The Senate

Select Committee on the National Broadband Network

Third report

November 2009

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Chronology

National Broadband Network

Timeframe	Milestone
2008	
11 April	RFP issued - Submissions invited on regulation and the Australian Broadband Guarantee
23 May	Closing date for bond and confidentiality deed
30 June	Regulatory submissions available
26 November	Closing time for Proposals
December to January 2009	Assessment of Proposals
2009	
21 January	Scheduled identification of preferred proponent(s) by Expert Panel
7 April	**NBN Announcement (RFP tender terminated)**
7 April	Regulatory reform discussion paper released
8 April	Tasmanian first stage of NBN rollout announced
9 April	Establishment of the NBN Co Limited
23 April	Regional backhaul initiative consultation paper released
24 April	REOI for implementation study lead advisor released
12 May	**Submissions to backhaul initiative due**
13 May	Order of the Senate preventing the consideration of any NBN related legislation until after the production of RFP-related documents
19 May	**Responses to implementation study REOI due**
25 May	REOI short-listed applicants to be notified
29 May	Implementation study RFT documents to short-listed applicants
May	Request for Tender for backhaul initiative scheduled to be issued
3 June	**Submissions to regulatory review due**
12 June	**Submissions on greenfields paper due**
16 June	**Implementation Study RFT closes**

Timeframe	Milestone
End of Winter sittings	First NBN legislation scheduled to be introduced including bill for greenfields proposal
25 June	First Government NBN bill introduced
1 July	Backhaul priority locations announced; tender issued
3 July	Release of discussion paper *National Broadband Network: Regulatory Reform for 21st Century Broadband.* Submissions also called for on governance arrangements for NBN Co
6 July	**Implementation Study scheduled to commence**
16 July	Establishment of NBN Tasmania (fully-owned subsidiary of NBN Co); first tender for the first Tasmanian stage of NBN released
24 July	Appointment of Executive Chair of NBN Co and Chair of NBN Tasmania announced
30 July	**Submissions due on legislative framework for NBN**
July	Negotiations and award of Lead Advisor contract(s) scheduled to be concluded
5 August	**Responses to backhaul RFT due**
6 August	Five new board members appointed to NBN Co
6 August	McKinsey-KPMG appointed Lead Advisor
13 August	Appointment of directors to NBN Tasmania
14 August	Establishment of Greenfields Stakeholder Reference Group announced
21 August	First board meeting of NBN Tasmania
10 September	Total full-time NBNCo staff now 12
15 September	Aurora Energy announces construction of backhaul commences
15 September	Telecommunications Legislation Amendment
17September	Inquiry into Telecommunications Legislation Amendment
8 October	Corning Cable Systems wins first supply contract for over 300km of backhaul fibre Tasmanian NBN
19 October	Full time employees of NBN Co now number 40
21 October	Telecommunications Legislation Amendment passed in House of Representatives
22 October	Communications Alliance releases Discussion Paper on High Level Architecture Option for the NBN

Timeframe	Milestone
26 October	BCA Report released condemning the Government's lack of a cost-benefit analysis for the NBN
26 October	Expert Panel Report excerpts and ACCC Report tabled in the Senate
26 October	Inquiry Report on Telecommunications Legislation Amendment tabled in the Senate
26 October	Aurora Energy begins tender process for TES for its FTTP Access Nodes
29 October	Senate agrees to release Telecommunications Bill from the requirements of the Order of the Senate
29 October	Bidding process commenced for the 'Smart Grid Smart City' initiative
Late October	Productivity Commission tables Annual Report critical of no Cost-benefit analysis for NBN.
December	Fibre scheduled to be connected to first premises in Tasmanian roll out
2010	
February	**Final report of Implementation Study due**
July	First NBN services expected to be available in Tasmania
1 September	Trial network to be in place in Scottsdale, Midway point and Smithton (announced 30.9.09)

Abbreviations

ABG	Australian Broadband Guarantee
ACCC	Australian Competition and Consumer Commission
ACMA	Australian Communications and Media Authority
ADSL	Asymmetrical Digital Subscriber Line
ADSL2	Asymmetrical Digital Subscriber Line version 2
ADSL2+	Extended Bandwidth ADSL2
AIB	Aussie Infrastructure Bonds
BAF	Building Australia Fund
BCA	Business Council of Australia
CAN	Customer Access Network
CCC	Competitive Carriers Coalition
CEG	Communications Expert Group
COAG	Council of Australian Governments
CSG	Customer Service Guarantee
DBCDE	Department of Broadband, Communications and the Digital Economy
DCITA	Department of Communications, Information Technology and the Arts
DOCSIS	Data Over Cable Service Interface Specification
DoFD	Department of Finance and Deregulation
DSL	Digital Subscriber Line
DSLAM	Digital Subscriber Line Access Multiplexer
EOI	Expression of Interest
ESA	Exchange Serving Area
FTTH	Fibre-to-the-Home
FTTN	Fibre-to-the-Node

FTTP	Fibre-to-the-Premise
GPON	Gigabit Passive Optical Networks
GRHAnet	Broadband network build by the Grampians Rural Health Alliance
HiBIS	Higher Bandwidth Incentive Scheme
HFC	Hybrid Fibre Coaxial
HSPA	High Speed Packet Access
ICAAN	Internet Corporation for Assigned Names and Numbers
ICT	Information and Communications Technology
ISDN	Integrated Services Digital Network or Isolated Subscriber Digital Network
IP	Internet Protocol
IPA	Infrastructure Partnerships Australia
IPTV	Internet Protocol Television
ISP	Internet Service Provider
LTE	Long Term Evolution
LTIE	Long-term interests of end-users
MB	Megabyte – a million bytes; one byte is a unit of binary information comprising 8 bits.
Mbps	Megabit per second – a million bits per second
MHz	Megahertz
NBN	National Broadband Network
NGN	Next Generation Network
OAN	Open Access Network
OECD	Organisation for Economic Co-operation and Development
OPEL	Optus and Elders Communication
POP	Point of Presence

POTS	Plain Old Telephone Service
P2P	Point to Point or Peer to Peer
PSTN	Public Switched Telephone Network
RFP	Request for Proposal
RIM	Remote Integrated Multiplexer
RSP	Retail Service Provider
RTIRC	Regional Telecommunications Independent Review Committee
SA	South Australia
SMEs	Small and medium sized enterprises
STD	Subscriber Trunk Dialling
STS	Standard Telephone Service
The Department	The Department of Broadband, Communications and the Digital Economy
The Panel	The Panel of Experts
TIO	Telecommunications Industry Ombudsman
TPA	*Trade Practices Act 1974*
ULLS	Unconditioned/Unbundled Local Loop Service
USO	Universal Service Obligation
VDSL	Very High Speed Digital Subscriber Line
VERNet	Victorian Education and Research Network
VIC	Victoria
VoIP	Voice-over-Internet Protocol
WA	Western Australia
WA CCI	Western Australian Chamber of Commerce and Industry
WA DOIR	Western Australia Department of Industry and Resources
WiMAX	Worldwide Interoperability for Microwave Access

Glossary

Access Network

That part of a communications network which connects subscribers to their immediate service provider. It is contrasted with the core network.

Active Optical Network

A network in which the passive splitting point is replaced with an Optical Line Distribution unit which is a powered unit making it possible to have a higher bit rate on individual routes over longer distances than on a passive optical network.

Backhaul

The backhaul portion of the network comprises the intermediate links between the core, or backbone, of the network and the small sub networks at the "edge" of the entire hierarchical network. For example, while cell phones communicating with a single cell tower constitute a local sub network, the connection between the cell tower and the rest of the world begins with a backhaul link to the core of the telephone company's network (via a point of presence).

Bandwidth

The capacity for a given system to transfer data over a connection. It is measured as a bit rate expressed in bits/s or multiples of it (kb/s Mb/s etc.).

Bit

In computing and telecommunications, a 'bit' is a basic unit of information storage and communication; it is derived from a contraction of the term '**b**inary dig**it**'.

BitTorrent

A peer-to-peer (P2P) file sharing protocol designed to reduce the bandwidth required to transfer files. It does this by distributing file transfers across multiple systems, thereby lessening the average bandwidth used by each computer. For example, if a user begins downloading a movie file, the BitTorrent system will locate multiple computers with the same file and begin downloading the file from several computers at once. Since most ISPs offer much faster download speeds than upload speeds, downloading from multiple computers can significantly increase the file transfer rate.

Blackspot

An under-served premises, or area, which is unable to obtain a metro-comparable broadband service.

Brownfield

Abandoned or under-used industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contaminations.

Byte

In computing and telecommunications, a byte is a unit of digital information; it is an ordered collection of bits, in which each bit denotes a binary value of 1 or 0. One byte is equal to 8 bits.

Coaxial Cable

An electrical cable consisting of an inner conductor surrounded by an insulating spacer, surrounded by an outer cylindrical conductor. It provides protection of signals from external electromagnetic interference and effectively guides signals from external electromagnetic interference and effectively guides signals.

Core Network

The central part of a telecom network that provides various services to customers who are connected by the access network.

Customer Service Guarantee (CSG)

A performance standard created by the Australian Communications and Media Authority (ACMA). This standard provides financial compensation, of a prescribed amount, to customers who are affected by delays in service connections and fault repairs. It also covers missed appointments. However, some exemptions apply.

Dark Fibre (also unlit fibre)

Unused fibres, available for use. The term was originally used when talking about the potential network capacity of telecommunication infrastructure, but now also refers to the increasingly common practice of leasing fibre optic cables from a network service provider.

Demarcation Point

The point at which the telephone company network ends and connects with the wiring at the customer premises. A demarcation point is also referred to as the demark, DMARC, MPOE, or minimum point of entry.

Digital Loop Carrier (Remote Integrated Multiplexer - RIM)

A system which uses digital transmission to extend the range of the local loop farther than would be possible using only twisted pair copper wires. A DLC digitizes and multiplexes the individual signals carried by the local loops onto a single data stream on the DLC segment.

Firewall

Is a dedicated appliance or software running on another computer, which inspects network traffic passing through it, and denies or permits passage based on a set of rules.

Functional Separation

Imposing an obligation of “equivalence” on a vertically integrated network provider to ensure all retail service providers, including its own downstream business, are treated equally.

Gigabit per second (Gbps)

Equal to 1, 000, 000, 000 bits

Gigabyte

Is a unit of information or computer storage meaning either exactly 1 billion bytes or approximately 1.07 billion bytes. The usage of the word "gigabyte" is ambiguous: the value depends on the context. When referring to RAM sizes and file sizes, it traditionally has a binary definition, of 10243 bytes. For other uses, it means exactly 10003 bytes. In order to address this confusion, currently the International Electro-technical Commission (IEC) promotes the use of the term "gibibyte" for the binary definition. It is commonly abbreviated GB or Gbyte (not to be confused with Gb, which is used for a gigabit).

GPON

An abbreviation of Gigabit Passive Optical Networks, this technology is generally preferred. GPON is where a single optical fibre is used to provide services to a group of premises, with is single fibre providing services for premises up to 30 km from its source. A passive splitter is situated close to the homes and 'splits' the fibre to service up to 64 premises. GPON is therefore a shared network, with the advantage that resulting in large cost reductions due to the decrease in splicing and jointing costs; it also produces a much lower carbon footprint compared to non-shared FTTP networks, and traditional FTTN and ADSL broadband networks.

Greenfield

A term used to describe a piece of undeveloped land, either currently used for agriculture or just left to nature.

Hybrid Fibre Coaxial

A telecommunications industry term for a broadband network which combines optical fibre and coaxial cable.

IPTV

A system where a digital television service is delivered using Internet Protocol over a network infrastructure, which may include delivery by a broadband connection. A general definition of IPTV is television content that, instead of being delivered through traditional broadcast and cable formats, is received by the viewer through the technologies used for computer networks.

Kilobyte

A unit of information or computer storage equal to either 1,024 bytes (210) or 1,000 bytes (103), depending on context. It is abbreviated in a number of ways: kB, KB, K and Kbyte.

Last-mile Infrastructure

The infrastructure used to provide the link from a customer's premises to the provider's nearest point of aggregation. For example, a provider offering a wireless broadband service to the customer would be providing Last-mile Infrastructure using wireless broadband technology.

Local Loop (also referred to as a subscriber line)

The physical link or circuit, that connects from the demarcation point of the customer premises to the edge of the carrier, or telecommunications service provider, network.

Megabit

A unit of information or computer storage abbreviated Mbit (or Mb). 1 megabit = 1,000,000 bits, which is equal to 125,000 bytes. In kilobytes this is either 125 kB (decimal meaning) or about 122 kB (122 KiB) (binary meaning). The megabit is most commonly used when referring to data transfer rates in network speeds, e.g. a 100 Mbps (megabit per second).

Megabyte

Is a unit of information or computer storage equal to either 106 (1,000,000) bytes or 220 (1,048,576) bytes, depending on context. In rare cases, it is used to mean 1000×1024 (1,024,000) bytes. It is commonly abbreviated as Mbyte or MB (compare Mb, for the megabit). The term megabyte was coined in 1970.

MiMo

In radio, it is the use of multiple antennas at both the transmitter and receiver to improve communication performance. It has attracted attention in wireless communications, since it offers significant increases in data throughput and link range without additional bandwidth or transmit power. It achieves this by higher spectral

efficiency (more bits per second per hertz of bandwidth) and link reliability or diversity (resulting in reduced fading).

Multi-layered broadband infrastructure

A network comprising of wireless, optic-fibre, xDSL, and high-speed satellite service.

Next Generation Networking

A broad term to describe some key architectural evolutions in telecommunication core and access networks that will be deployed over the next 5-10 years. The general idea behind NGN is that one network transports all information and services (voice, data, and all sorts of media such as video) by encapsulating these into packets, like it is on the Internet. NGNs are commonly built around the Internet Protocol, and therefore the term "all-IP" is also sometimes used to describe the transformation towards NGN.

Open Access Network

A horizontally layered network architecture and business model that separates physical access to the network from service provisioning. The same OAN will be used by a number of different providers that share the investments and maintenance cost.

Optical Fibre

A glass or plastic fibre that carries light along its length. Widely used in communication because it transmits over longer distances and at higher data rates than other forms of communication.

Packet

In information technology, a packet is a formatted block of data carried by a packet mode computer network. Computer communications links that do not support packets, such as traditional point-to-point telecommunications links, simply transmit data as a series of bytes, characters, or bits alone. When data is formatted into packets, the bit-rate of the communication medium can better be shared among users than if the network would have been circuit switched.

Pair Gain

A method of transmitting multiple POTS signals over the twisted pairs traditionally used for a single traditional subscriber line in telephone systems. Pair gain has the effect of creating additional subscriber lines. This is typically used as an expedient way to solve subscriber line shortage problems by using existing wiring, instead of installing new wires from the central office to the customer premises. Pair gain has come into disfavour in recent years, as it is detrimental to high speed dial-up modem connections, does not support 56k and is incompatible with Digital Subscriber Line (DSL) systems.

Point of Presence

An Internet point of presence is an access point to the Internet. It is a physical location that houses servers, routers, ATM switches and digital/analogue call aggregators. It may be either part of the facilities of a telecommunications provider that the Internet service provider (ISP) rents or a location separate from the telecommunications provider.

Point to Point

Generally refers to a connection restricted to two endpoints, usually host computers. Point-to-point is sometimes referred to as P2P, or Pt2Pt, or variations of this. Among other things, P2P also refers to peer-to-peer file sharing networks. A traditional point-to-point data link is a communications medium with exactly two endpoints and no data or packet formatting. The host computers at either end have to take full responsibility for formatting the data transmitted between them.

Remote Integrated Multiplexer (RIM)

Also known as a Digital Loop Carrier (DLC) - a system which uses digital transmission to extend the range of the local loop farther than would be possible using only twisted pair copper wires. A DLC digitizes and multiplexes the individual signals carried by the local loops onto a single data stream on the DLC segment.

Satellite Broadband Service

A service solution delivered by a two-way satellite service, or other service determined by the Department to be satellite based.

Shaping

The practice of slowing data speed once the monthly data usage limit, as specified in a Service Plan, is reached.

Structural Separation

The creation of separate companies with ownership controls, which prevent retail service providers, including the incumbent's downstream businesses, from having effective control in the NBN infrastructure.

Terabyte

Commonly abbreviated TB is a measurement term for data storage capacity. The value of a terabyte based upon a decimal radix (base 10) is defined as one trillion (short scale) bytes, or 1000 gigabytes.

Terrestrial Broadband Service

Is a service solution delivered by ground based networks, including ADSL, cable type services, wireless services, or any other service determined by the Department to be terrestrially based.

Twisted Pair

A form of wiring in which two conductors (two halves of a single circuit) are wound together for the purposes of cancelling out electromagnetic interference (EMI) from external sources; for instance, electromagnetic radiation from unshielded twisted pair (UTP) cables, and crosstalk between neighbouring pairs.

Unbundled Local Loop

Is the regulatory process of allowing multiple telecommunications operators use of connections from the telephone exchange's central office to the customer's premises.

Universal Service Obligation

The obligation placed on universal service providers to ensure that standard telephone services, payphones and prescribed carriage services are reasonably accessible to all people in Australia on an equitable basis, wherever they reside or carry on business. No carriage services have been prescribed to date. Telstra is currently the sole universal service provider, but additional universal service providers may be declared in the future. As the universal service provider, Telstra is obliged to have a policy statement and marketing plan approved by ACMA. The policy statement and marketing plan outline how Telstra intends to fulfil its obligations as universal service provider, including fulfilling its obligations to people with a disability, people with special needs and eligible priority customers.

Video on Demand

A system that allows users to select and watch/listen to video or audio content on demand.

Voice Over Internet Protocol

A protocol optimized for the transmission of voice through the Internet or other packet-switched networks.

WiMax

WiMAX — Worldwide Interoperability for Microwave Access - a wireless technology that provides high-speed broadband connections over long distances. It is not a mobile platform; it is specifically designed for optimum broadband performance. It is internationally recognised as a technology that delivers the highest quality wireless broadband.

Recommendations

Recommendation 1

1.54 That the Implementation Plan clearly states the government's intention to prioritise the needs of underserviced communities, particularly those in regional, rural and remote areas, over those with comparatively well-serviced urban areas.

Recommendation 2

5.40 That the government releases a detailed Business Plan for Tasmania by 31 December 2009 that includes: an implementation plan that details which towns will be connected by fibre and which will miss out; Commonwealth funding details for the Tasmanian roll-out; pricing details for Tasmanian consumers; and the percentage of aerial vs underground fibre connections to the premises.

Recommendation 3

5.46 That the government expediently bring forward the legislation that will provide the governance and funding framework for the NBN Co Ltd.

Recommendation 4

6.188 That the government conducts a rigorous cost-benefit analysis of its NBN proposal before the NBN Co enters into any new asset purchasing agreements for the mainland deployment.

Recommendation 5

6.189 That the government provides an Interim Implementation Study Report by 31 December 2009. This must provide a progress account of the planning of the NBN, including the progress of the deployment in Tasmania and lessons learned from that deployment.

Recommendation 6

6.190 That the government immediately undertakes a skills audit for the NBN, detailing the training course required, the training timeframes involved and the training institutions available to ensure there is a fully skilled workforce ready to deploy the NBN in each region.

Recommendation 7

6.191 That the cost-benefit analysis, the Interim Implementation Study Report and the Final Implementation Study, are all released for public scrutiny within 14 days of completion.

Recommendation 8

6.192 That the government commissions the Productivity Commission to undertake an annual ongoing evaluation of the impact on productivity resulting

from broadband uptake, across all community, business and industry sectors, with the first report to be tabled in parliament before the last sitting day in 2010.

Recommendation 9

6.193 That if the Implementation Study concludes the NBN project specifications are unrealistic, not practical or uneconomical, that the government must reassess its overall policy approach.

Recommendation 10

7.91 That the government provide greater opportunities for commercial viability of broadband networks by advocating the development of new applications that will facilitate economic development and improvements in health, education and energy efficiency outcomes.

Recommendation 11

8.83 That further consideration of the bill not proceed until after the NBN Implementation Study has been completed, the government has tabled its response to the Implementation Study and the Senate has certainty about the network structure of the NBN Co and the regulatory framework which will surround it.

Recommendation 12

9.18 That the Senate agree to extend the Select Committee on the National Broadband Network, under the following revised terms of reference:

a) That the resolution of the Senate of 25 June 2008, as amended, appointing the Select Committee on the National Broadband Network, be further amended:

- **to omit "25 November 2009", and substitute "30 April 2010"; and**
- **to add the following paragraph to the committee's terms of reference:**

(2A) The Committee is to examine the findings of the National Broadband Network Implementation Study, the Government's response to the Implementation Study and any subsequent implications of that report for the National Broadband Network policy.

Chapter One

Historical context of the inquiry

1.1 The Select Committee on the National Broadband Network (the committee) was established by the Senate on 25 June 2008, to inquire into and report on by 30 March 2009:

(a) the government's proposal to partner with the private sector to upgrade parts of the existing network to fibre to provide minimum broadband speeds of 12 megabits per second to 98 per cent of Australian's on an open access basis; and

(b) the implications of the proposed National Broadband Network (NBN) for consumers in terms of:

(i) service availability, choice and costs;

(ii) competition in the telecommunications and broadband services; and

(iii) likely consequences for national productivity, investment, economic growth, cost of living and social capital; and

(c) other related matters.

1.2 The full terms of reference were quite extensive and can be found at appendix 1. Although the usual advertising procedures were followed inviting written submissions, the committee was surprised that none had been received by the initial submission closing date. A large mail out followed, with an extension to the submission deadline advertised on the website.

1.3 The committee held seven public hearings and received 32 written submissions prior to tabling its first Interim Report in the Senate on 2 December 2008. During this period a number of milestone dates set by the government were extended, resulting in the bids for the Request for Proposal (RFP) process closing on 26 November 2008, much later than originally anticipated.

1.4 The qualifying bids on the RFP were evaluated by the Panel of Experts established by the government. The evaluation was supported by a written assessment of the proposals by the Australian Competition and Consumer Commission (ACCC). The Panel's final report was provided to the government on 21 January 2009.

1.5 No government preference for any submitted proposals was provided during the following ten weeks, which fuelled industry uncertainty and speculation as to the fate of the proposed NBN. Eventually, instead of choosing a winning bid, the government terminated the RFP process and announced a new NBN proposal in its place.

The new proposal

1.6 On 7 April 2009, the Prime Minster, the Hon Kevin Rudd, the Treasurer, the Hon Wayne Swan, the Minister for Finance, the Hon Lindsay Tanner and the Minster for Broadband, Communications and the Digital Economy, the Hon Stephen Conroy, jointly announced 'the establishment of a new company to build and operate a new super fast National Broadband Network.'[1]

1.7 The media release also announced the Rudd Government's decision to 'terminate' the National Broadband Network (NBN) Request for Proposals (RFP) process, stating that their decision was made:

> … on the basis of advice from the independent Panel of Experts that none of the national proposals offered value for money. The Panel noted the rapid deterioration of the global economy had a significant impact on the process.[2]

1.8 The government refused to make public the Panel's report, on which this decision was made. Consequently, on 13 May 2009, the Senate passed an order that no legislation relating to the NBN proposal be considered by the Senate until the final report of the Expert Panel and that of the Australian Competition and Consumer Commission (ACCC) are tabled in the Senate.

1.9 This committee published a second interim report, tabled in the Senate on 12 May 2009, which provided a summary of the inquiry process and outcomes to that date. The report provided evidence of the need to revise the terms of reference for the inquiry in order to ensure that the new proposal would be subject to the full scrutiny of the Senate inquiry process. A draft of proposed terms of reference was included in the interim report.

Revised terms of appointment for the committee

1.10 On 13 May 2009, the Senate approved a revised terms of reference for the committee, extending the committee and requesting that a final report be tabled in the Senate by 23 November 2009.

1.11 The revised terms of reference reflected the new broadband proposal of the Rudd Government; however the remainder of the terms were similarly broad in scope and largely unchanged.

1.12 The revised terms included inquiry into:

(a) the government's decision to establish a company to build and operate a National Broadband Network (NBN) to:

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1 http://www.minister.dbcde.gov.au/media/media_releases/2009/022, accessed 5 October 2009.

2 http://www.minister.dbcde.gov.au/media/media_releases/2009/022, accessed 5 October 2009.

i. connect 90 per cent of all Australian homes, schools and workplaces with optical fibre-to-the-premise (FTTP) to enable broadband services with speeds of 100 megabits per second;

ii. connect all other premises in Australia with next generation wireless and satellite technologies to deliver broadband speeds of 12 megabits per second or more;

iii. directly support up to 25,000 local jobs every year, on average, over the eight year life of the project.

(b) the implications of the NBN for consumers and taxpayers in terms of:

i. service availability, choice and costs,

ii. competition in telecommunications and broadband services, and

iii. likely consequences for national productivity, investment, economic growth, cost of living and social capital.[3]

1.13 The full set of the revised terms of reference can be found at appendix 2; however, notable inclusions were that the committee's investigation examine:

i. any economic and cost/benefit analysis underpinning the NBN;

ii. the ownership, governance and operating arrangements of the NBN company and any NBN related entities;

iii. any use of bonds to fund the NBN; and

iv. any regulations or legislation pertaining to the NBN.[4]

Conduct of the revised inquiry

1.14 The committee advertised the inquiry under its revised terms of reference, calling for submissions by 3 July 2009. The details of the committee's revised terms of reference and reporting date were placed on the committee's website.

1.15 Due to the number of requests for providing late submissions after the official closing date, the committee agreed that late submissions could continue to be received, processed and published, as appropriate. Under the revised terms of reference, the committee has received a total of 61 additional written submissions at the time of reporting; these are in addition to the 41 submissions the committee published under the original terms of reference. A list of the 102 submissions can be found at appendix 3.

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3 http://www.aph.gov.au/Senate/committee/broadband_ctte/tor.htm, accessed 11 October 2009.

4 http://www.aph.gov.au/Senate/committee/broadband_ctte/tor.htm, accessed 11 October 2009.

Public hearings

1.16 Under the revised terms of reference, the committee has held five public hearings in Canberra, Sydney, Melbourne and Hobart. There were ten public hearings held under the previous terms of reference, producing a combined total of fifteen public hearings held during the course of this inquiry. Details of these hearings, including a list of witnesses who gave evidence, can be found at appendix 6.

Late progress

1.17 On 26 October 2009, the Minister for Broadband, Communications and the Digital Economy (the minister) tabled out of session the ACCC report, together with a 12 page extract from the almost 900 page Expert Panel report. His objective in tabling these documents was to remove the Order of the Senate which prevented the Senate from considering telecommunications bills, and consequently allow the Senate to consider all pending NBN-related legislation.

1.18 At the time of reporting, this measure was not successful in lifting the Order of the Senate. However, a subsequent compromise with the crossbench saw the Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009 exempted from the order. The bill was subsequently scheduled for consideration by the Senate during the final two sitting weeks of the 2009 parliamentary year.

1.19 At the Supplementary Senate Estimates hearings, the minister announced the deferral of the next two pieces of telecommunications legislation until early 2010, being: the legislation providing a governance framework for the NBN Co and its subsidiaries; and laws to mandate the installation of FTTP in greenfield estates.

