises connected, and that data is only available publicly from NBN Co in six-monthly batches. We certainly would not be reporting about services delivered over the NBN more frequently than six monthly, unless the data becomes available more frequently.³⁶

Ability of the TIO to raise systemic issues relating to the NBN rollout

6.35 Another question discussed in relation to the TIO's data collection was whether it is sufficient to enable the TIO to identify systemic issues arising in the NBN rollout and raise these issues with government and industry.

6.36 The TIO informed the committee that in 2016, seven systemic issues were finalised that related to the actions of RSPs and the NBN rollout, and stated that as at

33 Ms Jennifer McNeill, General Manager Content Consumer and Citizen Division, Australian Communications and Media Authority, *Proof Committee Hansard*, 1 August 2017, p. 11.

34 Ms Kathleen Silleri, Assistant Secretary, Consumer Safeguards Branch, Department of Communications and the Arts, *Proof Committee Hansard*, 23 June 2017, p. 64.

35 Ms Jennifer McNeill, General Manager Content Consumer and Citizen Division, Australian Communications and Media Authority, *Proof Committee Hansard*, 1 August 2017, p. 11.

36 Ms Judi Jones, Ombudsman, Telecommunications Industry Ombudsman, *Committee Hansard*, 24 March 2017, p. 6.

28 April 2017, there were three possible systemic issues relating to the NBN currently under consideration by the TIO.³⁷

6.37 The TIO stated that it does already identify NBN-related issues and work with industry stakeholders to address them. It submitted:

The TIO monitors complaint trends and becomes involved in a range of formal and informal discussions, including on issues about the NBN. The TIO facilitates meetings and discussions between retail service providers and nbn to highlight issues and to exchange information. Members are encouraged to take prompt action to resolve wider issues across the industry.

The TIO also engages with consumer organisations (including ACCAN), regulators (the ACMA and ACCC), representatives of the Department of Communications and the Arts, retail service providers and nbn to support the resolution of issues. The TIO does this by sharing insights to highlight the issues consumers identify and experience in the rollout of the NBN.³⁸

6.38 The TIO stated that examples of issues it had raised through these processes include: technician appointment systems; infrastructure difficulties; sales and marketing practices; early termination fees; and the NBN interim satellite service and SkyMuster.³⁹

Research on the customer experience by the ACMA

6.39 The ACMA's 2016 research paper *Migrating to the NBN—The experience of Australian consumers* included survey data in relation to the satisfaction of NBN users in FTTP premises. Nine hundred residents and 304 businesses were surveyed about their experience migrating to the NBN, and further qualitative research was also undertaken for the study. In relation to overall consumer satisfaction with the connection process, the ACMA's findings were as follows:

Most consumers were satisfied (rating of five or above out of 10) with the whole process of connecting to the NBN; however, one in five residents and more than a third of businesses were dissatisfied with the process (rating of four or below out of 10). A key positive factor influencing consumers' satisfaction ratings was the absence of any service disruptions.⁴⁰

6.40 In relation to customers' experience once connected to the NBN, the findings were summarised as follows:

It was evident from the research that, for most consumers, migrating to the NBN met their expectations of having access to a faster, more reliable internet service. For connected consumers, satisfaction with internet speeds

37 Telecommunications Industry Ombudsman, additional answers to questions on notice, 24 March 2017 (received 1 May 2017), Question no. 20, p. 6.

38 Telecommunications Industry Ombudsman, *Submission 115*, p. 12.

39 Telecommunications Industry Ombudsman, *Submission 115*, p. 12.

40 The ACMA, *Migrating to the NBN—The experience of Australian consumers*, December 2016, p. 2.

was higher than for those not connected. Nearly half of residents (48 per cent) and two-thirds of businesses (65 per cent) expected the NBN to be faster than their current service. Residents were reasonably satisfied with their fixed-internet and landline phone services since connecting to the NBN, with 33 per cent reporting that their internet was more reliable now than before and 51 per cent reporting that their internet service was comparable to their service prior to connecting. Satisfaction levels for fixed-internet services were similar for businesses but slightly lower for landline phone services. A quarter of businesses reported that their internet was more reliable now than before.

The findings suggest, however, that some consumers continued to experience concerns with service reliability, with around one in five reporting that their fixed-internet and landline phone services were less reliable now than before connecting to the NBN.⁴¹

6.41 At the public hearing in Sydney, Ms Jennifer McNeill, General Manager, Content Consumer and Citizen Division, ACMA, noted that the authority was moving to a new phase of evidence gathering in relation to the NBN:

We will have a new consumer-focused research piece in the field in a few months time. Again, that will be looking at the consumer experience of Australians across a range of technologies as the network's rolled out and, also, smaller and medium-sized businesses. That's the consumer-facing piece. We're also moving to collect more granular information from companies involved in the NBN supply chain so that we can get a better grasp of the extent, the scope and the nature of problems that people are encountering as the network rolls out. Then, we can reflect on that information, together with industry and others involved in government, to see what might be done to make the experience as positive a one as it can be for consumers.⁴²

6.42 In answer to a question on notice from the 23 June hearing in Canberra, the Department provided some further information on how the research by ACMA would be carried out:

....[the] Australian Communications and Media Authority (ACMA) will conduct research and collect data from businesses across the NBN supply chain using its powers under the *Telecommunications Act 1997*. Twenty-one industry participants including retailers, wholesale providers and nbn will receive notices seeking a range of data on issues such as fault handling, connection timeframes, and appointment keeping.⁴³

41 The ACMA, *Migrating to the NBN—The experience of Australian consumers*, December 2016, p. 2.

42 Ms Jennifer McNeill, General Manager, Content Consumer and Citizen Division, Australian Communications and Media Authority, *Proof Committee Hansard*, 1 August 2017, p. 9.

43 Department of Communications and the Arts, Answers to questions on notice from a public hearing on 1 August 2017, (question number 11).

Committee view

6.43 In the committee's view there is clearly significant data being collected in relation to the customer experience in relation to the rollout of the NBN. However, the committee considers that the information made publically available relating to customer satisfaction on the NBN network does not enable adequate analysis and evaluation of the overall customer experience.

6.44 nbn's customer satisfaction metrics provide a much greater sample size than any other available data set. While a headline figure on end user satisfaction ratings is generally included in nbn's Annual Reports and Corporate Plan, this level of disclosure does not allow for any rigorous analysis of the data. The committee considers that the regular publication of nbn's end user satisfaction metrics would provide much needed transparency about the overall level of satisfaction in the NBN, and would provide context for the broader public discussion around the success of the rollout from a customer perspective.

Recommendation 19

6.45 The committee recommends that nbn publish prominently on its website, monthly information relating to its end user satisfaction metrics, including:

- **its overall net promoter score as measured each month;**
- **the overall net promoter score for each technology type as measured each month;**
- **relevant disaggregated information about end user satisfaction metrics in relation to each RSP; and**
- **any relevant disaggregated information about end user satisfaction metrics in specific geographic areas, such as:**
 - **data broken down by state and territory; and**
 - **data relating to each fixed-line area in the rollout footprint, as areas are designated Ready for Service.**

Data collection by the TIO

6.46 The committee considers that there is considerable scope for the TIO's data collection activities to be enhanced in order to enable its statistics to become a much richer source of information in evaluating the performance of the NBN. The committee acknowledges that it is not possible in every instance for the TIO to collect information such as the NBN technology type at the complainant's residence, however it is important that such data be collected wherever possible.

6.47 The committee notes that both the Department and the ACMA expressed the view that the TIO could collect data in a more robust fashion to provide a greater level of information on the NBN. The committee awaits to see how these issues are dealt with by the current independent review of the TIO, and the committee will provide further monitoring of this issue in its future work.

Recommendation 20

6.48 The committee recommends that the scope, function, and operation of the Telecommunications Industry Ombudsman (TIO) be expanded so that, among other improvements determined through the current review process, the TIO should keep data according to technology type, and should record and report multiple issues as separate items, especially where nbn and an RSP are both involved.

6.49 The committee welcomes the additional research work that will be undertaken by the ACMA, examining the NBN consumer experience across all stages and technology types. This will provide valuable, in-depth qualitative data on these issues.

Provision of information to the committee

6.50 The NBN rollout is the largest public infrastructure project in Australia which touches every premises in the country. The significant conjecture about the speed, efficiency and effectiveness of the rollout underscores the importance of transparency and disclosure.

6.51 The committee notes the refusal of the Department to provide the committee with the monthly reports provided to the Department by nbn, despite the committee's offer to accept this material in confidence. The committee believes that the information contained in nbn's monthly reports would greatly assist the committee in its inquiry and strongly encourages the government to reconsider the publication of this information.

Recommendation 21

6.52 The committee recommends that the Department of Communications and the Arts publish the data it receives from nbn as part of its monthly reporting regime, including data relating to:

- network fault restoration;
- service fault restoration;
- connection performance, such as right first time activations; and
- activities undertaken in accordance with service level agreement.

Chapter 7

Industry, market and regulatory characteristics of the NBN rollout

Introduction

7.1 The committee received evidence about market, regulatory and industry characteristics as they relate to the efficient and cost-effective rollout of the NBN. The first section of this chapter presents evidence received about industry characteristics, specifically the subcontracting arrangements for the construction of the network. Evidence about the market and regulatory characteristics of the rollout, and particularly in relation to the pricing structures, are discussed in the second section.

Industry characteristics

7.2 The construction of the NBN is carried out by nbn's 'Delivery Partners' –prime contractors.¹ Delivery Partners may then further subcontract the construction work. The committee received evidence on the nature of the subcontracting arrangements and the non-payment of subcontractors, as well as concerns about the workmanship by subcontractors.

Subcontracting arrangements

7.3 A number of submissions and witnesses commented on the subcontracting of work for the construction of the NBN.² For example, in its submission, Regional Development Australia Midwest Gascoyne (RDA MidWest Gascoyne) questioned whether the subcontracting arrangements were delivering value for money:

We have also noted what would appear to be a wasteful practice of multi-layer subcontracting, which is unquestionably adding unnecessary costs to the nbn bill for taxpayers. In some cases, we've been advised of up to six layers of subcontracting between the worker on the street and nbn. This practice cannot be providing value for taxpayer money?³

7.4 At the public hearing in Redcliffe, Queensland, the committee heard evidence from subcontractors, who had been subcontracted to carry out work for another company which was, in turn, subcontracted by one of nbn's Delivery Partners, BSA. The workers explained that they had carried out work for the subcontractor, but had not been paid. The workers understood that BSA had paid the subcontractor for the work. The workers sought assistance from BSA and nbn to resolve the situation. The

1 See: nbn, *Annual Report 2015-16*, p. 149.

2 See, for example: Regional Development Australia Midwest Gascoyne, *Submission 25*, p. 2; Mr Peter Uzelac, *Committee Hansard*, 6 April 2017, p. 14; and Mr Keith Green, Arid Land Communications, *Proof Committee Hansard*, 26 June 2017, pp. 41-46.

3 Regional Development Australia Midwest Gascoyne, *Submission 25*, p. 2.

committee was informed that nbn had 'given no support'. The workers indicated that they were pursuing a claim through the Fair Work Australia Ombudsman.⁴

7.5 The Chief Executive Officer of BSA, Mr Nicholas Yates, responded to this evidence stating:

...we wish to confirm that BSA has acted in accordance with our agreement with nbn co in relation to all resourcing requirements and subcontracting arrangements. BSA engages with a number of contractors under Master Service Agreements (MSAs), which set out the obligations of both BSA and our contractors in detail.

Under this model we can confirm BSA has met all its financial obligations due and payable for the contracted works under investigation.

Furthermore, we wish to confirm and concur with the witness statements that, while not obligated to do so, BSA met with the workers involved, listened to their concerns and supplied them with evidence of our financial obligations having been met in relation to the contracted works.⁵

7.6 Committee members also pursued this matter with nbn at Budget estimates hearings. Mr Bill Morrow, Chief Executive Officer of nbn, made the following statement in relation to this particular case:

Again, for anybody that is working on the NBN we are very grateful for what it is that they do and they deserve to have a fair, safe environment that is safe for them to work and they should be compensated appropriately for their work. We want and expect our contractors to act ethically and morally in this regard and we have regular discussions with them about this. If there is a situation that sounds like you described then I, too, would be angry to hear if somebody was being mistreated. They really have a legal recourse to take and that should be their first and foremost avenue that they will pursue to make sure they are getting what is properly due to them.⁶

7.7 Mr Morrow continued:

To maybe give you a little bit more comfort, we have a standard clause in our contracts that requires the contractors to confirm payment of subcontractors, so it does not get hidden too far down underneath between contractors, subbie, subbie, subbie, all the way down. This was an issue, as you probably recall from years ago, that was a serious issue and hence, the reason we changed the contracts with language to offer some of these subbies some protection.⁷

4 Mr Leif Karlsson, *Committee Hansard*, 6 April 2017, pp. 12-13.

5 Correspondence from Mr Nicholas Yates, Chief Executive Officer of BSA, to the Chair of the Joint Standing Committee on the NBN, dated 26 May 2017.

6 Mr Bill Morrow, Chief Executive Officer, nbn, *Senate Environment and Communications Legislation Committee Estimates Hansard*, 25 May 2017, p. 123.

7 Mr Bill Morrow, Chief Executive Officer, nbn, *Senate Environment and Communications Legislation Committee Estimates Hansard*, 25 May 2017, p. 124.

Workmanship by subcontractors

7.8 A number of witnesses spoke to the committee about their concerns of the poor quality of installation work that was being done by subcontractors. At the hearing in Port Augusta, Mr Keith Green, Arid Land Communications, who has 38 years of experience in the communications industry, described some of the issues that he has seen with installations of NBN infrastructure:

...you have exposed cables, you have conduit doing really weird things, you have penetrations of asbestos and you have a cable box mounted at chest height with the cables exposed where they can just be grabbed by anybody.⁸

7.9 Mr Michael Schuman, Chief Information Officer at Townsville City Council, also referred to concerns that he had about the standard of work by subcontractors:

That last bit of connectivity from where it hits your premises to where it terminates at the box inside your home is all done by subcontractors. We have had reports that the quality of those subcontractors is shoddy...I can go to somebody else's house and see galvanised staples, where they have taken a piece of optical fibre and stapled it to the side of the house to get it in. Now, any time you are working with optical fibre, that is a delicate operation; stapling is not advised in the first instance, not to mention that it is very untidy and there are all kinds of opportunities for that to lead to quality issues.⁹

7.10 Ms Debbie Hart told the committee of the distress to her 79 year old mother as a result of the damage caused when NBN infrastructure was installed at a block of flats she owned:

She has a home and five units, so she is a self-funded retiree. In May 2016, NBN commenced work at her property. In September, a NBN agent told mum the main box had to be moved and cables had to be replaced. In November 2016, the work was semi-completed and some cabling had been relocated. As a result of the relocation, numerous holes were left in the brickwork. Mum put in a formal complaint with NBN...

NBN then sent a contractor out to repair the damage. He used silicon on the bricks to plug up the holes, which made the mess even bigger. Red and green plugs were also put in the holes.¹⁰

8 Mr Keith Green, Manager, Arid Land Communications, *Proof Committee Hansard*, 26 June 2017, p. 41.

9 Mr Michael Schuman, Chief Information Officer, Townsville City Council, *Committee Hansard*, 7 April 2017, p. 2. See also: Regional Development Australia Midwest Gascoyne, *Submission 25*, p. 2.

10 Ms Debbie Hart, *Committee Hansard*, 6 April 2017, p. 11.

7.11 Ms Hart described how a representative from nbn and the subcontractor met with her and her mother:

After inspecting the damage, all parties agreed that the damage that was done was unacceptable and that it would be repaired to mum's satisfaction. They then went on to explain the cabling and the box needed to be moved yet again, which meant there would be more damage and more holes to be repaired.¹¹

7.12 Ms Hart noted that although a number of options were considered for repair of the damage, her mother would still be required to pay for part of the costs of the repair. Ms Hart summarised the result:

To date, the outcome of mum's association with NBN is as follows. She has damage to her property. She is faced with paying for something she does not want. Her health, mental and physical, has suffered. I have wasted an untold amount of time because NBN cannot get it right and are not willing to do what is fair and just. The job is still not finished, and NBN has now told my mother the boxes to the individual units have been installed in the wrong place and they will need to be moved, causing more damage.¹²

7.13 At the public hearing in Port Augusta, Mr Green also outlined concerns he had with the licencing of technicians, in particular that the 'quality has slipped':

The ACMA...the Australian Communications and Media Authority. We have what are called open registration cabling licences. To get them, you do a five-day training course, and you have to have 300 hours of appropriate supervised training. Anybody can falsify that. I have been to the refresher courses which we have to do on a regular basis et cetera, and a lot of the people there have no qualifications and no experience. We know that, but they will get the licence anyway.¹³

7.14 In response to a question on notice, the ACMA provided information about its cabling registration process. The ACMA regulates telecommunications customer cabling including the registration of cabling providers (persons that perform telecommunications customer cabling work). The ACMA advised:

The ACMA does not issue 'ACMA licences' for cabling providers nor does it directly register them. The registration process is facilitated by five registrars who have been accredited by the ACMA. Registrars are industry associations which issue cabling registrations and administer the registration process on a cost recovery basis.¹⁴

7.15 Prior to being registered, cablers must undertake appropriate training at a Registered Training Organisation (RTO), complete a mandatory written test, as well

11 Ms Debbie Hart, *Committee Hansard*, 6 April 2017, p. 11.

12 Ms Debbie Hart, *Committee Hansard*, 6 April 2017, p. 11.

13 Mr Keith Green, Arid Land Communications, *Proof Committee Hansard*, 26 June 2017, p. 44.

14 Australian Communications and Media Authority, answers to questions on notice, 1 August 2017 (received 23 August 2017), Question no. 11, p. 1.

as provide evidence of having completed the required minimum hours of practical on-the-job cabling experience. The training provided by the RTO also requires students to undertake some practical cabling work in the classroom environment.¹⁵

7.16 Further to this, the ACMA advised:

The cabling training requirements have been endorsed by the telecommunications industry and, in the absence of compelling evidence to the contrary, the ACMA has accepted to date that this training is fit for purpose. Any person successfully completing this training should have acquired the necessary skills in order to undertake the type of cabling work required for the cabling registration type they are seeking.¹⁶

7.17 The ACMA went on to advise:

The ACMA does not have jurisdiction to regulate carrier network telecommunications cabling, that is, telecommunications cabling on the carrier side of the network boundary point (NBP). Requirements for cabling that occurs on the carrier side of the NBP is specified and controlled by the relevant individual carrier.