1.20 A chronology of events that have occurred relating to the government's NBN proposals can be found at page ix.

This report

1.21 The committee considers that the National Broadband Network is an issue of such national significance that this report should not signify the end of the inquiry process. Rather, the committee believes that there is a critical need for ongoing monitoring and reporting throughout the life of this project.

1.22 The committee also notes that, at the time of reporting, the findings of the government's Implementation Study into the NBN, which is expected to set out the way in which the NBN will be funded, rolled-out, managed and operated, are still some months away, leaving many crucial questions unanswered.

Structure of the report

1.23 Chapter two of this report will detail the new broadband policy proposal announced on 7 April 2009, and comment on various aspects of the proposal,

including the differences between the previous fibre-to-the-node (FTTN) proposal and the current fibre-to-the-premise (FTTP) policy. A brief review of the OPEL initiative proposed by the previous Coalition Government will be included, as will a discussion of the footprint of 90 per cent FTTP coverage, versus the satellite and wireless technologies that are to service the remaining 10 per cent.

1.24 Chapter three will examine the progress made since April, noting the various discussion papers published by the government, and outline the issues under examination within the government's Implementation Study.

1.25 Chapter four will compare the advantages and disadvantages of aerial cabling with those of underground cabling, for the rollout of new fibre technology in the NBN.

1.26 Chapter five will look at aspects of NBN Co Ltd, established by the government as a commercially viable Government Business Enterprise for the purpose of building and operating the NBN in its formative years. Specifically, the chapter will review what little detail is available relating to the governance and role and funding of NBN Co and its fully owned subsidiary company, NBN Tasmania.

1.27 Chapter six will consider the issue of cost-benefit analysis, looking at the commercial viability of the NBN and how it might impact on productivity.

1.28 A separate chapter (chapter seven) has been allocated to discuss the importance of ensuring the development of broadband applications continues in parallel with the implementation of the NBN.

1.29 Chapter eight will review the government's intention to reform the telecommunications regulation regime, and examine those aspects of the Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009 relevant to the NBN proposal.

1.30 Chapter nine provides the committee's concluding remarks and final recommendation.

1.31 The committee would like to express its appreciation for the cooperation of all organisations and individuals who continue to make their time available to assist the inquiry, whether by personal appearance at a public hearing or by providing the committee with a written submission. Particular thanks are extended to Mr Jonathan Chowns, previously working within the Parliamentary Library, who provided the committee and secretariat with a wealth of contextual information throughout the inquiry process. The committee would also like to record its appreciation to the officers of the secretariat who assisted with the conduct of the inquiry and the drafting of this third report.

Note on references

1.32 References to the committee Hansard are to the proof Hansard – page numbers may vary between the proof and the official Hansard.

Chapter Two

The new proposal

2.1 The Panel of Experts released its Evaluation Report on the outcomes of the government's *Request for Proposals (RFP) to Roll-out and Operate a National Broadband Network for Australia* on 21 January 2009. Following the release of the report, the government repeatedly stated that it was considering the report, but failed to make any announcement on the outcome of the bids. This lead to months of industry speculation and a high level of uncertainty within the telecommunications sector.

2.2 On 7 April 2009, the Rudd Government made a joint ministerial announcement of the 'establishment of a new company to build and operate a new super fast National Broadband Network.'[1] The announcement signalled the termination of the RFP process, based on the view of the Panel of Experts that none of the national proposals offered value for money, which was the overarching qualifier upon which all RFP evaluation criteria were based.

The 'New National Broadband Network'

2.3 The announcement detailed the government's new policy direction and included a commitment to ensure that 'every house, school and business in Australia will get access to affordable, fast broadband.'[2]

Specifications of the new network

2.4 Although highly anticipated, it would be fair to comment that the details of the government's announcement took most in the industry by surprise. While the previous RFP provided the option for proponents to utilise either fibre-to-the-node (FTTN) or fibre-to-the-premises (FTTP) network architecture, there was no such option within the new proposal. In addition to specifying that the technology would be FTTP, the network also was to support a large increase in the speed of broadband services.

2.5 The new National Broadband Network (NBN) was to:

- Connect 90 per cent of all Australian homes, schools and workplaces with broadband services with speeds up to 100 megabits per second;

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1 http://www.minister.dbcde.gov.au/media/media_releases/2009/022, accessed 5 October 2009.

2 http://www.minister.dbcde.gov.au/media/media_releases/2009/022, accessed 5 October 2009.

- Connect all other premises in Australia with next generation wireless and satellite technologies that will deliver broadband speeds of 12 megabits per second; and
- Directly support up to 25,000 local jobs every year, on average, over the eight year life of the project. [3]

2.6 The announcement stated that the FTTP network will extend 'to towns with populations of around 1000 or more people.'[4] The fact that the remainder of the population not reached by fibre would now be guaranteed the same minimum speed promised to metropolitan subscribers under the previous RFP process, could be seen as a benefit to those living in remote areas.

2.7 In addition, the government announced its intention to provide new fibre optic transmission links connecting cities with major regional centres and rural towns. This measure addresses the issue raised by many within the industry that the lack of backhaul access and interconnection is a major factor in the dearth of affordable broadband in areas of lower population densities.

2.8 Most telcos welcomed the new proposal, as was reported widely in the media in the days following the announcement. *Communications Day* provided a concise sample of industry commentary, which included statements from iiNet, Optus, Primus, Internode and Macquarie Telecom. For example, Mr Maha Krishnapillai from Optus was reported as saying that the government had taken 'a visionary and nation building step in the right direction', while Mr Michael Malone from iiNet reportedly said:

> This is the best of all possible outcomes … In terms of key criteria we were looking for in a National Broadband Network – open access, structural reform, fixing backhaul 'blackspots' and regulatory reform – the government has delivered.[5]

2.9 A main feature of the new network was the announcement that it would be a national wholesale-only, open access broadband network. This sent a clear message to the telecommunications industry that the government intended to impose strict regulatory reforms in order to address competition issues in the current market.

2.10 As a supplementary feature, the government announced that the building of the NBN was to be a 'major nation-building project' with the ability to support, on average, 25,000 local jobs every year, a figure that would peak at 37,000. This announcement was welcomed in view of the impact of the global financial crisis across many Australian sectors. The government also claimed that not only would this major infrastructure project stimulate employment in the short term, it would also

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3 http://www.minister.dbcde.gov.au/media/media_releases/2009/022, accessed 5 October 2009.

4 http://www.minister.dbcde.gov.au/media/media_releases/2009/022, accessed 5 October 2009.

5 *Communications Day Extra*, 7 April 2009, p. 4.

provide productivity gains and increased innovation, the benefits of which would 'continue to flow for decades beyond the completion of the project.'[6]

NBN Co Limited

2.11 A major aspect of the project was the establishment of a new company to build and operate the new network. This company has since been registered as NBN Co Limited (NBN Co). While the government is listed as the company's major shareholder, 'significant private investment in the company is anticipated'. The government has committed to an initial investment of $4.7 billion, with joint private sector investment of up to $43 billion over the build time of 8 years.[7]

2.12 The government will seek private investment of up to 49 per cent of the company, with the objective of benefiting from private sector capacity and expertise in the telecommunications industry. However, there are to be limitations on ownership to ensure the government can deliver on its promise of retaining the network as a wholesale, open access operation.

2.13 The government has stated its intention that, once fully operational, it will sell its share in NBN Co to the private sector:

> The government will make an initial investment in this company but intends to sell down its interests in the company within 5 years after the network is built and fully operational, consistent with market conditions, and national identity security considerations.[8]

2.14 There is speculation that NBN Co as a regulated monopoly provider will leave the Australian telecommunications sector in a similarly uncompetitive position to that which the government is currently seeking to address. Until full details of NBN Co's governance framework are made available, including any ownership limitations, this speculation will undoubtedly continue.

2.15 The government has stated that its investment in the company will be funded through the Building Australia Fund (BAF) and the issuance of Aussie Infrastructure Bonds (AIBs), providing an opportunity for households and institutions to invest in the NBN. Further details relating to the funding of the NBN can be found in chapter five.

2.16 Further details of the operation and funding of the NBN Co are also discussed in chapter five.

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6 http://www.minister.dbcde.gov.au/media/media_releases/2009/022, accessed 5 October 2009.

7 http://www.minister.dbcde.gov.au/media/media_releases/2009/022, accessed 5 October 2009.

8 http://www.minister.dbcde.gov.au/media/media_releases/2009/022, accessed 5 October 2009.

Plan of action

2.17 The government has also announced a 'plan of action'[9] to launch NBN activities, stating that they would immediately:

- Commence an implementation study to determine the operating arrangements, detailed network design, ways to attract private sector investment – for roll-out in early 2010, and ways to provide procurement opportunities for local businesses;
- Fast track negotiations with the Tasmanian Government, as recommended by the Panel of Experts, to build upon its NBN proposal and begin the roll-out of a FTTP network and next generation wireless services in Tasmania as early as July [2009];
- Implement measures to address 'black spots' through timely rollout of fibre optic transmission links connecting cities, major regional centres and rural towns – delivering improvements to telecommunication services in the short term;
- Progress legislative changes that will govern NBN Co and facilitate the rollout of fibre networks, including requiring greenfields developments to use FTTP technology from 1 July 2010;
- Make an initial investment in the network of $4.7 billion; and
- Commence a consultative process on necessary changes to the existing telecommunications regulatory regime.

Closer examination of detail

2.18 The committee shared the surprise expressed by many within the industry at the announcement of the new NBN proposal. The new NBN amounts to a major shift in government policy, requiring architecture delivering FTTP to 90 per cent of Australian homes, schools and businesses, with alternative technologies of satellite and wireless proposed for more remote communities.

2.19 In its first interim report published in December 2008, the committee concluded that the then NBN platform 'should be broadened to enable a greater level of technology convergence where more appropriate than fibre.'[10] Consequently the committee acknowledges this aspect of the announcement as a welcome improvement.

2.20 The committee believes that the decision by the government to nominate FTTP architecture over the previous, optional FTTN architecture, reflects the general

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9 http://www.minister.dbcde.gov.au/media/media_releases/2009/022, accessed 5 October 2009.

10 National Broadband Network, *Interim report*, December 2008, p. xx.

consensus expressed by key industry stakeholders that investing in FTTN would result in a network based on out-dated architecture that would not be future-proofed.

FTTP vs FTTN

2.21 Indeed, the government's change in policy direction is reflective of evidence taken by this committee throughout the RFP process period, highlighting that a FTTN network could not subsequently be efficiently and effectively upgraded to FTTP. Representative of this view was Dr Ross Kelso, when he stated that:

> I am particularly concerned about prescription of fibre to the node technology for the national broadband network. I believe that … if we are to move down the path of the network being engineered for fibre to the node where it makes it difficult for it to go beyond that to fibre to the home, it is a retrograde step.[11]

2.22 There is general consensus throughout the telecommunications industry that FTTP architecture is the only option that will support future technology upgrades, given the rapid changes in telecommunications technology, even over the last five years.

FTTN[12]

2.23 Broadband is currently being delivered to many Australian homes through ADSL technology, which involves specialised modems situated in telephone exchanges utilising existing copper wire networks. The problem with ADSL is that, due to the limitations of the copper infrastructure, the maximum speed that data can reach is limited by the home's distance from the exchange. In fact ADSL will not run effectively beyond certain distances, with around four kilometres generally accepted as the limit.

2.24 FTTN resolves this problem by decreasing the distance that the data needs to travel over copper. The FTTN proposal would have seen fibre rolled out, generally from the local telecommunications exchange, to a 'node' or mini-exchange that would be located on the footpath. These cabinets, generally within 800m of a consumer's premises, would house the DSLAM equipment of numerous service carriers that was positioned in the exchanges. They would also need to be large enough to house the air conditioning equipment required to keep the DSLAMs at the correct operating temperatures.

2.25 By taking the fibre closer to the premises, FTTN would decrease the distance impediment experienced by ADSL technology, whereby the further a customer was from the exchange (or DSLAM equipment), the greater the likelihood that the customer could not access ADSL. Although FTTN would have been a significant step

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11 Dr Ross Kelso, *Committee Hansard*, Brisbane, 21 November 2008, pp 20-21.

12 Incorporates information from Alcatel Lucent, *Submission 51*, pp 7-8.

forward, it did not eliminate the dependence on copper infrastructure, and the associated problems of age deterioration and also the restrictions inherent in the amount of data even new copper can carry.

FTTP[13]

2.26 FTTP eliminates the dependence on copper. Each premises will have its own optical fibre connection from the street to the outside of the premises, with a connection to a new type of modem that is capable of converting the optical signals. Fibre optic cables are composed of strands of pure glass, the dimensions of human hair, which carry data over long distances in pulses of light. Because data is transmitted in light pulses, distance no longer impacts performance, so that a premises located 30 km from the exchange will receive data at the same speed as a premises right next to the exchange.

Technology explained

2.27 There are two main options for the government to consider when choosing the FTTP technology: point-to-point (P2P) or Gigabit Passive Optical Networks (GPON). The government has stated that it will use leading edge technology in the deployment of the FTTP network, but has declined to provide more specific details, stating that this level of detail will be provided in the Implementation Study, due by the end of February 2010. However, in responses to Questions on Notice taken during May Budget Estimates, the Department of Finance and Deregulation stated that:

> DBCDE considered that for the local distribution component of the FTTH [FTTP] network that a passive optical network was the most appropriate basis for the development of a preliminary cost estimate.[14]

P2P

2.28 Point-to-point technology would see every premises allocated a dedicated fibre, which would connect to a local Optical Line Termination (OLT). These OLTs would need to be located on most street corners, in a similar fashion to the 'nodes' under the previous FTTN proposal. OLT cabinets would need to contain significant electronics and would require cooling in hot weather.

2.29 P2P may seem ideal in providing dedicated fibre to every customer, thus providing greater scope for service differentiation. However, in reality this option would be far more costly to deploy and would also result in street-scape issues and noise pollution from the electronics and air-conditioning within each OLT.

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13 Incorporates information from Alcatel Lucent, *Submission 51*, pp 11-16.

14 Department of Finance and Deregulation, Answer to Questions on Notice, Budget Estimate Hearing – May 2009, Question F36 ii).

GPON

2.30 In the GPON alternative, a single optical fibre is utilised for multiple premises, which then share the bandwidth available on the fibre. As explained in an Alcatel-Lucent brochure:

> In a GPON environment, a single fibre runs from a central OLT site serving up to 64 users. Consumers up to 30 kilometres away can be economically connected on this single fibre. Close to the consumer's premises, the cable is split inside a junction box, similar to those used in today's telephony network. … No power is required at any point between the exchange and the home installation.[15]

2.31 The GPON option would be more cost efficient, due not only to the reduced amount of fibre required but also the corresponding reduction in the number of fibre joins. This naturally translates to less man hours and labour costs for a GPON deployment. Another advantage of GPON is the fact that it requires no power between the exchange and the premises. As the brochure concludes:

> …it is probably fair to say, from a visual, noise and carbon footprint standpoint, GPON is preferable for residential fibre coverage.[16]

Possible functional layers

2.32 The NBN is underpinned by the government's policy requirement that it will be an open access, wholesale-only network. Although to date the government has not elaborated on how this will operate, some suggestions have been made by the industry.

2.33 It is reasonable to assume that there will be three basic types of service providers, with three corresponding functional layers of the network, as follows:

- **NBN Co:** The public-private partnership established to build and operate the NBN. Returns are assumed to be regulated and the company will be excluded from providing retail services. This company provides wholesale access services to the Network Service Providers.
- **Network Service Provider (NSP):** NSPs will have a retail relationship with customers and provide Internet protocol (IP) access to applications. They may choose to develop and provide applications themselves.
- **Application Service Provider (ASP):** ASPs provide the applications such as television, video, voice telephony and internet access. They will also be the providers of applications and services that are yet to emerge

15 Alcatel Lucent, *Submission 51*, pp 34-35.

16 Alcatel Lucent, *Submission 51*, p. 35.

from non-telecom areas such as health, education and power management.[17]

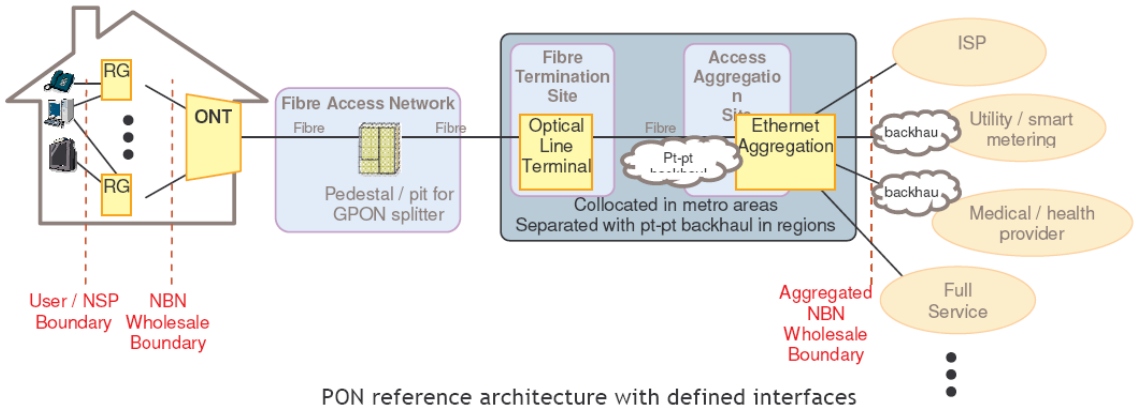
2.34 Today, a typical Internet Service Provider (ISP) fulfils the role of an integrated NSP/ASP, having retail relationships with customers and providing access to standard internet services, while others also offer telephony and paid video services.[18]

Network architecture

2.35 From this point the options multiply almost exponentially, with considerations before the Implementation Study that will include: connectivity for multi-dwelling units; the Optical Network Termination (ONT) device and its connection to one or more Residential Gateways (RG) within the premises; ownership of those devices; battery back-up requirements; and billing options.

2.36 One of the many complex decisions required will be the determination of the wholesale point of interconnect and service boundary point scenarios. A useful diagram illustrating the end-to-end architecture vision was provided in Alcatel-Lucent's submission, and is copied at Figure 1 below.

Figure 1[19]



PON reference architecture with defined interfaces

The 90/10 footprint

2.37 Australia possesses a geographically diverse topography, with a dense population around the coastline and sparse, but often economically significant, communities scattered across remote areas. After terminating the FTTN proposal, the

17 Alcatel Lucent, *Submission 51*, pp 17-18.

18 Alcatel Lucent, *Submission 51*, p. 18.

19 Alcatel Lucent, *Submission 51*, p. 20.

government has included 'next generation wireless and satellite technologies … to people living in more remote parts of rural Australia.'[20]

2.38 The committee notes that there is still varied opinion as to whether the policy will result in what could be seen as a broadband 'patchwork' rather than a network, and how the subsequent risks regarding the capability for national connectivity can be mitigated. This will need to be resolved in the context of the network architecture solution, which should be a major component of the Implementation Study.

2.39 One issue that has remained unresolved since the first NBN RFP proposal was announced in April 2008 is that there is still no detail of the geographic footprint of where the FTTP network will connect and where wireless and satellite might operate. This causes uncertainty for potential investors as well as for consumers.

2.40 The current proposal is that 90 per cent of Australian homes, schools and businesses will have access to FTTP, while the remaining 10 per cent will be connected via wireless or satellite. When discussing the 90 per cent/10 per cent footprint at the Sydney public hearing, the Australian Information Industry Association (AIIA) explained that they had spoken with Treasury officials trying to clarify the footprint:

> …we were making inquiries as to what the 90 per cent and the 10 per cent would mean. What does 10 per cent mean? It was put to AIIA that as a rough rule of thumb it would be those parts of Australia that are populated thinly – for example, fewer than a thousand people.[21]

2.41 The minister has been reported as stating FTTP could reach towns with populations less than 1000 people if the necessary infrastructure is available, or able to be readily deployed. However, in the committee's view, this potentially adds to the level of uncertainty.

2.42 At the Hobart hearing, satellite provider Intelsat gave evidence that, as an infrastructure provider, details of the 10 per cent footprint were a critical issue. When asked about possible customer numbers that might be covered by satellite, Mr David Ball answered that:

> I don't know. I think the 100,000 [estimated satellite customers] are in very remote areas which would probably fall outside the 90 per cent [FTTP] geographically. Again, it gets back to my opening question as to how the NBN Co. defines that geographically.
>
> …What of the 10 per cent could you serve by wireless terrestrial means? What is the residuum that gets served by satellite beyond that?[22]

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20 http://www.minister.dbcde.gov.au/media/media_releases/2009/022, accessed 5 October 2009.

21 Ms Loretta Johnson, AIIA, *Committee Hansard,* Sydney, 5 August 2009, p. 61.

22 Mr David Ball, Intelsat Asia-Pacific, *Committee Hansard*, Hobart, 8 October 2009, p. 39.

2.43 When the committee questioned officials from the Treasury regarding the footprint, their response was:

> That is a detail that you would really have to take up with the department of broadband. … It is not within our competence to provide that level of advice.[23]

2.44 Taking up Treasury's suggestion, at the Canberra public hearing the committee questioned Mr Quigley, CEO of the NBN Co, as to the areas included within the 10 per cent; Mr Quigley responded that:

> It is scattered predominantly in regional and rural areas, obviously, but there are also places not that far outside the metropolitan areas that still have difficulties with coverage – … When you look, for example, at the satellite footprint that you might want to plan for, some of those areas are closer in to the cities than you would otherwise expect …
>
> We do not have a very clear picture; we have a rough picture at this point.[24]

2.45 Whenever the committee has pressed for specific details of the FTTP network's coverage, the answer was invariably the same: that this will be examined in the Implementation Study. Mr Quigley gave this detailed response to a question he subsequently took on notice at the Canberra hearing:

> Providing consolidated information on the "geographic spread" of what is meant by the 'last 10 per cent' is extremely difficult. Ultimately, the final details of where the 'last 10 per cent' is located will not be known until at least the final report of the Implementation Study …[25]

Digital divide heightened

2.46 The committee notes that the disparity of access that currently exists between metropolitan premises and those in regional and remote communities – the so called digital divide – will remain, despite the new policy direction for FTTP.

2.47 The proposed minimum 12 Mbps speed for those within the 10 per cent footprint contrasts with the 100 Mbps connection to be provided to the other 90% of the network footprint. The committee notes the digital divide will be heightened as a result of the mandated coverage requirement for the fibre network being revised downward.

2.48 The committee notes that as a consequence of the revised NBN policy, some 2.2 million Australians (10 per cent of the population) will now miss out on access to the top level broadband via the fibre network.

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23 Mr Richard Murray, Department of the Treasury, *Committee Hansard*, Canberra, 1 October 2009, p. 9.

24 Mr Michael Quigley, NBN Co Limited, *Committee Hansard*, Canberra, 1 October 2009, p. 64.

25 Mr Quigley, Answer to a Question on Notice, received 26 October 2009.

2.49 In addition, the government has yet to detail, for example, how schools and educational facilities in rural and remote areas will be able to access the same quality services that those in inner metropolitan areas will be accessing.

2.50 The committee notes that questions surrounding the issue of the FTTP footprint and the consequential digital divide are key issues that will remain unanswered until the final report of the Implementation Study is available, at the earliest. This will continue to perpetuate uncertainty within the telecommunications industry, among potential investors, suppliers of wireless and satellite infrastructure and among Australian consumers.

Roll-in vs Roll-out

2.51 Despite concerns expressed by the committee in the two previous interim reports that underserviced communities, particularly those in regional, rural and remote areas, must gain access to affordable broadband before those that receive adequate services, the government has yet to provide any assurance that this will eventuate.

2.52 In its first Interim Report, this committee specifically called on the government, under the terminated RFP FTTN proposal, to roll-IN the network from those underserviced communities rather than to roll-out from urban areas that, in comparison, are largely well serviced.

2.53 Notwithstanding the government's announcement of the regional backhaul initiative, the committee firmly believes that this does not go far enough to provide certainty to these communities that their needs will be prioritised.

Recommendation 1

2.54 That the Implementation Plan clearly states the government's intention to prioritise the needs of underserviced communities, particularly those in regional, rural and remote areas, over those with comparatively well-serviced urban areas.

Next generation satellite and wireless technologies

2.55 Very little detail has been provided relating to the 'next generation wireless and satellite technology' that will provide broadband connectivity for approximately 10 per cent of Australian homes, businesses and schools.

Wireless technology

2.56 Wireless technology, as the name implies, involves the transmission of information using radio waves or microwaves rather than underground or overhead wires or cables. It can be used to establish long distance backhaul, particularly in more remote regions, or it can be used for the 'last mile' connection to the premises or to a hand-held device. It requires an antenna on any premises wanting to receive the

transmission and numerous strategically placed base station aerials that can relay signals across the skies.

2.57 Wireless is ideal where geographic conditions are not conducive to fixed line cabling. For example, wireless can provide coverage over short spans of water and across mountainous regions. This was clearly illustrated to the committee secretariat on a site visit that covered an area within approximately 45km of the Canberra CBD. A small local service provider, YLess4U, has installed and currently operates a successful wireless broadband network. This currently services communities, businesses and individuals within that area, all of whom were previously unable to access broadband due to the granite-based mountains surrounding the capital. More details of the applications made possible by this entrepreneurial network can be found in chapter seven.

Growth in wireless

2.58 The incidence of the wireless transmission of data has grown exponentially over the last two years, with the rapid increase in the number of mobile broadband connections showing no sign of slowing. Australia has been an international leader in this trend, with the number of mobile phones in Australia exceeding its population. In more populous developing countries, such as India, the growth of wireless technology has been slower; however potential for growth in those markets is enormous.

2.59 In Australia, Telstra currently has the largest footprint for mobile telephone coverage under their 3G network and upgraded Next G wireless network. Telstra claims that those networks cover close to 99 per cent of the population. At the recent Telstra Annual Investor Day, Telstra's CEO Mr David Thodey, told investors that Telstra currently had one million wireless broadband customers and around 2.5 million fixed line broadband customers. Mr Thodey was quoted as saying that the company expected the growth in wireless broadband take-up to continue, and predicted that by 2015 around 60 per cent of Telstra's broadband customers would use wireless connections.[26]

2.60 The Australian Bureau of Statistics June 2009 results on Internet usage in Australia is detailed in chapter six. The latest figures demonstrate a remarkable continuation of the increase in wireless broadband uptake, growing from 1.298 million in December 2008 to 1.961 million in June 2009[27]. Subsequent to the release of these statistics, Citigroup analysts were reported as saying:

> The market … has consistently under-estimated the wireless broadband market over the past two years …

26 *Communications Day*, 29 October 2009, p. 1.

27 http://www.abs.gov.au/AUSSTATS/abs@.nsf/ProductsbyReleaseDate/6445F12663006B83CA256A150079564D?OpenDocument, accessed 6 November 2009.