In the NBN environment, the NBP is the network termination device (NTD) which is located within the end-user's premises. This means that the Cabling Provider Rules only regulate the cabling that occurs beyond the NTD. In practice this is the telecommunications cabling within the end-user's premises.¹⁷

7.18 In contrast, Ms Rosalie Nelson, Head of Insight for Chorus NZ, provided the following information about the customer experience in relation to subcontractors in New Zealand:

There has been a lot of work that has been done around the training programs, and we can definitely see when you have had an influx of new subs come in and then what that looks like. I do not have the detail of what we are doing with all of the subcontractors, but the one thing that I actually would note is that for a lot of the households the technician is something of a hero because they come along, they front up and they explain all of this complex stuff. So many people do not know anything about what is really happening, and we typically find that the technician satisfaction rates, when we ask them a number of things like were they well presented, did they communicate, did they do what they said they would—all of those sorts of

15 Australian Communications and Media Authority, answers to questions on notice, 1 August 2017 (received 28 August 2017), Question No. 2, p. 1.

16 Australian Communications and Media Authority, answers to questions on notice, 1 August 2017 (received 28 August 2017), Question No. 2, p. 2.

17 Australian Communications and Media Authority, answers to questions on notice, 1 August 2017 (received 28 August 2017), Question No. 11, p.2.

things—are often up in the eights. They score eight out of 10, so they actually do score pretty well.¹⁸

7.19 Further, Mr Kurt Rodgers, also representing Chorus NZ, noted the work that the company had done in relation to providing training for subcontractors:

I would like to add that, from an engineering perspective, in my area we have active co-development programs where our engineering team produce the deployment standards and the collateral videos and documents. We have moved really to try to simplify, for the technology solution, all the complexities inside it. So it has become a very low craft, sensitive job to do the installation. We provide all this collateral and training and we regularly work with the service company leadership teams, and we have people going out mentoring people as well. So, while we self-contract, we are hand in hand at the engineering level with our subcontractors to ensure that we are delivering the collateral they need to do a simple but good-quality job.¹⁹

Committee view

7.20 The NBN is, among other things, an extraordinarily large and complex construction project. It was always likely that the kinds of risks which exist in the construction industry more widely would be present in the rollout of the NBN.

7.21 The committee understands the view put forward by nbn that responsibility for subcontracting arrangements lies between the delivery partner and the subcontractor. However, the evidence presented to the committee in relation to this issue is serious and concerning. While the matter of non-payment of contractors appears, at this stage, to be uncommon, the evidence in relation to the poor workmanship of subcontractors was widespread.

7.22 The committee believes it is particularly invidious for low-quality workmanship and unfair contracting arrangements to occur within a project that is, in effect, funded, managed, and supervised by the Commonwealth.

7.23 The committee has been unable to discern any particular systems that were in place on a project of this scale to ensure that workmanship would be carried out to an acceptable standard, and that subcontracting arrangements would be fair and effective

7.24 The committee intends to pursue this matter through the next year of the inquiry.

Recommendation 22

7.25 The committee requests that nbn review and provide advice to the committee on its processes and conduct with regard to the engagement, training, coordination and dispute resolution with subcontractors, in accordance with global best-practice.

18 Ms Rosalie Nelson, Head of Insights, Chorus NZ, *Proof Committee Hansard*, 23 June 2017, p. 8.

19 Mr Kurt Rodgers, Network Strategy Manager, Chorus NZ, *Proof Committee Hansard*, 23 June 2017, p. 8.

Market and regulatory characteristics

7.26 As outlined in the *Corporate Plan 2017*:

...nbn has been structured as a wholesale-only, open-access broadband network available on equivalent terms to all access seekers. This is intended to level the playing field in Australian telecommunications, creating real and vibrant competition within the industry.²⁰

7.27 The committee heard evidence that the establishment of nbn as a wholesaler and the regulatory framework which sets out the pricing structure for NBN services for RSPs is impacting on the operation of the network and impeding the take up of higher speed plans.

NBN pricing structure

7.28 On its website, nbn lists a number of objectives that underpin pricing of their products including: to deliver a wholesale service that will provide an appropriate return to Government, maintaining uniform national wholesale access pricing, fostering competition, innovation and flexibility in the market.²¹

7.29 nbn sells wholesale access to its network to RSPs who then sell internet and phone services to customers.

7.30 There are two prices charged by nbn to RSPs to access the network: the Access Virtual Circuit (AVC) and the Connectivity Virtual Circuit (CVC).

7.31 The AVC is a fixed monthly fee for each RSP end-user. The AVC charge is determined by the maximum bit rate requested by the RSP. Currently, the most common bit rate requested is 25Mbps down and 5Mbps up and costs the RSP \$27/month.²²

7.32 The CVC charge paid by the RSP depends on the capacity that the RSP wants to flow between the RSP's network and the nbn's network at the point that the two networks connect (the Point of Interconnection). One description often used when explaining the amount of CVC purchased by RSPs is the 'thickness of the pipe that determines the maximum amount of water flowing through'.²³

7.33 The maximum prices that nbn can charge RSPs for AVC and CVC are regulated under a Special Access Undertaking (SAU). The SAU is assessed and approved by the ACCC. The current SAU was approved by the ACCC in 2013.

20 nbn, *Corporate Plan 2017*, p. 7.

21 nbn, *Our pricing approach*, <http://www.nbnco.com.au/sell-nbn-services/products-services-pricing/our-pricing-approach.html>.

22 Mr Bill Morrow, Chief Executive Officer of nbn, *Why are data speeds sometimes lower than what consumers were expecting? Is nbn to blame with its infamous CVC charge?*, Position Paper, 1 August 2017, p. 2.

23 Mr Bill Morrow, Chief Executive Officer of nbn, *Why are data speeds sometimes lower than what consumers were expecting? Is nbn to blame with its infamous CVC charge?*, Position Paper, 1 August 2017, p. 2.

7.34 In accordance with Part XIC of the *Competition and Consumer Act 2010*, the ACCC is required to assess the SAU against a number of principles. Fundamentally, customers should not be worse off when migrating to the NBN from legacy copper and HFC networks.

7.35 At the public hearing in Melbourne, Mr Michael Cosgrave, Executive General Manager, Infrastructure Regulation Division, ACCC, explained that a key driver of the AVC-CVC construct was to ensure that 'consumers not be subject to price shock'.²⁴ Specifically, 'prices for entry level NBN services should be broadly comparable to functionally equivalent legacy services'.²⁵

7.36 Another consideration for the ACCC to assess the AVC and CVC charges relates to the capacity for nbn to generate revenue:

The ACCC also considers that NBN Co has incentives to price its products to encourage uptake of higher value services and increase revenue. End-users who value higher value services that cannot be provided by legacy infrastructure are likely to pay higher prices for those services.²⁶

How does CVC affect the customer experience?

7.37 In a position paper published on 1 August 2017, Mr Morrow explained the CVC charge in more detail, noting that the practical impact of RSPs not purchasing enough CVC is constraints to the speed available to customers during peak times:

While the amount of CVC purchased limits the total volume of data being passed between the two networks, the more practical impact of not purchasing enough will constrain the observed speed during busy traffic times.²⁷

7.38 In a situation where more customers are added to an RSP's network, or the average speed or consumption changes, without an increase in CVC capacity, service quality will be affected.

As more end-users are added, or as the average speed and consumption increases, the network carrier will need to spend more money to add capacity OR accept the speed offered to the enduser will degrade during the busy period of the day. This trade-off has existed since the industry was established and is not specific to nbn's or the RSPs' networks...If RSPs don't dimension their own network with enough capacity, if they don't purchase enough CVC flow through at peak time, or if nbn has not

24 Mr Michael Cosgrave, Executive General Manager, Infrastructure Regulation Division, Australian Competition and Consumer Commission, *Committee Hansard*, 19 April 2017, p. 58.

25 Australian Competition and Consumer Commission, answers to questions on notice, 24 March 2017, (received 9 June 2017), p. 3.

26 Australian Competition and Consumer Commission, answers to questions on notice, 24 March 2017, (received 9 June 2017), pp. 3–4.

27 Mr Bill Morrow, Chief Executive Officer of nbn, *Why are data speeds sometimes lower than what consumers were expecting? Is nbn to blame with its infamous CVC charge?*, Position Paper, 1 August 2017, p. 2.

dimensioned its network with enough capacity, service will degrade at peak time.²⁸

7.39 At the public hearing in Sydney, Mr Morrow argued that, because there is so much competition in the market, from both incumbent RSPs as well as new entrants to the market who are all selling essentially the same service, RSPs must compete aggressively on price if they are going to increase market share. This situation means that RSPs are being forced to cut costs:

When you have that kind of price competitiveness in the market, there is no choice if you want market share—meaning a higher percentage of customers from the homes that we open up in an RFS area—but to continue down this path of price competition. That squeezes their margins, because the consumers, at the same time, are increasing their usage over time, which means it costs more for networks to be built, and cost recovery is required there. When you have this margin squeeze that occurs, they're left with either cutting their labour costs, cutting their building costs, cutting their advertising expenses or cutting the CVC expense, which they can actually manipulate with NBN and control on a day-to-day basis.²⁹

7.40 Mr Morrow explained that despite a 25 per cent reduction in the CVC charge over the last two years, RSPs are still under pressure because of the over-competitive market:

Every one of these retailers understands our pricing structure, and we have had a massive reduction in the price over the last couple of years, from a [CVC] price of \$20 per unit to an average of about \$14.50—a reduction of more than 25 per cent over that period of time—but they are under greater pressure because of this phenomenon associated with an overheated, over competitive market.³⁰

7.41 Mr Morrow was of the view that the over-competitive market is becoming destructive. Further to this, Mr Morrow explained that the CVC price reduction may result in some of the smaller RSPs leaving the market:

Because, quite frankly, the price reduction will force the little guys that can't make the money and don't have the scale and lower cost structure out. They won't make any money and will have to leave the market, so that 100 [current RSPs] shrinks down to a reasonable level. Similarly, if it goes down to one or two, the profit margins get big, and that attracts other people to come in, and that's why that equilibrium occurs.³¹

28 Mr Bill Morrow, Chief Executive Officer of nbn, *Why are data speeds sometimes lower than what consumers were expecting? Is nbn to blame with its infamous CVC charge?*, Position Paper, 1 August 2017, p. 2.

29 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 41.

30 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 41.

31 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 63.

7.42 Mr Morrow explained that some of these issues will balance out once the rollout is complete:

There is a market dynamic, a free-market issue, that I will elaborate on... With this price war phenomena and the 100,000 new homes of inventory every week, with 100 providers that can resell this service, with this need for market share because of the economy of scale and business, you've got this very unique phenomenon that says: 'I've just got to run and I've got to offer the most competitive price, because that's what's going to pull me on board. I'll think about whether they're on the right plan later.' That is in some cases. Once we stop introducing 100,000 new homes of inventory every week and we balance out and are near at the end of the rollout, you are going to say, 'All right, fine. Two things are going to happen. One is that there is not much new inventory, and now I just want to go after my competitors' customers and see if I can't pull them over to me. Now I've got to differentiate in different ways, with perhaps more quality.' Can we wait until 2019 or 2020 for this to start to ramp down for that to occur? I don't think so, and I don't think we have to.³²

7.43 In terms of consumers being willing to pay higher prices, Mr Morrow, stated:

We have conducted our own research. We have third-party companies that specialise in this area to be able to advise us as to what consumers would be willing to pay. No-one wants to pay more than they have to, so that's just normal consumer behaviour, but the fact is that, if consumers knew what they were getting and the options available to them, we see a propensity that they would be willing to pay more.³³

7.44 Mr Morrow emphasised that customers are willing to pay for quality, especially if they have a good understanding of the service being offered:

... people are willing to pay for quality, and if you explain that quality to them they will come on board and buy this service. But it is difficult in a competitively intense environment like what we have right now.³⁴

7.45 Mr Morrow provided examples of RSPs who are now providing more information to customers about the speeds that may be available at different times of the day.

...there are a couple of RSPs out there...that have recently changed their comms [communications] plans and are now talking ranges with their consumers. That's exactly the conversation that needs to happen because, in some way, we—and I'm going to say NBN Co is at fault here too—have put out this view that you can buy 25, 50 or 100 megabits per second without saying, 'That's a peak information rate, not a guaranteed 24-hour-a-day,

32 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 63.

33 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 42.

34 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 42.

every-minute-of-the-day rate that you're going to be observing.' Hence the reason why these retailers...are starting to change that conversation out there and saying: 'It will range. You'll peak at 25 megabits per second, but you may drop down to 15 megabits per second or maybe to 10 megabits per second. Is that good enough for you at this price point? If not, maybe I have an upgraded product where I can give you more certainty—call it the bottom end of my speed delivery—that that will be increased because you're going to pay \$5 more a month, \$10 more a month or whatever it is I have on offer'.³⁵

7.46 On the question of whether the market will respond by itself or will action by the ACCC be required, Mr Morrow stated:

I think it is multi-tier. First of all, I think our [RSPs] are realising that this is creating more of a problem than just getting the market share, so they want to do more. You see TPG saying, 'I'm going to start talking about range'; [of speed on a plan] you see Aussie Broadband saying, 'I've have provisioned a massive amount of CVC because I want your busy hour of the day to have this minimum service level.' You're seeing Telstra and Optus start to think about this as well. By doing so, the market may actually respond on its own. When you hear the ACCC saying, 'I want to put some speed monitoring devices out there', that catches a lot of people's attention as to whether or not they need to be clear in how they're advertising this product and, therefore, clear in the options that they give to the consumers.³⁶

Stakeholder views on the NBN pricing structure

7.47 The majority of the evidence received about pricing related to the CVC, with particular reference to the amount charged for CVC and the impact this is having on competition and the customer experience.

7.48 In their submission, Macquarie Telecom Group (Macquarie Telecom) expressed concern that there is not an effective wholesale market for NBN services. The wholesale challenges are exacerbated by the CVC pricing model:

It is not until an RSP has a significant number of connections that it can economically purchase CVC in that area and directly connect to the PoI. Through this period of attaining scale, the RSP is reliant on a wholesale aggregation service which, in turn, makes customer acquisition highly problematic and uneconomical.³⁷

7.49 The Queensland Government is concerned that increases in the wholesale charges to retail service providers are increasing costs to consumers and business without a commensurate increase in service performance.³⁸

35 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 62.

36 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 64.

37 Macquarie Telecom Group, *Submission 10*, p. 2.

38 Queensland Government, *Submission 21*, p. 9.

7.50 In its submission, Vodafone Hutchison Australia (Vodafone), stated:

NBN's wholesale pricing arrangements discourage RSPs from offering their customers the faster speeds that the NBN is capable of delivering...The amount of CVC an RSP purchases is one of the most significant influences on the quality of the service experienced by that RSP's customers. The current structure of this CVC pricing penalises RSPs for provisioning higher guaranteed capacity and therefore more consistent guaranteed performance for their customers.

The fixed AVC monthly charge increases steeply for higher speed plans. This, combined with higher CVCs to guarantee the higher throughput customers would expect on higher speed plans, means that the pricing model discourages RSPs from offering higher speed data plans.

7.51 At the public hearing in Sydney, Mr Dan Lloyd, Chief Strategy Officer and Corporate Affairs Director, Vodafone spoke about the CVC charge in more detail:

We fully understand NBN's need to deliver a rate of return to government, and we've put forward in NBN's current consultation on the CVC what we think is a very practical way forward, which is to substantially reduce the CVC—we have proposed halving the CVC rates—but to balance that with an increase in the AVC so that NBN still gets the wholesale revenue that it needs. It said \$44 a month, currently, rising to \$52 a month in 2020. We believe that can be achieved through a model that has a higher fixed access charge and a lower variable component, so RSPs aren't facing such a massive risk in buying more capacity at the most congested times of the network.³⁹

7.52 Mr Lloyd explained that there is a fear amongst RSPs about purchasing more CVC. Part of this fear relates to the difficulty to communicate to consumers, in an environment where there is a high number of RSPs selling the same product, that an increase in cost is due to a higher quality product/experience.⁴⁰

7.53 Mr Lloyd went on to suggest that a readjustment of the pricing model is required to 'maximise the potential of nbn to provide higher and higher services':

If we look at New Zealand, for example, which has a fixed monthly charge—and so it's entirely AVC, to use that terminology—we see in areas where fibre is available people are overwhelmingly—about 80 per cent of people—purchasing 100 megabits per second, whereas with NBN 80 per cent of customers are on 25, five or below. We think there is some evidence that that a more stable charging model that doesn't bring that fear of

39 Mr Dan Lloyd, Chief Strategy Officer and Corporate Affairs Director, Vodafone Hutchison Australia, *Proof Committee Hansard*, 1 August 2017, p. 1.

40 Mr Dan Lloyd, Chief Strategy Officer and Corporate Affairs Director, Vodafone Hutchison Australia, *Proof Committee Hansard*, 1 August 2017, p. 4.

purchasing more capacity is the best way for the industry to move forward.⁴¹

Changes to pricing announced in 2017

7.54 On 17 February 2017, nbn announced that it would change CVC pricing to a 'new discount model', which would take effect from 1 June 2017:

The new model...calculates the discount based on individual retailer averages, as opposed to an industry average. It automatically reduces the price of CVC as the average amount of CVC per end user increases.⁴²

7.55 nbn explained that the new model will 'further enhance RSPs ability to manage service quality provided to their end users':

This model enables RSPs, both small and large, to have greater control over their service experience and the cost related to that experience. It's up to each individual RSP to make a judgement call on how much CVC at a Point of Interconnect it should buy to service its users in that area.⁴³

7.56 Under the industry average model retailers had been paying \$15.25/Mbps per CVC unit but under the new model they will be able to achieve discounts based on how much CVC they purchase per end-user. According to nbn:

The new model enables retailers to differentiate their offerings to consumers, which will help promote competition and a wider choice of broadband plans.⁴⁴

7.57 As noted earlier there has been a reduction in the CVC charge over time from \$20 in June 2015 to the current average of \$14.40Mbps per end user. Mr Morrow explained the reductions to the CVC charge in more detail:

It's entirely up to each of the nation's 45 RSPs as to how much of that bandwidth they choose to allocate among their end-users. With the recently

41 Mr Dan Lloyd, Chief Strategy Officer and Corporate Affairs Director, Vodafone Hutchison Australia, *Proof Committee Hansard*, 1 August 2017, p. 4, See also Mr Kurt Rodgers, Network Strategy Manager, Chorus NZ, *Proof Committee Hansard*, 23 June 2017, p. 8 who explained that NZ telecommunications carriers decided that the AVC-CVC pricing model was overcomplicated and would create barriers to drive bandwidth usage.

42 nbn, 'New CVC pricing model to drive enhanced broadband service', *Media Release*, 17 February 2017, available at: <http://www.nbnco.com.au/corporate-information/media-centre/media-releases/New-CVC-pricing-model-to-drive-enhanced-broadband-service.html>.

43 nbn, 'nbn's new CVC pricing model set to help improve consumer experience', *Blog post*, 5 July 2017, <http://www.nbnco.com.au/blog/the-nbn-project/nbns-new-cvc-pricing-model.html>.

44 nbn, 'Discounting model set to help improve consumer experience', *Media Release*, 1 June 2017, available at: <http://www.nbnco.com.au/corporate-information/media-centre/media-releases/nbn-launches-new-cvc-pricing-model.html>.

introduced pricing scheme, the more CVC the RSP allocates per end user the more their price/unit decreases and can go as low as \$8/Mbps.⁴⁵

7.58 nbn has reported that between February, when the new discounting model was first announced, and June, there was an 11 per cent increase in CVC purchased per end user on average on the network.⁴⁶

7.59 Ms Caroline Lovell, Chief Regulatory Officer, nbn explained that there is scope within the current SAU for nbn to 'rebalance' the AVC and CVC pricing depending on the 'nature of the rebalance'. The price changes announced in February 2017 have been implemented within the scope of the existing SAU. Broader changes would require nbn to submit a variation to the SAU to the ACCC for assessment under the statutory framework.⁴⁷

7.60 In relation to the changes to the CVC charge announced in February 2017, Vodafone submitted that whilst the changes did represent some improvement to CVC pricing, further consideration should be given to other charging models:

NBN Co. has recently announced some improvements to its CVC pricing which give RSPs some discount if that RSP purchases more CVC capacity and therefore guaranteed minimum performance per customer. However, the discount is relatively modest and is unlikely to provide a substantial incentive to migrate customers to the higher speed plans. As NBN Co. acknowledges there needs to be further consideration of either more substantial discounts or even a move to different charging models.⁴⁸

7.61 At the public hearing in Sydney, Mr Morrow told the committee that the company is constantly reviewing the pricing structure in consultation with industry:

There is a perpetual one; it is always underway; we are always looking at new ways to do this. When this management took over a bit over three years ago, the price was set at \$20; it was fixed; there was no dimension, no scaling. We introduced a dimension based structure; that was an industry wide average. Subsequently we introduced a regional 'by RSP' dimension based structure. These things go through a very well spelled out agreed process and have a long cycle time. Even though it was only on 1 June that we had the newest pricing regime put in place, we immediately began

45 Mr Bill Morrow, Chief Executive Officer of nbn, *Why are data speeds sometimes lower than what consumers were expecting? Is nbn to blame with its infamous CVC charge?*, Position Paper, 1 August 2017, p. 2.

46 nbn, 'nbn's new CVC pricing model set to help improve consumer experience', *Blog post*, 5 July 2017.

47 Ms Caroline Lovell, Chief Regulatory Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 51. The committee notes that the ACCC is currently considering a variation to the SAU from nbn. This variation is not related to the CVC charge and the ACCC review process is ongoing.

48 Vodafone Hutchison Australia, *Submission 47*, pp. 3-4.

talking about what else we should be thinking about. So that has been underway since then.⁴⁹

Potential impact of further pricing changes

7.62 nbn's *Corporate Plan 2017* forecasts a base case peak funding of \$49 billion (within a forecasted range of \$46 billion to \$54 billion) with an expected internal rate of return (IRR) of between 3.2 per cent and 3.7 per cent.⁵⁰

7.63 The committee sought information from nbn about when information about the potential impact of pricing changes on the IRR, peaking funding and forward projections would be available, in the event that changes are made to the nbn pricing structure after the *Corporate Plan 2018* is published. Mr Morrow confirmed that these sorts of updates would be provided in the *Corporate Plan* the following year.⁵¹

Committee view

7.64 The committee recognises the importance of prices being set by nbn to generate revenue, and encourage competition in the market, and notes the evidence from nbn that they undertake pricing reviews on a perpetual basis to ensure that the pricing structure is appropriate.

7.65 The committee notes the different approach taken by Chorus NZ which applies a flat access charge, and where 90 per cent of new customers are taking 100 Mbps plans with unlimited data, and there are more 13,500 premises with gigabit connections.

7.66 The committee notes the concerns raised by witnesses and submitters about the wholesale market and in particular the CVC. The pricing changes implemented in June 2017 are already showing positive results with an 11 per cent increase in CVC purchased per end-user on average on the network between February and June 2017.

7.67 The committee notes that analysis and discussion about the nbn pricing structure will be ongoing, and believes it is one of the key topics that should be considered closely in the next annual report, along with careful consideration of the nbn business model as a whole.

49 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 42.

50 nbn, *Corporate Plan 2017*, p. 54.

51 Mr Bill Morrow, Chief Executive Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 46.

Chapter 8

Opportunities for the NBN to provide economic and social benefits

Introduction

8.1 In nbn's 2015-16 Annual Report, the Chairman and Chief Executive Officer's message stated:

Our purpose remains to connect all Australia and bridge the digital divide, and at 30 June 2016, 70 per cent of the rollout to date has been in non-metropolitan and regional Australia.¹

8.2 Given the extent of the rollout in regional Australia, and as noted in Chapter 1, the committee undertook its public hearing program with the specific intent of taking the inquiry outside of major metropolitan areas and gathering evidence in regional Australia. During the course of the inquiry, the committee received evidence of the opportunities the NBN is providing for economic and social benefits, particularly for communities located outside the major metropolitan areas. The committee focussed on the potential opportunities in economic growth and innovation, telehealth, digital inclusion and education.

8.3 The committee also received evidence that showed the NBN is delivering a service of significantly varied quality as a result of the uneven nature of the multi-technology mix and the apparent over-use of satellite broadband.

Opportunities for economic growth and innovation

8.4 The committee received substantial evidence highlighting the importance of good broadband services in promoting economic growth and innovation in regional Australia.

Agricultural applications

8.5 A number of submissions referred to the contribution of the agricultural sector to the Australian economy. For example, Better Internet for Rural, Regional and Remote Australia (BIRRR) noted:

Figures recently released by the Australian Bureau of Statistics show that, in the three months to December 2016, agriculture contributed 0.5% to the nation's overall 1.1% economic growth. In addition, agricultural export earnings are expected to be around \$48.7 billion in 2017-18. Considering agriculture experienced 27.6% growth in 2016 (compared with 4.6% in mining and a decline in both manufacturing and construction) it is safe to

1 nbn, *Annual Report 2015-16*, p. 9.

say agriculture is an important sector that continues to underpin the overall economy.²

8.6 The submission from the NSW Farmers' Association emphasised the importance of telecommunications services to farmers:

Access to reliable, affordable, quality telecommunications underpins the viability of these farming businesses across NSW, allowing farming families access to the business and education services as well as social connectivity. Access to improved telecommunications services in regional, rural and remote Australia is imperative to facilitate economic growth across agriculture through innovation in production, improved market access and enhanced consumer connectivity.³

8.7 Cotton Australia explained the extent to which telecommunications were essential business activity for their growers:

...on any given day a cotton grower may rely on telecommunications to communicate with employees, to complete online banking, to participate in online trading, to monitor weather conditions, to receive real-time updates from on-farm sensors, to upload aerial drone footage and data, to remotely monitor and control irrigation systems, to access data from machinery and so much more.⁴

8.8 Submissions and evidence to the committee particularly noted the potential of precision technologies in agriculture and the importance of internet services to handle these applications.⁵ At the public hearing in Townsville, Professor Ian Atkinson, of the e-Research Centre at James Cook University, appeared before the committee in a private capacity and detailed some of his work in this area:

We have been doing precision agriculture—high precision beef cattle farming, where animals are tracked and weighed in real time on properties—and feeding that data back to farmers so that they have decision support systems and can move animals around these vast cattle stations in Northern Queensland and north Australia to improve profitability and land management. We are starting to do work in the cane industry to monitor run-off of sediments and fertilisers. Even in the wine industry in South Australia, some of our technology is being used to water and assess individual grapevines.⁶

8.9 Professor Atkinson continued, outlining the role of the NBN:

2 Better Internet for Rural, Regional and Remote Australia, *Submission 101*, p. 23. See also: National Farmers' Federation, *Submission 45*, p. 1, which set out a projection for Australian agricultural to become a \$100 billion industry by 2030.

3 NSW Farmers' Association, *Submission 104*, p. 4.

4 Cotton Australia, *Submission 46*, p. 2.

5 See, for example: Queensland Government, *Submission 21*, p. 32; and GrainGrowers, *Submission 82*, p. 2.

6 Professor Ian Atkinson, *Committee Hansard*, 7 April 2017, p. 18.

For many of these things, although we have access to very high bandwidth connections between universities, we are actually getting out into the real world. I could take you 120 kilometres west of here and it is really just dirt, and we want to actually take that land and make it productive for producers. Ubiquitous, accessible internet makes that available in ways that we simply could not do before. So it is with the NBN that we can start to imagine a new future for northern agriculture, where food is much more traceable and safe, and we can actually provide more value back to farmers.⁷

8.10 Some of these agricultural applications could be performed with quite small bandwidth, however, coverage is an issue:

We are dealing in locations which can be a hundred kilometres away from the nearest Telstra access point or mobile phone access point, so, although the data rates are quite low, it is actually the coverage and the ubiquity. In many cases we are putting in an NBN Sky Muster solution and then building our own networks out over those properties...You can think of them like a wi-fi network, but it is different technology, so it has a much longer range. Instead of them being around a house, you can spread them out for maybe 30 kilometres.⁸

8.11 Cotton Australia noted, however, that coverage was such an issue, that some growers were leasing office spaces in local towns to ensure they had access to reliable telecommunications services to conduct their businesses.⁹

Regional development

8.12 Mr Andrew Cottrill, from the Albury City Council, explained the role that the NBN had in stimulating regional growth and development:

...I really believe that great broadband speeds and great broadband services are critical to regional development. We are constantly behind the eight ball in regional areas, in terms of the tyranny of distance and access to services. The NBN is...a key facilitator of business investment. Whenever businesses look to invest in our city, there are always questions about: what is the broadband speed like; what are the services like; will they be available in this location? So it is very much front of mind for business investors in the region and it is critical that we have a great service.¹⁰

8.13 Conversely, Ms Robyn Downham, a representative from the Spencer community on the Central Coast, described for the committee the impact on that community of a lack of internet and mobile coverage:

7 Professor Ian Atkinson, *Committee Hansard*, 7 April 2017, p. 18.

8 Professor Ian Atkinson, *Committee Hansard*, 7 April 2017, p. 20.

9 Cotton Australia, *Submission 46*, p. 2. See also: Mr Alex Green, Chief Executive Officer, Mansfield Shire Council, *Committee Hansard*, 20 April 2017, p. 34.

10 Mr Andrew Cottrill, Team Leader, Economic Development Team, Albury City Council, *Committee Hansard*, 20 April 2017, p. 7. See also: Mrs Lynette Craigie, President, Western Australian Local Government Association, *Proof Committee Hansard*, 17 July 2017, p. 2.

On the business side of things with the area, there is [sic] hardly any business opportunities. Only a few people operate from home. From a social aspect, young families who love the area are discouraged to buy in the area because there is no school, no internet and no mobile coverage. There are a few people in the older demographics buying in the area because of a tree change. What we are finding is the community is becoming an ageing population. The average age is 45 to 50.¹¹

8.14 The committee heard evidence of a number of examples of businesses based in regional areas benefiting from the rollout of the NBN and contributing to economic growth in those areas.

SafetyCulture, Townsville

8.15 At the public hearing in Townsville, the committee heard evidence from Mr Luke Anear, Chief Executive Officer, SafetyCulture, about the establishment and growth of that company and the iAuditor app, which it created.¹²

8.16 SafetyCulture started in 2004 and by 2011 had three staff. Between 2012 and 2017 the number of staff grew from three to 104, with an estimated 150 more positions to be added over the next 12 months. Mr Anear noted that the 104 jobs at SafetyCulture were 'high-skilled, high-paying jobs', in the local Townsville economy and also in other states of Australia.¹³

8.17 Mr Anear explained the significance of the NBN to the growth of his company:

None of what we do would be possible if it were not for the NBN or a capability like that. Our company simply would not exist. We would not be able to build the teams and reach the customers we do without it. The situations we face where we have not had high-speed internet have crippled our capability completely.¹⁴

8.18 Mr Anear contrasted the operation of SafetyCulture's Townsville office with the Sydney office:

11 Ms Robyn Downham, Advocate, Spencer community, *Proof Committee Hansard*, 2 August 2017, pp 49-50.

12 Mr Luke Anear, Chief Executive Officer, SafetyCulture, *Committee Hansard*, 7 April 2017, p. 17. iAuditor allows workers to conduct inspections and assessments to manage safety and quality in their workplaces. The app is used by 7,000 companies in 80 different countries. Customers use the products to do things such as inspect the London City Airport each day; inspect Starbucks stores across the world for quality, safety and condition the Royal Flying Doctor Service uses the app to inspect their aircrafts and equipment each day; researchers in Antarctica inspect the equipment they use; and as of February 2019 the products will be used on the International Space Station.

13 Mr Luke Anear, Chief Executive Officer, SafetyCulture, *Committee Hansard*, 7 April 2017, p. 17.

14 Mr Luke Anear, Chief Executive Officer, SafetyCulture, *Committee Hansard*, 7 April 2017, p. 17.

Our teams consume roughly 80 hours a day of video, calls and conversations between each other and our customers. That is vital in being able to build and create teams of people to be able to solve complex problems. We now even design our offices so that they have single-person phone booth-style video offices as part of the way our offices are designed. We have spent up to \$40,000 on our Sydney office to get fibre internet because we did not have the NBN down there although we did have it in Townsville. That would mean our communications would break down and we were not able to effectively maintain shared knowledge across teams and work together effectively.¹⁵

8.19 Mr Anear stated that the strengths of the NBN were the bandwidth available, which allowed for communicating of 'reasonably large amounts' of information without delay.¹⁶ While the company's current 100 Mbps connection is currently sufficient, Mr Anear stated that this would not be enough going forward:

Today we have a business that is built around people entering information into an app with their fingers, and taking photos. They do that 175 million times every month, and that is doubling every few months. In three years' time our business will not be that. Our business will be a combination of manual data entry and sensory data feeds, and combining other data sets that are coming from external sources, such as the telemetry inside a vehicle or a truck to know where its location is, or what the temperature is around it if you are moving produce and all those sorts of factors.

So we need to move today from a fairly simple manual data-entry business into a much more automated data sensory feed that then has manual labour over the top of that. Our data requirements are probably less than five per cent of what they will be over the next three to five years. We are using 50 to 80 per cent of our hundred-megabit connection today. If we are not aiming towards 10 times that over the next—and perhaps we are a little on the extreme side compared to an everyday business—three to five years then we are going to start running into bottlenecks.¹⁷

BlinkMobile, Gosford

8.20 Mr Alan Williams, Chair and Chief Executive Officer of BlinkMobile, explained the work of his company to the committee:

We are a software company based in Gosford. Just 12 of us create and sell a software platform that is used to develop and operate mobile and IOT [Internet of Things] based solutions that integrate into large corporate systems. So we have about 120 clients, many of which are large corporates in the government agencies. Agencies such as New South Wales SafeWork

15 Mr Luke Anear, Chief Executive Officer, SafetyCulture, *Committee Hansard*, 7 April 2017, p. 17.

16 Mr Luke Anear, Chief Executive Officer, SafetyCulture, *Committee Hansard*, 7 April 2017, p. 19.

17 Mr Luke Anear, Chief Executive Officer, SafetyCulture, *Committee Hansard*, 7 April 2017, pp 25-26.

and Food Authority use our software platform to deliver apps to their staff that are really transforming the way they work....

So how can 12 people based in Gosford compete with the likes of IBM, SAP, salesforce and other large corporations selling into large enterprises? The answer is to be specialised and cloud based.¹⁸

8.21 Mr Williams outlined the benefits of 'growing the ecosystem of similar businesses' on the Central Coast:

Well, it is the Silicon Valley effect. The more good people you get around, the more good ideas flow around. It is just like an eat street or Silicon Valley or anything like that. The more businesses of a certain type you get, you get the foment of ideas that happens. You get people bouncing off each other. We have a pretty small IT community here. You do not get people investing in IT. It is not a known place particularly for IT. We are trying to make it so. Investors follow where the ideas are. Getting start-ups going is what we need here. Obviously, we would love to have some big companies come here as well as anchor tenants into the area. We do not have a large IT company anywhere around here. A large IT company tends to spawn other ideas around it. People come out of that and do and new and exciting things. We would love that around here.¹⁹

8.22 Mr Williams also flagged speed issues as an impediment to this type of growth:

Transfer speeds are consistently good at about 100 megabits per second download, although faster rates would be useful at peak demand periods. So it is good, but we would always use more...

...

... it is 100 in a company that has 12 active developers and a multimedia guy doing stuff. So it is easily consumed with that. For an individual working at home, in our world, where we are moving moderate amounts of data, 20 or 25 is probably okay. For somebody doing multimedia, it would not be okay. So it depends upon the business. Certainly if you are moving large amounts of video and things like that around, it would not be okay.²⁰

Launtel, Launceston

8.23 At the committee's public hearing in Launceston, Mr Damien Ivereigh, Chief Executive Officer, Launtel, a Tasmanian retail service provider, spoke about the business potential arising from Launtel's gigabit product. Noting that the product was a business grade product, and not cheap, Mr Ivereigh gave the example of two local Launceston firms:

18 Mr Alan Williams, Chair and Chief Executive Officer, BlinkMobile, *Proof Committee Hansard*, 2 August 2017, p. 1.

19 Mr Alan Williams, Chair and Chief Executive Officer, BlinkMobile, *Proof Committee Hansard*, 2 August 2017, p. 6.

20 Mr Alan Williams, Chair and Chief Executive Officer, BlinkMobile, *Proof Committee Hansard*, 2 August 2017, pp 1 and 6. See also: Mr John Simpson, *Submission 173*, p. 1.