> Wireless broadband as a growth driver is nothing new in Australia but the magnitude of the growth continues to surprise…[28]

2.61 The committee is concerned that the government's requirement for FTTP technology to underpin the NBN ignores this trend in wireless broadband uptake, impacting the ability of the network to meet future demand.

Wireless limitations

2.62 However, the 3G network has some significant drawbacks that are consistent with international experience. These drawbacks include the cost of 3G phones and the high cost broadband services to handheld devices. The latter is particularly evident in more remote areas where Telstra is the only carrier offering wireless broadband.

2.63 Additionally, although Telstra claims to cover 99 per cent of the population, this does not equate to 99 per cent of the Australian landmass. It is a common complaint that there is a lack of service availability in more remote areas, along even major highways, with corresponding implications for travellers and local remote residents alike.

2.64 A prominent industry stakeholder, AUSTAR, has been quoted as stating that 3G networks were not suitable for NBN purposes:

> [The NBN] is about a wireless data network, built and priced to deliver data based services at affordable prices.
>
> The 3G networks are voice networks with data as an overlay, they don't have the capacity, the pricing structure, or the spectrum to provide the services that are needed in the 10% areas where fibre won't reach.[29]

Wireless improvements

2.65 The industry has already moved to address some of the technical issues with wireless technology. For example, upgraded standards have been developed, in particular Long Term Evolution (LTE) which is based on an all-Internet Protocol (IP) network infrastructure and uses advanced wireless technology such as Multiple-Input and Multiple-Output (MIMO). MIMO is a form of smart antenna technology, involving the use of multiple antennas at both the transmitter and receiver to improve communication performance. This offers significant increases in data throughput and link range without additional bandwidth or transmission power.

CSIRO's cost saving solution

2.66 The committee heard evidence from the Commonwealth Scientific and Industrial Research Organisation (CSIRO) relating to developments they have made in

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28 *Communications Day*, 23 September 2009, p. 2.

29 *Communications Day*, 24 September 2009, p. 1

wireless technology, which have the potential to be quite ground-breaking. The solution addresses the 'last 10 per cent', and is called the *CSIRO regional access solution.* The submission from CSIRO describes the solution as follows:

> In simple terms, the *CSIRO regional access solution* proposes the use of existing broadcast infrastructure [base stations and aerials] and broadcast spectrum in the new NBN. By using CSIRO technology …, beams using new synchronisation and co-operative networking methods will form signals over the long distances to individual premises.[30]

2.67 The CSIRO submits that their technology is superior to 3G/4G and WiMAX technologies, able to deliver a higher quality service with fewer base stations at a significantly lower capital cost.[31] CSIRO believes their development would be able to more efficiently manage backhaul requirements in the 'last 10 per cent', providing backhaul via point-to-point microwave radio relay. Once fully developed and patented, the CSIRO believes that this development will not only be able to provide the NBN with a home-grown technology solution, but will also have significant potential in a growing international market.[32]

2.68 The cost savings estimated by the CSIRO through the utilisation of the *CSIRO regional access solution* are extraordinary:

> When compared with 3G/4G the capital savings are estimated to be $12 billion; and when compared to WiMAX, the capital savings are estimated to be $5.0 billion.[33]

2.69 CSIRO has stated that the cost of implementing their *CSIRO regional access solution* would be in the order of $255 million, which would provide backhaul services to the last 10 per cent of the Australian population.[34]

2.70 The committee acknowledges that the CSIRO is in a unique position to provide ground-breaking, Australian-developed technology for backhaul access, advice on the technologies, independent advice around network costs and designs and also on applications development in the areas of health, energy management and the delivery of government online services.

2.71 Given the obvious level of expertise, the committee asked whether the CSIRO had been commissioned by the government to assist in the NBN rollout. The CSIRO was careful in its responses, noting that '[W]e provide regular briefings around our technologies.' When the committee pressed further whether they had been asked to

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30 CSIRO, *Submission* 80, p. 8.

31 CSIRO, *Submission* 80, p. 8.

32 CSIRO, *Submission* 80, pp 13-14.

33 CSIRO, *Submission* 80, p. 13.

34 CSIRO, *Submission* 80, p. 14.

advise specifically in relation to the rollout in rural and remote areas, their response was:

> It is nice to be asked, and we hope we are asked, but sometimes we are not.[35]

2.72 The committee is concerned that the CSIRO was not consulted in the formulation of the revised NBN policy, and that insufficient consideration was given to emerging technology prior to the 7 April announcement by the government, which included the requirement for FTTP to underpin the NBN.

2.73 The advantage of mobile connectivity via lap tops or mobile hand held devices to an increasingly mobile workforce is obvious. This in turn is driving demand for wireless connectivity. In fact, there have been questions raised as to whether the 90 per cent footprint FTTP should be more flexible, given the move by service providers and application developers to cater for this growing market segment. AUSTAR made the following comment in their submission:

> …it does not make any sense to limit the building of a wireless network to only 10 per cent of the population, particularly given the benefits of portability and interoperability inherent in the wireless product. … AUSTAR believes that the rapid deployment of a WiMAX wireless broadband network using 2.3Ghz spectrum provides a excellent opportunity for NBN Co to provide immediate, affordable, high speed broadband services to many Australians.[36]

Spectrum issue

2.74 If wireless broadband is to be deployed, the government will need to ensure that sufficient spectrum is reserved at appropriate frequencies and that this allocation can continue to meet the demand requirement caused by the rapidly growing uptake of wireless broadband.

2.75 The imminent digital switchover of analogue television transmission to digital TV will result in the freeing up of spectrum previously used by analogue TV services. There will no doubt be strong competition for the purchase of licenses for this spectrum, with industry groups lobbying in the media to publicly stake their claim. There are calls on the government to ensure that at least a portion of this freed spectrum is reserved for the specific purpose of facilitating wireless broadband. The CSIRO is a strong advocate of this view to enable its wireless access solution:

> By utilising the digital dividend of reusing the broadcasting towers and spectrum (UHF and VHF) currently allocated to analogue TV… the CSIRO regional access solution can deliver broadband services at 100 Mbps to sparsely populated communities at significantly lower costs than WiMAX or 4G. …

35 Dr Alex Zelinski, CSIRO, *Committee Hansard*, Sydney, 5 August 2009, p. 36.

36 AUSTAR, *Submission* 73, p. [4].

> To deploy the CSIRO access solution, it will be necessary for ACMA to re-allocate at least some of the spectrum currently allocated to analogue TV. …It is recommended that at least 35 MHz in the 400-800MHz frequency range is assigned for fixed wireless access to rural broadband.[37]

2.76 It is unclear whether this issue is receiving an appropriate level of consideration under the government's Implementation Study.

2.77 AUSTAR has also highlighted that the government needs to ensure that adequate spectrum for the wireless solution is available. AUSTAR has spectrum that it believes would be suitable for the wireless broadband network:

> …AUSTAR invested A$183 million in 2000 to obtain spectrum licenses covering 98Mhz of contiguous spectrum in the 2.3Ghz band and … obtained 65Mhz in the 3.4-5Ghz band…[38]

2.78 Further, their submissions states that:

> AUSTAR has made clear to the Government and to third parties that it is willing to enter into commercial arrangements for the sale of our spectrum licenses to facilitate the rollout of wireless broadband services.[39]

2.79 It is apparent that spectrum is as important in the facilitation of the wireless network as the fibre is to the fixed line fibre network. However, the issue of spectrum allocation has not been clearly addressed by the government in relation to the requirements for the NBN. This will need to be a priority discussion within the Implementation Study.

Satellite technology

2.80 Satellite technology is, in reality, a subset of wireless technology, which enables global transmission of data via satellite. However, satellite and terrestrial wireless technologies have different benefits and disadvantages.

2.81 There are three main types of satellite systems that are generally categorised by the height of their orbit: low-earth orbit (LEO) at around 2,000km altitude; medium-earth orbit (MEO) at around 9,000 km; and geosynchronous orbit (GEO) at 40,000 km.

2.82 Geosynchronous satellites are most common. They are seen as stationary from the earth and have large coverage areas and consequently fewer satellites are required and can provide a wide or even global coverage. The disadvantages of the GEO systems are that it takes a great deal of power for data to reach the satellite and there is

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37 CSIRO, *Submission* 80, pp 4&5.

38 AUSTAR, *Submission* 73, p. [23].

39 AUSTAR, *Submission* 73, p. [5].

the increased delay or latency issue with the greater distances involved. Latency issues have come to the fore due to the increased use of satellite for video, interactive games and Voice over Internet Protocol communications. GEO satellites are also more costly to launch and have higher maintenance costs, given the higher orbit from which they operate.

2.83 The committee heard evidence and received written submissions from two satellite providers, Intelsat and O3b networks. Intelsat claims to be the largest fixed satellite services provider globally, with 50 satellites covering 99 per cent of the world's populated regions. In its submission, Intelsat states that:

> …the direct-to-consumer element of the satellite NBN will require two multi-spot Ka-band satellite payloads to … deliver service into multiple high power spotbeams providing contiguous coverage across the desired service area.[40]

Footprint uncertainty concerns

2.84 The issue discussed above relating to the lack of detail of the geographical footprint of the 10 per cent was an issue for both satellite providers. Without this certainty, providers cannot commence planning what type and how many satellites might be required to meet the needs of the 10 per cent. Intelsat noted that the 'Implementation Study will need to consider a wide range of issues relating to satellite delivery direct-to-consumers.'[41] This concern was reiterated when Intelsat's Regional Vice-President for Asia-Pacific gave evidence at the Hobart hearing:

> One of the first activities that has to be undertaken by the department or by NBN Co is truly defining where the 90 per cent is geographically and where the 10 per cent is in terms of the 100 megabit and the 12 megabit definitions that have been provided. … Is it a traditional satellite that is in orbit today that can provide services to customers, or is there a much larger number of customers that need to be addressed that lead you to putting up a KA band satellite which would be dedicated to NBN?[42]

Eliminating the latency issue

2.85 Mr Greg Wyler from O3b Networks gave evidence at the Melbourne public hearing and explained very clearly the operation of satellite and the issues that his satellite system could overcome. O3b stands for the 'Other 3 billion', a reference to the people in the most remote and least populous regions of the world who are currently not able to access the Internet, let alone broadband services.

2.86 O3b is designing a satellite infrastructure system that will see eight MEO satellites launched in 2011 that will orbit at around 8,062 km above the equatorial belt,

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40 Intelsat Asia Pty Ltd, *Submission 64*, p. 6.

41 Intelsat Asia Pty Ltd, *Submission 64*, p. 7.

42 Mr David Ball, Intelsat Asia-Pacific, *Committee Hansard*, Hobart, 8 October 2009, p. 37.

with coverage of plus or minus 45 degrees north and south of the equator. Mr Wyler stated that O3b's network would have beams that would be 'steerable', whereby the footprint of the satellite can be altered to meet community and capacity requirements. Mr Wyler outlined what he believed to be the advantages of O3b's satellite system, as follows:

> Geosatellites have been very expensive – about $250 to $300 million to produce. Our satellites are … about $22 million to produce. We put them in orbit at I think about 8,062.7 kilometres, which is 4.6 times closer to the earth than a geosatellite. The satellites being a lot closer to the earth means that they use a lot less power to bring just as much capacity to the earth or to the customer. On top of that we have allocated 4.3 gigahertz of capacity, which is much more than any of the geosatellites.[43]

2.87 The MEO satellite system deployed by O3b would immediately address the latency issue that currently inhibits the quality of services. Mr Wyler suggested that an additional four satellites would most likely be needed to provide coverage for the Australian landmass, including Tasmania, at a cost of $150 million to $200 million for those four satellites. This is less than the cost of just one GEO satellite.

Satellite limitations

2.88 Both the GEO and MEO satellite systems provide a highly reliable connectivity, 'even in comparison to fibre and microwave'.[44] However the one issue that neither GEO nor MEO satellites can eliminate is the susceptibility of satellites to adverse climatic conditions. Both O3b and Intelsat suggested that Australian satellites should utilise the Ka band frequency, which unfortunately is more affected by rain than other frequencies.

2.89 Mr Wyler explained that the susceptibility of Ka band satellites to weather can be overcome by strategic system design that would manage this issue and minimise the impact of adverse weather patterns. This would be necessary in Australia, given that the O3b satellites would orbit over the tropical monsoonal areas. However, as pointed out by Mr Wyler:

> Nothing is foolproof. There can be moments of outages in any [network] topology…
>
> Satellites can certainly be designed to have very limited sensitivity to weather conditions.[45]

Oversubscription and contested networks

2.90 Another disadvantage with both wireless and satellite technologies is that the services received are 'contested'. The speed that the network offers is a maximum

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43 Mr Greg Wyler, O3b Networks, *Committee Hansard*, Melbourne, 7 October 2009, p. 8.

44 Mr Wyler, O3b Networks, *Committee Hansard*, Melbourne, 7 October 2009, p. 2.

45 Mr Wyler, O3b Networks, *Committee Hansard*, Melbourne, 7 October 2009, p. 9.

speed, and is shared among the number of users in that particular network. This only becomes an issue in more populous areas, where more people are likely to be using broadband services simultaneously.

2.91 Both Mr Wyler and Mr Ball warned that for this reason, any operator of a satellite network must take into consideration the oversubscription limitations under which their network can effectively operate. Mr Wyler gave a clear example of the effect of oversubscription:

> Oversubscription is a key factor. …
>
> If you provide 12 megabits piped into a town and then put up a WiMAX tower and then offer everybody 12 megabits to their home and you have 100 customers, then you have 100 times oversubscription. You have promised 100 people 12 megabits, but the reality is there are only 12 megabits … Unless you watch the oversubscription, or at least take note of it, it is possible to find that the quality you are hoping for is not really achieved.[46]

2.92 However, as Mr Ball explained, this issue also applies to ADSL technology and to any wireless technology, and needs to be monitored and managed:

> [Oversubscription] is one of the challenges you have with any wireless technology as you start to load it up, and indeed any ADSL type technology today. As you start to oversubscribe point of presence, you end up having to provide additional capacity.[47]

2.93 Mr Wyler concurred with this view:

> There will definitely be oversubscription. There is oversubscription in every network; it is inherent. But you do not want too much.[48]

2.94 Adding satellite capacity in order to address oversubscription in a region is a long term, expensive project. Both O3b and Intelsat stated that it is generally a three year process from the planning phase to launch of a satellite service. Mr Wyler stated that consequently, it is critical to gain a clear understanding of the population densities and the capacity requirements of each area, to ensure that the oversubscription issue is managed to achieve and maintain quality service.[49]

2.95 The committee believes that, given the vast geographic expanse of the Australian continent, its varied climatic conditions, and its diverse topography, the technologies of both wireless and satellite should be considered as complementary to the FTTP network.

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46 Mr Wyler, O3b Networks, *Committee Hansard*, Melbourne, 7 October 2009, p. 6.

47 Mr Ball, Intelsat Asia Pacific, *Committee Hansard*, Hobart, 8 October 2009, p. 41.

48 Mr Wyler, O3b Networks, *Committee Hansard*, Melbourne, 7 October 2009, p. 6.

49 See discussion Mr Wyler, O3b Networks, *Committee Hansard*, Melbourne, 7 October 2009, pp 6-8.

2.96 In addition the committee believes that there is scope for greater flexibility in the FTTP footprint, and that the technology/ies best suited to a particular location should be selected for deployment in that location, thus ensuring optimal quality broadband services to all Australians.

2.97 The committee also calls on the government to the release details of the 90 per cent/10 per cent footprint as early as possible to enable wireless and satellite providers optimal planning capabilities, which will in turn provide for informed estimates of the cost of deploying the 90/10 network.

OPEL?

2.98 In discussion of wireless and satellite technology options, the issue of the Coalition Government's cancelled OPEL proposal was raised a number of times, generally in reference to the fact that, if allowed to proceed, the OPEL solution would have almost been fully deployed at the time of reporting.

2.99 The OPEL network was a joint venture partnership between Elders and Optus that, among other services, would have utilised wireless technology to provide improved backhaul access. Specifically targeting underserviced areas through a subsidy program, the OPEL proposal would have delivered ADSL2+ broadband services for 1.5 million premises in regional areas by upgrading an additional 312 exchanges.

2.100 The OPEL proposal was never initiated, so the doubt cast by the government on the viability of OPEL's solution cannot be tested.

2.101 Although the current NBN is promising higher speeds to regional areas than OPEL offered, the committee again states its concern that the underserviced areas still have no guarantee that they will receive priority attention in the roll-out implementation plan.

2.102 Despite the government's claims of providing better broadband services to regional and remote Australians than the OPEL initiative, the committee highlights that under OPEL, these underserviced areas would now be accessing broadband at ADSL2+ speeds. This would have been a vast improvement to the government's record of inaction and the status quo – which could persevere for the full length of the NBN rollout.

2.103 The committee notes that due to the lack of available cost benefit analysis data, it is difficult to quantify whether the rural and regional component of the $43 billion NBN commitment is a positive value proposition compared to the $1 billion in public funding required by the OPEL initiative.

Committee view

2.104 The committee remains concerned whether the 90/10 footprint will meet the demand profile for broadband services now and into the future and is particularly concerned that the 90/10 footprint has not been clarified for the Tasmanian roll-out.

2.105 Despite the commencement of roll-out, Tasmanians are still in the dark as to which towns the fibre will touch and which it will by-pass.

2.106 The committee acknowledges the multiple complexities facing the government as it makes decisions around the architecture that will provide the optimal solution, both for the NBN Co and for all Australians.

2.107 The architecture is one of the key components in determining the cost to the tax payer of this network, as discussed in chapter five. Hence an early decision on the network architecture will enable a rigorous cost-benefit analysis to be undertaken.

2.108 The committee notes the significant cost and energy efficiencies to be gained by deploying GPON architecture as compared to a P2P network; however, the committee also notes that P2P architecture provides greater scope for service differentiation.

2.109 Importantly the committee highlights the continuing rapid growth in the proportion of wireless broadband connections and questions whether the 90/10 percentage for FTTP and wireless/satellite connections should be more flexible to leverage this increase.

2.110 Evidence brought before this committee has stated that a wireless broadband network could be deployed relatively quickly, particularly if optimal use is made of existing base stations. In this manner, wireless could be seen as a 'first step to address the long standing needs of underserved communities.'[50] In the longer term, wireless and fixed-line fibre will be complementary components within the NBN. The interrelated issue of the allocation of sufficient spectrum to enable the wireless deployment requires urgent attention and resolution.

2.111 The committee is particularly concerned that substantial savings, in the magnitude of billions of dollars, are a very real possibility when the CSIRO solution for backhaul re compared to the alternatives of WiMAX and 3G/4G deployments. The committee is concerned that the government seems totally unaware of these savings, following the recent commencement of a major WiMAX rollout in South Australia as part of the Regional Backhaul Blackspots initiative.

2.112 The committee urges the government to consult with CSIRO prior to the awarding of any new regional backhaul contracts to determine the feasibility and

50 See discussion in AUSTAR, *Submission* 73, p. [19].

possible development timeframes involved in this cost-saving and superior backhaul solution.

2.113 The committee also urges the government to consider the alternative options for satellite deployment featured in this chapter.

Chapter Three

Progress since the FTTP announcement

3.1 Included in the joint ministerial announcement of the proposed FTTP project was a plan of action, which was immediately launched, as was noted in chapter two. In addition, the government released a number of discussion papers that directly related to the deployment and operation of the NBN. A chronology of events has been included in this report at page ix. This chapter provides details of the progress made on the plan of action, on issues covered within the discussion papers and on other NBN related processes.

April – June 2009

National Broadband Network: Regulatory Reform for 21st Century Broadband discussion paper

3.2 On the same day that the government announced the FTTP initiative, Minister Conroy also released the first of several discussion papers. The *National Broadband Network: Regulatory Reform for 21st Century Broadband* discussion paper provided options for reforming the current telecommunications regulatory regime to increase its effectiveness, particularly during the eight years that the government anticipates it will take to the build and transition to the NBN. The government invited comment from interested parties on a number of reform options, with submissions closing on 3 June 2009.

3.3 The discussion paper was based on the government's extensive submission process on regulatory reform of the telecommunications industry, which was undertaken during 2008 in parallel with the terminated RFP process. Although the government received over 100 submissions during that process, no analysis of those submissions was provided to the industry or the public to indicate which reform options the government favoured.

3.4 Throughout the RFP process, the lack of a regulatory framework, or even an indication of the government's preferences, lead to increasing criticism that prospective bidders would be prevented from building a sound business case for the NBN RFP. This criticism was detailed in the committee's first interim report and is illustrated by the following quote:

> I totally agree with the sentiment that the cart has been put before the horse; the regulatory arrangement of the framework should have been done first.[1]

3.5 The *National Broadband Network: Regulatory Reform for 21st Century Broadband* discussion paper was based on the general consensus that the current

1 Dr Ross Kelso, *Committee Hansard,* Brisbane, 21 November 2008, p. 18.

regime was ineffective in meeting the basic legislative objectives of supporting competition and protecting the long term interests of end-users. In fact, throughout the discussion paper quotes from key telecommunications stakeholders from the 2008 submission process, including Telstra, were featured, in support of each option.

3.6 The discussion paper cited its two main purposes as:

> - to outline the proposed regulatory reforms that the Government will progress to facilitate the roll-out of the National Broadband Network; and
> - in light of the announcement of the enhanced National Broadband Network, to consult on the options for broader reforms to make the existing regulatory regime more effective in the transition period before the network is fully rolled out.[2]

3.7 The paper also stated that, in reviewing the existing regulatory regime, the government will have regard to its ongoing policy commitment to: improve productivity across the economy; competition; consumer protection; rural, regional and remote Australia; and reducing unnecessary regulation.[3]

3.8 The focus of the consultation process was on the options for reform of the telecommunications competition framework and the existing consumer safeguards in the telecommunications sector.[4] In the minister's foreword to the discussion paper, he stated that:

> The Government does not have a pre-determined view on these [options for reform] and we have an open mind about the reforms that should be pursued.[5]

3.9 By the closing date, the Department of Broadband, Communications and the Digital Economy (DBCDE) had received 82 written submissions. The majority of authors had also provided submissions to the previous RFP discussion process, with many reiterating, if not strengthening, their views regarding the inadequacies and inefficiencies of the current regime.

3.10 The end result of the submission process was the tabling of the Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009 (the Bill). This Bill seeks to introduce a series of reforms that

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2 Discussion paper, *National Broadband Network: Regulatory Reform for 21st Century Broadband,* p. 1.

3 Discussion paper, *National Broadband Network: Regulatory Reform for 21st Century Broadband,* p. 3.

4 Discussion paper, *National Broadband Network: Regulatory Reform for 21st Century Broadband,* p. 2.

5 Discussion paper, *National Broadband Network: Regulatory Reform for 21st Century Broadband,* p. iv.

would address competition issues within telecommunications while also strengthening consumer safeguards. The Bill is discussed further in chapter eight of this report.

Backhaul Blackspots Initiative Stakeholder Consultation Paper

3.11 On 23 April 2009 the government released a second discussion paper, this one addressing the lack of affordable and accessible backhaul in regional communities. The consultation timeframe was limited, with submissions closing on 12 May 2009. This discussion paper again rehashed many of the previous submissions from the 2008 process on how to improve the accessibility and affordability to broadband services in regional and remote Australia. The lack of competitive backhaul is argued to be a major cause of higher access prices for the access seeker and ultimately the consumer.

3.12 The discussion paper was consequential to the government's commitment to invest 'up to $250 million to immediately address backbone blackspots throughout regional Australia.'[6] The purpose of the discussion paper was to facilitate the expedient implementation of the backhaul blackspot project by canvassing opinions on the:

- identification and prioritisation of regional centres to be addressed through the initiative;
- appropriate technical parameters associated with roll-out of backhaul links; and
- arrangements for funding the construction of the links, the delivery of services and the ownership of the infrastructure.[7]

3.13 The government had previously received extensive comment in relation to these issues through the *Regional Telecommunications Independent Committee Report*, which became known as the Glasson Review, named after the Chair of that committee, Dr Bill Glasson. In December 2008, the *State of the Regions Report 2008-09*, produced by National Economics for the Local Government Association of Australia, dedicated an entire chapter to the progress of achieving nationally equitable high speed broadband.

3.14 On 1 July 2009, after examination of the submissions received on the *Backhaul Blackspots Initiative Stakeholder Consultation Paper*, the government 'issued Request for Tender (RFT) to build, operate and maintain backbone transmission links to the following priority locations: Darwin; Geraldton; Broken Hill; South West Gippsland; to Emerald and on to Longreach; and Victor Harbour.'[8] The RFT closed in early August; however at the time of reporting there seems to have

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6 http://www.dbcde.gov.au/broadband/national_broadband_network/national_broadband_network_Regional_Backbone_Blackspots_Program, accessed 29 October 2009.

7 DBCDE, *Backhaul Blackspots Initiative Stakeholder Consultation Paper*, 23 April 2009, p. 2.

8 http://www.dbcde.gov.au/all_funding_programs_and_support/national_broadband_network/national_broadband_network_Regional_Backbone_Blackspots_Program, accessed 30 October 2009.

been little acknowledgement of the commencement of work in any of these priority regions.

Request for Expression of Interest – Lead Advisory Services for the Implementation Study

3.15 One of the key action items the government announced on 7 April 2009 was the commencement of an Implementation Study to be completed by February 2010. The Implementation Study will:

> …determine the operating arrangements, detailed network design, and ways to attract private sector investment and ways to provide procurement opportunities for local businesses.[9]

3.16 On 24 April the government released the *Request for Expression of Interest for Provision of Lead Advisory Services relating to the Implementation Study for the National Broadband Network* (REOI). This document outlined the two-stage process by which the Lead Advisor would be selected, the approximate timeframe for the REOI and the conduct of the study, and the issues to be analysed within the study. The REOI closed on 19 May with the subsequent RFT sent to short-listed respondents.

3.17 The Lead Advisor is required to conduct a comprehensive and multi-disciplinary study, as was indicated by the list of requirements provided in the REOI, which were:

- Advice as required in support of proposed legislation relating to the operation and governance of the network company, the regulatory regime, and ownership restrictions for retail telecommunications providers and other investors as required;
- Advice on the overall funding requirements for the network rollout (quantum and profile) beyond the $4.7 billion initial funding injection;
- Development of strategies to maximise the scope for private sector investment in the network company, subject to appropriate ownership restrictions and appropriate terms and conditions for participation;
- Advice on the optimal capital structure for the network company over time;
- Development of detailed commercial/financial and engineering analysis of the network roll-out and the implications for the network company;
- Advice on how best to structure NBN Company arrangement[s] from the outset so that the Government's long term objective of privatisation can be accommodated;

9 REOI, p. 7.

- Development of plans for the integration of the Tasmanian operation and backhaul network into the overall national broadband network;
- Network design consistent with the Government's objectives;
- Development of strategies to provide procurement opportunities for local businesses;
- Develop a detailed implementation plan for the roll-out of the National Broadband Network;
- Development of recommendations as to the appropriateness of any foreign ownership restrictions for the network company;
- Development of a risk management strategy for the national broadband roll-out; and
- Stakeholder consultation.[10]

3.18 The successful Lead Adviser was announced on 6 August 2009 as being McKinsey-KPMG. The committee notes that this appointment was made a full month later than the government had anticipated, which in turn places doubt on the ability of the Implementation Study to be completed on time before the end of February 2010.