...I can talk about ARTAS, a local architecture firm, and Rare Innovation, an engineering company, who have both used the product. They tell me that, due to the integration they are able to have with each other—architects and engineers have to work quite closely together when they're designing a building, obviously—they have cut their time to work on a building from about six to eight weeks down to about two weeks, simply because they are able to work on the same design together using the same software, because they've both got high-speed connections.²¹

8.24 Mr Iverleigh drew on examples from overseas to support his view that a gigabit product had the potential to attract business to Launceston:

Absolutely I think they are going to come here. In fact, on the day we launched we had a call from a Singaporean engineering company, who basically told me that they were thinking of it, and now it's a no-brainer. ...Certainly the experience in places like Chattanooga, and Dingle in Ireland, is that within a few months businesses will start to relocate here. As for marketing this, as for letting the people on the mainland realise that it is available here, we could always do more. I'm talking to everybody who will listen, because I believe very much in what Tasmania as a state has to offer both Australia and the rest of the world. To my mind, this is just yet another reason why Tasmania is one of the best places in the world to live.²²

Expanding and developing the delivery of telehealth services

8.25 At the committee's public hearing in Redcliffe, Queensland, Dr Anthony Smith, Associate Professor and Deputy Director, Centre for Online Health, University of Queensland, outlined the reasons for the potential for telehealth in Australia:

Telehealth has tremendous opportunities in a country such as Australia, where distances are tremendous and where we have a health system that is constructed in such a way that patients have to travel to access high-quality specialist services, especially if they reside in country areas.²³

8.26 Dr Smith described an example of telehealth being able to bring in multiple specialists from across Australia:

I have had a child with an oncology condition diagnosed in Brisbane. I was able to organise three specialists in three different states of Australia who were able to meet and talk together with the family. That family would normally have had to spend a lot of money to travel around each of those areas, and the stress and inconvenience is incredible. However, we were

21 Mr Damien Ivereigh, Chief Executive Officer, Launtel, *Proof Committee Hansard*, 25 July 2017, p. 10.

22 Mr Damien Ivereigh, Chief Executive Officer, Launtel, *Proof Committee Hansard*, 25 July 2017, p. 10.

23 Dr Anthony Smith, Associate Professor and Deputy Director, Centre for Online Health, University of Queensland, *Committee Hansard*, 6 April 2017, p. 32.

able to make that happen with a videoconference with each of the specialists, and that was really good.²⁴

8.27 Dr Smith agreed that, in the example above, there was the potential to seek out not only three specialists in Australia, but specialists globally.²⁵

8.28 However, Dr Smith noted that telehealth is not just videoconferencing, there is significant potential for 'store and forward' techniques.²⁶ Dr Mohanraj Karunanithi, Group Leader, Australian e-Health Research Centre, described the 'Remote-I' project as one example of store-and-forward technology:

...we tested our store-and-forward telemedicine platform, called Remote-I, to close the gap in access to specialist eye care for Australians living in rural and remote areas. We conducted this study in Far North Queensland and remote Western Australia, using the Australian government broadband satellite. During the trial, we demonstrated that this was an effective and efficient way of providing eyecare services, reducing the number of patients that needed to be seen when an ophthalmologist visited these regions, and expediting patient care in critical cases. This also reduces the need for patients to travel to local health facilities and city hospitals.²⁷

Royal Flying Doctor Service

8.29 Mr Martin Laverty, Chief Executive Officer of the Royal Flying Doctor Service of Australia (RFDS), explained initiatives that organisation, which has telehealth at the core of its services, will be deploying, in partnership with nbn:

- That RFDS bases and remote area clinics that RFDS visits on a regular basis, a total of about 300 locations across remote Australia, will be declared 'public interest premises', which will allow a community services access rate for the use of Sky Muster satellite services.
- The trial of six transportable antennas – four in aircraft and two in ground vehicles – to access the satellite for the primary health care services that RFDS provide across Australia.

24 Dr Anthony Smith, Associate Professor and Deputy Director, Centre for Online Health, University of Queensland, *Committee Hansard*, 6 April 2017, p. 37.

25 Dr Anthony Smith, Associate Professor and Deputy Director, Centre for Online Health, University of Queensland, *Committee Hansard*, 6 April 2017, p. 37.

26 Dr Anthony Smith, Associate Professor and Deputy Director, Centre for Online Health, University of Queensland, *Committee Hansard*, 6 April 2017, p. 35.

27 Dr Mohanraj Karunanithi, Group Leader, Australian e-Health Research Centre, Health and Biosecurity, Commonwealth Scientific and Industrial Research Organisation, *Committee Hansard*, 6 April 2017, p. 32. See also: Mr Alan Taylor, *Submission 147*, which describes the Flinders Telehealth in the Home (FTH trial) trial conducted in South Australia during 2013-14. The FTH trial involved clinical care delivered from the hospital to the participant via video conferencing and compared connections provided over the NBN with connections via mobile data services.

- Exploring the provision of public interest premise concessions to RFDS medical chest holders,²⁸ which would give those medical chest holders access to Sky Muster services and the potential to conduct video health services with the RFDS.²⁹

8.30 Mr Laverty noted that these arrangements were still being developed.³⁰ Pricing arrangements in relation to the satellite have not yet been settled and in relation to the transportable antennas, Mr Laverty stated that this was a 'genuine trial':

At the end of six months I and my colleagues will be looking at the outcomes to see: have we been able to access better speeds, have we taken broadband to areas where it has previously not been accessible, is it reliable, does it work in aircraft? We genuinely have to test the antennas in our aircraft and the antennas that will be on the roads, and at the moment we are having challenges around weight. The antennas going into our aircraft weigh a little more than we would want them to weigh, and we are looking to ensure that we can find a robust system so those antennas can be sustainably put into all of our aircraft if the trial proves successful.³¹

8.31 Both Mr Laverty and Dr Smith described to the committee a joint project of their respective organisations:

In partnership with the University of Queensland, through National Health and Medical Research Council funding, the flying doctor [RFDS] is undertaking a five-year randomised trial of the use of telehealth for chronic disease management of patients across 15 across remote communities to prove the testing and the development of different device uses in management of chronic illnesses, such as cardiovascular disease and diabetes.³²

8.32 Mr Laverty also gave the following example of the direct economic benefits that the NBN could provide to the RFDS:

In the current financial year we will pay \$32,000 for access to ADSL broadband in Rockhampton. In the next financial year, we expect to spend

28 A Royal Flying Doctors Services' medical chest comprises over 100 commonly used medicines that are able to be prescribed by RFDS doctors over the phone. There are 3,500 locations with an RFDS medical chest, including property and station owners and post offices. See, Mr Martin Laverty, Chief Executive Officer, Royal Flying Doctor Service, *Proof Committee Hansard*, 26 June 2017, p. 10.

29 Mr Martin Laverty, Chief Executive Officer, Royal Flying Doctor Service, *Proof Committee Hansard*, 26 June 2017, pp 9-10.

30 See: Mr Martin Laverty, Chief Executive Officer, Royal Flying Doctor Service, *Proof Committee Hansard*, 26 June 2017, pp 10 and 14.

31 Mr Martin Laverty, Chief Executive Officer, Royal Flying Doctor Service, *Proof Committee Hansard*, 26 June 2017, p. 14.

32 Mr Martin Laverty, Chief Executive Officer, Royal Flying Doctor Service, *Proof Committee Hansard*, 26 June 2017, p. 13. See also: Dr Anthony Smith, Associate Professor and Deputy Director, Centre for Online Health, University of Queensland, *Committee Hansard*, 6 April 2017, p. 35.

\$7,000. That is a 78 per cent reduction in our costs at Rockhampton for accessing broadband services because of the arrival of the NBN at that location. We are also advised that we will have faster speeds when that service is deployed at Rockhampton. As we look at being able to expand NBN across Australia, having flagged that we currently spend \$3.7 million per annum on access to telecommunications services, the potential for savings for Australia's most reputable charity is significant, and we are looking to harness those savings to return those revenues to our services.³³

Bringing healthcare into the home

8.33 Dr Smith explained that the opportunities for telehealth were not only about transferring current model of patient-doctor interaction to an online environment:

I think the preference would be to try to imagine this in such a way that it is a service we have not seen before. This is not about trying to improve what we have currently got; it is trying to think about what this will look like in 10 years. Ideally, the services should be as convenient as possible, and that is not just in a hub that you have to travel 300 kilometres to. Ideally, you want services that are available in the home, because it is not just the interaction that happens between the patient and the clinician but also what the patient can do for themselves. There is education, support, accessing information, keeping your own personal records, keeping your own information, having alerts and having systems monitor and guide you.³⁴

8.34 In this context, Dr Karunanithi spoke of two projects that his organisation have undertaken related to using a fast broadband network:

The first project we undertook developed a mobile platform technology to support older Australians to live longer in their own homes. In this project, we developed a platform that engages the older person, the family and the nursing service through an iPad app, an internet portal and sensors in the home.

In the second project we conducted a national home telemonitoring trial in six sites on the east coast of Australia. The trial was aimed at seeing if telehealth intervention on older Australians with multiple chronic disease would reduce hospitalisations and GP visits. The outcome of this trial allowed a 50 per cent reduction in the rate of admissions to hospital, and a 46 per cent reduction in the rate of MBS expenditure.³⁵

33 Mr Martin Laverty, Chief Executive Officer, Royal Flying Doctor Service, *Proof Committee Hansard*, 26 June 2017, p. 9.

34 Dr Anthony Smith, Associate Professor and Deputy Director, Centre for Online Health, University of Queensland, *Committee Hansard*, 6 April 2017, p. 36.

35 Dr Mohanraj Karunanithi, Group Leader, Australian e-Health Research Centre, Health and Biosecurity, Commonwealth Scientific and Industrial Research Organisation, *Committee Hansard*, 6 April 2017, p. 32. See also: Mr Alan Taylor, *Submission 147*, which describes the Flinders Telehealth in the Home (FTH trial) trial conducted in South Australia during 2013-14. The FTH trial involved clinical care delivered from the hospital to the participant via video conferencing and compared connections provided over the NBN with connections via mobile data services.

8.35 Mr Alan Taylor, of eDevelopment Solutions, highlighted the importance of the NBN in achieving this care in the home:

One of the main benefits of the NBN will be to deliver high quality home-based healthcare to Australians independent of where they live. With the rapidly ageing population, this will represent an increasing focus of healthcare.³⁶

8.36 Dr Smith agreed with this point, but indicated that coverage was an issue:

I think the greatest opportunity [for the NBN] is supporting people in the home. My experience in the last few years is that it has been a real struggle to connect with families in the home. Some families do have the NBN, and it works quite well. The majority of the families we deal with do not, and some of the remote areas that we are trying to connect to have very limited internet access in their entire town.³⁷

8.37 Dr Smith explained that, in this context, NBN infrastructure is particularly important in regional and rural areas:

At the research end we have our own networks. We have gigabits—and hundreds of gigabits, actually, in some instances—but, where we are now starting to translate the research into servicing people, that is where the NBN capability in regional and rural Queensland is absolutely essential. And it is, of course, more essential, because if you are in Brisbane or Sydney or Melbourne you can actually, with difficulty maybe, drive to the hospital. These options just are not available for people in these communities, so the NBN, as a device or a tool to get to these people, is going to be enormous. I think the future of telemedicine is critical. Again, we will never have the money. We will probably have less money to put into health over time. That is the reality. Telemedicine is a way to compensate and enable people to live in rural communities.³⁸

8.38 Dr Smith referred to the delivery of mental health programs as one of the best examples of how telehealth has applied for patients. Dr Smith provided the following example of the importance of accessible and affordable internet connections for these types of programs:

Another more recent program which we have been working with is called the Grow Program. The Grow Program is a national program that leads support groups during the recovery stages for, basically, people who have a mental health disorder. This has been a very successful program. We have been working with the Grow group in Queensland and looking at how we can extend a very successful program which is available to Sydney patients and groups to country environments. The No. 1 problem for us at the

36 Mr Alan Taylor, *Submission 147*, p. 5.

37 Dr Anthony Smith, Associate Professor and Deputy Director, Centre for Online Health, University of Queensland, *Committee Hansard*, 6 April 2017, p. 34.

38 Dr Anthony Smith, Associate Professor and Deputy Director, Centre for Online Health, University of Queensland, *Committee Hansard*, 6 April 2017.

moment has been ensuring that people have access to an internet connection. They just do not have it in their home. They have given many examples where they have either no internet or very limited internet and they just cannot afford to get it and then use it for that particular purpose.³⁹

8.39 Professor Atkinson outlined a project he is currently discussing with Queensland Health, but noted the lack of NBN services as a significant impediment to the project:

The Townsville Hospital takes all neonatal babies from north of Rockhampton. A lot of the people cannot be with their babies for four months; they have to go back to their communities and back to work. The hypothesis is that, if they can see their child in the humidicrib when they need to, they will bond better with that baby. The international experience is that they will actually take those babies home earlier, saving in the health system money and days in hospital. But how do we do that? How do we provide that real-time video access to that baby without an NBN-type service in these remote communities?⁴⁰

8.40 Dr Smith indicated the data allowances and speeds available on some services currently mean that some applications are not feasible:

I think the NBN is going to help us reach areas that we cannot currently reach. There are a lot of places that still require patients to travel large distances in order to reach their nearest hospital where they know there is a reliable internet connection. The families and places that we are trying to connect to in many remote locations may have internet but a very small amount of internet that costs them a lot of money, so they are reluctant to use the data for their consultations. They also may not have the speeds that are required to be able to do an appropriate clinical consultation.⁴¹

8.41 Dr Smith also noted that latency is an issue:

When you are doing a consultation there is nothing more distracting than having to wait for a minute for your voice to come back and answer. That is an example and a very important concern...I know historically when we are dealing with older telecommunications it was a real problem and a huge distraction for clinicians, who found that very difficult. My thinking is: is something better than nothing? I think the answer is yes; however, if we are

39 Dr Anthony Smith, Associate Professor and Deputy Director, Centre for Online Health, University of Queensland, *Committee Hansard*, 6 April 2017, pp 39-40.

40 Professor Ian Atkinson, *Committee Hansard*, 7 April 2017, p. 18. See also: Professor Ian Atkinson, *Committee Hansard*, 7 April 2017, p. 21, describing another example of stroke patients being provided with ongoing monitoring and support via video, fitbits and other devices, once they have returned home after an initial intensive six month rehabilitation period in the Townsville hospital.

41 Dr Anthony Smith, Associate Professor and Deputy Director, Centre for Online Health, University of Queensland, *Committee Hansard*, 6 April 2017, p. 35.

striving for an excellent network that is going to do what we want to do then I think we should be aiming for better.⁴²

8.42 The committee discussed with Dr Smith the possibility of using community infrastructure, such as a library, as a means of improving access to telehealth:

I guess a conservative approach would be to say that if, at the very least, we could get every library connected that would be fine as a method of, or an avenue for, providing clinical consults. There are some requirements when providing clinical working areas, and a very important one is privacy and security.⁴³

Improving digital inclusion

8.43 Submissions and witnesses referred to Australian Digital Inclusion Index, which measures digital inclusion in three categories: accessibility, affordability and ability to use.⁴⁴ The Queensland Government summarised the results from the 2016 Digital Inclusion Index:

The Australian Digital Inclusion Index 2016 (ADII) report measures the level of digital inclusion across the Australian population, and monitors this longitudinally, collecting data for three years to date. The report provides a view of digital inclusion in Australia regarding access, affordability and digital ability, providing a national, state, regional and socio-demographic snapshot.

Overall, the ADII has found that digital inclusion is improving in Australia however, there is a 'digital divide' between people on lower incomes, compared to those on higher incomes. Particular communities and social groups, such as people aged over 65 years, people with a disability, people with less than secondary education, people not in paid employment or receiving a lower income, and Aboriginal and Torres Strait Islanders are the most digitally excluded.

42 Dr Anthony Smith, Associate Professor and Deputy Director, Centre for Online Health, University of Queensland, *Committee Hansard*, 6 April 2017, p. 38.

43 Dr Anthony Smith, Associate Professor and Deputy Director, Centre for Online Health, University of Queensland, *Committee Hansard*, 6 April 2017, p. 37.

44 See: Ms Louise Denoon, Executive Director, Regional Access and Public Libraries, State Library of Queensland, *Committee Hansard*, 6 April 2017, pp 1-2; Ms Teresa Corbin, Chief Executive Officer, Australian Communications Consumer Action Network, *Committee Hansard*, 19 April 2016, p. 12; State Library of Queensland, *Submission 6*, pp 1-2; and Queensland Government, *Submission 21*, p. 23. See also: Mr Daniel Featherstone, General Manager, Indigenous Remote Communications Association, and Director, Broadband for the Bush Alliance, *Proof Committee Hansard*, 17 July 2017, p. 9, who also noted the limitations in data collection of the Australian Digital Inclusion Index in terms of picking up the inclusion or exclusion of remote Indigenous people.

The report suggests that community-specific initiatives are required to address digital exclusion alongside measures to improve affordability.⁴⁵

8.44 The committee received some evidence about some of the groups which were identified as 'most digitally excluded', namely Aboriginal and Torres Strait Islanders, and people aged over 65 years.

8.45 Mr Daniel Featherstone, General Manager, Indigenous Remote Communications Association (IRCA), spoke of access to government services as one example of how Aboriginal and Torres Strait Islander people, particularly those living in remote communities, may be digitally excluded:

People are reliant on online government services now. In particular, myGov and My Health are critical to people getting their community benefits. A lot of people are not getting those benefits now because there is a lack of digital literacy and affordability to access online services. Many people are being breached or are unable to afford to get online to do their reporting to Centrelink and are therefore missing out on getting their welfare payments.⁴⁶

8.46 In its submission, the Northern Territory Government referred to the potential of broadband connectivity in addressing this exclusion:

Provision of a superior broadband connection in remote communities will be a significant factor towards closing the gap of Indigenous disadvantage. It would enable improved well-being for individuals and families living and working in some of the most remote locations in Australia by improving access to essential health and education facilities and other online services provided by the Northern Territory Government which is increasingly delivering services digitally.⁴⁷

8.47 Mr Featherstone also spoke of digital inclusion in the context of Closing the Gap:

One of the activities that are underway at IRCA, coming out of the recent Broadband for the Bush forum, is to push for digital inclusion to be considered a Closing the Gap indicator because it will enable many of the other Closing the Gap indicators around health, education, employment, housing and so on. We see digital inclusion helping to leverage a lot more support for other outcomes.⁴⁸

45 Queensland Government, *Submission 21*, p. 23. See also: Ms Louise Denoon, Executive Director, Regional Access and Public Libraries, State Library of Queensland, *Committee Hansard*, 6 April 2017, pp 1-2.

46 Mr Daniel Featherstone, General Manager, Indigenous Remote Communications Association, and Director, Broadband for the Bush Alliance, *Proof Committee Hansard*, 17 July 2017, p. 8. See also: Ms Teresa Corbin, Chief Executive Officer, Australian Communications Consumer Action Network, *Committee Hansard*, 19 April 2016, p. 2.

47 Northern Territory Government, *Submission 2*, p. 2.

48 Mr Daniel Featherstone, General Manager, Indigenous Remote Communications Association, and Director, Broadband for the Bush Alliance, *Proof Committee Hansard*, 17 July 2017, p. 8.

8.48 However, Mr Featherstone noted:

To get people connected isn't as simple as giving a one-size-fits-all model. We need to build on what people are already familiar with and having relevant applications and information in language or visually to help get people through their own learning journeys. IRCA's been doing some work in that with our inDigiMOB digital mentors project, and we have been trying to encourage a program to employ local people to be the digital mentors, to support their family and friends through a peer learning model. There is a range of different components to building digital inclusion, and it is certainly not just about infrastructure. That is only one part of the puzzle.⁴⁹

8.49 Ms Louise Denoon, Executive Director, Regional Access and Public Libraries, State Library of Queensland, provided the following example of assistance for older people in Queensland public libraries through a specialised program:

With the Tech Savvy Seniors Program, often it has been imperatives like being able to connect with families—how to use Facebook—because they are missing out on all of these rich family stories that are going on there. It is understanding what solution they need. We have had stories, particularly of older couples, where one of them has done all the online banking and all of that stuff. That person has died and the other person—the widow—has not really known how to access it and how to pay the bills. Sometimes it is that direct. Or it could be online shopping.

Often, people come to public libraries—older people—to do family history. Family history now requires very significant digital skills to be able to find the information that is wanted. It is also health, knowing how to access health resources. If your kids are in remote Indigenous communities, if your kids are at boarding school in Cairns, how do you talk to them? How could you Skype in? How do you connect in that way? The needs are many and varied but some are as basic as government services. Others may be that small businesses want to be able to access information that is only online. That incubator service supporting entrepreneurs in communities is an emerging trend, and libraries are looking to meet that demand.⁵⁰

Participation in education and training

8.50 Evidence to the committee demonstrated a variety of opportunities that the NBN may provide for participation in education, from preschool aged children, right through to training and development for professionals. Witnesses also shared the challenges that they faced in accessing education opportunities through NBN and the implications that this had.

49 Mr Daniel Featherstone, General Manager, Indigenous Remote Communications Association, and Director, Broadband for the Bush Alliance, *Proof Committee Hansard*, 17 July 2017, p. 11.

50 Ms Louise Denoon, Executive Director, Regional Access and Public Libraries, State Library of Queensland, *Committee Hansard*, 6 April 2017, p. 3.

8.51 At the public hearing on the Central Coast, Mr David Soede, Director of ICT at Central Coast Grammar School and the Educational Infrastructure Spokesperson for Managers of IT in Education, provided a number of detailed examples of how a high quality NBN could benefit students' education. For example:

What about learning a foreign language using a traditional classroom setting versus the possibility of a one-to-one video conference between students in our country and other countries? Think about China or Japan. You have students who want to learn a foreign language. A lot of the Asian languages in particular are very heavy on inflexion, so you cannot just have a single sound phonetically said. The inflexion on that syllable is really important. You can only get that across a decent connection. High speed, low latency allows that high audio quality.⁵¹

8.52 At the public hearing in Townsville, Ms Susan Parsons, the Senior Engagement Officer for Mareeba Shire Council, spoke of the possibility of the NBN bringing tertiary education opportunities to that shire, which is located west of Cairns:

The way that education is being delivered these days—vocational and tertiary—is that you do not actually need to be in the classroom, because it is live but online. So what I see happening in places like Mareeba is that they do not need to drive to Mareeba to attend the class; it can be like in a virtual classroom. Without the capacity or the reliability of the NBN, they are the types of opportunities that they will miss out on.⁵²

8.53 At the public hearing in Adelaide, Professor Shane Dawson, Teaching Innovation Unit, University of South Australia, described how the NBN may overcome the current limitations to providing tertiary course content via distance:

Internet coverage is pretty good in Australia as it is, whether it is NBN or down to 4G or 3G networks, satellites and so on, so we get into remote areas quite well. So, the access at the moment is fine. We can actually deliver education. The issue...is that it does impede the level of education that we would like to provide. We have the capacity now around 4K videos that we would take of geological representations around the Flinders Ranges that we would like to beam into students. You cannot do that now with the current internet access standards, which means that they do not see that same visualisation as on-campus students would see. If we are going to spread and have greater flexibility and diversity then we need better internet access speeds. As for how that rolls out across through the NBN, obviously the sooner the better, I would argue.⁵³

51 Mr David Soede, Director of ICT, Central Coast Grammar School and Educational Infrastructure Spokesperson, Managers of IT in Education, *Proof Committee Hansard*, 2 August 2017, p. 36.

52 Ms Susan Parsons, Senior Engagement Officer, Mareeba Shire Council, *Committee Hansard*, 7 April 2017, p. 14.

53 Professor Shane Dawson, Teaching Innovation Unit, University of South Australia, *Proof Committee Hansard*, 27 June 2017, p. 36.

8.54 At the hearing in Burnie, Mr Chris Walpole, a pharmacist from Queenstown, described how the NBN might facilitate professional development:

Training and education is a vital component of our pharmacy business strategy in Queenstown, and we're continually looking at opportunities to access more efficient training without the distractions and annoyance of the pixelation and freezing of the images which currently exists. As a pharmacist, access to national conferences for the purposes of training and CPD [continuing professional development] is expensive in its current form, as there is the requirement to find a locum pharmacist, the expense of accommodation and interstate travel. An NBN connection would enable access to conference webinars without having to leave the community, which is an overall cost saving to the pharmacy and the health system. We are hoping, therefore, that the NBN will enable our business to be more efficient.⁵⁴

8.55 Mrs Joanna Gibson, representing the Isolated Children's Parents' Association (ICPA), explained the importance of a fast, reliable and affordable internet connection for students undertaking distance education:

Over the years, as the curriculum for the schools of distance education has moved to an online format, we have become increasingly reliant on an affordable, reliable and fast internet connection. The legacy nightmare that was the oversubscribed interim satellite service remains all too vivid in the memories of many of our members. There is an enormous demand in rural and remote areas for a reliable and affordable internet service.⁵⁵

8.56 Mrs Gibson noted the work her organisation has done with the federal government and the nbn during the rollout of Sky Muster to address the requirements of families educating children and home and living in isolated locations.⁵⁶ Mrs Gibson referred to the same challenges with Sky Muster as are canvassed in Chapter 4 of the committee's report.⁵⁷ However, Mrs Gibson did note the 'huge assistance' that the education port has provided to distance education students:

The education port comes under one of these PIP [Public Interest Premises] sites. At the moment, it is just for students studying via distance education. They have to be signed off by the department of education and NBN in order to access this port. It is 50 gigabytes per student for up to three

54 Mr Chris Walpole, Pharmacist, QMU Pharmacy, *Proof Committee Hansard*, 26 July 2017, p. 39. See also: Mr Warwick Hough, Director, Workplace Policy, General Practice and Legal Services Department, Australian Medical Association, *Proof Committee Hansard*, 23 June 2017, p. 27, discussing the same point in relation to the training and professional development of rural doctors.

55 Mrs Joanna Gibson, Portfolio Leader, Federal Council, Isolated Children's Parents' Association of Australia, *Proof Committee Hansard*, 26 June 2017, p. 17.

56 Mrs Joanna Gibson, Portfolio Leader, Federal Council, Isolated Children's Parents' Association of Australia, *Proof Committee Hansard*, 26 June 2017, p. 17.

57 Mrs Joanna Gibson, Portfolio Leader, Federal Council, Isolated Children's Parents' Association of Australia, *Proof Committee Hansard*, 26 June 2017, pp 17-18.

students. So it can be up to 150 gigabytes that you can access for education and it is a priority signal so it is always at speed; it is not off-peak and peak.

...

It is a huge benefit for people studying by distance education because they are separate from the household and separate from the business, and they can concentrate on doing everything that their school curriculum requires of them. If they have to do research or something, they can watch YouTube or look at lots of articles or whatever without any worry about limits.⁵⁸

8.57 Mrs Gibson continued:

The provision of the education port is a huge assistance for those studying by distance education. However, it does not assist those studying in a small rural school, students returning home from boarding school during holiday breaks, or those studying at a tertiary level. These students still need adequate internet to be able to complete homework and assignments, do research and watch online lectures.⁵⁹

8.58 In its submission, BIRRR argued that there is a need for a tertiary education port to be established, similar to the distance education port:

Sky Muster customers are limited to one connection per household/location, which (in many cases) needs to be 'rationed' for business, health, education and personal needs. As such, there is a huge risk that RRR [rural, regional and remote] children and tertiary students will be unable to access the internet adequately for their studies, and will fall behind their metropolitan peers.

Whilst the development of the educational port for distance education and home school students using Sky Muster services is a welcome initiative, it is not accessible to tertiary students or primary and secondary students in mainstream schools, who also need internet access to complete homework, research and assignments.⁶⁰

8.59 In relation to secondary students in mainstream schools, Ms Lee Longmire from the Riverina region in New South Wales, spoke of the experience of her family, who only have access to mobile broadband, which she described as 'very expensive, a bit unreliable and a bit patchy'.⁶¹ Ms Longmire's children attend 'an old-school school, where they do not have laptops for them'.⁶² Ms Longmire described the implications

58 Mrs Joanna Gibson, Portfolio Leader, Federal Council, Isolated Children's Parents' Association of Australia, *Proof Committee Hansard*, 26 June 2017, p. 19.

59 Mrs Joanna Gibson, Portfolio Leader, Federal Council, Isolated Children's Parents' Association of Australia, *Proof Committee Hansard*, 26 June 2017, p. 18. See also: Better Internet for Rural, Regional and Remote Australia, *Submission 101*, pp 51-52.

60 Better Internet for Rural, Regional and Remote Australia, *Submission 101*, p. 52.

61 Ms Lee Longmire, Community Member, Narrandera Shire Council, *Committee Hansard*, 20 April 2017, p. 23.

62 Ms Lee Longmire, Community Member, Narrandera Shire Council, *Committee Hansard*, 20 April 2017, p. 27.

for her children, and particularly her daughter who is currently studying year 11 as a result of the need to ration data:

Speak to my children! They get told, even when we have 150 gigabytes of data, that they cannot willy-nilly just go on anything. My daughter—who is in year 11 and who is doing compressed curriculum HSC, so she is completing her first three HSC subjects at the moment—has to come and check: 'Mum, is it okay if I go on'—to watch whatever video the class has been told they need to watch, or download or look up anything. This is a kid trying to complete her HSC. My son loves it when we go to a hotel somewhere. His first question is: 'Mum, does it have free wi-fi?' He is like, 'so am I allowed to watch'—whatever little Minecraft video thingies he wants to watch. Those rationing things are real.⁶³

8.60 The committee also heard from Arabella Zocher, a Year 9 student at the Central Coast Rudolf Steiner School, who explained to the committee that her school used ADSL wi-fi and that the school does not have access to the NBN. Arabella described what this meant for her, and her classmates:

...with an increasing workload of over 300 people, the school is struggling to work efficiently and sometimes struggling to even work at all. YouTube has many educational platforms. Athletics is a great way to reinforce mathematical skills. Both of these take up a large amount of bandwidth. So when we try to have a Athletics class, half of the year cannot work, which causes major disruptions to our education. Apart from being frustrating, it denies us the opportunity of nurturing a love of maths. The Internet can collapse even though only 50 people can be using it at a time. At times, streaming websites have to get blocked because the network cannot handle the traffic.

...it is hard to use online textbooks and things. We are always using the big heavy textbooks and things. We cannot access the online ones because they need time to load and they have a lot of information in them.⁶⁴

Committee view

8.61 The rollout of the NBN presents many economic, health and business opportunities to residents in regional, rural and remote Australia. The committee received evidence of very positive developments occurring in regional areas, including: businesses leveraging the capabilities of the NBN; innovation in agriculture; improved educational opportunities for distance education students; and initiatives to expand the provision of health services.

8.62 The committee understands that there are some concerns in relation to the limitations of the NBN, particularly in relation to future capacity.

8.63 The committee is concerned that NBN is delivering a service of quite varied quality with the potential to fall short of a ubiquitous network in which a foundation

63 Ms Lee Longmire, Community Member, Narrandera Shire Council, *Committee Hansard*, 20 April 2017, p. 26.

64 Arabella Zocher, *Proof Committee Hansard*, 2 August 2017, pp 55 and 56.

of reliable, affordable, high-speed internet is available to the vast majority of households and businesses. The uneven nature of the multi-technology mix and the apparent over-use of satellite broadband could exacerbate existing social, economic, and digital inequality.

8.64 The committee notes the evidence that it received that accessing services through a community facility, such as library, may be an option in some circumstances. In Chapter 4 the committee referred to the merit of nbn undertaking some analysis about increasing the number of premises in the fixed wireless footprint. In the committee's view, this analysis should include prioritising facilities such as libraries, hospitals and community health services for receiving fixed wireless connections instead of a Sky Muster service.

8.65 In the committee's view, it is important that all Australians are able to access a high quality NBN service. While the committee is encouraged by the fact that the rollout is ahead of schedule, it has to be noted that the quality, ubiquity, and fairness of the NBN is under question.

8.66 The committee believes that the current design and rollout of the NBN is likely to maintain the 'digital divide', which means that particular communities and social groups will not share in the benefits of broadband technology, but will instead find themselves further separated in terms of full social and economic participation in Australian life.

Recommendation 23

8.67 The committee recommends that the Australian Government ensure that digital inclusion is measured and reported. It has been suggested that the Productivity Commission assess and report on income and wealth inequality in Australia, and it may be worth including the measurement and reporting of digital inequality, as the two areas are likely to be increasingly related.

Hon Sussan Ley MP

Chair

Chair's dissenting report

1.1 While signing the committee's majority report in my capacity as Chair, I and other government members on the committee do not agree with all of the conclusions and recommendations contained in the majority report. This dissenting report broadly outlines the views of government members, where these differ from the views found in the majority report.

Introduction

1.2 Rolling out the next-generation NBN to all Australians as quickly as possible is a priority for the Coalition Government. But national objectives must always be tempered by economic reality, and tested by thorough public scrutiny.

1.3 In the eight years since the National Broadband Network (NBN) was conceived, there have been a multitude of parliamentary inquiries and hearings to examine NBN Co Limited's (nbn's) performance in delivering on its purpose, as expressed in the Government's Statement of Expectations, to ensure all Australians have access to fast, affordable broadband as soon as possible, and at least cost. Almost all of these reviews have occurred during the term of the Coalition Government.

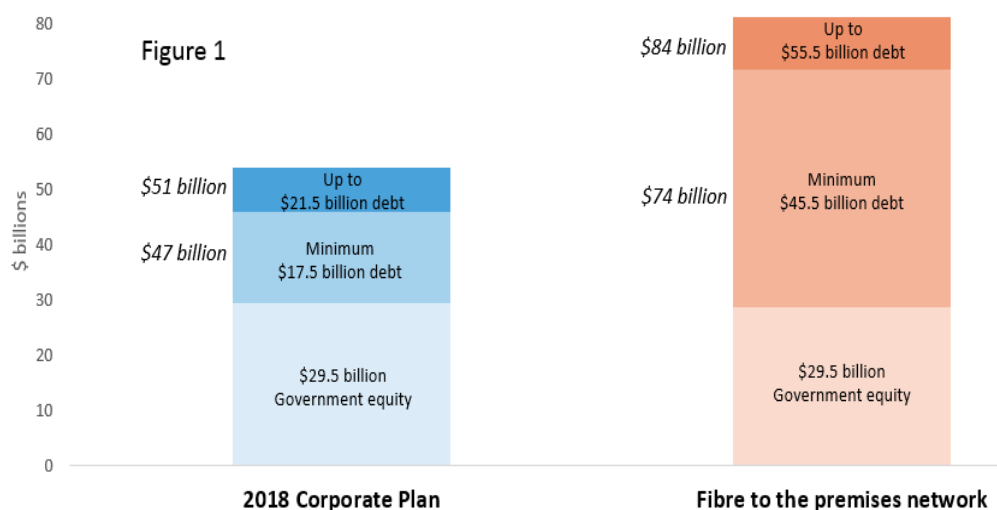
1.4 On all measures, Bill Morrow and the rest of the executive team at nbn have done a phenomenal job in turning the company around. The NBN is Australia's largest and most complex infrastructure project. It will be a key facilitator for innovation in the nation. In a sense it will be the sinews of the Australian economy in the 21st Century, especially for households and small business. Critical to this is how fast the network can be rolled out, and what prices householders and businesses pay for access to the network.

Performance measurement

1.5 When judging nbn's performance it is reasonable to assess the management's record in meeting business plan targets as set out in annual corporate plans, as required of Commonwealth companies by the *Public Governance, Performance and Accountability Act 2013*.

1.6 nbn's record in meeting or exceeding its financial and rollout targets for three consecutive financial years stems from the Coalition Government's reforms which gave nbn the flexibility to choose the right broadband technology for each location. This approach aims to reduce costs, save time and limit inconvenience to households and businesses during the transition to the new network.

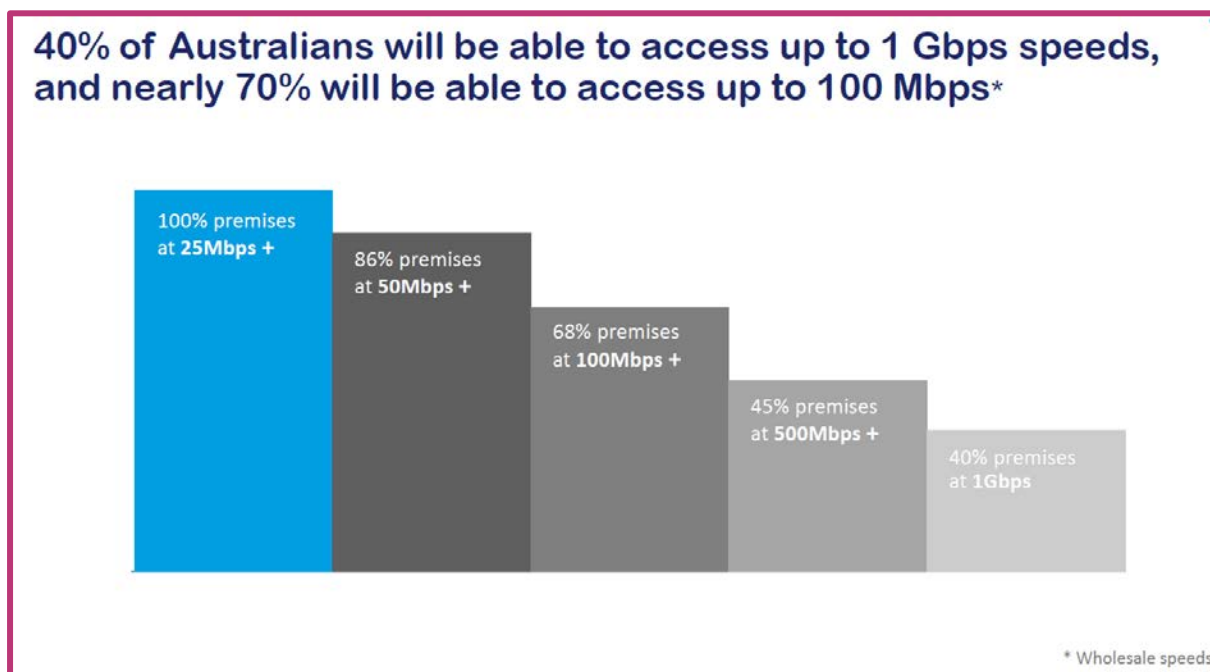
1.7 Under the Coalition Government, this important infrastructure project is continuing at a more manageable cost and is on track to deliver all households access to better broadband by 2020. An important point is that someone must in the end pay for the network. This means that if the cost of the network increases, the increase must either be paid for by consumers through higher retail prices, or tax payers through more funding. Figure 1 represents the difference in financial profiles between the MTM approach and the all-FTTP approach.