Critical decisions delayed until final report

3.19 The committee notes with concern that information critical to the successful build and operation of the NBN remain unavailable pending the release of the Implementation Study. The committee is particularly concerned that until the final report is published, many critical issues remain unresolved for potential investors, potential infrastructure providers, the telecommunications industry and the Australian consumers.

3.20 The committee heard evidence of this uncertainty from numerous witnesses, who stated that the particular detail being sought by the committee would not be available until the completion of the Implementation Study. By way of example, in evidence given by Mr Richard Murray from the Department of the Treasury, the Implementation Study was mentioned on at least seven occasions in just over 30 minutes.[11] And these were just Treasury-related issues.

Interim reports?

3.21 Given the extensive scope and analysis required in the Implementation Study, and the reliance of so many stakeholders on its content, it would seem logical for the Lead Adviser to provide at least one interim report prior to the final report in February

10 REOI, p. 27.

11 See for example, Mr Richard Murray, Department of the Treasury, *Committee Hansard*, Canberra, 1 October 2009, pp 4, 5, 6 (for three separate issues), 11, and 14.

2010. Further more, the REOI stated that there would be at least one interim report provided by the Lead Adviser 'during the second half of 2009.'[12]

3.22 The committee raised this issue with the Department of Finance and Deregulation (DoFD) at the Canberra hearing. Mr Simon Lewis made the comment that:

> The implementation study is unlikely to have a landing all at one point at the very end; there are obviously going to be issues that need to be addressed through the course of the implementation study.[13]

3.23 When further questioned on whether interim reports would be produced, Mr Lewis clarified that:

> I just think it would make sense for the broadband department to bring forward at least that one interim report, if not more than one, prior to the delivery of the final report.[14]

3.24 Remarkably, the Department does not seem to agree with the sentiments of the Treasury. When the committee sought confirmation in relation to the interim reports, the Department's response was:

> The first Interim Report was provided to the Department on 14 August 2009. The Lead Advisor contract and the terms of reference provide for further interim reports to be provided at the Department's request. However, the Department has not sought further interim reports. [15]

3.25 The Department stated that the interim report 'provided an early view of the key issues to be considered over the course of the implementation study.'[16]

3.26 The committee notes that this interim report was provided only eight days after the announcement of the Lead Adviser.

3.27 It is the view of the committee that the government has made a severe error in judgement by not requiring further interim reports that would remove the clouds of uncertainty that are obscuring overall confidence in the outcome of the NBN.

Establishment of the NBN Co Limited

3.28 On 9 April 2009, a company was registered by the Department with the Australian Securities and Investments Commission (ASIC). Initially registered under

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12 REOI, p. 8.

13 Mr Simon Lewis, General Manager DoFD, *Committee Hansard*, Canberra, 1 October 2009, p. 96.

14 Mr Lewis, DoFD, *Committee Hansard*, Canberra, 1 October 2009, p. 97.

15 Answers to Written Questions on Notice, DBCDE, 9 November 2009, Question 1 a), p. 1.

16 Answers to Written Questions on Notice, DBCDE, 9 November 2009, Question 1 b), p. 1

just the company number issued, ACN 136 533 741 Ltd, the company was subsequently named NBN Co Limited, now generally referred to as the NBN Co.

3.29 On 3 July 2009 the government called for submissions on the governance arrangements for the NBN Co. This had also been a component of the discussion paper *National Broadband Network: Regulatory Reform for 21st Century Broadband.* However, although legislation seeking to reform the regulation of the telecommunications industry has been introduced, no legislation detailing governance arrangements for NBN Co has been introduced into parliament. The NBN Co has begun operating despite its lack of a legislative framework.

3.30 Chapter five of this report details the establishment, operation and funding of NBN Co, and its Tasmanian subsidiary, or rather, as much detail as is publicly known in the absence of the legislation necessary to provide its governance and operational framework.

Fibre-to-the-premises in greenfield estates

3.31 In its 7 April announcement, the government indicated that it would legislate the mandatory deployment of FTTP in greenfield estates that received planning approval after 1 July 2010. Legislation relating to this was expected to be tabled prior to July 2009, but has not yet been introduced at the time of reporting.

3.32 As an interim measure, the government released another consultation paper in May, with feedback required by 12 June 2009. The *Fibre-to-the-premises in greenfields estates* consultation paper put forward options for a national implementation model for requiring the deployment of FTTP infrastructure in greenfield estates.

3.33 The paper offered two options for consideration. The first option suggested legislation requiring developers to ensure FTTP infrastructure and services are available to consumers. The second option was for the Australian Government to work with state, territory and local governments to require installation of FTTP, with the possibility of providing legislative support that would prohibit the installation of non-fibre networks in greenfield estates.[17]

3.34 The paper stated the government's preference for the second option, noting that the first legislative requirement may become 'too cumbersome'[18]. Other related issues for consideration are outlined in the paper, including the role and responsibility of governments at all levels, possible exemptions, regulatory framework, competition, open access arrangements, equivalence, and retail pricing. Tellingly, the paper also noted that:

17 *Fibre-to-the-premises in greenfields estates*, p. 6.

18 *Fibre-to-the-premises in greenfields estates*, p 7.

> The Implementation Study is also relevant to the implementation of the greenfields policy.[19]

3.35 The committee notes that issues dependent on the outcome of the Implementation Study were mentioned no less than five times throughout this paper.[20]

3.36 According to the discussion paper, the Australian Government has consulted with stakeholders in the process of finalising its preferred approach, and suggested the formation of a stakeholder representative group to coordinate subsequent activities.[21]

3.37 The government noted that the establishment of a stakeholder representative group was strongly supported in submissions on the discussion paper. Accordingly, on 14 August 2009, the government announced the establishment of the Fibre in Greenfields Stakeholder Reference Group. Invitations to participate were sent to peak bodies within consumer groups, property developers and telecommunication carriers, as well as to all levels of governments. [22]

3.38 The committee also notes that the changes to the telecommunications regulatory regime that are currently before the Senate will impact on the greenfields implementation policy.

Order of the Senate

3.39 On 13 May 2009, the Senate agreed to a motion put forward by Senator Minchin, as the Leader of the Opposition in the Senate, that consideration of any NBN-related bill be postponed until the day after the government tabled the final report of the NBN Panel of Experts, (relating to the now-terminated RFP process) and the formal report by the ACCC to the Panel of Experts.

3.40 At the time of writing, the Order of the Senate remains in place. However, on 29 October 2009, the Senate agreed to exempt the Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009 from the order.

First NBN related legislation

3.41 On 25 June 2009, the government introduced the Telecommunications Legislation Amendment (NBN Measures No 1) Bill 2009, which was immediately referred to the Standing Committee on the Environment, Communications and the Arts Legislative Committee. This bill sought to amend the *Telecommunications Act 1997* by giving the Minister the power to require that telecommunications carriers provide network information.

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19 *Fibre-to-the-premises in greenfields estates,* p 2.

20 See *Fibre-to-the-premises in greenfields estates,* pp 2, 10, 11, 12, and 13.

21 *Fibre-to-the-premises in greenfields estates,* p 19.

22 Address to MAV Local Government Technology Solutions Conference, delivered on behalf of the Minister by the Hon. Richard Marles MP.

3.42 The inquiry reported to the Senate on 17 August 2009, with the majority report recommending that the Bill should be passed without amendments. Due to the aforementioned Order of the Senate, however, further consideration of this Bill did not occur in the Senate.

3.43 The government subsequently introduced an almost identical piece of legislation into the House of Representatives, where it was passed and sent to the Senate on 21 October 2009.

July – September 2009

3.44 The focus of activity during the month of July was the supposed commencement of the roll-out in Tasmania and the establishment of NBN Tasmania for that purpose. Mr Michael Quigley was appointed as Executive Chairman and Chief Executive Officer of NBN Co Ltd. On 6 August 2009, five board members, all to be Directors for the NBN Co, were announced by the government; these were:

- Mr Doug Campbell;
- Mr Peter Hay;
- Ms Siobhan McKenna;
- Ms Diane Smith-Gander; and
- Mr Gene Tilbrook.[23]

3.45 The following week, directors were appointed to NBN Tasmania. One of the NBN Co Directors, Mr Doug Campbell, was announced as the Executive Chair of NBN Tasmania, with other directors named as Ms Alison Terry; Ms Jody Fassina; and Mr Greg McCann.

3.46 By early September there were 12 full time staff working within the NBN Co; this had grown to 40 at the time of the Senate Estimates hearings in mid October.

Second NBN related legislation

3.47 On 15 September 2009, the government introduced the Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009 (the Bill), a consequence of the extensive submission process on regulatory reforms. The package of reforms in the Bill attempts to address anti-competitive behaviour in the telecommunications industry, and has been long awaited by the industry. The Bill was sent to the Environment, Communications and the Arts Standing Legislative Committee (ECA Committee) for inquiry and report.

3.48 Although only given four weeks to investigate what can be described as the most extensive regulatory reform in the industry for many years, 119 written submissions were received, in addition to 224 form letters. The government-led

23 *NBN Co Limited Annual Report 2008-09*, p. 3.

committee reported on 26 October 2009, with the majority recommending that the Bill be passed. However, Coalition Senators were concerned by many aspects of the Bill, particularly those relating to the proposed separation of Telstra. The Coalition Dissenting Report recommended that:

> …further consideration of the bill not proceed until after the NBN Implementation Study has been completed, the Government has tabled its response to the Implementation Study and the Senate has certainty about the network structure of the NBN Co and the regularity framework which will surround it.[24]

3.49 This recommendation once again highlights the critical dependence of the future fate of the telecommunications industry on the findings of the government's Implementation Study.

3.50 The Bill was passed in the House of Representatives on 21 October. Although further consideration of the Bill was temporarily delayed by the existing Order of the Senate, cross-bench negotiations by the government overcame this obstacle on 29 October 2009, with debate scheduled to proceed in final sitting weeks of November 2009.

Tasmanian roll-out commences

3.51 On 15 September 2009, Aurora Energy announced that work had begun on the Tasmanian deployment of the NBN. Workmen commenced the roll-out at Midway Point, near Hobart, with work on the section between Scottsdale and George Town anticipated before Christmas 2009.

October – November 2009

3.52 On 8 October came the announcement of the first successful supply contract for over 300 kilometres of backhaul fibre for the Tasmanian NBN deployment.

3.53 Other events of note include the release on 22 October 2009 by Communications Alliance of a discussion paper on the *High Level Architecture Options for the NBN*. The objective of the paper is to:

> …represent a range of scenarios and options that the Communications Alliance working groups have identified with the purpose of facilitating broader discussion and decision making on the NBN.[25]

3.54 It is anticipated that this will in turn inform the establishment of 'an industry agreed set of NBN reference architecture options.'[26]

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24 ECA Committee Report, *Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009*, pp 44-45.

25 *Draft NBN Reference Architecture – High Level Architecture Options of the NBN*, Communications Alliance, October 2009, p. 1.

3.55 In the final week of October, the Business Council of Australia (BCA) released a report examining the Rudd Government's selection and prioritisation of Australian infrastructure projects of national significance. The NBN was highlighted in this report, with BCA condemning the government for embarking on this project without conducting a rigorous cost-benefit analysis.

3.56 This issue has, quite justifiably, plagued the government since the 7 April announcement. However, the government continues to refuse to conduct a robust analysis of costs and benefits of the NBN, despite the government estimating the project will cost up to $43 billion. The issue of cost-benefit analysis is further discussed in chapter six.

3.57 In late October the Productivity Commission tabled its Annual Report 2008-09; this report also contained strong criticism of the government for not undertaking a rigorous cost-benefit analysis on the NBN and is featured further in chapter six of this report.

3.58 On 29 October 2009 there was a joint ministerial announcement that the bidding process for the 'Smart Grid Smart City' initiative had commenced; further details of smart grid and other broadband applications can be found in chapter seven of this report.

3.59 On 4 November 2009, the government announced that on 10 and 11 December 2009 it will host a 'major forum to explore Australia's potential in the digital economy.[27]

3.60 With reference to the role that the NBN will take in shaping the digital future of Australia, the media release stated:

> The National Broadband Network will turbo-charge our digital economy and enable Australia to become a global leader, harnessing new applications to support economic growth and service delivery. …
>
> This forum will highlight the opportunities and help our research community and commercial sectors plan for the digital applications, services and business models of the future.

3.61 Leading keynote speakers will include Mr Mike Quigley, CEO of the NBN Co.

3.62 At the time of reporting, the Senate had not yet considered the Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009.

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26 *Draft NBN Reference Architecture – High Level Architecture Options of the NBN*, Communications Alliance, October 2009, p. 2.

27 http://www.minister.dbcde.gov.au/media/media_releases/2009/101, accessed 10 November 2009.

Chapter Four

To bury or not to bury…

4.1 In rolling out fibre-optic cable to 90 per cent of Australian homes, workplaces and schools, there are two main choices for the mode of deployment: underground cabling and aerial cabling. The committee strongly believes that this issue requires greater scrutiny by the government, industry and the Australian people; consequently this chapter is dedicated to this crucial issue.

Aerial

4.2 To provide optical fibre cables aerially, the NBN Co will need to either use existing electricity utility infrastructure, or to build their own poles where there are none in existence. Aerial cabling is most likely to be used in existing, or 'brownfield' areas, where telecommunications and other infrastructure already exists. Extrapolating from that assumption, and taking guidance from the Tasmanian roll-out, the committee believes that aerial cabling may be deployed over the vast majority of the 90 per cent FTTP footprint.

Deployment requirements and issues

4.3 To the casual observer, the option of utilising existing power poles to carry the fibre optic cabling required for the FTTP project seems an obvious and efficient solution. The infrastructure is already there, so all that might be required would be the technical slicing and stringing of cables between poles to connect each premises.

tasCOLT pilot

4.4 This was the assumption made during the planning of the tasCOLT pilot that connected several small pockets of homes in Tasmania to a FTTP network utilising existing infrastructure. The pilot objectives were to create a FTTP network using Passive Optical network technology, deployed mainly via overhead cables owned by Aurora Energy, and delivering network services capable of average speeds up to 100Mbps. The completed tasCOLT network passes approximately 1200 premises, connecting approximately 600 of those. Over half of the connected premises have subscribed to the full range of services available under the project. [1]

4.5 However, the final report of the tasCOLT project provides evidence that aerial cabling was not the quick-fix that planners had anticipated. The rollout of the pilot was expected to take six months, but actually took almost two years, with the report

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1 *Report on the rollout of the tasCOLT Fibre to the premises Commercial Trial October 2008,* pp 3-5.

noting that 'installing optic fibre in "brownfield" areas is complex.'[2] The reported reasons for the massive overrun on the project timeframe were:

- The requirement to obtain local government approvals for aerial cable deployment, including an environmental impact study and approvals from the Tasmanian Heritage Council, where applicable;
- The integration of the optical fibre system with Aurora Energy's existing infrastructure, which involved:
  - compliance with OH&S standards;
  - compliance with Australian Engineering standards;
  - possible reconfiguration of existing poles and cabling; and
  - possible replacement of some poles and cabling.
- The availability and affordability of skilled installation contractors;
- The requirement of approvals from landlords to connect the drop cable to each property.[3]

4.6 In a revealing admission, the report made the statement that:

> Local government is a key player in the deployment of optic fibre networks and should be included as a partner in any project.[4]

General aerial issues

4.7 The documented lessons from the tasCOLT project validate the concerns expressed by several witnesses in relation to the use of aerial cabling. Mr Peter Downey, Chairman of Cables Downunder, gave evidence and also provided a written submission jointly with Dr Ross Kelso elaborating on several of the issues identified in the tasCOLT report.

4.8 When discussing the impact of aerial construction, the submission noted that electrical safety codes require power lines and optical fibre cables to be at separated, predetermined and standardised heights. An example of the impact of these codes from tasCOLT is illustrated at figure 2, with a photo of a typical pole at figure 3. The submission states that cable heights must also comply with road traffic regulations, with the lowest cable being no less than five metres above the crown of the road.[5]

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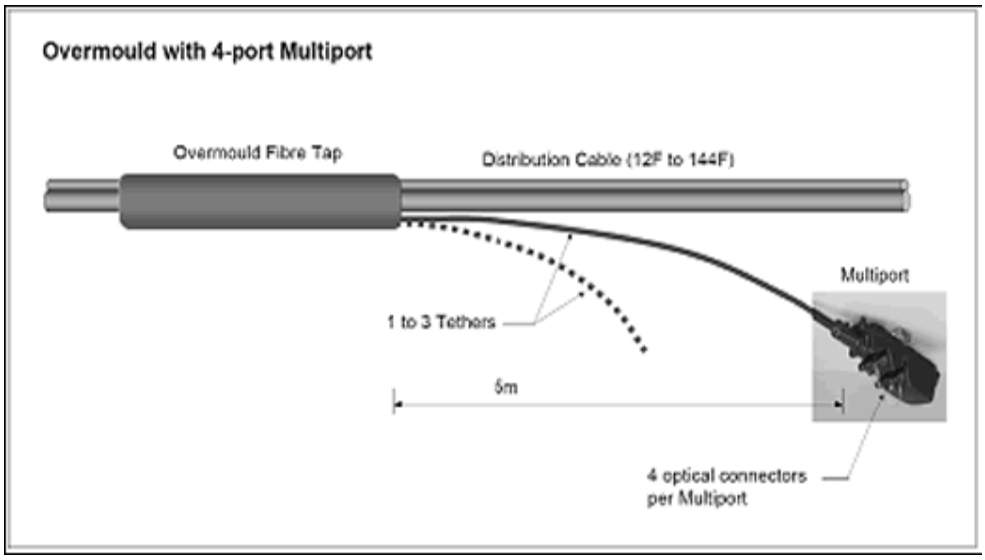
2 *Report on the rollout of the tasCOLT Fibre to the premises Commercial Trial October 2008,* p. 20.

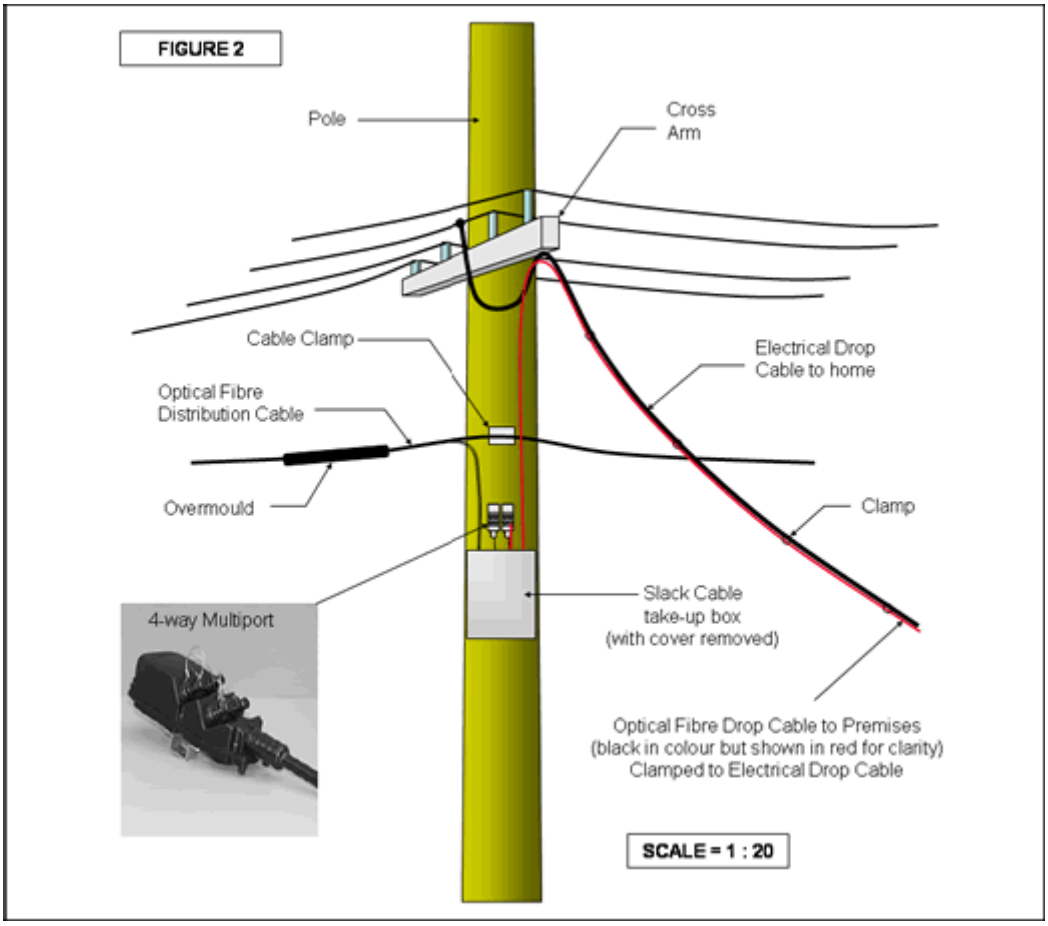
3 *Report on the rollout of the tasCOLT Fibre to the premises Commercial Trial October 2008,* p. 19.

4 *Report on the rollout of the tasCOLT Fibre to the premises Commercial Trial October 2008,* p. 20.

5 Kelso and Downey, *Submission* 94, p. 4.

Figure 2: Representation of aerial cabling[6]





6 *Report on the rollout of the tasCOLT Fibre to the premises Commercial Trial October 2008*, p. 13.

4.9 The submission states that during the Hybrid Fibre Coaxial (HFC) deployment by Telstra and Optus between 1995 and 1997, utilities companies determined that existing pole infrastructure was insufficient, and that existing poles had to be replaced or strengthened. The photo at Figure 3 illustrates efforts to strengthen and heighten a pole in a Brisbane suburb. Mr Downey explained that height clearance issues are exacerbated in hilly, or even mildly sloping, street scapes.

4.10 Mr Downey gave evidence that by deploying aerial cables Australia would be putting itself further behind international efforts, where 'the majority of communications and electricity cables are underground.'

> As an example, Germany began burying telegraph cables in 1845, London began burying electricity cables in 1882, followed by New York in 1888. We have found that many third world countries, such as Rwanda and Somalia in Africa, have underground fibre optic and electricity networks. Today UK is 85 per cent underground and Europe is 70 per cent and rising.[7]

4.11 Mr Downey also noted the lack of public awareness that aerial cabling is likely to be the mode of the NBN's deployment in many urban areas.

> At this stage I do not believe that the general public are aware that the NBN will be erected overhead. At various functions I have attended recently at which I have raised the issue there has been stunned silence followed by comments such as, 'You are kidding, aren't you?' …
>
> It does not matter what size the overhead cable is, it will be the fact that it is an overhead cable that raises the ire of the public.[8]

4.12 Even if aerial cabling is proven to be more efficient than underground cabling to deploy, there are legacy issues with aerial cabling that will remain a burden to governments for the life of the aerial cabling. One obvious cost is in keeping trees trimmed and well away from aerial cabling. The subsequent 'mutilation' of trees will continue to increase the visual pollution of aerial cabling, in addition to the annual cost of labour to prune the trees.

4.13 A further bottleneck that was caused by the use of aerial cabling in the tasCOLT project was the lack of skilled technicians. In order to rollout aerial cabling, technicians with electrical, communications and fibre optic slicing skills are needed.[9] If the government wishes to pursue aerial cabling, it will need to address this issue immediately and ensure that the additional time of training is factored in – as was clearly illustrated during the tasCOLT pilot.

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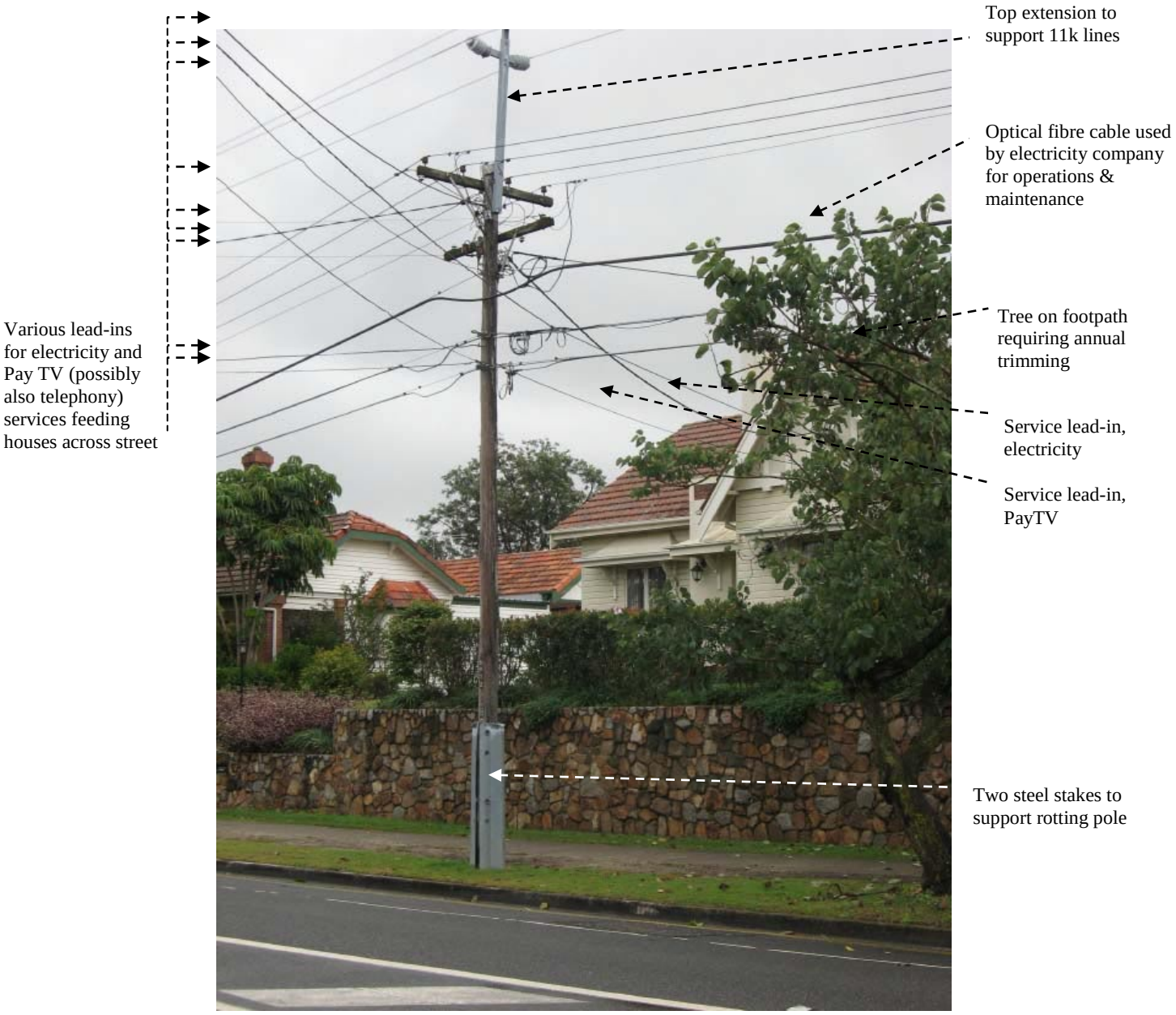
7 Mr Peter Downey, *Committee Hansard*, Canberra, 1 October 2009, pp 29-30.