1.8 The committee majority report implies at several points that there is a risk nbn will fall short of the Statement of Expectations regarding the speed of services provided to the fixed line footprint.

1.9 In fact, elsewhere in public statements, responses to Questions on Notice and evidence presented to parliamentary committees, nbn has indicated that the average speed attainable on nbn's fibre to the node (FTTN) network is 67.7 megabits per second (Mbps) and 101.6 Mbps on the fibre to the basement (FTTB) network. The average attainable rate across both networks is 70.4 Mbps (page 101).

1.10 While the network speed baseline is nominally set at the universal minimum 25 Mbps, at least 9 in 10 premises in the fixed line footprint will have wholesale speeds of at least 50 Mbps at rollout completion under the direction set by the Statement of Expectations. Furthermore, an upgrade path will provide close to half of all premises on the network access to speeds of up to 500 Mbps as demand emerges.



Source: nbn quarterly report.

1.11 Paragraph 1.28 of the committee majority report also misrepresents the findings and purpose of the 2013 NBN Strategic Review. The objectives of the review were to assess the progress and cost of the rollout at that time, as well as the economic viability of nbn under alternative rollout scenarios. The Strategic Review also evaluated the likely operational and financial position of nbn based on the continuation of the fibre-to-the-premises rollout targeting 93 per cent of premises.

1.12 The strategic direction recommended by the review was that NBN Co should develop an 'optimised multi-technology approach' to rollout out the network that balanced fast broadband deployment to the highest number of Australians with better economics.

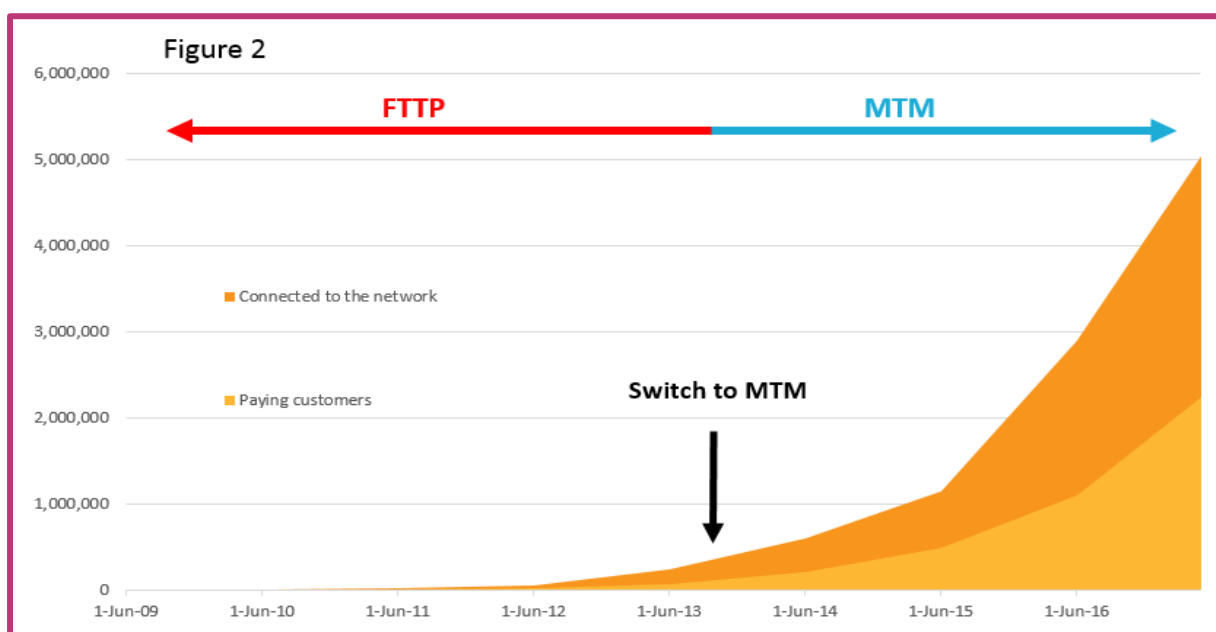
1.13 Far from being an outlier, nbn's 'incremental upgrade' approach has been adopted in other countries such as Austria, Germany and the UK, to enable further investment to be staged as demand emerges, in parallel with technology advances.

Rollout progress

1.14 By mid-2017 nbn had exceeded its rollout targets and financial forecasts across three full financial years. The cost overruns and connection delays that plagued the early rollout under the former Labor Government have been resolved.

1.15 Over little more than three years, the number of premises able to access the NBN network has grown from 504,000 premises reached, to more than six million in the NBN's national footprint.¹ Similarly, customers connected to the built network stood at 51,000 in September 2013. In September 2017 there are more than 2.8 million services in operation and nbn's wholesale revenues have exceeded \$1 billion annually and continue to grow.

1.16 Figure 2 demonstrates the rapid rollout since switching to an MTM model.



1 See: nbn Weekly Progress Report, available at <http://www.nbnco.com.au/corporate-information/about-nbn-co/corporate-plan/weekly-progress-report.html>.

1.17 nbn's *Corporate Plan 2018-21*, released in August 2017, shows the NBN rollout remains firmly on track to deliver fast broadband to all Australian homes and businesses by its target of 2020, having achieved two consecutive years during which the network footprint was nearly doubled.²

1.18 The plan will see three-quarters of Australian premises able to access a service over the nbn network by mid-2018, with 4.4 million active services by that time. These forecasts are in line with targets the company set more than two years ago.

1.19 The Corporate Plan reports that network construction and activation is nearing peak with more than 6,000 direct nbn employees and an external field workforce of 24,000 contractors working to build the network and connect homes and businesses across every square kilometre of Australia.

1.20 Capital expenditure reached \$5.8 billion in FY2017. More than 70 per cent of nbn's procurement spend to date has been on local content – that is, Australian manufacturing, construction, installation and support activities.³

1.21 End-user activations were higher than forecast in 2016-17 and the NBN is now being switched on at 1,000 Australian premises every working hour. There are more than five times as many users on the network today compared to just two years ago.

1.22 The committee majority report at paragraph 2.29 argues that nbn has no capacity to upgrade the network. This is in stark contrast to both the Statement of Expectations (which requires nbn to ensure that upgrade paths are available as required) and the facts. In the past year nbn has:

- introduced new fibre-to-the-curb technology that will be available from 2018 to around one million premises;
- announced Sky Muster satellite users will gain access to 50 per cent more peak data and twice as much off-peak data; and
- trialled speeds up to 100 Mbps delivered over the fixed wireless service.

1.23 That nbn has been given the flexibility to choose the best technology for each part of Australia is the very reason that these upgrades have been possible, in contrast to the technological ideology of the previous Government.

1.24 Of course, even though these factors were brought to the committee's attention, nonetheless the committee majority has formed the view that upgrades across the nbn network are required (although not costed). In paragraph 2.88 the

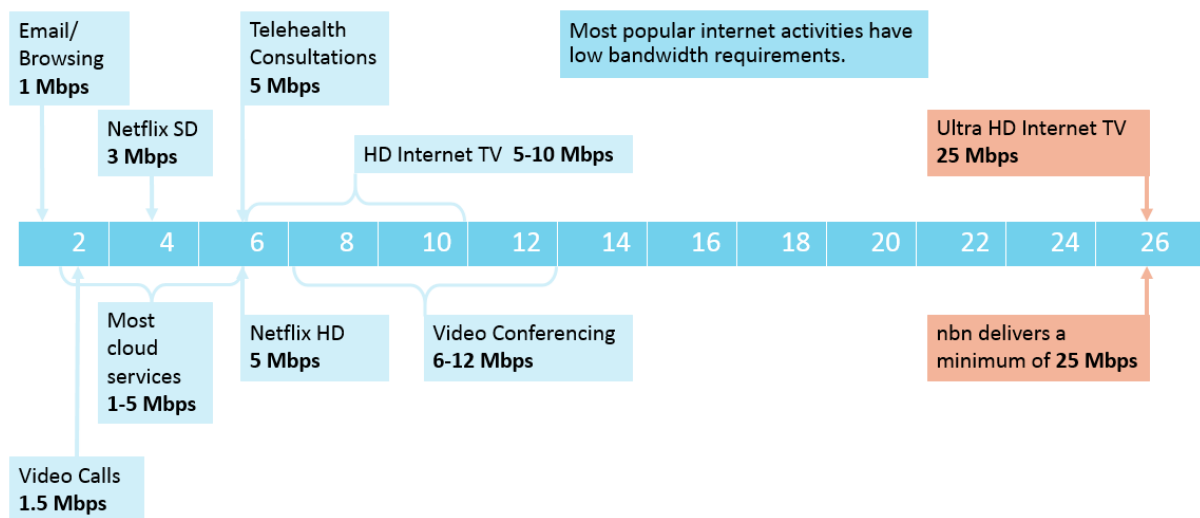
2 nbn, *Corporate Plan 2018-21*, available at <http://www.nbnco.com.au/content/dam/nbnco2/documents/Corporate-Plan-2018-2021.pdf>.

3 Senator the Hon. Mitch Fifield, Minister for Communications, *Media Release*, 'nbn Corporate Plan confirms record performance', 31 August 2017, available at <http://www.mitchfifield.com/Media/MediaReleases/tabid/70/articleType/ArticleView/articleId/1430/Joint-Minister-for-Finance--nbn-Corporate-Plan-confirms-record-performance.aspx>.

committee majority appears ignorant of the costs of wholesale upgrade, and in paragraph 2.89 appears to confuse speed with capacity.

1.25 As figure 3 clearly shows, most user applications require far less speed than what will be delivered over the NBN. The reality is that, aside from a few niche products (that are largely focused on video streaming and related entertainment applications) there are currently few products or applications that require speeds higher than 25 Mbps. It is the case that under current technology specifications (including compression technology) multiple ultra high definition video streams might require speeds of 75 Mbps or more (on the basis that households have access to ultra high definition televisions and content), although it is questionable whether the Australian taxpayer should be subsidising such uses.

Figure 3. Speeds required to support typical household and office applications (Mbps)



1.26 The argument cited at paragraph 2.81 of the committee majority report, that Australia has been dropping in internet speeds, fundamentally misunderstands the Akamai index upon which those claims are based. Akamai measures the total speed achieved or requested through its global services (i.e. demand, not supply). Consequently, countries with high concentrations of a small number of high usage consumers achieve a relatively higher ranking.

1.27 The strength of the Government's rollout is affordability and ubiquity – all Australians, regardless of where they live, will have access to high speed broadband of 25 Mbps or more by 2020, at affordable prices. Demand for speed in Australia is also depressed compared to some other countries because of the compression technologies being used (the ABC, for example, asks that users have an internet speed of 1.5 Mbps or more for best results).⁴

4 See <http://iview.abc.net.au/support/hq>.

1.28 Ironically, an all FTTP rollout would have meant a *lower* ranking for longer because of the much slower pace of the rollout and consequent delayed switch over from slower ADSL-based broadband.

Meeting financial forecasts

1.29 The estimated peak funding is forecast to reach \$48.8 billion in financial year 2020. This remains unchanged from nbn's forecast in the two previous corporate plans. nbn forecasts that its revenue will almost double in the coming financial year, from \$1 billion in 2016-17 to \$1.9 billion in 2017-18. The internal rate of return for the project is forecast to be within the range of 3.2 to 3.7 per cent based on peak funding of approximately \$49 billion and a terminal value calculated at six times EBITDA.

Activations and service take-up

1.30 At the end of each of the last three financial years, nbn's activations have been ahead of forecast. Further, nbn's public statements on take-up rates by the end of the 18-month migration period—and 2018 Corporate Plan forecasts of RFS and activations—suggest the proportion of activated services at the end of FY2021 will be 73.5 per cent, across all technologies.

1.31 The committee majority report at paragraphs 2.17 and 2.6 suggests there is doubt around nbn's take-up forecast because the proportion of services activated is currently less than 70 per cent. However, the clear trend from service activation rates over the past three years indicates nbn's forecasts have been on the conservative side. A closer analysis of the data would reveal that the proportion of premises in serving area modules that are live increases as time goes on. It is obvious that the activation rates will lag the ready for service progress because nbn has been expanding the network footprint at a faster rate than the connection runrate. For example, in FY2018 nbn plans to deliver nbn access to a further three million premises but during the same period the company will connect two million premises. Therefore the proportion of connected premises in the total footprint in a year's time will remain relatively steady at 50 per cent.

Upgrade paths

1.32 The Statement of Expectations which sets the overarching objectives and direction for nbn makes explicit the requirement for nbn to design and build the network with upgrade paths available for future development. On several occasions and in various forums, including hearings of this committee, nbn has confirmed that the multi-technology mix is delivering an upgrade path for FTTN and its variants, as well as HFC.

1.33 In his evidence at the committee's Sydney public hearing, nbn Chief Financial Officer Stephen Rue explained the underlying business rationale for selectively investing in speed increases via technology upgrades:

[T]he typical way you do long-term planning is...apply parameters of CPI for both revenue and costs and we apply a ratio of CAPEX to revenue, which, in our case, are around about 15 per cent. It is true some of that 15 per cent could be applied to upgrades, but...it's not locked in... So what we

would do is we would look at business cases for upgrades as and when they come and we would apply capital where it made business sense to do so. There would be an overlay, if you like, to our corporate plan, and you would only do it when it improved the corporate plan.⁵

The committee majority report conclusion of paragraph 2.90 is at odds with the usage patterns, speed tier take-up, and choice of plan indicated in Table 2.4 of the same report. Relying on a sample size of 2.8 million connected customers, the speed tier data indicates the prevalent trend is for users to move from the lowest tier (12/1) to the next highest tier (25/5). The proportion of users selecting a speed tier of 50 mbps or more has remained largely unchanged during the past two years.

Sky Muster satellite services

1.34 Describing the Sky Muster service as a 'technology of last resort' (committee majority report paragraph 4.87) significantly undervalues the step-change that has occurred in the experience of internet users living in regional and remote areas.

1.35 The Australian Government has invested \$2 billion in two advanced Ka-band satellites and a network of ground stations that make up the Sky Muster service.

1.36 Until the Sky Muster service became available many homes and businesses in regional and rural Australia were still dependent on very basic internet access which made even online banking or emailing difficult. Sky Muster has change all that for many thousands of Australians.

1.37 As the committee majority report acknowledges, satellite has always been intended to be part of the rollout. Indeed, since the beginning of the rollout, satellite has been used to provide broadband to Australians living in regional and remote areas. nbn first began providing satellite services through the Interim Satellite Service (ISS). Spending approximately \$351 million, the then Labor Government had promised 250,000 Australians would be eligible but capacity was only available for 48,000. The service was abysmal, with speeds often no faster than dial up. Part of this stemmed from poor design – the lack of an enforced fair use policy meant that some heavy use consumers were able to consume more than their fair share of data, whilst thousands of normal users could not get an adequate service.

1.38 Under the current Government, the nbn has a record of being able to deliver satellite to some of the most remote parts of the world, and deliver upgrades along the way.

1.39 The Fixed Wireless and Satellite review undertaken by nbn under the Coalition Government was able to diagnose some of the systemic issues that plagued the ISS at the time. In 2014, nbn upgraded the capacity of the ISS by one third, at a cost of \$18.4 million. Secondly, a fair use policy was introduced to ensure that a minority of very heavy users could not crowd out the majority.

5 Mr Stephen Rue, Chief Financial Officer, nbn, *Proof Committee Hansard*, 1 August 2017, p. 70.

1.40 Following the work undertaken in the Fixed Wireless and Satellite Review, both satellites were launched successfully into orbit by nbn, and have begun providing services. Whilst there have been some initial problems in installation and stability, nbn has now resolved these issues, and the reliability of Sky Muster has been consistent with other technologies on the network for some months. At the same time, the rollout of Sky Muster services has been proceeding at a rapid pace, with over 79,000 active customers now using the service.

1.41 Last year, telecommunications research firm Ovum found that when measured in terms of data allowance, download speed, upload speed and affordability selected plans on the nbn Sky Muster service are world leading for satellite broadband services.⁶

1.42 Ovum examined eighteen retail service providers internationally that offer satellite broadband services and found that selected plans based on nbn's Sky Muster service delivered outstanding results across all service requirements, establishing itself as a world leader that will deliver a great service for regional and remote Australians.

1.43 Notwithstanding the substantial achievement in launching two of the most sophisticated telecommunications satellites to provide services to some of the most remote places in the world, nbn has also delivered a series of upgrades to the service, over and above what they were originally designed to do under the former Government. In particular, nbn has been able to fully utilise the second satellite to provide services, rather than leaving it for redundancy. Secondly, through more sophisticated demand modelling, nbn has been able to adjust upwards the fair use policy to enable nbn to provide an extra 50 per cent of data during peak times, and double the data available at off peak time, whilst still ensuring that all users are able to get an adequate service. It is clear that less data would have been available under the former Government as it had only planned to make use of one satellite. Due to its revised forecasts of Sky Muster capacity and through optimising the conversion of available satellite spectrum (megahertz) to usable bandwidth (megabits), nbn has been able to increase data caps from 150GB to 300GB, or from an average of 30GB of peak data per customer to an average of 45GB of peak data per customer.

Global comparisons

1.44 The committee majority report focuses on limited and at times, misleading comparisons between rollouts in other countries. In particular, to compare the rollout of broadband in New Zealand with the rollout in Australia fundamentally misunderstands the basic geographies of the two different countries, and the economics of each rollout.

1.45 Figure 4 seeks to demonstrate the difference in land mass size between Australia and New Zealand. Put simply, Australia is more than 27 times larger than New Zealand.

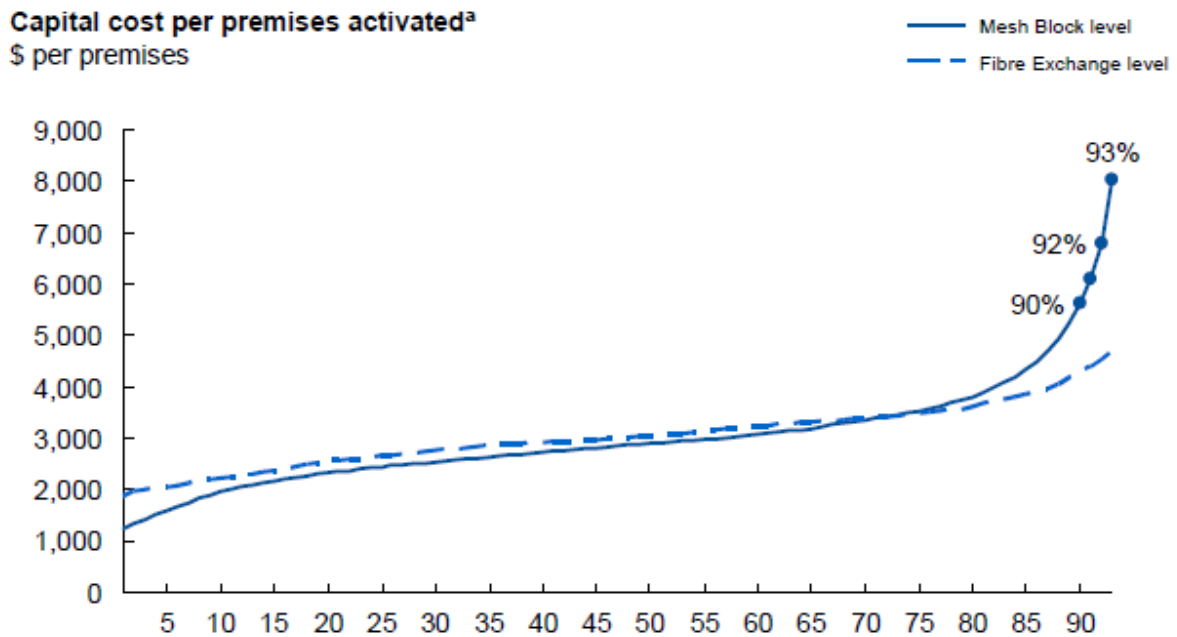
6 Ovum, *Satellite Broadband: A Global Comparison*, April 2016, available at <http://www.nbnco.com.au/content/dam/nbnco2/documents/Satellite%20Broadband%20-%20A%20Global%20Comparison%20-%20FINAL.pdf>

Figure 4



1.46 Furthermore, there are important facts about the New Zealand rollout that the committee majority has not acknowledged. In particular, there is no commitment in New Zealand for 100 per cent coverage – premises can be chosen on the basis of how easy or profitable it is to rollout services to them.

1.47 Fixed line high speed broadband is expected to be provided to 85 per cent of premises. Even the former Labor Government's deeply flawed NBN Implementation Study acknowledged that there was substantial additional cost beyond the 85 per cent mark:



Source: *National Broadband Network Implementation Study*, May 2010, p. 14.

1.48 With the continuation of the rollout, these forecasts have proved overly optimistic, as nbn has gained experience in a real-world environment, and not the theoretical model of consultants.

1.49 New Zealand has not needed to make use of satellite technology in its rollout and is able to rely on terrestrial wireless and mobile technologies for providing services beyond the fixed line footprint.

1.50 For Australia, satellite has been necessary as this is the most cost effective technology to serve remote premises to ensure that all premises can access minimum broadband speeds of 25 Mbps.

1.51 nbn is expected to spend around \$4.5 billion in capital on the fixed wireless and satellite networks to provide affordable broadband to regional, rural and remote Australia. Of course, the Government has done this because it believes that there must be equivalent broadband services in regional Australia. This commitment is demonstrated by the Government's regular reviews of regional telecommunications via the Regional Telecommunications Independent Review Committee (RTIRC).

1.52 The new broadband networks being rolled out in Australia and New Zealand are vastly different and it does neither rollout justice to compare them using simple metrics such as the cost per premises to build FTTP.

1.53 While the cost of building FTTP in New Zealand may be less than what nbn has experienced, the NBN is achieving better outcomes than New Zealand in many other areas, including:

- The fixed line footprint in Australia will extend to around 92 per cent of premises, whereas the fibre rollout is only around 85 per cent in New Zealand.
- The minimum broadband speed being provided in Australia is 25 Mbps, whereas New Zealand is only guaranteeing 10 Mbps.

1.54 And while the committee majority report at paragraph 2.82 suggests the ACT Government found Australia compared unfavourably to South Korea and Hong Kong which have rolled out FTTP networks, there is no acknowledgement of evidence given at two hearings that demonstrated that the beneficiaries of FTTP are unwilling to pay the incremental costs of upgrade. Both the ACT Government and the South Australian Government expressed a desire for FTTP to be rolled out in those States. When asked whether they would be will to contribute to the cost, these jurisdictions declined. This is a real world example of the willingness to pay for FTTP over MTM – when asked whether they would contribute to the sometimes substantial costs of using FTTP over MTM, both jurisdictions declined even though the supposed benefits would largely accrue in their jurisdictions.

1.55 The reality is that access to high speed broadband (regardless of the technology) is just one factor to determine whether the economic and social benefits flow from access to high speed broadband. For example, Tasmania has the highest proportion of FTTP of any state, and has had access to the network the earliest. Nonetheless, Tasmania ranks the lowest on Telstra's Digital Inclusion index compared to other States.

Serviceability of premises

1.56 At paragraph 3.24, the majority committee argues that premises classed as service class zero (SC0) have resulted in delays of months or more. However, the committee majority report fails to acknowledge the fact that under the FTTP rollout SC0 was a substantially bigger problem. The public reporting that nbn was required to undertake following the 2013 election clearly shows that the percentage of SC0 premises has fallen significantly since nbn switched to a more efficient MTM rollout model:

- 14 September 2017: Total percentage of brownfields premises at SC0: *5.9 per cent.*
- 9 September 2013 (at time of 2013 election): Total percentage of brownfields premises at SC0: *31 per cent.*

1.57 The committee majority report at paragraph 1.50 refers to research undertaken by the Australian Communications and Media Authority (ACMA) in 2016 and implies the research found that very early and high migration rates were a feature of the FTTP footprint. In fact, the ACMA research found that, of 900 premises in FTTP ready for service areas, 400 (or 44 per cent) had not switched over to the NBN at all at the time the survey was undertaken.

Consumer experience

1.58 Several recent announcements indicate the Coalition Government is working closely with nbn and retailers to ensure the processes for switching to the NBN are being refined and enhanced to meet consumers' needs. Over the past year the Government announced it is:

- helping Australians get what they pay for under their internet plan by introducing Australian Competition and Consumer Commission (ACCC) monitoring of broadband performance at the retailer level;
- having the ACMA gather objective data on the consumer experience to help target industry improvements;
- increasing understanding of consumer experiences before, during and after migration to the NBN through research being commissioned and undertaken by the ACMA; and
- setting out the roles and responsibilities of all parties in delivering a smooth transition to an NBN-based service through a revised telecommunications industry guide.

1.59 In addition, the ACCC has released detailed guidance for retailers on how to advertise broadband speeds to customers, including clearly identifying typical minimum speeds during peak periods.

1.60 The committee majority report finds that these measures are untimely or inadequate, despite most of them being at just the earliest stage of implementation. For example, paragraph 5.62 declares the committee's view that industry guidance from the ACCC will be insufficient and heavy regulatory intervention is required.

1.61 The ACCC is to be applauded for taking the measured and prudent approach of developing comprehensive industry guidance on the information to be provided to consumers about broadband services supplied over the NBN. While great progress has been made in the rollout of the NBN over the past several years, it remains a fact that the majority of residential broadband connections still operate over pre-NBN infrastructure.

The telecommunications sector is undergoing a period of adjustment as the nbn progressively replaces legacy broadband infrastructure. Broadband consumers do need more detailed information concerning the new choices available to them in the post-nbn world. The ACCC's guidance is well researched and informed by typical usage and user needs. Given the guidance has only been provided to retailers in recent weeks—and there remain more than five million Australian premises to be migrated to the nbn—it would appear premature to be declaring that the guidance will be inadequate.

Hon Sussan Ley MP

Chair

Mr Luke Howarth MP

Senator Jane Hume

Senator Dean Smith

Mrs Lucy Wicks MP

Appendix 1

Submissions received

Submission Number	Submitter
1	Mareeba Shire Council
2	Northern Territory Government
3	Australian Medical Association
4	Isolated Children's Parents' Association of Australia
5	ACT Government
6	State Library of Queensland
7	Mr Ben Howard
8	National and State Libraries Australasia
9	Informative Technology Innovations
10	Macquarie Telecom
11	Communications Alliance Ltd
12	Australian Smart Communities Association
13	Premium Grain Handlers
14	Ms Heather Meyer
15	Ms Kathy Allen
16	Mr Peter Young
17	Name Withheld
18	Ms Pauline Whiting
19	Mr Roger Tozer
	<ul style="list-style-type: none"> • Supplementary submission
20	Ms Gabriele Thomson
21	Queensland Government
22	Australian Communications Consumer Action Network (ACCAN)
23	NHS Australia Medical Centre
24	Mansfield Shire Council
25	Regional Development Australia Midwest Gascoyne
26	Ms Emma McBride MP - Federal Member for Dobell
27	Australian College of Rural and Remote Medicine
28	Albury City Council
29	Ms Madeleine King MP - Federal Member for Brand
30	Mr Ian Richardson
31	Mr Laurie O'Brien
32	Mr James Orr
33	Ms Patricia Hicks
34	Mr Peter Rice
35	Mr Bruce Nulty
36	Mr Ronald Harrigan
37	Mr Gerard Verbeek
38	Ms Margaret Blackshaw
39	Mr Malcolm Anderson
40	Mr Tony Mccready
41	Dr Anne Bittner

42	SBS
43	Regional Development Australia Alliance (NRDAA)
44	Regional, Rural and Remote Communications Coalition
45	National Farmers' Federation
46	Cotton Australia
47	Vodafone Hutchison Australia
48	Mr Steve Fleming
	• Supplementary submission
49	Mr David Wood
50	Mr Wes Oliver
51	Mr Steve Collins
52	Mr Sam Doolan
53	Mr Vince O'Reilly
54	Ms Delia Jackson
55	Ms Pamela Dalglish
56	Mr Graeme Skinns
57	Mr Roger Coates
58	Ms Jo Bleaser
59	Mr John Hill
60	Mr Wayne Mills
61	Mr Kevin Horder
62	Mr Matthew Stevens
63	Name Withheld
64	Mr Russell Clough
65	Mr Damian Heman
66	Mr Gordon Huskinson
67	Mr Paul Dingemans
68	Ms Judy Phipps
69	Ms Christine Helby
70	Mr Rick Cunneen
71	Mr Robert (Bob) Paton
72	Ms Inge Riebe
73	Ms Wendy Cain
74	Rev Dr Tom Plaizier
75	Mr Martin Nichols
76	Mr David Priol
77	Mr Kevin Cobley
78	Mr Eamon O'Flaherty
79	Mr Matt Heuston
80	Narrandera Shire Council
81	Ms Tracey Good
82	Grain Growers Limited
83	Mr Andy Foster
84	Mr Bill Hignett
85	Mr David Johns
86	Mr Dennis Barbour
87	Ms Bonny Fairall
88	Mr John Bartels
89	Mr Michael Ellen
90	Ms Louise Noyes
91	Mr Graeme Thow

92	Ms Anne Royston
93	Angus Car Service and Nepean Brake and Clutch Service
94	Maraylya Progress Association
95	Mr Phil King
96	Mr Gary Jackson
97	Mr Peter Weeks OAM
98	Ms Terry Wagstaffe
99	Mr Matthew Leggett
100	Ms Meryl Swanson MP - Federal Member for Paterson
101	Better Internet for Rural, Regional and Remote Australia (BIRRR)
102	South Australian Government - Department of State Development
103	Pastoralists' Association of West Darling (PAWD)
104	NSW Farmers Association
105	Logan City Council
106	Mr Barry Egan
107	Mr Alan Schacher
108	Ms Christine Osborne
109	Ms Veronica and Mr Robert Paratore
110	Ms Ann Wylie
111	Ms Sally Dean and Mr John Harries
112	Mr Callum Macklan
113	Mr Alastair Jeremy
	• Supplementary submission
114	Mr David Ong
115	Telecommunications Industry Ombudsman
116	Mr Ichlis Giovannoni
117	Mr Les Ridd OAM
118	Mr Gary Keys
119	Mr Neil Turton
120	Matcham and Holgate Valley Residents Group
121	Ms Wendy Degenhardt
122	Ms Helen Griffiths
123	Name Withheld
124	Mr Graeme Wright
125	Ms Dawn Campbell
126	Mr John Podubinski
127	Mr Duncan Robertson
128	Mr Michael Maclaurin
129	Mr Shayne O'Connor
130	Ms Rebecca Neumann
131	Mr Ian Crowther
132	Ms Deborah Legge
133	Mr Adam Myers
134	Ms Diane Mayhew
135	Mr Philip Cooney
136	Name Withheld
137	Ms Hazel Bowley
138	Mr Des Egan
139	Name Withheld
140	Name Withheld
141	Ms Michelle Thuillier

142	Mr Graham King
143	Mr Mike Arnold
144	Name Withheld
145	ICS Technologies
146	Mr Humphrey Poland
147	Mr Alan Taylor
148	Mr Andrew Russell
149	Mr Andrew Cooke
150	Resilient Communities - Adelaide Hills <ul style="list-style-type: none">• Supplementary submission
151	Mr Bruce Bebbington
152	Dr Pri Bandara
153	Somerset Outdoor Learning
154	Mr Chris Willis
155	Electrical Trades Union of Australia (ETU)
156	Mr Jeremy Dixon
157	Ms Rachel Moor
158	Bins Skips Waste and Recycling
159	Mr Jeff Tink
160	Mr Neil Keele
161	Mr Jarod Hamilton
162	Ms Leonie Lyall
163	Ms Katriona Cox
164	Name Withheld
165	West Wimmera Shire Council
166	Coastal Connexions
167	Name Withheld
168	Mr R Ford
169	Mr Russell Harris
170	Name Withheld
171	Name Withheld
172	Mr Matt Wilkinson
173	Mr John Simpson
174	Ms Kate Watson
175	Regional Development Australia Far North
176	Dr Ryan Walklin
177	Ms Robyn Herring
178	CareAlert
179	City of Adelaide
180	Western Australia Government
181	Mr Carl Doring
182	Devonport City Council
183	Ms Louise Degeling
184	Name Withheld
185	Warnervale Regional Uniting Church
186	Mr Paul Budde
187	Altheas Needles and Threads
188	Mr Noel Plummer
189	Mr John Murton
190	Mr Rob Manson

Appendix 2

Tabled documents

1. 'Telecommunications Industry Ombudsman presentation to the Joint Standing Committee on the NBN', tabled by Ms Judi Jones at a public hearing in Canberra on 24 March 2017.
2. 'Overview of Submission', tabled by Better Internet for Rural, Regional and Remote Australia at a public hearing in Townsville on 7 April 2017.
3. 'BIRRR Sky Muster Report', tabled by Better Internet for Rural, Regional and Remote Australia at a public hearing in Townsville on 7 April 2017.
4. 'A Guarantee for the Future', Australian Communications Consumer Action Network (ACCAN), tabled by ACCAN at a public hearing in Melbourne on 19 April 2017.
5. 'What affects the quality of my broadband?', ACCAN, tabled by ACCAN at a public hearing in Melbourne on 19 April 2017.
6. 'A Guide to Sky Muster services, 2nd edition', ACCAN, tabled by ACCAN at a public hearing in Melbourne on 19 April 2017.
7. 'Better Comms for the Bush' Regional, Rural and Remote Communications Coalition, tabled by ACCAN at a public hearing in Melbourne on 19 April 2017.
8. Supplementary material to opening statement, tabled by Associate Professor Mark Gregory at a public hearing in Melbourne on 19 April 2017.
9. Opening statement, tabled by Dr Craig Watkins at a public hearing in Melbourne on 19 April 2017.
10. City of Ballarat presentation, tabled by Mr Terry Demeo at a public hearing in Wodonga on 20 April 2017.
11. Additional information, tabled by Ms Lee Longmore at a public hearing in Wodonga on 20 April 2017.
12. Opening statement by Rural Councils Victoria, tabled by Ms Jo Shannon at a public hearing in Wodonga on 20 April 2017.
13. Opening statement, tabled by Mr Peter Weeks OAM at a public hearing in Wodonga on 20 April 2017.

14. Opening statement by the Communications Alliance, tabled by Mr John Stanton at a public hearing in Canberra on 23 June 2017.
15. 'Communications Alliance Broadband Education Package', tabled by Mr John Stanton at a public hearing in Canberra on 23 June 2017.
16. Case study, tabled by Isolated Children's Parents' Association at a public hearing in Port Augusta on 26 June 2017.
17. Information, tabled by Mr Keith Green at a Public hearing in Port Augusta on 26 June 2017.
18. 'City of Adelaide 2016-2020 Strategic Plan', tabled by City of Adelaide at a public hearing in Adelaide on 27 June 2017.
19. Supplementary material—CareAlert medical alarms, tabled by CareAlert at a public hearing in Adelaide on 27 June 2017.
20. Opening statement, tabled by Mr Paul Nicholls at a public hearing in Perth on 17 July 2017.
21. Opening statement, tabled by Ms Lara Kirkwood at a public hearing in Perth on 17 July 2017.
22. Opening statement, tabled by Mr Wayne Carter at a public hearing in Perth on 17 July 2017.
23. Opening statement and pamphlet, tabled by Mr Michael Hendry at a public hearing in Perth on 17 July 2017.
24. Newspaper article, tabled by Senator Dean Smith at a public hearing in Perth on 17 July 2017.
25. Northern Tasmania Development - case example, tabled by Ms Maree Tetlow at a public hearing in Launceston on 25 July 2017.
26. Digital Tasmania – photos, tabled by Mr Andrew Connor at a public hearing in Launceston on 25 July 2017.
27. Burnie City Council - results of NBN Roll-Out Survey conducted in Burnie in July 2017, tabled by Mr Rodney Greene from Burnie City Council at a public hearing in Burnie on 26 July 2017.
28. Opening statement by nbn co, tabled by Mr Bill Morrow at a public hearing in Sydney on 1 August 2017.
29. Opening statement by Blink Mobile, tabled by Mr Alan Williams at a public hearing in Central Coast on 2 August 2017.