8 Mr Downey, *Committee Hansard*, Canberra, 1 October 2009, p. 30.

9 See discussion, Mr Downey, *Committee Hansard*, Canberra, 1 October 2009, p. 31.

Figure 3: Visual impact of aerial cabling with required spacing[10]

Typical example of a pole that has been extended and strengthened to support additional HFC cables.



Picture taken by Ross Kelso

4.14 There is also a concern that aerial construction of the NBN 'will seriously degrade service reliability.'[11] Despite all efforts to keep power lines free from

10 Kelso and Downey, *Submission* 94, p.9.

11 Kelso and Downey, *Submission* 94, p.8.

obstructions, power lines and aerial optical cables are frequently brought down by severe storm conditions across the nation – again with ongoing repair costs.

4.15 For example, Mr Downey pointed to the threat to service reliability caused by bushfires every year across Australia. This was most evident in the tragic Victorian bushfires in February 2009:

> Many Victorian communities were put at risk simple because the overhead cabling that provided them with communications and power was destroyed long before those communities were aware of their peril.[12]

4.16 Conversely, the protection offered by below-ground infrastructure which escaped destruction was discussed by Mr Brad Wynter from the City of Whittlesea, which was devastated in those fires. Whittlesea council had been proactive in planning the installation of fibre conduits in greenfields estates. When asked whether underground services in the town had been any better off than the aerial cabling, Mr Wynter replied:

> Without a doubt, the underground infrastructure was preserved. At Strathewen, which is a neighbouring municipality, the only infrastructure that was damaged was the exchange, the above-ground infrastructure. In that case, Telstra brought in a portable exchange on the back of a truck and basically connected that up and had those services operating within one day.[13]

4.17 A further negative aspect of aerial cabling is the damage caused by traffic accidents between vehicles and power poles, both to surrounding businesses as a result of interruptions in communications and electricity services, and more importantly to individual health and life. There is also of course the cost of repairing both the pole and the cabling.

Underground

The technology

4.18 Underground cabling (undergrounding) is a more labour-intensive option for deploying the FTTP network. High labour costs consequently increases in the cost of deployment. Undergrounding costs are minimised in greenfield estates, where the cabling ground works can be undertaken as part of establishing the overall infrastructure of the greenfield area. This also minimises the impact of trenching on traffic, businesses and utility services to the community, as it can be completed prior to the area being populated.

4.19 Retrofitting of underground cabling is much more costly than greenfields undergrounding, due to the need to trench along and subsequently repair roads and

12 Mr Downey, *Committee Hansard,* Canberra, 1 October 2009, p. 30

13 Mr Brad Wynter, *Committee Hansard,* Melbourne, 7 October 2009, p. 91.

footpaths, in close proximity to existing underground infrastructure. In highly built-up areas there is the requirement of using horizontal trenching methods to minimise road closures and traffic disruption.

Tasmanian example

4.20 The Tasmanian government imported from Germany the latest in trench-digging machinery for laying fibre optic cables. This machinery was used in Hobart, which was the first time it had been used in Australia. The giant wheel-saw can cut through road surfaces with minimal disruption to traffic and minimal damage to existing road or footpaths.

4.21 The details of this new horizontal trenching technology were discussed by several witnesses. For example, Mr Downey explained that the technology is capable of 'trenchless' deployment of underground cables. By using a horizontal boring head with imbedded sonar detection, Mr Downey explained that:

> …you basically dig a hole two foot by three foot … at your entry point and then put another at your exit point and you just drill a [horizontal] hole underground.[14]

4.22 Mr Downey went on to explain that a worker with a sonar wand walks along the street, able to detect where the boring head is, and hence steers the head to avoid other underground infrastructure. This technique can be employed to lay cable under a busy intersection, avoiding any traffic disruption. Although understandably more expensive that trenching, this could minimise the disruption to businesses that would otherwise occur during the trenching works, also allow the continuity of other utility and communication services.

Improvement in planning coordination

4.23 The need for planning and consultation at the local government level is crucial for the deployment of underground cabling in both greenfield and brownfield estates. Issues that require consideration for greenfields were outlined by Mr Wynter from the Whittlesea Council at the Melbourne hearing.

4.24 The Whittlesea Council identified that the future retrofitting of fibre in greenfield estates would be very difficult, as all infrastructure is underground. The Council recognised that it could address this in future greenfields development planning by mandating that an additional conduit be laid for the future provision of fibre to the premises. As the council did not have a carrier's licence, and consequently could not lay the fibre themselves, they lobbied developers to provide a subsidy for licensed carriers who wanted to lay the fibre. The council now has two estates that are FFTP connected and providing 100Mbps services.[15]

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14 Mr Downey, *Committee Hansard*, Canberra, 1 October 2009, p. 37.

15 See discussion, Mr Wynter, *Committee Hansard*, Melbourne, 7 October 2009, pp 87-88.

4.25 Commenting on the cost saving of laying conduit at the time of development, Mr Wynter said that:

> We know that the cost of putting the conduits in at the time of subdivision is about half the cost of doing retrospectively – the main reason being that [developers] open up the trenches to put in all the other services, but to retrofit they have to bore under roads and footpaths …[16]

4.26 The benefits of laying conduit at the time of development were also highlighted to the committee by Professor Walter Green, and are detailed in the committee's first Interim Report. Professor Green not only outlined the economic efficiencies, but also highlighted the crucial need for improved coordination of infrastructure planning across all tiers of government and the private sector developers. In fact, Professor Green seemed to pre-empt the government's thinking when he stated that:

> State and Federal governments should in fact be mandating, for new estates or greenfield estates, that provision for the fibre infrastructure should be made.[17]

4.27 Professor Green was also able to provide the committee with examples where improved coordination between governments and developers had provided improved outcomes in major state infrastructure projects, including the recently completed Perth to Mandurah railway:

> …[W]here state planning has…been lucky is in terms of the Perth to Mandurah railway line. I…proposed…or motivated to get the conduit next to the railway line. Putting fibre in there is having an impact on broadband…[18]

Lack of standards and regulation

4.28 A critical issue raised by Mr Wynter was the lack of applicable standards for underground networks:

> We had some work done in getting a commercial developer to develop some standards so that the conduit would be suitable for any type of fibre technology, because there is a range of fibre technology, some of which require more space than others, and we built some standards around that conduit network to ensure it could be future-proof and could cater for any type of technology.[19]

4.29 The committee is concerned by this lack of standardised practice, and urges the government to bring forward the development of standards that would be

16 Mr Wynter, *Committee Hansard*, Melbourne, 7 October 2009, p.89.

17 Professor Walter Green, *Committee Hansard*, Perth, 6 November 2008, p. 56.

18 Professor Green, *Committee Hansard*, Perth, 6 November 2008, p. 56

19 Mr Wynter, *Committee Hansard*, Melbourne, 7 October 2009, pp 87-88.

applicable nationally to greenfields conduit networking. The committee notes that although there are various current standards for the retrofitting of aerial cabling, the government needs to ensure there are national standards for the retrofitting of underground cabling.

4.30 Mr Wynter also noted the lack of regulation at the federal level, which became evident when the Whittlesea Council came to enter into agreements with carriers to ensure they provided FTTP services on an open access basis:

> The conduit belongs to council, and it is our mechanism of ensuring that we get our three policy objectives met … open access, scaleable infrastructure and a rich mix of services on a competitive basis. ... Currently, because there is no regulation at the federal level, we are the ones that have to regulate the open access, and [retaining ownership of the conduit] is our mechanism for doing so.[20]

Comparative advantages and disadvantages

4.31 It is apparent that the government is desperate to demonstrate progress on the NBN, particularly with the commencement of an election year in 2010. The Committee is concerned that the Government is looking to implement aerial cabling in as large an area as quickly as possible to serve this need.

4.32 Despite the government refusing to release the full report of the Panel of Experts, their negotiations with the Tasmanian Government were a clear indication that the Expert Panel thought there was merit in the Tasmanian Government bid for the FTTN RFP process. This bid no doubt would have aimed to leverage the experience and lessons gained during the tasCOLT pilots, the majority of which involved retrofitting aerial cabling in brownfield estates.

Aerial advantages

4.33 The main advantage of deploying aerial cabling is in the apparent time-saving use of existing infrastructure. However, as evidenced by the experience of the tasCOLT pilots, this anticipated expediency did not eventuate

4.34 If aerial deployment is effectively planned to ensure the required approvals and skill shortages do not cause bottlenecks, aerial cabling may be more cost effective. This in turn could enable the NBN Co to more quickly become commercially viable. However, the ongoing maintenance and repair costs would be a continual burden for the operator.

Underground benefits

4.35 The benefits of underground cabling are numerous and long term, as has been outlined above. These benefits include:

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20 Mr Wynter, *Committee Hansard*, Melbourne, 7 October 2009, p.91.

- underground cabling is a future proofed, long term solution;
- immediate economic stimulus of increased employment across a broader section of local communities;
- lack of visual pollution;
- consequential increase in property values;
- lack of impact from climatic extremes, including bushfires and flooding;
- consequential increased reliability;
- decreased maintenance costs;
- decreased associated costs of pole replacements (due to motor vehicle accidents);
- no need for street tree mutilation;
- decreased OH&S issues;
- decreased electrical transmission losses with consequential decrease in greenhouse gas emissions[21];
- smart deployment technologies will enable skills development while minimising disruption to telecommunication and utility services; and
- decreased negative impact on local businesses during deployment.

4.36 Deploying the NBN fibre optical cables underground will result in a long term, future proofed solution. Initial increased deployment cost and time frames can be mitigated by the overall decrease in ongoing costs over the life of the fibre. This will provide a pathway for the long term commercial viability of the network.

4.37 Cables Downunder went further in their submission to advocate that the government should utilise the NBN opportunity to embark on burying all aerial utility infrastructure as a long term, truly nation building project.[22] The submission quoted a comprehensive study undertaken around 1998 'into the practical options for retrospectively undergrounding both aerial electricity lines and telecommunication cables throughout urban and suburban Australia.'[23]

4.38 Included in the study were all urban and suburban localities with a population over 30,000, which then equated to around 90 per cent of the population. The average cost of retrofitting underground utilities was then estimated at $5516 per household. However, with today's innovative design, installation improvements and economies of

21 See discussion Kelso and Downey, *Submission* 94, p.7.

22 Kelso and Downey, *Submission* 94, p.8.

23 Kelso and Downey, *Submission* 94, p.6.

scale, the submission states that figure could be closer to $4900 per household in today's figures.[24]

Dearth of information

4.39 The committee is concerned at the dearth of current information relating to comparative costs of aerial versus underground deployment of the NBN, despite the best efforts by the committee to source that information. Witnesses generally pointed to the companies manufacturing and/or deploying fibre currently as the logical source of that information.

4.40 However, when the committee sought that information from Aurora Energy, the partner in the NBN Tasmania venture, the major infrastructure supplier and owner refused to reveal likely costs. They instead referred the committee's question to the NBN Tasmania. The response was eventually provided was completely unhelpful, devoid of any dollar value, noting only that:

> In general terms installing optical fibre cable on overhead structures is substantially cheaper than installing the same infrastructure in a new underground environment.[25]

4.41 The committee also highlights that tender documents released by Aurora Energy for the Tasmanian roll-out confirm that 560km of the 580km of cable will be aerial. This is with little consultation with the general community that will be impacted by the aerial cabling, nor with the local councils in which the roll-out is to occur.

Committee view

4.42 The committee remains concerned that the perceived short term benefits of aerial deployment will over-ride sound business practices, which should dictate that major national infrastructure is built seeking long term benefits.

4.43 The committee strongly cautions against expediency where it would clearly not be in the long term interest of public investment. The short term cost efficiency gains that may result in short term political benefits need to be weighed against the long term efficiencies of underground cabling. As submitted by Cables Downunder:

> It would be foolish to embark on a nation-building exercise based on such a short term approach to construction cost and roll-out speed.[26]

4.44 Additionally, as can be seen in the previous photograph, the outcome is far from ideal, and is certainly not 'future-proofed'. Australia is already more than a

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24 Kelso and Downey, *Submission* 94, p.7.

25 Answers to Written Questions on Notice, NBN Tasmania Ltd, Question 3, 10 November 2009.

26 Kelso and Downey, *Submission* 94, p.6.

century behind major international competitors that have buried the vast majority of their electricity and telecommunications cables.

4.45 The committee highlights that the aerial deployment of the NBN merely provides a quick-fix, bandaid solution that is not worthy of an infrastructure project of this magnitude.

4.46 The committee therefore urges the government to favour underground cabling in the remainder of the 90 per cent FTTP footprint, ensuring long term, future proof benefits for the network, its investors and its consumers.

Chapter Five

Establishment of NBN Co Limited

5.1 One of the terms of reference for this inquiry was for that the committee's investigations include:

> 2. b) the ownership, governance and operating arrangements of the NBN company and any NBN related entities.[1]

5.2 This chapter considers the establishment of the government corporations which will underpin the company established by the government to build and operate the National Broadband Network, including legislation, other legal documents and funding arrangements.

NBN Legislation

5.3 At the time of reporting, no legislation outlining the way in which the NBN will be rolled out, managed and funded has yet been introduced into the Parliament. This includes the promised legislation that was to outline the governance framework for the NBN Co. The only legislation that has been introduced has been somewhat tangential to the proposal itself, specifically:

- The Telecommunications Legislation Amendment (National Broadband Network Measures-Network Information Bill) 2009 was introduced into the House of Representatives on 19 August 2009. The Bill would 'enable the Minister to require telecommunications carriers and utilities to give information to the Commonwealth about their telecommunications networks'.[2] This followed the inquiry into a virtually identical bill by the Senate Standing Committee on the Environment, Communications and the Arts, the report of which was tabled in the Senate on 17 August 2009.
- The Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009 was introduced into the House of Representatives on 15 September 2009. The Bill seeks to amend the regulatory framework of the telecommunications industry in an attempt to improve regulation and competition while the NBN is being built. As discussed in chapter eight, however, the Bill is not required for the building or operation of the NBN.

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1 Senate Select Committee on the National Broadband Network, Terms of Reference, http://www.aph.gov.au/Senate/committee/broadband_ctte/tor.htm, accessed 15 November 2009.

2 Mr Jonathan Chowns, *Bills Digest No 22:2009-10: Telecommunications Legislation Amendment (National broadband Network Measures – Network information) Bill 2009*, 7 September 2009.

5.4 Legislation relating to the governance of NBN Co and the installation of fibre in greenfields developments have been mentioned in various media, [3] and were also listed on the Department of Broadband, Communications and the Digital Economy's website. The government has since stated that these bills will not now be introduced into parliament until 2010.

Establishment of NBN Company

5.5 As noted in the committee's previous report, the Minister for Broadband, Communications and the Digital Economy, Senator the Hon Stephen Conroy, announced the establishment of the NBN Company Limited (NBN Co) on 7 April 2009.[4]

5.6 The company was prescribed as a Government Business Enterprise (GBE) in August 2009, and has two shareholders: the Minister for Broadband, Communications and the Digital Economy, and the Minister for Finance and Deregulation.[5]

5.7 Although the legislation to provide the governance framework of the NBN Co has not been forthcoming, a Constitution for the company has been established. The Constitution of NBN Co remains very basic, and offers little indication of the way in which the company is to be operated or of its objectives.

The NBN Co Board

5.8 Under clause 12 of NBN Co's Constitution, the Board of the company was established and given the power to appoint the CEO, in consultation with the Commonwealth. Company directors are appointed by the Commonwealth under clause 5.4, for a maximum term of three years, and are eligible for reappointment.[6] The remuneration package for directors is set by the Remuneration Tribunal.[7]

5.9 On 24 July 2009, Mr Michael Quigley was appointed as the 'Executive Chairman' of NBN Co.[8] Mr Quigley is an electrical engineer with substantial experience in the telecommunications sector; his appointment was reported in *The Australian* as 'giv[ing] the [NBN] project some much needed credibility'.[9]

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3 See for example: James Riley, 'NBN Co authorised to acquire assets now: Conroy', *IT Wire*, 19 October 2009, at: http://www.itwire.com/content/view/28628/127/ (accessed 28 October 2009).

4 Senate Select Committee on the National Broadband Network, *Second Interim Report: Another Fork in the Road to National Broadband*, May 2009, p. 39.

5 Mr Michael Quigley, *Committee Hansard*, Canberra, 1 October 2009, p. 58.

6 Constitution of ACN 136 533 741 Limited, clause 5.5.

7 Constitution of ACN 136 533 741 Limited, clause 5.7.

8 Senator the Hon Stephen Conroy, 'Mike Quigley appointed Executive Chairman of NBN Co', *Media Release*, 25 July 2009, at http://www.minister.dbcde.gov.au/media/media_releases/2009/067.

9 Jennifer Hewatt and Michael Sainsbury, 'Hiring of Mike Quigley brings credibility to broadband', *The Australian*, 27 July 2009.

5.10 Mr Quigley is presently both the Chairman and the Chief Executive Officer of NBN Co.[10] At the Supplementary Estimates hearing in October 2009, Senator Minchin raised concerns about this model from a corporate governance perspective, and was informed by the minister that Mr Quigley would be performing both jobs:

> …just in the start-up phase. We thought that it would work best in this manner but I am a fan—as you have heard me say many times on corporate governance—of a chair and an executive being separate figures. But just in the short term—for three months or six months—we are just seeing how we go. But there is no question we will move to a chair and a CEO as separate individuals.[11]

5.11 In terms of timing, the minister told the Environment, Communications and the Arts Committee that the arrangement is not anticipated to last longer than 12 months.[12]

5.12 Clause 5.4.1 of the NBN Co constitution provides that there is to be a minimum of three and a maximum of nine Company Directors. At the Supplementary Estimates hearing, the minister stated that there are currently five board members, plus the minister, and that the minister is hoping to fill two more positions in the near future.[13]

NBN Co staffing

5.13 Details of staffing numbers were provided at the Supplementary Estimates hearing in October 2009. At that time, the NBN Co had 13 full-time employees and 25 contracted staff, whose locations were spread between Sydney, Canberra and Melbourne.[14]

5.14 The Committee is disturbed by the preparedness of the government to commit to the $1.95 million annual salary of NBN Chairman, Mr Michael Quigley, when the viability of the project remains unknown and Implementation Study is yet to be completed. Compounding this, the government has also agreed to $450,000 in total annual fees for the five part-time NBN Co directors, in addition to the exorbitant

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10 Mr Quigley, Senate Standing Committee on Environment, Communications and the Arts, *Supplementary Estimates Proof Hansard*, 19 October 2009, p. 61.

11 Senator the Hon Stephen Conroy, Senate Standing Committee on Environment, Communications and the Arts, *Supplementary Estimates Proof Hansard*, 19 October 2009, p 61.

12 Senator the Hon Stephen Conroy, Senate Standing Committee on Environment, Communications and the Arts, *Supplementary Estimates Proof Hansard*, 19 October 2009, p. 61.

13 Senator the Hon Stephen Conroy, Senate Standing Committee on Environment, Communications and the Arts, *Supplementary Estimates Proof Hansard*, 19 October 2009, p 62.

14 Mr Quigley, Senate Standing Committee on Environment, Communications and the Arts, *Supplementary Estimates Proof Hansard*, 19 October 2009, p. 64.

annual salary of $450,000 recently announced for the new NBN Co Government Relations Manager, Mr Mike Kaiser.

Government Funding

5.15 Estimates also heard that the working capital of NBN Co was $60,000,010, comprised of two separate funding injections of $10 million and $50 million, plus the start-up capital of $10. The appropriation of this funding was made under the Building Australia Fund (BAF) legislation following the processes established in that legislation.[15]

5.16 There was a total of $2 billion on which the ministers had the authority to draw for NBN Co. This was from the original $2.4 billion that formed the previous Communications Fund, with the minister noting that $400 million of that had been 'earmarked for the Glasson recommendations'. [16]

5.17 Under clause 9 of the NBN Co constitution, the Commonwealth has the authority to increase the company's maximum share capital.

Future funding strategy

5.18 The minister told Estimates that, at this stage, the $2 billion in the BAF is the maximum equity that the government has agreed to put into NBN Co. However, Mr Murray, Executive Director of Policy and Governance at the Department of Treasury explained that:

> Even though the government is committed up to the whole $43 billion, the proposal is that 49 per cent would come from the private sector over the eight-year period. The assumption has been made that the other 51 per cent would have around a 50-50 debt-equity ration…That leaves you with an equity funding by the government of about $11 billion.[17]

5.19 Taking the $2.4 billion originally provided in the BAF, that leaves the government a shortfall of $8.6 billion. In order the raise the additional $8.6 billion that the government has agreed to contribute to the NBN, the government has indicated that it is likely to issue 'Aussie Infrastructure Bonds'. [18]

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15 Mr Mark Heazlett, Senate Standing Committee on Environment, Communications and the Arts, *Supplementary Estimates Proof Hansard*, 19 October 2009, p. 65.

16 Senator the Hon Stephen Conroy, Senate Standing Committee on Environment, Communications and the Arts, *Supplementary Estimates Proof Hansard*, 19 October 2009, p. 66.

17 Mr Richard Murray, Executive Director, Policy and Governance, Department of the Treasury, *Committee Hansard*, Canberra, 1 October 2009, p. 5.

18 Senator the Hon Stephen Conroy, Senate Standing Committee on Environment, Communications and the Arts, *Supplementary Estimates Hansard*, 19 October 2009, p. 66.

5.20 At this stage, the government has indicated that it is not in a position to give the committee any further information about the structure or timing of the bonds. Treasury informed the committee that:

> No further indication on the timing of the first issuance of Aussie Infrastructure Bonds (AIBs) is available from the 2009-10 Budget.
>
> The structure and form of AIBs will be informed by the National Broadband Network implementation study, including the volume of the task and the timing of financing requirements. Consideration of AIB issues will continue in parallel with the implementation study. [19]

5.21 At the committee's public hearing on 20 July 2009 in Canberra, Mr Lyon, the Executive Director of Infrastructure Partnerships Australia warned that:

> The use of Treasury issuance in the form of Aussie Infrastructure Bonds is an appropriate way to raise public debt to fund the public component of the project, but the use of debt must always be prudently managed within the context of the broader economic management of the Commonwealth's balance sheet.[20]

5.22 In this regard, Treasury stated that:

> An addition of $8.6 billion to the borrowing program, spread over (say) four years, would represent an increase of only $2.15 billion per annum. An adjustment of this magnitude would be very manageable.[21]

5.23 Despite this assurance from Treasury, the committee remains deeply concerned at the lack of detailed information regarding the government's proposal to issue Aussie Infrastructure Bonds. The committee draws attention again to principles outlined by the Productivity Commission in this regard:

> ,,,bonds, if structured appropriately, can provide a level of market-based discipline to the project. To achieve this, the bonds need to be serviced from income generated by the infrastructure project rather than from general tax receipts.[22]

5.24 The committee highlights that in order for this principle to operate, the NBN Co must be a commercially viable entity. Alternatively, the Commission states the bonds could be just another government bond, noting that in this instance:

> …the crucial issue is the cost of borrowing via these bonds compared with the cost of standard Government debt raising. Such bonds may be less liquid and involve higher transaction costs. … Should the Government

19 Department of Treasury, Answers to Questions taken on Notice, 1 October 2009, p. 8.

20 Mr Brendan Lyon, Executive Director, Infrastructure Partnerships Australia, *Committee Hansard*, 20 July 2009, p. 18.

21 Department of Treasury, Answers to Questions taken on Notice, 1 October 2009, p. 7.

22 Productivity Commission, *Submission* 87, p. 8.

> provide tax concessions on the bonds to make them more attractive to purchasers, it should fully account for the cost of the concessions.[23]

5.25 As clearly expressed by the Commission, the bottom line is the overall cost of the borrowings, noting that:

> …tax concessions may not appear on the Government's balance sheet. The key issue for Government is the cost of borrowing, taking into account all concessions.[24]

5.26 The committee once again urges for the government to ensure the Implementation Study remains on schedule for February 2010, and provides in-depth detail of how the NBN Co will be funded through issuance of AIBs.

Objects of association

5.27 At the time of reporting, the objects of association for the NBN Co are:

> ..to roll out, operate and maintain a national wholesale broadband network while working closely with the Commonwealth during the implementation study in order to facilitate the implementation of Australian Government broadband policy and regulation.[25]

5.28 The minister has stated on a number of occasions that NBN Co is intended to run as a commercial operation, and run profitably.[26] At Supplementary Estimates the minister agreed with a question put to him by Senator Minchin that the Directors of NBN Co are have the ordinary fiduciary obligations to shareholders under Corporations Law. [27]

5.29 The committee highlights that these statements of the objects of NBN Co seem to be directly contradictory with the Constitution of NBN Tasmania Limited.

Establishment of Tasmania NBN Co

5.30 To date, Tasmania is the only state or territory in Australia in which the NBN rollout has begun. On 24 July 2009, the Minister for Broadband, Communications and

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23 Productivity Commission, *Submission* 87, p. 8.

24 Productivity Commission, *Submission* 87, p. 8.

25 Constitution of ACN 136 533 741 Limited, clause 4.1.1.

26 Senator the Hon Stephen Conroy, Senate Standing Committee on Environment, Communications and the Arts, *Supplementary Estimates Proof Hansard*, 19 October 2009, p 67.

27 Senator the Hon Stephen Conroy, Senate Standing Committee on Environment, Communications and the Arts, *Supplementary Estimates Proof Hansard*, 19 October 2009, p. 67.

the Digital Economy announced the establishment of Tasmania NBN Co Ltd (NBN Tasmania) to rollout the NBN in Tasmania.[28]

5.31 NBN Tasmania is a wholly owned subsidiary of NBN Co. Its constitution is substantially more developed than that of NBN Co, likely because of the stage of NBN development in Tasmania. Clause 4.4 of NBN Tasmania's constitution provides that:

> The objects of the company are:
>
> (a) to implement the NBN in Tasmania consistently with the Commonwealth's plans for the NBN in each other State or Territory from time to time;
>
> (b) to facilitate the **accessibility** and **affordability** of broadband services for Tasmanians;
>
> (c) subject to relevant legislation, to set prices for the Company's products and services;
>
> (d) to provide a direct optical fibre connection to an agreed target number of Tasmanian premises; and
>
> (e) to maximise the public benefit to Tasmanians through the existence of the NBN as a widely available broadband network in Tasmania.[29]

5.32 There are two sections within those objects that appear to conflict with the government's statements made regarding the NBN Co and its network operation. The first perceived conflict is the fact that NBN Tasmania seems to have the power to set prices for its products and services. Legislation that (at the time of reporting) is due for Senate consideration seeks to entrust that power to the ACCC, granting the regulator the ability to set prices up front. The committee asks the question: how will these conflicting roles be resolved?