30. Opening statement, tabled by Ms Louise Degeling at a public hearing in Central Coast on 2 August 2017.
31. Opening statement, tabled by Mr Neil Keele at a public hearing in Central Coast on 2 August 2017.
32. Opening statement, tabled by Mr Gary Jackson at a public hearing in Central Coast on 2 August 2017.
33. Opening statement, tabled by Mr Barry Egan at a public hearing in Central Coast on 2 August 2017.
34. Opening statement, tabled by Ms Michelle Looney at a public hearing in Central Coast on 2 August 2017.
35. Additional information, tabled by Mr David Abrahams at a public hearing in Central Coast on 2 August 2017.
36. Opening statement, tabled by Ms Belinda Mabbott at a public hearing in Central Coast on 2 August 2017.
37. Opening statement, tabled by Mr David Soede at a public hearing in Central Coast on 2 August 2017.
38. Additional information, tabled by Ms Rhonda Hillyer at a public hearing in Central Coast on 2 August 2017.
39. Additional information, tabled by Ms Arabella Zocher at a public hearing in Central Coast on 2 August 2017.

Additional information

1. Clarification of evidence received from Ms Lee Longmire following a public hearing in Wodonga 20 April 2017.
2. Response from Mr Colin Gough to evidence received from Mr Leif Karlsson following a public Hearing in Redcliffe on 6 April 2017.
3. Response from Communications Connect to evidence received from Mr Leif Karlsson following a public Hearing in Redcliffe on 6 April 2017.
4. Response from BSA to evidence received from Mr Leif Karlsson following a public hearing in Redcliffe on 6 April 2017.
5. Additional Information from Resilient Communities – Adelaide Hills following a public hearing in Adelaide on 27 June 2017.

6. Correspondence from Ms Emma McBride MP, regarding the Central Coast Rudolf Steiner School.
7. Correspondence from Telecommunications Industry Ombudsman, regarding changes to service types and key words for complaints.

Answers to questions on notice

1. Answers to question on notice received from the Australian Competition and Consumer Commission on 19 December 2016.
2. Answers to question on notice received from the Department of Communication and the Arts on 6 February 2017.
3. Answer to a question on notice (no. 20) from the Australian Competition and Consumer Commission, received on Wednesday 12 April 2017 from a public hearing in Canberra on 24 March 2017.
4. Answers to questions on notice (1-24) from the Australian Competition and Consumer Commission, received on Tuesday 18 April 2017 following a public hearing in Canberra on 24 March 2017.
5. Answer to questions on notice (17-19) from the Australian Competition and Consumer Commission, received on Tuesday 18 April 2017 from a public hearing in Canberra on 24 March 2017.
6. Answers to questions on notice from the Telecommunications Industry Ombudsman, received on Monday 1 May 2017 from a public hearing in Canberra on 24 March 2017.
7. Answers to additional questions on notice from the Telecommunications Industry Ombudsman, received on Monday 1 May 2017 from a public hearing in Canberra on 24 March 2017.
8. Answers to questions on notice from the State Library of Queensland, received on Thursday 6 April 2017 following a public hearing in Redcliffe on 6 April 2017.
9. Answers to questions on notice from the State Library of Queensland, received on Thursday 27 April 2017 following a public hearing in Redcliffe 6 April 2017.
10. Answers to questions on notice from Townsville City Council, received on Monday 24 April 2017 from a public hearing in Townsville on 7 April 2017.

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11. Answers to questions on notice from Better Internet for Rural, Regional & Remote Australia, received on Wednesday 26 April 2017 from a public hearing in Townsville on 7 April 2017.
 12. Answers to question on notice from the Australian eHealth Research Centre, received on Wednesday 17 May 2017 from a public hearing in Redcliffe on 6 April 2017.
 13. Answers to questions on notice from The City of Ballarat, received on 24 May 2017 following a public hearing in Wodonga on 20 April 2017.
 14. Answers to question on notice from Dr Craig Watkins, received on Wednesday 24 May 2017 from a public hearing in Melbourne on 19 April 2017.
 15. Answers to questions on notice from Associate Professor Mark Gregory, received on Thursday 25 May 2017 from a public hearing in Melbourne on 19 April 2017.
 16. Answers to questions on notice from Clear Networks, received on Thursday 25 May 2017 from a public hearing in Melbourne on 19 April 2017.
 17. Answers to questions on notice from Rural Councils Victoria, received on Thursday 25 May 2017 from a public hearing in Wodonga on 20 April 2017.
 18. Answers to questions on notice (25-37) from the Australian Competition and Consumer Commission, received on Friday 9 June 2017 following a public hearing in Canberra on 24 March 2017.
 19. Answers to questions on notice from Professor Rod Tucker, received on Monday 19 June 2017 from a public hearing in Melbourne on 19 April 2017.
 20. Answer to a question on notice from the Isolated Children's Parents' Association, received on 4 July 2017 following a public hearing in Port Augusta Monday 26 June 2017.
 21. Answer to a question on notice from the ACT Government, received 6 July 2017 following a public hearing in Canberra 23 June 2017.
 22. Answers to questions on notice from the Australian Medical Association, received 18 July 2017 following a public hearing in Canberra 23 June 2017.
 23. Answers to questions on notice from Communications Alliance, received 20 July 2017 following a public hearing in Canberra 23 June 2017.
 24. Answers to questions on notice from Joanna Gibson, ICPA, received 4 July 2017 following a public hearing in Port Augusta 26 June 2017

25. Answer to a question on notice from Department of Communications and the Arts, received on 28 July 2017 following a public hearing in Redcliffe 6 April 2017.
26. Answers to questions on notice from the Department of Communications and the Arts, received on 28 July 2017 following a public hearing in Canberra 23 June 2017
27. Answer to question on notice Lara Kirkwood, Community of Aubin Grove, received on 1 August 2017 following a public hearing in Perth 17 July 2017.
28. Answers to Questions taken on notice from Perth Mid-West Development Commission, received 9 August 2017 following a public hearing in Perth 17 July 2017.
29. Answer to questions on notice from the Department of Communications and the Arts, received on 11 August 2017 following a public hearing in Launceston 25 August 2017.
30. Answer to question on notice from Morley Internet Action Group, received on Friday 11 August 2017 from a public hearing in Perth on 17 July 2017.
31. Answers to questions on notice from the Department of Communications and the Arts, received on 16 August 2017 following a public hearing in Sydney 1 August 2017.
32. Answers to questions on notice from Australian Communications and Media Authority, received 23 August 2017 following a public hearing in Sydney 1 August 2017.
33. Answers to questions on notice from NBN Co, received 28 August 2017 following a public hearing in Sydney 1 August 2017.
34. Answers to questions on notice from NBN Co, received 14 September 2017 following a public hearing in Sydney 1 August 2017.

Appendix 3

Public hearings and witnesses

Friday 24 March 2017 – Canberra

Telecommunications Industry Ombudsman Limited

Ms Judi Jones, Ombudsman

Australian Competition and Consumer Commission

Mr Michael Cosgrave, Executive General Manager, Infrastructure Regulation Division

Ms Clare O'Reilly, General Manager, Mobiles, Transmission and Consumer

Mr Sean Riordan, General Manager, Industry Structure and Compliance

Thursday 6 April 2017 – Redcliffe

State Library of Queensland

Ms Louise Denoon, Executive Director, Regional Access and Public Libraries

Private capacity

Ms Rosslyn Kennedy, Gateway Properties and Simons Letting Agency

Private capacity

Ms Debra Hart

Private capacity

Mr Leif Karlsson

Private capacity

Mr Larry Brown

Private capacity

Mr Peter Uzelac

AgForce Queensland

Dr Greg Leach, Senior Policy Advisor

Australian e-Health Research Centre

Dr Mohan Karunanithi, Group Leader Health and Biosecurity

Centre for Online Health, University of Queensland

Dr Anthony Smith, Associate Professor and Deputy Director

Friday 7 April 2017 – Townsville

Townsville City Council

Mr Michael Schuman, Chief Information Officer

Mareeba Shire Council

Ms Susan Parsons, Senior Engagement Officer

Safety Culture Pty Ltd

Mr Luke Anear, Chief Executive Officer

Private capacity

Professor Ian Atkinson

Better Internet for Rural, Regional and Remote Australia

Ms Kylie Stretton, Co-Founder

Ms Rachel Hay, Data Analyst

Wednesday 19 April 2017 – Melbourne

Australian Communications Consumer Action Network

Ms Teresa Corbin, Chief Executive Officer

Ms Rachel Thomas, Policy Officer

Private capacity

Associate Professor Mark Gregory

Clear Networks

Mr Rob van der End, Chief Executive Officer

Activ8me

Mr Tony Bundrock, Chief Executive Officer

Mr Martin Camilleri, Chief Operating Officer

Private capacity

Professor Rod Tucker

Informative Technology Innovations

Dr Craig Watkins, Director

Australian Competition and Consumer Commission

Mr Michael Cosgrave, Executive General Manager, Infrastructure Regulation Division

Mr Sean Riordan, Executive General Manager, Competition Enforcement

Mr Scott Harding, Director, NBN and Pricing Coordination

Thursday 20 April 2017 – Wodonga

City of Ballarat

Mr Terry Demeo, Director, Infrastructure and Environment

Albury City Council

Mr Andrew Cottrill, Economic Development Team Leader

Albury-Northside Chamber of Commerce

Ms Kathie Heyman, Business Manager

Mr Dan Fewster, Board Director

Narrandera Shire Council

Ms Judith Charlton, Chief Executive Officer

Ms Lee Longmire, Community Member

Mansfield Shire Council

Mr Alex Green, Chief Executive Officer

Private capacity

Ms Pauline Whiting

Private capacity

Mr Roger Tozer

Private capacity

Mr Steve Fleming

Rural Councils Victoria

Ms Jo Shannon, Director of Community and Corporate Services, Towong Shire Council

Private capacity

Mr Marcus Chick

Private capacity

Mr Matthew Leggett

Private capacity

Mr Peter Weeks OAM

Private capacity

Mr Peter Young

Friday 23 June 2017 – Canberra

Chorus NZ

Mr Kurt Rodgers, Network Strategy Manager

Ms Rosalie Nelson, Head of Market Insights

Macquarie Telecom Group

Mr David Forman, Senior Manager, Industry and Policy

ACT Government

Mr Jon Cumming, Chief Digital Officer

Mr Andrew McCredie, Senior Officer, Innovate Canberra

Private capacity

Adjunct Professor Robin Eckermann

Australian Medical Association

Mr Warwick Hough, Director, Workplace Policy, General Practice and Legal Services Department

Dr Dilip Dhupelia, Member

Dr Chris Clohesy, Member

Dr Peter Maguire, Member

Communications Alliance

Mr John Stanton, Chief Executive Officer

Ms Christiane Gillespie-Jones, Director Program Management

Grain Growers Limited

Mr Michael Hunt, Member of National Policy Group

Ms Susan McDonnell, Northern Regional Coordinator

Department of Communication and the Arts

Mr Andrew Madsen, Assistant Secretary, Broadband Implementation Branch

Mr Philip Mason, Assistant Secretary, Competition Branch

Ms Kathleen Silleri, Assistant Secretary, Consumer Safeguards Branch

Monday 26 June 2017 – Port Augusta**Port Augusta City Council**

Mr John Banks, Chief Executive Officer

Ms Cherie Gerlach, Manager, Media and Communications

Mr Stephen Kite, Information Technology Manager

Royal Flying Doctor Service

Mr Martin Laverty, Chief Executive Officer

Isolated Children's Parents' Association

Mrs Joanna Gibson, Communications Portfolio Leader, Federal Council

Open Access College, Port Augusta Campus (School of the Air)

Mr George Hewitson, Head of Campus

Remote & Isolated Children's Exercise (RICE)

Mr Rob Kay, Executive Officer

Regional Development Australia Far North

Mr Greg Williams, Business Development Manager

Flinders Ranges Council

Councillor Peter Slattery, Mayor

Arid Land Communications

Mr Keith Green, Manager

Bormann Communications

Mr Ian Bormann

Tuesday 27 June 2017 – Adelaide

City of Adelaide

Mr Steven Harrison, Chief Advisor to the City of Adelaide

Mr Peter Auhl, Associate Director, Information Management

Outback Communities Authority

Mr Mark Sutton, Director

Coutts Communications

Professor Reginald Coutts, Principal

Plastyk Studios

Mr Andre Biganovsky, Business Technology Adviser

Mr Andrew Chataway, Project Manager

Mylor 'Resilient Communities' group

Ms Susanne Koen

Private capacity

Dr Nicola Spurrier

Flinders University

Professor John Roddick, Dean, School of Computer Science, Engineering & Mathematics

University of South Australia

Professor Shane Dawson, Director, Teaching Innovation Unit

CareAlert

Mr Michael Steele, Chief Executive Officer

Mr Barry Steele, Technical Support and Business Development Manager

Mr Darren Steele, Sales Manager

Direct Alarm Supplies

Mr Neil McLean

Australian Alarm Company

Mr Michael Pratt

West Wimmera Shire Council

Councillor Bruce Meyer, Mayor

Mr David Leahy, Chief Executive Officer

Ms Kellie Jordan, Economic Development Officer

Private capacity

Mr Leon Byner

Wednesday 28 June 2017 – Darwin

Northern Territory Government

Ms Kathleen Robinson, Chief Executive, Department of Corporate and Information Services

Mr Doug Cooke, Senior Director Digital Policy, Department of Corporate and Information Services

i-Vet

Dr Sue Samuelsson, Founder

Monday 17 July 2017 – Perth

Western Australia Local Government Association

Mrs Lynette Craigie, President

Mr Peter Johnson, ICT and Procurement Manager

Indigenous Remote Communications Association

Mr Daniel Featherstone, General Manager

Curtin University, Office of Research and Development

Mr Paul Nicholls, Director, Strategic Projects

Mr Jim Wyatt, Strategic Project Officer

Community of Aubin Grove

Ms Lara Kirkwood, Vice-President

Morley Internet Action Group

Mr Wayne Carter

Mid-West Development Commission

Mr Robert Smallwood, Mid-West Digital Economy Strategy Manager

Regional Development Australia-South West

Mr Mike Hendry, South West Independent National Broadband Network
Adviser

Office of the Government Chief Information Officer, Western Australia

Mr Andrew Cann, Executive Director Technology Innovation/Chief
Technology Officer,

Monday 24 July 2017 – Hobart

TasmaNet

Mr Joel Harris, Managing Director

TasICT

Mr William Kestin, Chief Executive Officer

Mekina Technologies

Mr Jacek Mekina, Managing Director

Takeflight/Factory Floor Co-Working

Mr Casey Farrell, Director

Enterprize Tasmania

Mr Gary McDarby, Chief Executive Officer

Brighton Council

Mr Heath Macpherson, Manager Asset Services

Private capacity

Ms Raelene Van De Kamp

Private capacity

Mr Sean Skinner

Tuesday 25 July 2017 – Launceston

University of Tasmania, Sense-T

Associate Professor Stephen Cahoon, Director of Research

Launtel

Mr Damien Ivereigh, Chief Executive Officer

Kentish Council

Councillor Donald Thwaites, Mayor

Bitlink

Mr James Riggall, Managing Director

University of Tasmania, Human Interface Technology Laboratory

Dr Winyu Chinthammit, Deputy Director

St John's Foot Clinic

Ms Virginia Bower, Director

AuTech

Mr Darren Alexander

EagleCrest Technologies

Mr Ben Jones, Commercial Manager

Mr Jin-oh Choi, Solutions Architect

Van Diemens Project, Enterprise Centre for the Northern Region

Mr Chris Davis, Director of Operations

Northern Tasmania Development Corporation Ltd

Ms Maree Tetlow, Chief Executive Officer

Digital Tasmania

Mr Andrew Connor

Wednesday 26 July 2017 – Burnie

Cradle Coast Authority

Mr Sid Sidebottom, Chair

Mr Brett Smith, Chief Executive Officer

Central Coast Chamber of Commerce and Industry

Mr Ian Locke, President

Burnie Chamber of Commerce and Industry

Mr Ian Jones, Vice President and Secretary

Braddon Business Centre, Enterprise Centre in the North West

Mr Warren Moore, Business Facilitator

Burnie City Council

Mr Rodney Greene, Director, Community and Economic Development

West Coast Council

Councillor Phil Vickers, Mayor

Charles Clinic Heart Care

Mr Alistair Sherman, Business Manager

Private capacity

Mr Chris Walpole, Pharmacist

Private capacity

Professor Dennis Pashen, GP

Copper Mines of Tasmania

Mr Peter Walker, General Manager

Big hArt

Mr Scott Rankin, Chief Executive Officer

Tuesday 1 August 2017 – Sydney

Vodafone Hutchison Australia

Mr Dan Lloyd, Chief Strategy Officer and Corporate Affairs Director

ViaSat

Mr Peter Girvan, Asia Pacific Vice President

Australian Media and Communications Authority

Ms Jennifer McNeill, General Manager, Content Consumer and Citizen
Division

Ms Nicola Skill, Assistant Manager, Communications Futures Section

Internet Australia

Ms Anne Hurley, Chair

Dr Paul Brooks, Vice Chair

Department of Communications and the Arts

Mr Philip Mason, Assistant Secretary, Telecommunications Competition
Branch

Mr Andrew Madsen, Assistant Secretary, Broadband Implementation Branch

Ms Kathleen Silleri, Assistant Secretary, Consumer Safeguards Branch

New Street Research

Mr Ian Martin, Senior Telecommunications Analyst

NBN Co Limited

Mr Bill Morrow, Chief Executive Officer

Mr Stephen Rue, Chief Financial Officer

Ms Caroline Lovell, Chief Regulatory Officer

Wednesday 2 August 2017 – Central Coast

Blink Mobile

Mr Alan Williams, Chair and Chief Executive Officer

Private capacity

Ms Louise Degeling

Private capacity

Mr Neil Keele

Private capacity

Mr Gary Jackson

Private capacity

Mr Barry Egan

Private capacity

Ms Michelle Looney

Private capacity

Mr Ken Knight, local artist

Private capacity

Mr Mark Beatson, Anytime Fitness

Private capacity

Mr Laurie O'Brien, Bridgecoast Finance Group Pty Ltd

Private capacity

Mr David Abrahams, Central Coast Start IT Incorporated

Private capacity

Ms Belinda Mabbott, Tumbi Sand, Soil and Gravel Supplies

Private capacity

Ms Caroline Chidgey, Warnervale Regional Uniting Church

Ms Bruce Butler, Warnervale Regional Uniting Church

Central Coast Grammar School

Mr David Soede, Director of ICT

Private capacity

Mr Paul Budde, Chief Executive Officer, Paul Budde Consulting Pty Ltd

Starship Cruises

Ms Louise de Martin, Director

Private capacity

Ms Robyn Downham, Spencer Community Advocate

Private capacity

Ms Belinda Repton, Vice-President, Wendoree Park Community Advocate

Private capacity

Ms Rhonda Hillyer

Private capacity

Ms Arabella Zocher, Student, Central Coast Rudolf Steiner School