5.33 The committee also notes that the NBN Tasmania's object of providing accessible and affordable broadband services appears to be quite contradictory to the minister's comments about the NBN aiming to be a commercially viable company.

5.34 Mr Andrew Connor, the spokesperson from Digital Tasmania acknowledged the perception of a conflict.[30] However, he also pointed out that:

> … anyone's definition of 'affordable' is different… As for the monthly cost, some figures have been touted of $200 per month just for an internet service, but what you are getting is a platform to provide you with a wealth of services, which I am sure you know about. I will just run through a couple of them. If you add up current services into a home, you have phone, internet for data and pay television, and there are other services we do not even have yet. When it makes videoconferencing available and when it

28 Senator the Hon Stephen Conroy, 'Tasmania NBN Co Limited Established', *Media Release*, 13 August 2009 at http://www.minister.dbcde.gov.au/media/media_releases/2009/075/.

29 Constitution of ACN 138 338 271 Limited, clause 4.4, emphasis added.

30 Mr Andrew Connor, *Committee Hansard*, Hobart, 8 October 2009, p. 4.

> makes hosting of your own femtocell for your mobile phone in your own home possible, that is another value-adding, so it will value-add to the proposition.[31]

5.35 The committee notes that the minister has committed to ensuring that 'every house, school and business in Australia will get access to affordable fast broadband.'[32] The committee urges the government to expediently bring forward governance legislation for the NBN Co to ensure there is consistency between the company and any wholly-owned subsidiary companies that are currently established, or those established in the future. The confidence of the industry, the market and the Australian population is highly dependent on this consistency.

NBN Tasmania flying blind?

5.36 The committee is concerned that the roll-out in Tasmania has apparently commenced in what is virtually an information vacuum. Apart from stating in which towns the fibre will be first deployed, neither the State nor the Federal Governments have provided any form of implementation plan.

5.37 Although NBN Tasmania has a constitution, there is no structured Business Plan to inform the public how this GBE will ensure that it will provide the 'accessibility and affordability' in broadband services to which its constitution refers. With services due to commence in July 2010, Tasmanians remain ignorant of the prices they will have to pay to access broadband. Details of the level of Federal funding for the Tasmanian roll-out are also sketchy, with the Treasury only willing to state that it had provided for 'an investment in the early rollout … in Tasmania' in 2009-10.

5.38 Given the size of Tasmania, the anticipated roll-out time of five years, and the fact that the first services are now not scheduled until July 2010, the committee is sceptical that the government can maintain the national roll-out will take only another three years.

5.39 The committee is critical of this lack of detail relating to NBN Tasmania, a company that is already in operation, yet without a business plan, without an implementation plan and without any future funding guarantee documented.

Recommendation 2

5.40 That the government releases a detailed Business Plan for Tasmania by 31 December 2009 that includes: an implementation plan that details which towns will be connected by fibre and which will miss out; Commonwealth funding details for the Tasmanian roll-out; pricing details for Tasmanian

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31 Mr Connor, *Committee Hansard*, Hobart, 8 October 2009, p. 4.

32 http://www.minister.dbcde.gov.au/media/media_releases/2009/022, accessed 5 October 2009.

consumers; and the percentage of aerial vs underground fibre connections to the premises.

Committee view

5.41 At this stage, very little is known about the structure of NBN Co, the legislation underpinning its governance, or the way in which it will be the investment bonds will be structures and the timing of their issuance.

5.42 There is concern about how debt arrangements will be managed and at the levels of debt the Government will be required to underwrite to fund the project.

5.43 The committee is deeply concerned that these critical details are not established for a GBE that has been granted responsibility for the government's largest nation-building infrastructure project.

5.44 The committee highlights other worrying indications, including the apparent conflict in the goals of the parent company and its subsidiaries.

5.45 The committee urges the government to expediently provide the Implementation Study report for public scrutiny. A project of this magnitude demands transparency and accountability of all decisions, particularly those relating to the governance and funding of the GBE that has been established to undertake and successfully complete the project.

Recommendation 3

5.46 That the government expediently bring forward the legislation that will provide the governance and funding framework for the NBN Co Ltd.

Chapter Six

Commercial viability

Introduction

6.1 This chapter will examine the government's commitment to the NBN being a commercially viable operation. Relevant issues include the level of demand that is required and its relationship to service pricing.

6.2 Pursuant to this, the predicted estimated costings for the NBN will be outlined, together with the basis on which those costings were made. Claims that productivity increases will result from the NBN will also be examined, as will the contentious issue of conducting a cost benefit analysis for this massive spending of tax payers' funds.

The foundation promises

6.3 Shortly after being elected in November 2007, the Rudd Government made a commitment to the nation that it would:

> …provide funding of up to $4.7 billion, and consider the necessary regulatory changes, to facilitate the roll-out of a new open access, high-speed, fibre-based broadband network, providing downlink speeds of at least 12 megabits per second to 98 per cent of Australian homes and businesses.[1]

6.4 Following the termination of the RFP fibre-to-the-node (FTTN) process in April 2009, this commitment suddenly ballooned into the current promise that the Australian Government would build a fibre-to-the-premise (FTTP) NBN. This build will be conducted in partnership with the private sector in what is claimed to be the single largest nation building infrastructure project in Australia's history.

6.5 The current commitment by the government is that the NBN will:

- Connect 90 percent of all Australian homes, schools and workplaces with broadband services with speeds up to 100 megabits per second, 100 times faster than those currently used by many households and businesses;
- Connect all other premises in Australia with next generation wireless and satellite technologies that will deliver broadband speeds of 12 megabits per second; and

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1 http://www.archive.dbcde.gov.au/2009/april/national_broadband_network, accessed 3 November 2009.

- Directly support up to 25,000 local jobs every year, on average, over the 8 year life of the project.[2]

6.6 Further, the government stated that the NBN was to be 'built and operated on a commercial basis'[3] by a company established specifically for this purpose, the company now known as NBN Co.

6.7 The government has committed that 'every house, school and business in Australia will get affordable fast broadband.'[4] However, the cost of this new broadband promise is nearly ten times the previous commitment, with the government anticipating it will now require an investment of up to $43 billion over the eight year period that the NBN build is expected to take.[5]

Cost – benefit analysis

6.8 The expenditure of any substantial amount of public funding needs to be justified transparently to the Australian taxpayer. This is usually undertaken in the form of a robust and rigorous cost-benefit analysis, which is generally a component of the government's business case that is routinely prepared prior to embarking on a major project.

6.9 When the government embarked upon its nation building infrastructure project, a new agency called Infrastructure Australia was created to facilitate the analysis and the prioritisation of proposed major infrastructure projects. In its first report to government in December 2008, Infrastructure Australia stated that it had:

> …adopted a new national approach to infrastructure decision making … [which] uses a robust framework. …
>
> Infrastructure Australia has rigorously applied this framework.[6]

6.10 The framework has seven stages through which infrastructure projects were to be analysed, which are as follows:

(i) Goal identification;

(ii) Problem identification;

(iii) Problem assessment;

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2 http://www.minister.dbcde.gov.au/media/media_releases/2009/022, accessed 3 November 2009.

3 http://www.minister.dbcde.gov.au/media/media_releases/2009/022, accessed 3 November 2009.

4 http://www.minister.dbcde.gov.au/media/media_releases/2009/022, accessed 3 November 2009.

5 http://www.minister.dbcde.gov.au/media/media_releases/2009/022, accessed 3 November 2009.

6 *A Report to the Council of Australian Governments*, December 2008, p. 6.

(iv) Problem analysis;

(v) Option generation;

(vi) Solution assessment; and

(vii) Solution prioritisation.[7]

6.11 The detailed explanation within Stage 6 of the framework, the 'Solution assessment', lists the following requirements for action within that stage:

> Use of cost-benefit analysis to assess those options/solutions. … **Accurate and justifiable Cost-Benefit Analysis [CBA] has been used to appraise options. CBA is comprehensive** and includes wider economic and social impacts.[8] (bolding added)

6.12 It is clear from this that the government's intention was that all proposals for infrastructure projects of national significance were to be validated through the application of this assessment framework, which included the requirement of an 'accurate and justifiable' cost-benefit analysis that was to be 'comprehensive' in nature.

6.13 In addition, Infrastructure Australia was required to assess infrastructure proposals that were to be funded from the Building Australia Fund (BAF) according to a set of BAF evaluation criteria and principles. Those criteria can be found on Infrastructure Australia's website, along with an Explanatory Statement that cites:

> Pursuant to s. 52(2) [of the *Nation-Building Funds Act 2008*], the Infrastructure Minister must not recommend payments from the BAF unless Infrastructure Australia has advised the Infrastructure Minister that the payment satisfies the BAF Evaluation Criteria.
>
> Similar arrangements apply under s. 52 to advice from Infrastructure Australia … through the Infrastructure Minister, to the Minister for Broadband, Communications and the Digital Economy…[9]

6.14 The BAF Evaluation Criterion 2 relates to the '[E]xtent to which proposals are well justified with evidence and data', with the first part of that criterion stating:

> a) Proposals should demonstrate through a cost-benefit analysis that the proposal represents good value for money.[10]

6.15 The committee reminds the government that a lack of 'value for money' was the supporting principle used by the government to terminate the previous FTTN RFP process.

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7 *A Report to the Council of Australian Governments*, December 2008, p. 10.

8 *A Report to the Council of Australian Governments*, December 2008, p. 10.

9 Explanatory Statement: BAF Evaluation Criteria, accessed 3 November 2009 at: http://www.infrastructureaustralia.gov.au/publications.aspx

10 Explanatory Statement: BAF Evaluation Criteria, accessed 3 November 2009 at: http://www.infrastructureaustralia.gov.au/publications.aspx

6.16 The government has made no attempt to justify its decision to push ahead with this major infrastructure project without undertaking a cost-benefit analysis; this was also the case with the previous FTTN NBN proposal. When Minister Conroy was closely questioned at Senate Estimates in October 2008 whether there would be any cost-benefit analysis of the FTTN proposal, the Minister was adamant:

> This is an election commitment, and we will deliver our election commitment. …
>
> We are going to deliver on our election commitment. … No ifs, no buts; it will be delivered.[11]

6.17 The Senate Standing Committee on Environment Communications and the Arts (the ECA committee) sought confirmation that the funding was to come from the BAF, yet was to be exempt from the BAF Evaluation Criteria, to which the minister replied:

> We could not be clearer. … This will not be subject to Building Australia Fund processes. This is a separate election commitment.[12]

6.18 The committee is appalled that, at the time of reporting, almost eight months after the announcement of the commitment to a massive investment of $43 billion for the FTTP NBN, the government still refuses to comply with its own legislative requirements that the NBN must undergo a rigorous cost-benefit analysis.

Stakeholder opinions regarding CBA requirement

Implementation Study?

6.19 The report has discussed in chapter 3 the broad scope of the multi-disciplinary Implementation Study being undertaken by the Lead Advisor into all aspects of the NBN roll-out. It would be logical to include a cost-benefit analysis within the broad scope of this study. Despite the comprehensive list of inclusions within that study, (see paragraph 3.17), most conspicuous by its absence is a cost-benefit analysis of the project.

6.20 It was clearly anticipated by several witnesses that a cost-benefit analysis would be part of the Implementation Study. Mr Sameer Chopra stated at the public hearing in Canberra that;

> It is my understanding that [a cost-benefit analysis] would probably occur as the NBN implementation study group comes together, but I have not seen any cost-benefit analysis at this stage.[13]

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11 Minister Conroy, Senate Estimates, Standing Committee on Environment, Communications and the Arts (ECA Committee), *Committee Hansard*, 20 October 2008, p. 28.

12 Minister Conroy, ECA Committee Senate Estimates, *Committee Hansard*, 20 October 2008, p. 28.

13 Mr Sameer Chopra, Deutsche Bank, *Committee Hansard*, Canberra, 20 July 2009, p. 81.

6.21 The committee asked a telecommunications and media analyst at this hearing whether it would be 'prudent' to undertake a cost-benefit analysis for the NBN, to which the response was:

> We absolutely do. With an investment of $43 billion, whichever way you look at it and whichever way you structure it in terms of debt equity funding, it makes sense to perform a rigorous cost-benefit analysis.[14]

An assessment framework

6.22 Another witness made the comment that a cost-benefit analysis was just one of a 'dashboard' of assessment tools available to the government, also anticipating this to occur within the Implementation Study:

> It is one of a range of measures that governments can use to assess the attractiveness of particular projects. It is obviously important that projects have a reasonable cost-benefit analysis … irrespective. Clearly, there is more detail which will come out through the implementation study about the costs and benefits of this project and we look forward to seeing them.[15]

6.23 The Productivity Commission held the view that conducting a cost-benefit analysis was not the only way of assessing the viability of a major project. Mr Bernard Wonder explained at the Canberra hearing in October:

> Desirably, cost-benefit analysis can be used as a tool to inform decision making. Different cost-benefit assessments will present different challenges. Sometimes they are more straightforward that other times: for example, where there is less uncertainty in what the benefits and costs flows are.
>
> …It is not only cost-benefit analysis, I might add, that will give you that information – there may be other analyses that are being conducted … but a cost-benefit analysis is one framework that you can enter all of these things into.[16]

6.24 The submission provided by the Productivity Commission went into considerable detail about using a cost-benefit analysis as a framework, highlighting the fact that any such analysis is only as good as the data available to feed into the framework. The submission noted that:

> The precise nature of the benefits and cost which should feed into the analysis will depend on the specific features of the project.[17]

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14 Mr Daniel Blair, Southern Cross Equities, *Committee Hansard*, Canberra, 20 July 2009, p. 85.

15 Mr Brendan Lyon, Infrastructure Partnerships Australia, *Committee Hansard*, Canberra, 20 July 2009, p. 21.

16 Mr Bernard Wonder, Productivity Commission, *Committee Hansard*, Canberra, 1 October 2009, pp 25-26.

17 Productivity Commission, *Submission* 87, p. 3.

6.25 The Productivity Commission points to the government's *Best Practice Regulation Handbook* (2007) which recommends:

> …costs and benefits, including money equivalents based on willingness to pay, should be discounted using a real rate with appropriate sensitivity analysis.[18]

6.26 A social discount rate of seven per cent is recommended by the handbook, with sensitivity testing between three and eleven per cent.[19] The Productivity Commission believes that:

> …uncertain future costs and benefits should be estimated in terms of the risk-weighted averages (expected values) of all possible outcomes … That is, uncertainty of costs and benefits should be addressed in the valuation of the costs and benefits rather than used to vary the appropriate discount rate.[20]

6.27 The issue of the uncertainty of both the costs and particularly the benefits is very pertinent to the NBN, a fact pointed out by the Productivity Commission:

> The use of expected values of costs and benefits is relevant to the NBN, as uncertainties of the evolution of technologies and consumer demand mean no single estimate for each of the future costs or benefits can be proposed with certainty.[21]

6.28 The submission acknowledges the difficulties around conducting a cost-benefit analysis for the NBN, highlighting the complexities of 'forming appropriate estimates of the expected values of costs and benefits.'[22] Further emphasising this point, the Productivity Commission submitted that:

> …cost-benefit analysis is a tool whose results are no better than the systemic way in which it is used and the quality of data it elicits or estimates – its value lies principally in it being appropriately used to fairly assess the relevant costs and benefits of a project.[23]

6.29 The committee acknowledges these difficulties. However, the committee strongly believes that this should not excuse the government from their responsibility to assess the 'value for money' of this project by conducting a cost-benefit analysis.

6.30 The submission provided by the Productivity Commission suggested that one way to overcome much of this uncertainty is to conduct pilot trials, with the objective of gathering information that may not otherwise be revealed. Consequently, pilots can

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18 Productivity Commission, *Submission* 87, p. 4.

19 Productivity Commission, *Submission* 87, p. 4.

20 Productivity Commission, *Submission* 87, pp 4-5.

21 Productivity Commission, *Submission* 87, p. 5.

22 Productivity Commission, *Submission* 87, p. 6.

23 Productivity Commission, *Submission* 87, p. 4.

be 'useful insurance policies'[24] for the government. Noting that the government has selected Tasmania as the first phase of the national roll-out, and also that the first priority regions have been selected for the Regional Backbone Blackspots, the submission suggests that information from these 'pilots' could provide valuable input into the framework of a cost-benefit analysis.

6.31 The committee views this as sound advice, but believes the suggested approach of awaiting results from pilots could see the timeframe for implementation of the NBN blow out considerably. However, the committee also recognises that the additional time taken would be a relatively inexpensive 'insurance policy' when measured against the $43 billion investment at risk.

6.32 One organisation that remains highly critical of the government's refusal to undertake a cost-benefit analysis is the Business Council of Australia (BCA). The written submission provided by BCA attached their submission to the government regarding regulatory reform options.

6.33 Although supportive of the NBN proposal, BCA's submission to this inquiry noted that the government's decision to create the NBN Co was:

> …a significant departure from past policy approaches in the ICT sector and the market-led approach to broadband investment favoured by the OECD. The proposal is therefore not without some risk and… the BCA contends that further analysis of the [NBN FTTP] proposal is warranted.[25]

6.34 BCA supported this call for further analysis citing recent advice to governments by the OECD that 'policy makers must evaluate the costs and benefits of any government investment in communication infrastructure.'[26] The submission stated further that:

> Consistent with this advice and with international best practice, the government should provide publicly and in full a cost-benefit analysis that also sets out the investment case for the planned roll-out …
>
> Rigorous cost-benefit analysis needs to be an in-built part of all spending decisions … The government needs to remain committed to having Infrastructure Australia audit the likely benefits of major infrastructure projects and ensuring the transparency of policy advice.[27]

6.35 Attention was drawn to the lack of publicly available information about the government's policy intentions, which presumably will be entailed in the Implementation Study. Highlighting the need to fill this information vacuum, BCA

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24 Productivity Commission, *Submission* 87, p. 6.

25 Business Council of Australia (BCA), *Submission* 52, p. 3.

26 BCA, *Submission* 52, p.3.

27 BCA, *Submission* 52, p.3

cautioned that until the government's intentions are more fully detailed, 'much potential current and future investment [in broadband take-up] could be held back.'[28]

6.36 The submission by BCA to the government's discussion paper on regulatory reform further elaborated on these issues, again emphasising the need for the Implementation Study to be completed expediently. The submission made a number of high level recommendations, two of which were directly relevant:

- The government should make the completion of the NBN implementation study a high priority and avoid upholding potential investment, both within and outside the NBN, due to bureaucratic delay or regulatory uncertainty.
- A thorough cost-benefit analysis on the NBN proposal should be made publicly available, to ensure that the approach that has been proposed has a net benefit for the Australian economy and to underpin confidence in investment.[29]

6.37 The committee fully supports this call to the government to ensure that the Implementation Study is completed expediently and that a thorough cost-benefit analysis is conducted, with the outcomes of both of these to be available for public scrutiny.

Existing analysis[30]

6.38 At the time of reporting, there had been only one academic attempt to conduct a structured cost-benefit analysis. This was presented by economists Professor Henry Ergas and his associate, Professor Alex Robson at a Productivity Commission roundtable on evidence-based policy.

6.39 The telling conclusion of this detailed analysis was that the overall costs of the NBN will far outweigh any benefits by between $14-20 billion. This is a staggering claim that surely must ring alarm bells for the government.

6.40 Professor Ergas and Professor Robson are both previously from Concept Economics. Their analysis compares the likely costs of connecting those within the 90 percent footprint of the FTTP network with the counterfactual cost of upgrading the existing HFC and copper assets. The latter scenario is similar to the government's previous FTTN proposal, but with higher speeds of 30-40 Mbps and enabling wireless broadband in regional areas of up to 30 Mbps. The economists estimate that the cost to build the FTTP NBN would be around three times the cost of the counterfactual.

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28 BCA, *Submission* 52, p.4

29 BCA, *Submission to DBCDE on Regulatory Reform for 21st-Century Broadband*, p.4.

30 This section includes observations made by and through *Communications Day*, 2-4 September 2009.

6.41 The analysis of the benefits was based on the likely increase in the consumer's willingness to pay for the increased speed offered by the NBN FTTP. This willingness to pay is then mapped over a 20 year period (life span assumed for the FTTP), allowing for increases in income and the development of future applications that could drive demand. Professor Ergas explained the analysis as follows:

> Our cost-benefit analysis is based on the bottom-up approach, …the way that works is that we assume a rate of growth in the willingness to pay and then we assume that the willingness to pay for higher speeds increases more rapidly than the willingness to pay for lower speeds. …
>
> We then value the benefits in that way. That is an absolutely conventional way of doing this sort of exercise for new goods. We then use that valuation to compare it to the schedule of costs and that then gives you the comparison between the costs and benefits…[31]

6.42 The paper suggested that the NBN would take longer than eight years to build and that consequently any flow-on benefits would be delayed. Also questioned was the government's claim that eHealth applications development will surge.

6.43 The authors were critical of a number of assumptions made by the government that were fundamental to the development of the current NBN policy. One criticism was the government's claim that the NBN would result in an increase in productivity after 10 years of 1.1 per cent. The authors stated their belief that this was incorrectly based on the change in productivity resulting from there being no broadband available, whereas most Australian consumers already have some form of broadband.

6.44 There is also an admission within the paper that the option of delaying the project was not costed. However, the authors are quoted as suggesting that:

> This option is likely to have high value, particularly if it is accompanied by regulatory reform that addresses the current disincentives to invest.[32]

6.45 The authors conclude that if the costs of the NBN outweigh the benefits by more than $17 billion, the project should not proceed. As Professor Ergas stated at the Canberra hearing:

> What it shows to my mind is that you need to do this kind of analysis because otherwise it is impossible to take rational decisions.[33]

6.46 Since the publication of this paper, there have been some criticisms of the overall outcome arrived at by the authors, their assumptions and the fact that they advocate a counterfactual that is similar to the now terminated FTTN proposal.

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31 Mr Henry Ergas, *Committee Hansard*, Canberra, 1 October 2009, p. 43.

32 Australian Financial Review, Wednesday, 2 September 2009, p. 3.

33 Mr Henry Ergas, *Committee Hansard*, Canberra, 1 October 2009, p. 44.

6.47 The committee believes that this criticism only serves to emphasise the need for the government to take the lead, undertaking a robust cost-benefit analysis that makes use of all the information that only the government has available to it through the ongoing Implementation Study.

Government position

6.48 The committee sought advice from the Department of Broadband, Communications and the Digital Economy (the Department) on whether a cost-benefit analysis was planned for the NBN. The Department reiterated the Minister's claim that the implementation of the NBN 'is the government's commitment' and continued that:

> There will certainly be an independent, multidisciplinary set of commercial, technical and legal advice.[34]

6.49 However, this apparently will not include a cost-benefit analysis.

6.50 The Department of Finance and Deregulation (DoFD) played a significant role in determining that the FTTP proposal should proceed. When questioned about how DoFD determined the costing estimates for the proposal for the FTTP network, it was explained that:

> Our costing exercise was entirely related to the cost of building or acquiring a network. It was not a business study or a cost-benefit study or a business case analysis. …
>
> In terms of advice on cost and benefit, certainly we have given advice to the minister in relation to those matters on NBN Co., but a full cost benefit analysis was not done as part of the period leading up to the [April 2009] announcements by the government.[35]

6.51 Officers from the Treasury were also questioned in relation to the costing exercise, and in particular whether Treasury would normally be asked to conduct a cost-benefit analysis of a major project proposal as part of its advice to government. Treasury responded:

> We would not. …a formal cost-benefit analysis has not been undertaken.[36]

6.52 However, Mr Murray did attempt to explain this response in the ensuing discussion. Although there may be some benefits that would be readily identified, such as increased capital stock, and clear economic benefits from increases in productivity, he said other benefits would be less obvious, including those resulting from improved competition and greater network coverage:

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34 Mr Colin Lyons, DBCDE, *Committee Hansard*, 20 July 2009, p. 99.

35 Mr Simon Lewis, DoFD, *Committee Hansard*, Canberra, 1 October 2009, p. 90.

36 Mr Richard Murray, Department of the Treasury, *Committee Hansard*, Canberra, 1 October 2009, p. 12.

> …there are likely to be significant spin-off benefits of this. … Those spin-off benefits are very difficult to quantify.[37]

6.53 The committee was troubled to hear Finance Minister the Hon Lindsay Tanner seem to concede that a cost-benefit analysis would be too hard, due to the high level of uncertainties that exist:

> …cost-benefit analyses are only as good as the assumptions you feed into them and it is hard to make assumptions about applications and services that will only be imagined and marketised in a high-speed [NBN] environment.[38]

6.54 Again, the committee remains highly critical of the dismissive attitude taken by the government that such uncertainties justify tossing a cost-benefit analysis into the 'Too Hard' basket.

Minority lack of concern

6.55 Conversely there were a number of key stakeholders who stated that they were not overly concerned that there would be no cost-benefit analysis of the NBN project. Some pointed to historical examples of large national infrastructure projects that would most likely not have gone ahead if approval was dependent on a rigorous cost-benefit analysis. For example, Mr Maha Krishnapillai from Optus explained:

> …if Sir John Monash in Victoria in 1920s and 1930s had to do a full economic cost-benefit analysis in terms of rolling electricity out to regional Victoria it would have failed and would not have gone ahead on the basis of why would you rollout electricity to replace a whole lot of candles and gas lights.[39]

6.56 At the Communications Day Congress in Melbourne during October, the issue was the topic of a panel discussion that 'revealed pronounced industry ambivalence on the subject'.[40] Mr Greg Muller Managing Director of Bullseye was quoted as saying that the delay caused by insisting on a cost-benefit analysis:

> …could be more harmful that the project itself – leaving Australia exposed to increased competition from other countries proceeding with their own fibre builds. …
>
> If we're going to be sustainable as an economy and as a society into the future, we need access and we need speed …[which] are fundamental needs for our society as part of our growth … failing to implement [the NBN] is

37 Mr Murray, Department of the Treasury, *Committee Hansard*, Canberra, 1 October 2009, p. 12.

38 *Communications Day,* 21 September 2009, p. 6.

39 Mr Maha Krishnapillai, Optus, *Committee Hansard*, Sydney, 5 August 2009, p. 45.

40 *Communications Day,* 16 October 2009, p. 3.

> only going to constrain us and constrain our business in much bigger ways than $43 billion.[41]

6.57 There was a consensus in that panel that, due to the high level of unknowns, particularly regarding future innovative applications that may be a consequence of the NBN, concern for the cost-benefit analysis was possibly over-stated. Examples of present and future applications and uses for the NBN are featured in chapter seven.

6.58 The committee acknowledges that there will be innovations that evolve in an NBN environment. However, the committee strongly disagrees with the reliance on policies based on a 'build it and they will come' mentality, which the committee believes is a poor substitute for a rigorous and publicly disclosed cost-benefit analysis.

Commercial viability

6.59 As noted in the introduction to this chapter, the government has committed to ensuring that the NBN Co operates as a 'commercially viable' Government Business Enterprise (GBE). This will be a necessary pre-requisite for the government to be able fulfil its subsequent commitment to sell down its share in the NBN Co five years after the network is fully operational. However, in stating this desired outcome, the government has yet to define how it will measure the 'commercial viability' of the NBN Co, which adds to the list of uncertainties upon which this proposal is based.

An applicable definition

6.60 One definition of commercial viability was provided in a report to the New Zealand Government as it sought to restructure its energy sector in 1998. The report cited several criteria for determining whether the newly separated entities would be commercially viable. The New Zealand scenario has parallels to the situation currently facing the Australian telecommunications industry. The criteria to determine that the entities were commercially viable included that the entity was:

- able to survive (operate without going into liquidation or requiring financial support from its shareholders) under all reasonably foreseeable market and operating circumstances; and
- projected in most reasonably foreseeable market and operating conditions, including all probable market outcomes, to provide enough positive free cash flow and net profit after tax to enable it to:
    - compete effectively in the wholesale [telecommunications] market;
    - have funds to reinvest in the [telecommunications] sector;
    - provide acceptable returns to its shareholders; and
    - borrow from the private sector on comparative terms.[42]

41 *Communications Day,* 16 October 2009, p. 3.

6.61 The sensitivity to unfavourable variations in demand and different pricing strategies was also taken into consideration.[43]

6.62 Due to the strong similarities of the New Zealand restructuring scenario to the establishment of the NBN Co, the remainder of this chapter will use this definition as a useful benchmark for further examination of the 'commercial viability' of the NBN Co.

Timeframe?

6.63 The committee draws attention to another critical parameter that has not been defined, being the timeframe within which the NBN Co must attain commercial viability. Although there has been no definite period of time over which the NBN Co would be expected to prove commercial viability, there was a hint by the Executive Chair of the NBN Co when he commented that:

> I would certainly not exclude the possibility of providing a return on the investment over the longer term.[44]

6.64 Of course, this still leaves Australia guessing exactly what is meant by 'over the longer term.'

The cost

6.65 According the above definition of commercial viability, the NBN Co will need to earn a return sufficient to cover the cost of the build before it can generate 'positive free cash flow and net profit after tax' and be able to provide 'acceptable returns to shareholders.'

6.66 The government has said that up to $43 billion dollars would be invested to build a fully operational, wholesale only, national network. The project will be undertaken as a joint investment, with government hoping to attract significant investment from the private sector. This poses the question: what will be the actual cost to tax payers?

Government response

6.67 The government has been questioned closely about the $43 billion investment and what portion of that is to be the responsibility of the Australian taxpayer.

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42 Energy Reform Transition Unit, *Final Certification Report*, Chapter 3, 21 November 2005, accessed on 4 November 2009 at: http://www.med.govt.nz/templates/MultipageDocumentPage____5412.aspx.

43 Energy Reform Transition Unit, *Final Certification Report*, Chapter 3, 21 November 2005, accessed on 4 November 2009 at: http://www.med.govt.nz/templates/MultipageDocumentPage____5412.aspx.

44 Mr Michael Quigley, NBN Co, ECA Committee Senate Estimates, *Committee Hansard*, 19 October 2009, p. 74.

6.68 At Budget Estimates in May 2009, the Minister gave a detailed opening statement in which he noted that '…the total funding of the network will be no more than $43 billion.' The minister further explained that:

> With respect to the total cost I should make clear that advice to government identified a cost range of $38 billion to $43 billion … no-one has seriously suggested that these figures are an underestimate. I note that even the analyst Ian Martin stated in a recent report that the government's proposed NBN company could roll out a passive optical network based on FTTP … to 90 per cent of households for less than $20 billion to $25 billion. Indeed we expect the actual cost to be significantly lower than $43 billion for a number of reasons, including the substantial contingency intentionally built into the estimate.[45]

Lower estimates

6.69 The Minister's admission that the NBN could cost almost half the stated $43 billion was supported in evidence to the committee some months later. Mr Arthur Price, CEO of Axia NetMedia Corporation, outlined his cost estimates to the committee, stating that the greatest proportion of the cost to build the NBN would be in connecting individual premises to fibre. This would:

> …have much more of a resources logistical challenge. We think the fibre-to-the-premises component of this is about two-thirds to three-quarters of the [total] capital.[46]

6.70 Mr Price believed that the way that this was managed in the network built by Axia in both France and in Alberta, Canada, was to complete the build in two stages. The regional backhaul (Axia's 'community interconnect grid') was deployed first and communities connected once they had backhaul provided to their closest regional centre.[47] Mr Price believed that the NBN in Australia would not cost $43 billion, stating that:

> The fibre-to-the-premise part would be in the range of $20 billion. The community interconnect grid [regional backhaul] – the rest – is in the range of let us say $5 billion to $7 billion.[48]

6.71 Mr Price later reiterated that the build should cost 'around $27 billion and less than $30 billion.'[49]

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45 Minster Conroy, Budget Estimates, Environment, Communications and the Arts, *Committee Hansard*, Canberra, 26 May 2009, p. 50.

46 Mr Arthur Price, Axia NetMedia Corporation, *Committee Hansard*, Sydney, 5 August 2009, p 15.

47 Mr Price, Axia NetMedia Corporation, *Committee Hansard*, Sydney, 5 August 2009, p 15.

48 Mr Price, Axia NetMedia Corporation, *Committee Hansard*, Sydney, 5 August 2009, p 15.

49 Mr Price, Axia NetMedia Corporation, *Committee Hansard*, Sydney, 5 August 2009, p 16.

$43 billion under the microscope

6.72 The committee questioned officers from the Department of the Treasury when they appeared at the Canberra public hearing during October 2009. Mr Richard Murray reiterated that it was not the government's intention that it would need to provide the entire $43 billion; rather, 49 per cent of that would come from the private sector over the eight-year building period. Mr Murray continued that:

> The assumption has been made that the other 51 per cent [provided by the government] would have around a 50-50 debt-equity ratio. … That leaves you with an equity funding by the government of about $11 billion. Not all of that is going to be spent over the forward estimates, but we have in the budget numbers enough to cover the government's equity investment over the next four years.[50]

6.73 However, when the government was pressed to confirm it would only need to come up with that 51 per cent, the minister admitted that:

> We said we would be the 100 per cent if necessary.[51]

6.74 The amount of $11 billion was then further clarified in response to another question on notice:

> The figures … indicate that the Government borrowing to fund its equity contribution to the National Broadband Network might be of the order of $8.6 billion (comprising an $11 billion equity contribution less the $2.4 billion from the Building Australia Fund), not all of which would be required over the forward estimates. An addition of $8.6 billion to the borrowing program, spread over (say) four years, would represent an increase of only $2.15 billion per annum. An adjustment of this magnitude would be very manageable.[52]

6.75 The government has committed to providing an initial investment of $4.7 billion, which includes:

> $4.45 billion for an equity injection for the company that will build and operate the network and an investment in the early rollout of the fibre-based network in Tasmania.[53]

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50 Mr Richard Murray, Department of the Treasury, *Committee Hansard*, Canberra, 1 October 2009, p. 5.

51 Minster Conroy, Budget Estimates, Environment, Communications and the Arts, *Committee Hansard*, Canberra, 26 May 2009, p. 79.

52 Department of Treasury, Answers to Questions on Notice, 1 October 2009, http://www.aph.gov.au/Senate/committee/broadband_ctte/answers_qon/091001_Treasury.pdf, p. 7.

53 Department of Treasury, Answers to Questions on Notice, 1 October 2009, http://www.aph.gov.au/Senate/committee/broadband_ctte/answers_qon/091001_Treasury.pdf, p. 10.

6.76 This $4.7 billion comprises $2.4 billion from the Building Australia Fund; the remaining $2.3 billion is to be provided through the future issuance of Aussie Infrastructure Bonds. Further discussion about the issuing of bonds can be found in chapter five.

Wholesale only entity

6.77 Even if the overall cost of the NBN is less than $43 billion, the major limiting factor to commercial viability is that NBN Co will only provide wholesale services to access seekers. Basically, NBN Co can only sell access to the fibre, and that will generally be to telecommunications retailers, at least in the formative years. It is common knowledge that the major commercial value is in the retail service arena, in which the NBN Co cannot participate.

6.78 If the NBN Co is to be commercially viable, it follows that the prices it charges for access to the wholesale services must ensure that the NBN Co can meet the minimum criteria listed in paragraph 6.60 above. Critical among those criteria is the ability to provide sufficient positive cash flow to enable reinvestment in the sector and also provide acceptable returns to its shareholders.

6.79 To assess the ability to generate positive cash flow, a basic requirement would be a sound understanding of the cost of building a fully operational NBN. Due to the current lack of information regarding the technical build and consequently the overall cost of the NBN, prices that have been suggested to date by analysts and telecommunications companies can only be regarded as speculation. Again, details within the Implementation Study will hopefully enable more precise calculations.

The relationship between demand and pricing

Is there demand for high-speed broadband?

6.80 The demand for broadband services across Australia is increasing, according to the June 2009 statistics from the Australian Bureau of Statistics (ABS) on Internet Activity. Comparisons to June 2008 data show a continuing upward trend in broadband connections and a corresponding decrease in dial-up connections. [54]

6.81 An interesting figure is that there still remain over one million dial-up subscribers out of a total of 8.4 million internet subscribers.[55] Almost 13 per cent of Australian internet subscribers are currently not connected to broadband services. This is a significant statistic that the government must consider as a possible limitation to achieving commercial viability of the new network.

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54 http://www.abs.gov.au/AUSSTATS/abs@.nsf/ProductsbyReleaseDate/6445F12663006B83CA256A150079564D?OpenDocument, accessed 6 November 2009.

55 http://www.abs.gov.au/AUSSTATS/abs@.nsf/ProductsbyReleaseDate/6445F12663006B83CA256A150079564D?OpenDocument, accessed 6 November 2009.

6.82 Subscription to Digital Subscriber Line (DSL) continued to comprise the greatest proportion of non-dial-up connections; however this figure fell from 63 per cent in December 2008 to 57 per cent in June 2009.[56]

6.83 What is most notable is the staggering ongoing growth in wireless broadband connections, which now represent around 47 per cent of the DSL subscription. In June 2009, there were just over two million wireless subscribers, with over 1.9 million of these being mobile subscriptions. This equates to an increase of over 51 per cent in wireless subscriptions over the previous six months.[57]

6.84 This figure would no doubt be even higher, as the ABS site states that the figure of two million does not include internet connections via a mobile phone device.[58] Given the ever increasing use of handheld devices by a progressively more mobile workforce, added to by the popularity of new smart phones, such as the iPhone, the committee suggests that this figure should be markedly higher.

6.85 Some of these statistics should be examined at more than just face value. In fact the increasing prevalence of wireless broadband connections raises serious doubts over the need for fibre to 90 per cent of Australian premises.

6.86 The ABS statistics also document the increasing appetite among Australians for higher download speeds, with 57 per cent of internet users now subscribing to download speeds of 1.5Mbps or greater, up from 51 per cent in December 2008. However, another telling aspect to the ABS report was that the demand for the highest speed connections of above 24 Mbps remained steady at 5 per cent over the last six months.

6.87 This indicates that the increase in demand for speed is limited to the lower end of the speed range, hence questioning the requirement of the government's move from the RFP proposal speed of 12 Mbps. Mr Kevin Morgan was one witness that raised this point directly with the committee when he suggested the government needed to provide affordable broadband, not just to the individual consumer but to 'society at large.' Mr Morgan pointed out that the current UK proposal for broadband is for 2 Mbps as a national goal, suggesting that for Australia:

> …it might be more realistic to perhaps go back to the 12 megabits as the baseline. That would be adequate for most applications that any domestic user would want. …

56 http://www.abs.gov.au/AUSSTATS/abs@.nsf/ProductsbyReleaseDate/6445F12663006B83CA256A150079564D?OpenDocument, accessed 6 November 2009.

57 http://www.abs.gov.au/AUSSTATS/abs@.nsf/ProductsbyReleaseDate/6445F12663006B83CA256A150079564D?OpenDocument, accessed 6 November 2009.

58 http://www.abs.gov.au/AUSSTATS/abs@.nsf/ProductsbyReleaseDate/6445F12663006B83CA256A150079564D?OpenDocument, accessed 6 November 2009.

> So 100 megabits is definitely gold plating and perhaps not necessary.[59]

6.88 In Canberra the committee heard from Mr Daniel Blair from Southern Cross Equities, who agreed that there was not the demand for 100 Mbps, in fact he believed that '[t]here is not that propensity of demand for [even] 12 megabits per second.'[60] He later continued that:

> In our view there is not a demand for 100 megabits per second. [But] if you offer someone something for free they will probably take it up. …
>
> It is pretty hard to see how you are going to use 100 megabits per second today.[61]

6.89 Mr Blair stated quite firmly that the FTTP network would not be economically viable, partly due to the lack of demand in two areas:

> …we believe there is limited demand from consumers – firstly for the speeds being proposed and, secondly, a low propensity by consumers to pay above what they do today.[62]

6.90 On this basis, Mr Blair believed that the NBN would not be attractive to potential investors, and that in fact, 'I would not be recommending this investment at this stage.'[63]

A different pricing model?

6.91 Aligned to the discussions of both Mr Blair and Professor Ergas relating to consumers' 'willingness to pay', a commentator from Nokia, Mr Bob James, came to the following conclusion:

> History shows us that people and businesses … looking back over the last ten years … have paid the same amount or less year after year in most countries yet received faster speeds. …
>
> Many households in urban areas have the option of paying for higher speed today, but choose their plans based on needing more gigabytes per month rather than more megabits per second.[64]

6.92 What Mr James infers is that families are looking for subscription plans that meet their higher download data capacity requirements, rather than just seeking higher speed capacities for those downloads.

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59 Mr Kevin Morgan, *Committee Hansard*, Melbourne, 7 October 2009, p. 53.

60 Mr Daniel Blair, Southern Cross Equities, *Committee Hansard*, Canberra, 20 July 2009, p. 89.

61 Mr Blair, Southern Cross Equities, *Committee Hansard*, Canberra, 20 July 2009, p. 94.

62 Mr Blair, Southern Cross Equities, *Committee Hansard*, Canberra, 20 July 2009, p. 85.

63 Mr Blair, Southern Cross Equities, *Committee Hansard*, Canberra, 20 July 2009, p. 88.

64 Mr Bob James, Nokia Siemens networks APAC, *Communications Day*, 3 November 2009, p. 6.

6.93 Referring to the current price modelling based on speed, Mr James commented that:

> Charging for speed made sense when fast connections to business premises were constructed at one time and at great expense. … It made sense when something rare had to be rationed. But does it make sense when the government is spending considerable amounts of money to make fast broadband universally available at affordable prices?[65]

6.94 Mr James suggests that the NBN Co could charge for usage, rather than for speed, for example applying a monthly fixed fee per premises, plus a charge per gigabyte of usage. Mr James continued:

> This utility style pricing …is a good way of pricing by value for high fixed cost infrastructure – rather like water and electricity. It also aligns the … long term interests of the end user, the retailer and the network owner. [66]

6.95 This line of thought picks up the thread of conversations the committee has had with Mr Arthur Price. In evidence before the committee, Mr Price has consistently advocated Axia's principle that the network owner does not compete with their customer. If network is thus established as a wholesale-only operation, then it is Axia's contention that structural separation will occur by default.

6.96 The network owner (in Australia's case, the NBN Co) will then be focussed on attracting access seekers in order to be commercially viable, rather than actively competing with them and restricting their access. If the fibre network is of the highest quality, access seekers will be attracted to it. They in turn will seek to attract consumers through differentiation of their retail services.

6.97 Mr James' pricing model would dovetail neatly into this scenario, aligning the needs of the NBN Co, its access seekers and the Australian consumers. This has potential as an optional operating model for the NBN Co.

6.98 Mr Price said that wholesale next generation networks, such as Australia's proposed NBN, would need to alter their operations and focus on long term benefits. This is due to the fact that fibre networks have high up-front capital costs. However, Mr Price reminded the committee that FTTP has low recurring maintenance costs and activities. Consequently, the wholesale owner will:

> …depend on the evolution of new, compelling services for end users and a change in the way end users buy. Those are transformational things. They depend on the evolution of a vibrant, competitive retail services sector that provides easy-to-adopt, high value services.[67]

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65 Mr James, Nokia Siemens networks APAC, *Communications Day*, 3 November 2009, p. 6.

66 Mr James, Nokia Siemens Networks APAC, *Communications Day*, 3 November 2009, p 6.

67 Mr Arthur Price, Axia NetMedia Corporation, *Committee Hansard*, Sydney, 5 August 2009, p 10.

6.99 Mr Price then outlined a scenario that he believed would deliver a commercially viable wholesale-only open access network. However, the notable difference between Axia's model and that of the government is Mr Price's suggestion that the starting point is 'a level of financial support', to be provided by the government. Generally 'in the range of a third of the capital,'[68] this financial start-up would be considered a government grant that will not be expected to earn a return.

6.100 However, in this scenario Mr Price claims that the grant would also be a one-off cost to government: '[T]his financial support is not ongoing.' In addition, if regional backhaul was provided through that one-off government grant, he believes there would be no further need for the additional government ongoing funding to ensure ubiquitous regional telecommunication coverage:

> …take into account substantial funding …to regional and rural Australia and they crystallise that into one time span and get rid of it – let me use an example – they would have a payout of having a $2 billion one-time grant… [that] would deal forever with the regional and rural dislocation. That would not be a grant, that would be a saving against ongoing programs.[69]

6.101 Using the scenario above, Mr Price believed that wholesale access prices for each premises in Australia could be between $40 and $60 per month.[70] Mr Price also discussed in detail the key success factor for a wholesale network to be commercially viable, stating that:

> For wholesale fibre-to-the-premises investments to be viable the key criterion is to ensure market penetration covers the cost of capital for the implementation of the fibre-to-the-premises and associated infrastructure.[71]

6.102 Using the access prices of $40 to $60 per month, Mr Price thought it would be possible for a customer to have a voice-plus-ISP price starting at about $50 per month for a lower end 25 Mbps service, ranging to $80 to $100 for 100 Mbps. This compares favourably to what Mr Price believed was the current average cost for a Telstra customer of $100 per month. At those pricing levels, the NBN Co could drive demand for its network, attract access seekers and hence achieve the level of market penetration that would ensure commercial viability. Mr Price stated that the ideal penetration level was around 70 per cent, and until that is achieved there would be shortfalls for the company.[72]

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68 Mr Price, Axia NetMedia Corporation, *Committee Hansard,* Sydney, 5 August 2009, p 11.

69 Mr Price, Axia NetMedia Corporation, *Committee Hansard,* Sydney, 5 August 2009, p 17.

70 Mr Price, Axia NetMedia Corporation, *Committee Hansard,* Sydney, 5 August 2009, p 11.

71 Mr Price, Axia NetMedia Corporation, *Committee Hansard,* Sydney, 5 August 2009, p 10.

72 Mr Price, Axia NetMedia Corporation, *Committee Hansard,* Sydney, 5 August 2009, p 11.

Other pricing guesstimates

6.103 As mentioned previously, without the Implementation Study, the industry can only speculate on what could be the pricing levels of the wholesale access.

6.104 At the Telecoms World conference in Sydney during September 2009, a telecommunications analyst, Mr Mark McDonnell, estimated that wholesale access prices would cost more than double the cost suggested by Mr Price.

6.105 Mr McDonnell also pointed to what he believed was a lack of demand for high speed broadband, stating:

> …no-one has yet provided any real evidence relating to unmet demand for 100Mbps broadband delivery for the household.[73]

6.106 This statement seems to be verified by the ABS statistics cited above that showed there was no growth in the demand over the last six months for services above 24 Mbps.

6.107 Using his own set of assumptions, Mr McDonnell calculated the cost of wholesale prices would be $113 per month if the NBN achieved 100 per cent penetration, ramping up to $905 per month if the network achieved only 12 per cent penetration.[74]

6.108 Mr McDonnell continues that:

> It isn't hard to imagine what would happen to consumer demand under these prices.[75]

6.109 The committee notes that the penetration of the recently completed tasCOLT pilot achieved was only around 25 per cent.[76]

6.110 Mr Blair also provided some estimates of probable pricing, likewise based on a series of assumptions (necessary due to the lack of accurate information), including a take-up assumption of 50 per cent after 10 years of operation. Under his modelling, Mr Blair proffered that:

> …to maintain a 10 per cent return would require that the wholesale price be somewhere around the $110 mark. If you are a retailer … [t]oday's margin levels suggest [a retail price] around the $200-$220 mark. It is conceivable that perhaps it could be $150, but that would be on very thin margins …[77]

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73 Mr Mark McDonnell, BBY, *Communications Day*, 9 September 2009, p. 1.

74 Mr McDonnell, BBY, *Communications Day*, 9 September 2009, p. 1.

75 Mr McDonnell, BBY, *Communications Day*, 9 September 2009, p. 1.

76 *Report on the rollout of the tasCOLT Fibre to the premises Commercial Trial*, October 2008, p.5.

77 Mr Blair, *Committee Hansard*, Canberra, 20 July 2009, p. 89.

6.111 A more optimistic estimate of the cost of wholesale access was made in late October by an Optus analyst, placing the cost at between $40 and $70 per month depending on the level of service selected by the customer. Not surprisingly, this lower-end price was quickly highlighted by Minister Conroy.[78]

6.112 The committee draws attention to the government's commitment that it will provide every house, school and business 'access to ***affordable*** fast broadband.' (emphasis added). Wholesale access prices must be structured to ensure that no Australian business, household or school is excluded from the potential benefits offered by the NBN through a lack of service affordability.

The value of existing assets

6.113 With the view that market penetration rates of around 60 to 70 per cent will be required for the NBN Co to be commercially viable, the obvious question is how can that be achieved by a new network when the current incumbent, Telstra, will also be striving to retain at least 60 per cent of the market.

6.114 The obvious solution would be to utilise as much of Telstra's existing infrastructure – its underground conduits, pits and pipes – as possible. The value placed on Telstra's assets, and consequently the bargaining power it could wield, was also subject to much industry speculation. At least that was the case until 26 October 2009, when the government inadvertently tabled a report by the ACCC that revealed Telstra's true worth to the Australian public.

6.115 Discussion in the industry has centred on the probability that Telstra could negotiate with the government to 'vend in' its assets, including the transfer of its customer base. This would resolve the dilemma of NBN Co in struggling to attract customers to the new network, with the bonus of achieving the immediate high market penetration and hence faster attainment of commercial viability. It could also be (very optimistically) seen by some as a 'win' for Telstra, considering the well known fact that much of their copper customer access network is ageing and consequently heavily maintenance-intensive.

6.116 Conversely, Telstra could have chosen not to negotiate with the government at all. Instead, with the knowledge that it would take the government least eight years before the NBN was built and fully operational, Telstra could easily have made a concerted effort to upgrade its own infrastructure during that period. They would subsequently be able to retain and possibly increase their customer base through their upgraded offerings, leaving the new NBN virtually stranded, underutilised and definitely not commercially viable.

6.117 That option has been severed with the government's tabling in September 2009 of the Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009. This bill seeks to amend the several pieces of

78 See discussion, *Communications Day*, 23 October 2009, p. 1.

existing legislation, with the overall effect of enforcing the structural separation of Telstra's wholesale and retail business units, thus removing the incentive to optimise its market power. This legislation is discussed in detail in chapter seven.

6.118 Negotiations between Telstra and the government were ongoing at the time of reporting. No-one will ever know the full impact that the mistaken revelation of Telstra's asset value has made on Telstra's negotiations with the government. However, for commercial viability, the NBN Co needs more than just Telstra's infrastructure; it requires Telstra's customers who are using that infrastructure. This customer base is most certainly as valuable as the infrastructure itself.

Legislation to allow price setting

6.119 One of the outcomes sought by the Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009 is to amend the powers of the Australian Competition and Consumer Commission (ACCC) in making access determinations. As noted in the Explanatory Memorandum to the Bill:

> A key reform made by this Bill to Part XIC [of the *Trade Practices Act 1974*] is the removal of the ACCC's role in arbitrating access disputes between access providers and access seekers, and the introduction of a power for the ACCC to set up front the terms and conditions of access to declared services to apply to all access providers and all access seekers.[79]

6.120 This provision seeks to end the ability of Telstra to 'game' the regime, streamlining the pricing process and providing pricing certainty to access seekers and their customers. It is a move that will no doubt be welcomed by the majority of access seekers who have experienced both the investment uncertainty and the costly and time-consuming litigation processes that have plagued the industry for the last decade.

6.121 However, even if the legislation is passed and the ACCC is granted the power to set prices, the committee highlights that there is still no clear basis on which the ACCC can decide prices. The committee again urges that the Implementation Study must be publicly provided to ensure that the previous industry uncertainty around pricing options is not perpetuated by government delays.

Pricing principles

6.122 The Productivity Commission (the Commission) provided a submission to this inquiry that drew from recent reviews it had conducted, noting that the Commission had not undertaken any recent reviews into broadband itself. Regardless of this, the submission provided some very useful principles that govern a number of aspects around the deployment of the NBN, including pricing principles.

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79 Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, *Explanatory Memorandum*, p. 141.

6.123 An insight provided by the Commission is that governments should not regulate prices 'unless it is clearly necessary to avoid larger efficiency losses from the successful exercise of market power.' Although this implies that price regulation in the current telecommunications environment is warranted, the submission then states that:

> Price regulation should not be employed to meet social objectives.[80]

6.124 This places some cloud over the continuation of price regulation once the NBN is fully operational, due to the high level of social benefit. Although social benefits of the NBN are difficult to quantify or monetise for the purpose of a cost-benefit analysis, they are certainly an assumed consequence by the government and major stakeholders.

6.125 The Commission also cautioned that 'price setting is an imprecise exercise' and that '[A]ll of the methods available to regulators for setting an "efficient" price have shortcomings.'[81]

6.126 Having noted that price-setting is an 'imprecise exercise', the Commission warned that there are negative effects of setting prices either too high or too low:

> Prejudicing future investment in important infrastructure services through setting prices too low is likely to be much more economically damaging than allowing service providers some prospect of retaining a modicum of monopoly rent.
>
> - Excessively low access pricing produces adverse effects gradually, but its long-run welfare implications can be significant. If access prices remain too low, no firm (including the incumbent) will make core network investments as it cannot expect a reasonable return on capital.
> - Excessively high access prices discourage service-based competition and lead to excessively high retail prices, less product variety and the potential for inefficient duplication of facilities.[82]

6.127 The Commission recommended that prices should be set so that they are:

> …at least sufficient to cover efficient long-run costs, including a return commensurate with the commercial and regulatory risks involved.[83]

Competitive neutrality

6.128 The Commission's submission also discussed the issue of competitive neutrality, noting that the full operational and governance arrangements are still uncertain. The Commission states that compliance with the policy of competitive

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80 Productivity Commission, *Submission* 87, p. 9.

81 Productivity Commission, *Submission* 87, p. 9.

82 Productivity Commission, *Submission* 87, pp 9-10.

83 Productivity Commission, *Submission* 87, p. 10.

neutrality would ensure that any company operating as a government business would not have a competitive advantage. The submission quotes from the *Commonwealth Competitive Neutrality Policy Statement (1996),* which warned that:

> Where competitive neutrality arrangements are not in place, resource allocation distortions occur because prices charged by significant government businesses need not fully reflect resource costs. Consequently this can distort decisions on production and consumption … [and] also distort investment and other decisions of private sector companies.[84]

6.129 This has clear implications for the NBN Co and also for the ACCC in setting up front costs for access to the NBN Co, which will be a major GBE. The Commission cautioned that:

> …prices set by any government-owned business should fully reflect resource costs and, in doing so, achieve a commercial rate of return on the business' capital.[85]

6.130 This note of caution is not only relevant, but also highlights yet again the fact that the costs of building the NBN are an essential component in the price setting process for the wholesale-only network. Without knowledge of the anticipated cost outlay, the prices cannot be set to 'reflect resource costs' and consequently no-one can determine whether the NBN Co will ever be a commercially viable entity.

Discard the commercial viability requirement?

6.131 There have been a number of stakeholders who have questioned the government's insistence that the NBN Co must be a commercially viable GBE. The founding CEO of Internode is among those who believe that the government is mistaken in trying to achieve this outcome. Mr Simon Hackett aligns the creation of a dedicated national broadband network with the building of Australia's national road system. He notes that the last 50 years of economic growth and prosperity was facilitated by the national roadwork, and suggests that the next 50 years' growth will be equally dependent on building a dedicated national broadband network.

6.132 Consequently, Mr Hackett states that:

> …the new network, like the national road network, should be initially built as a 100% government funded network, not as a public-private partnership, to avoid a tug-of-war between competing drivers that could literally pull the network apart.[86]

6.133 Mr Hackett explained this further:

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84 Productivity Commission, *Submission* 87, p. 11.

85 Productivity Commission, *Submission* 87, p. 11.

86 Mr Simon Hackett, *Communications Day,* 17 August 2009, p. 6.

> The natural agenda of a commercial investor … conflicts fundamentally with the long term, nationally available, wholesale-only aspects of the NBN policy.
>
> …this just serves to highlight that the commercial investment model is the wrong model to apply to a network of this nature![87]

6.134 Professor Joshua Gans was also of the view that the government should not force the NBN Co to be a commercially viable entity. Professor Gans pointed out that the NBN will be a critical infrastructure project for Australia, and stated that:

> There is a lot of discussion regarding the new broadband network and whether it can earn a commercial return. As an economist, I regard that as a largely irrelevant consideration for what is essentially a government infrastructure policy.[88]

6.135 Professor Gans believed that the government must place greater consideration on the long term benefits of the NBN, adding the interesting viewpoint that:

> …part of the future proofing is being not just technologically future proofed but economically future proofed as well. … I see it not as broadband policy but infrastructure policy and that is how we have to think about it.[89]

The promise of pricing equivalence

6.136 Adding to the pricing confusion is the commitment by the government not only to provide affordable broadband across the nation, but also to ensure that everyone in Australia pays the same price for their broadband services. This is in response to thus-far unanswered and long-standing criticisms that regional and remote Australians are forced to pay far higher prices for a service than their metropolitan-living compatriots.

Cross-subsidisation

6.137 In order for wholesale access prices to be equivalent right across the Australian landmass, and over the three different delivery modes, it is apparent that access prices for the less-profitable regional, rural and remote communities will need to be supported by cross-subsidies from the more commercially viable urban centres.

6.138 Minister Conroy has been quoted as confirming that the NBN will offer uniform wholesale pricing across fibre, wireless and satellite:

> This is unashamedly and explicitly a cross-subsidy to deliver equivalent service to all Australians.

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87 Mr Hackett, *Communications Day,* 17 August 2009, p. 6.

88 Professor Joshua Gans, *Committee Hansard*, Melbourne, 7 October 2009, p. 66.

89 Professor Gans, *Committee Hansard*, Melbourne, 7 October 2009, p. 67.

> My ambition is that there will be the same wholesale price for every household for the same speed across satellite, wireless and fibre-to-the-node [premises].
>
> We are saying up front this will be a cross-subsidy, one wholesale price averaged across the country.[90]

6.139 The minister further clarified this several weeks later at Senate Estimates, however also inserted a caveat:

> What I said in Tamworth was that across the fibre network for 90 per cent there would be one price for a product – for example one meg. What I clearly said was that was our ambition, depending on the implementation report … for across the three platforms of wireless, satellite and fibre for there to be consistent pricing, subject to the implementation study…[91]

6.140 The minister was even more tentative as he further clarified:

> What I have talked about is products and, depending on the implementation study, some products may – and I stress 'may' – be able to be priced across all three platforms.[92]

6.141 Yet again, the Implementation Study is creating uncertainty even around the basic assumption of equivalent pricing, which subsequently must impact on the promised 'affordability' aspect of the NBN.

Should the subsidy be individualised?

6.142 The prospect of having uniform wholesale prices right across the national network is most likely music to the ears of those who have been consistently paying much higher prices for broadband services.

6.143 However, in relation to the application of subsidies, the committee again draws attention to the principles laid out by the Productivity Commission in their submission. Their submission stated that:

> …if subsidies for some consumers of particular infrastructure services are judged to be necessary, then consistent with the approach agreed by Australian governments, these should be applied through separate budget-funded CSOs [Community Service Obligations].[93]

6.144 Later in their submission the Commission further expanded on that statement:

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90 See discussion *Communications Day*, 23 September 2009, p. 2.

91 Minster Conroy, Senate Estimates, Environment, Communications and the Arts, *Committee Hansard*, Canberra, 19 October 2009, p. 67.

92 Minster Conroy, Senate Estimates, Environment, Communications and the Arts, *Committee Hansard*, Canberra, 19 October 2009, p. 67.

93 Productivity Commission, *Submission 87*, p. 9.

> Governments in Australia have accepted the general proposition that support for low income, or otherwise disadvantaged, consumers of infrastructure services is better delivered either by addressing the disadvantaged directly or through transparent and directly funded CSOs, rather than requiring providers to cross-subsidise certain users through artificial pricing structures.[94]

6.145 Professor Gans separately offered a solution to ensuring that all Australians have access the benefits of the NBN. In evidence given in Melbourne, Professor Gans explained a way to ensure that the social dividends of the NBN were achieved across all demographics:

> I advocate, in particular, [free] basic broadband services … just a basic level of internet access … there is no reason why you cannot make that freely available. You end up making a return on that since the vast majority of households will want something more than the free service, but if you have a free basic internet service…it allows you to really consider putting government services online. We know that one of the impediments to putting those services online is … simply because there is a section of the population that cannot afford broadband access. Provide a free service and that entire debate changes.[95]

6.146 Professor Gans believed that the government could also include an income-tested provision of computer equipment to ensure that all Australians could access the free service.[96] The bottom line dividend for the government would be the long-term cost savings offered by the broader provision of online government services.

6.147 Yet another alternative solution is to follow the model detailed earlier by Mr Price, from Axia NetMedia. His suggestion was that, if the government provided seed funding that was used to nationally deploy sufficient regional backhaul to facilitate all communities to connect to their nearest regional centre, there would be no need for any future government funding for regional areas at all. Mr Axia suggested that:

> If you do it that way it solves the perpetual cross-subsidy program process; all our numbers would say that it would only take $2 billion of grant to deal with that. The government is spending more than $500 million a year now, so they get a payout on that $2 billion and the long-term spending is over.[97]

Productivity Claims

6.148 There is general consensus that the provision of ubiquitous broadband at equitable and affordable prices will result in productivity benefits across the nation. For example, the Productivity Commission noted in their submission that:

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94 Productivity Commission, *Submission 87,* p.12.

95 Professor Gans, *Committee Hansard,* Melbourne, 7 October 2009, pp 66-67.

96 Professor Gans, *Committee Hansard*, Melbourne, 7 October 2009, p. 69.

97 Mr Price, *Committee Hansard*, Sydney, 5 August 2009, p. 17.

> …an important contributor to Australia's improved productivity performance in the 1990s was a competitively driven acceleration of ICT use in many industries … By analogy, an efficient, well regulated and widely accessible NBN might be expected to facilitate further direct productivity benefits …[98]

6.149 The BCA submission supports this view, making the following claim in their introductory paragraph:

> Investment that raises the speed, quality and coverage of high-speed broadband provision in Australia has the potential to contribute to innovation, productivity and economic growth in the coming decades.[99]

6.150 However, the committee notes that the difficulty of attempting to quantify and monetise productivity increases, coupled with the lack of data both here and overseas, results in some variance in estimates of the NBN's benefits to productivity. This simply adds to the list of uncertainties surrounding the implementation of the NBN.

State of the Regions Report 2008-09

6.151 In the *State of the Regions Report 2008-09* (SOR), an entire chapter was dedicated to the impact of broadband on the economic development of regional Australia. Although it is almost a year since this report was published, and the government's planned NBN has evolved from the then FTTN to the current FTTP proposal, the SOR does carry some important, relevant facts and conclusions from around the nation.

6.152 The chapter on broadband commences with an examination of the ongoing upward trend in statistics in broadband and internet usage – a trend that has continued unabated in the last twelve months, as noted earlier in this chapter. On the basis of the published figures, the SOR makes a clear statement that:

> It is in the nation's interest that the development of the National Broadband Network is facilitated as planned. Further delays will further undermine Australia's competitive position in relation to the benefits of the knowledge economy and of online services.[100]

6.153 Further on, the report finds that any delay to the NBN will constrain the international competitive position of companies, while also delaying the cost savings that could be achieved through broader application of government online services. The report also notes that '[P]oor standards of connectivity constrain innovation',

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98 Productivity Commission, *Submission 87*, p. 2.

99 BCA, *Submission 52*, p. 1.

100 National Economics/Australian Local Government Association, *State of the Regions 2008-09*, p. 57.

compromising opportunities to develop, for example, smart network grids that can facilitate the management of greenhouse emissions.[101]

6.154 The report quotes from a Telstra publication, *Towards a high-bandwidth, low carbon future*, released in October 2007, which estimated that telecommunications networks had the capacity to reduce national emissions by around five per cent, with cost savings in the order of $6.6 billion per year.[102] With the current debate about carbon trading schemes, the potential value in carbon credits to Australia will be even more beneficial to the economy today.

6.155 Noting productivity losses quoted in the previous SOR due to inadequate broadband connectivity, the report stated that 'there is no reason to assume any improvements in these numbers for 2008'. No doubt the same can be said for 2009:

> Last year's SOR identified $3.2 billion and 32,000 jobs lost to Australian businesses in the previous 12 months due to inadequate broadband infrastructure and the possibility of an estimated $40 to $50 billion in savings from e-health/e-medicine and smart networks over 10 years.[103]

6.156 The SOR also speculates that 'the rapid uptake of mobile and wireless broadband [could be] a symptom of the lack of a high speed national broadband fibre network.'[104]

A New Zealand perspective

6.157 Late in October 2009 a report was released by three New Zealand authors, who examined the impact of internet connectivity on business productivity. The report analysed three broadband scenarios for businesses using the internet: broadband versus no broadband; slow versus no broadband; and fast versus slow broadband. In their conclusion, the authors noted that:

> Our study is the first, internationally, to estimate the productivity impacts of connectivity upgrades using firm level data after controlling for firms' connectivity choices based on their characteristics.[105]

6.158 The introduction of this report highlights the lack of existing research relating to productivity increases claimed to be attributable to broadband:

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101 National Economics/Australian Local Government Association, *State of the Regions 2008-09*, p. 70.

102 National Economics/Australian Local Government Association, *State of the Regions 2008-09*, p. 70.

103 National Economics/Australian Local Government Association, *State of the Regions 2008-09*, p. 71.

104 National Economics/Australian Local Government Association, *State of the Regions 2008-09*, p. 71.

105 Grimes, Ren and Stevens, *The Need for Speed: Impacts of Internet Connectivity on Firm Productivity*, p. 35.

> Despite well articulated pleas for upgraded internet access, reference to rigorous research that quantifies benefits actually accruing from network upgrades is generally absent in supporting materials. A key reason for this conspicuous absence is that little rigorous research exists that measures the productivity impacts of a shift from one type of internet access to another.[106]

6.159 The overall analysis findings supported the general consensus that productivity is improved through the uptake of broadband:

> We find a … productivity effect of broadband relative to no broadband of approximately 10% across all firms. The estimates indicate a marginally stronger impact on firm productivity … in rural (low population density) relative to urban (high population density) areas but the differences are not significantly different.[107]

6.160 However, an interesting finding seemed to substantiate claims made earlier in this chapter that perhaps Australia does not need 100 Mbps:

> …all of these productivity gains can be attributed to the adoption of slow relative to no broadband, with no discernable additional effect arising from a shift from slow to fast broadband.[108]

6.161 The report cautions that this finding should be interpreted with care, citing a number of possible reasons for the finding, and suggests that further research would beneficial.

Home-grown examples

6.162 The committee was fortunate to hear from several witnesses who are already reaping the benefits of broadband. Although no attempt has yet been made to quantify and/or monetise these benefits, they were none-the-less apparent.

6.163 In Melbourne the committee heard from executives of Ballarat ICT Limited, which 'is a partnership of industry, government and educational institutions', with the underlying belief 'that ICT is critical to creating sustainable and dynamic growth across the region.'[109] When asked to comment on the impact that the availability of higher speed broadband has had on the economic success in the region's ICT sector, their response was:

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106 Grimes, Ren and Stevens, *The Need for Speed: Impacts of Internet Connectivity on Firm Productivity*, p. 6.

107 Grimes, Ren and Stevens, *The Need for Speed: Impacts of Internet Connectivity on Firm Productivity*, p. 37.

108 Grimes, Ren and Stevens, *The Need for Speed: Impacts of Internet Connectivity on Firm Productivity*, p. 37.

109 Ballarat ICT Fact Sheet.

> If you look at development of technology, there is a strong correlation between the infrastructure in place, including really good optical fibre into the [Ballarat Technology] park, and the developments that occurred. The reality is that to attract investment out of the capital cities you have to provide the appropriate infrastructure.[110]

6.164 Noting the attraction factor of the high speed fibre connectivity into the Ballarat Technology Park, another witness said that it 'gives us an economic development advantage'.[111] In fact, the group noted that the Ballarat Technology Park had experienced a slight increase in employment over the past twelve months, despite the global financial crisis:

> In actual fact, we have had a marginal increase in employment. We are still talking to further investors in this sector … It gives me added confidence to continue to push to grow the ICT sector within Ballarat. It is almost like a risk mitigation sector.[112]

6.165 One sector within the Ballarat region that is benefiting from reach of the Ballarat ICT Ltd is the Grampians Rural Health Alliance; the Alliance established a company called GRHANet with the purpose of building a broadband network across the Grampians region. This infrastructure in turn has enabled VoIP services within the region's health sector, so that:

> …every health service in the region is using IP telephony… So all calls between all health services in the region are free.[113]

6.166 This has obviously been financially beneficial to each health service. In addition, GRHANet has enabled administrative benefits to each health service entity across the region through the establishment of shared service set-ups:

> We provide applications, internet services, electronic health records, electronic referral systems and the like from that major centre, that shared service.[114]

6.167 Chapter six discusses the benefits of GRAHNet to local healthcare in further detail.

6.168 There were also benefits for staff in remote locations having the ability to access specialist opinions. This had multiple flow-on benefits of increasing the skill levels of remote health workers, increasing their confidence levels. Having specialist

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110 Mr Mal Vallance, Ballarat ICT Ltd, *Committee Hansard*, Melbourne, 7 October 2009, p. 32.

111 Ms Helen Thompson, Ballarat ICT Ltd, *Committee Hansard*, Melbourne, 7 October 2009, p. 32

112 Mr Vallance, Ballarat ICT Ltd, *Committee Hansard*, Melbourne, 7 October 2009, p. 33.

113 Mr David Ryan, Grampians Rural Health Alliance, *Committee Hansard*, Melbourne, 7 October 2009, p. 77.

114 Mr Ryan, Grampians Rural Health Alliance, *Committee Hansard*, Melbourne, 7 October 2009, p. 77.

advice available on-call and face-to-face had an unexpected benefit of decreasing staff turnover and also acting as an attraction in the recruitment of new staff.[115]

6.169 All these benefits are having very real, positive impacts across the Ballarat health sector and on to Melbourne. Unfortunately none have been collated and documented.

6.170 Another Melbourne witness gave evidence of the productivity improvements resulting from the use of broadband. Mr Brad Wynter, from the City of Whittlesea, described a number of innovations that have been introduced within the council with the aim of reducing the regulation burden on business. The first was to design a common electronic smart form that could be utilised by all Victorian councils and then made available to them across a common platform:

> That EasyBiz project built that platform to cover 21 different regulatory processes including planning, building, land based information, health and local laws … with the aim of simplifying for local businesses their dealings with local government.[116]

6.171 Mr Wynter explained that this principle has subsequently been applied to legislation governing food safety and compliance timetables. Even though there were training programs for businesses that handled food, the council realised there was no common template for businesses to record their compliance information:

> We built an online template system in conjunction with the ANZFA standards and made it available to all Victorian councils. … Since then both New Zealand and Western Australia have looked at the system and have been interested in utilising it.[117]

6.172 These and other innovations discussed by Mr Wynter, clearly demonstrate that through the use of high-speed broadband, the council had improved business productivity by reducing the administrative burden. Other 'mobile applications' decreased the amount of travel required by council officers, again with increased productivity and decreased fuel costs and resultant carbon emissions.[118]

6.173 Again, unfortunately these benefits have not been collated or documented other than anecdotally here in Hansard.

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115 See general discussion, Grampians Rural Health Alliance, *Committee Hansard*, Melbourne, 7 October 2009, pp 80-83.

116 Mr Brad Wynter, City of Whittlesea, *Committee Hansard*, Melbourne, 7 October 2009, p. 92.

117 Mr Wynter, City of Whittlesea, *Committee Hansard*, Melbourne, 7 October 2009, p. 93.

118 See discussion, Mr Wynter, City of Whittlesea, *Committee Hansard*, Melbourne, 7 October 2009, p. 94.

Employment promises

6.174 One of the focal points of building the new network was the government's promise that this would stimulate employment:

> This is a major nation building project that will support 25,000 jobs every year, on average, over the life of the project. At its peak, it will support 37,000 jobs.[119]

6.175 At that time, with the global financial crisis biting hard throughout the world, this was a very welcome promise of economic stimulus and employment opportunities.

6.176 Given that the first rollout has only recently commenced in Tasmania, there have been no reports to date supporting the claim that local jobs are being supported in the areas where the fibre deployment has commenced, or whether the deployment has created new job opportunities, or is just supporting existing employment.

Skills shortage

6.177 While the committee acknowledges that it is early days in the NBN rollout and that figures supporting the claim are most likely unavailable, there is one issue that greatly concerns the committee, and that is the requirement for highly skilled technicians to undertake this rollout.

6.178 The tasCOLT report highlighted the fact that the project, which was comparatively minute in scale compared to the national NBN rollout, was significantly hampered by the lack of skilled technicians required to deploy the fibre.

> Availability and affordability of skilled installation contractors also contributed to delay and final completion date of the network.[120]

6.179 This claim should ring alarm bells for the government to make sure that there are sufficient skills training in the appropriate technical fields that will provide the number of skilled, work-ready employees to undertake the rollout in each region.

6.180 The committee sought some information from the Tasmanian Government on how it would ensure there were sufficient numbers of appropriately trained workers ready to rollout the NBN in Tasmania. The committee also sought to hear from the Tasmanian Skills Institute on the courses they might currently have underway that would provide places for those requiring new skills or an upgrade of current skills. Both these potential witnesses declined to appear before the Committee.

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119 http://www.minister.dbcde.gov.au/media/media_releases/2009/022, accessed 16 November 2009.

120 tasCOLT, *Report on the rollout of the tasCOLT Fibre to the Premises Commercial Trial*, October 2008, p. 19.

6.181 The committee did hear relevant evidence from the Ballarat ICT Limited, who responded to the question of whether the NBN would result in local jobs. The representatives noted that it was '[c]ritical … to understand the timeframes' that the training facilities would have to provide the training:

> If the NBN was to be launched in Ballarat in six months, there is no doubt that we would be challenged in finding the full range of skills necessary to support implementation. If we have a window of three of four years, … the University of Ballarat, particularly through its TAFE division, is one mechanism we would try to ramp up the skilling of labour.[121]

6.182 The committee highlights that the government needs a lead time of three to four years to ensure an appropriately skilled workforce is ready to deploy the NBN. Unfortunately, the reluctance of witnesses to speak with the committee does not provide any assurances that the lessons learned during the tasCOLT trial have been heeded by the government.

Committee view

6.183 The committee draws the attention of the government to the recently tabled annual report by the Productivity Commission. In the section devoted to 'getting the most out of stimulus spending', the Commission highlights the 'long-term economic effects' that this stimulus spending will have. The Commission states that:

> The Government has affirmed that efficient public investment in infrastructure requires the application of detailed cost-benefit analysis and transparency at all stages of the decision-making process, to ensure that the highest economic and social benefits are delivered. (Australian Government 2008c). It has committed to apply rigorous evaluation criteria to allocations from the newly established 'nation building' investment funds …[122]

6.184 The Commission highlights the fact that the 'guidelines have not been universally applied to date', holding up the NBN as an example:

> …the decision to build a National Broadband network, although endorsed by Infrastructure Australia, was not based on detailed cost-benefit analysis.
> …
> The consistent application of rigorous project evaluation methods remains fundamental to ensuring that investments are the most beneficial.[123]

6.185 The committee condemns the government's refusal to conduct a cost-benefit analysis on the implementation of the national broadband network. The committee urges the government to follow its own guidelines in requiring a transparent evaluation of the costs and likely benefits of this proposal.

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121 Mr Vallance, *Committee Hansard*, Melbourne, 7 October 2009, p. 26-27.

122 *Productivity Commission Annual Report 2008-09*, p. 21.

123 *Productivity Commission Annual Report 2008-09*, p. 21.

6.186 The committee urges the government to produce an interim report on the Implementation Study, to provide the Australian public and the telecommunications industry with a level of confidence in the progress of this massive infrastructure project. The committee also urges the government to ensure the final Implementation Study report is not delayed beyond February 2010 and is open to public scrutiny.

6.187 The committee is disappointed at the lack of benchmark data that could be used to measure the predicated impact on productivity of NBN. The committee urges the government to commission an ongoing review by the Productivity Commission to capture the productivity benefits across all Australian communities and particularly across all sectors of business and industry. The committee consequently makes the following recommendations:

Recommendation 4

6.188 That the government conducts a rigorous cost-benefit analysis of its NBN proposal before the NBN Co enters into any new asset purchasing agreements for the mainland deployment.

Recommendation 5

6.189 That the government provides an Interim Implementation Study Report by 31 December 2009. This must provide a progress account of the planning of the NBN, including the progress of the deployment in Tasmania and lessons learned from that deployment.

Recommendation 6

6.190 That the government immediately undertakes a skills audit for the NBN, detailing the training course required, the training timeframes involved and the training institutions available to ensure there is a fully skilled workforce ready to deploy the NBN in each region.

Recommendation 7

6.191 That the cost-benefit analysis, the Interim Implementation Study Report and the Final Implementation Study, are all released for public scrutiny within 14 days of completion.

Recommendation 8

6.192 That the government commissions the Productivity Commission to undertake an annual ongoing evaluation of the impact on productivity resulting from broadband uptake, across all community, business and industry sectors, with the first report to be tabled in parliament before the last sitting day in 2010.

Recommendation 9

6.193 That if the Implementation Study concludes the NBN project specifications are unrealistic, not practical or uneconomical, that the government must reassess its overall policy approach.

Chapter Seven

Driving demand

Introduction

7.1 The previous chapter discussed the commercial viability of the NBN at length, and examined the interrelated issues of the drivers of demand and the possible economic, productivity and social benefits that will determine the level of commercial viability.

7.2 The committee was reminded by Professor Seneviratne, Director of National ICT Australia (NICTA) that 'the NBN is the enabler for the digital economy.'[1] The NBN is not in and of itself a useful technology. Rather, its usefulness, and commercial value depends entirely on the applications that it will support in the future. In this regard, Professor Joshua Gans submitted that:

> Broadband is much more than the wires and equipment. To use it you need internet services and applications. And it is here that the Government can fill market gaps and directly increase the value of broadband to consumers. By doing that, it can help make the case for public investment in the infrastructure and also reduce the level of investment required as consumers will be more willing to pay for their own service.[2]

7.3 This chapter focuses on the innovation and possibilities that will steer the NBN towards commercial viability and sets out some of the considerations that are relevant to the development of applications within the NBN policy arena.

7.4 It is not practical in this report to discuss all of the possible applications that may be enabled by the NBN, nor indeed is it even possible to contemplate all future innovative possibilities. Accordingly, the committee has restricted itself to a discussion of a select few applications to indicate the possibilities of the NBN in a range of areas, and illustrate the issues involved.

Applications determine demand

7.5 Mr Keller-Tuberg, Chair of the Regulation and Policy Committee of the Fibre to the Home Council Asia-Pacific, told the committee that:

> In order to understand and comprehend the value of an investment in advanced broadband infrastructure, regardless of whether it is fibre to the premise, wireless, DSL or fibre to the node, you really need to contemplate the applications that run over that infrastructure. Until applications are

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1 Professor Aruna Seneviratne, Director, ATP Laboratory, NICTA, *Committee Hansard*, Sydney, 5 August 2009, p. 18.

2 Professor Joshua Gans, *Submission 42*, p. 10.

> implemented and delivered, there is no value in the investment. The value to society is entirely in the way the network is used.[3]

Chicken and egg scenario

7.6 As noted by Mr Keller-Tuberg, the commercial viability of the NBN will not be based on the physical fibre rolled out to people's homes, but on the value to consumers of the applications enabled by the fibre. Conversely, it will be the affordability of the network to a large percentage of Australian consumers that will in turn drive uptake and hence determine whether it is commercially viable for developers to create new applications.

7.7 There is a 'chicken and egg' scenario in this discussion: it can be argued that without the development of applications that will utilise high speed broadband, there is no need for high speed broadband infrastructure. On the other hand, it can be argued that unless consumers of those applications have affordable high speed broadband infrastructure available to them, they cannot use the applications. Consequently application developers have no market, so why spend resources to develop the applications?

7.8 On the affordability issue, Professor Gans agreed that Australia's existing broadband infrastructure – specifically its low speeds and high costs – 'ha[s] been responsible for a lack of broadband development and applications in Australia'.[4] In order to ensure that application development in Australia is not further hampered by the high costs and low speeds of broadband, which in turn have limited consumer uptake, both the affordability aspect for the consumer and the network capacity aspect will need to be addressed to encourage future application development.

7.9 As outlined in chapter five, Mr Henry Ergas and Mr Alex Robson undertook an assessment of the costs and benefits of the NBN. In terms of the development of applications, they too found that there is a relationship between the value the consumer will place on high speed broadband, based on the value of the services and applications they utilise, and their willingness to subscribe to those higher speeds:

> For any given set of applications, the valuation of speed will therefore be significantly concave, though the location of the valuation curve will shift over time, as ‘bandwidth hungry’ applications develop and as a greater number of consumers attain a utility level from access to broadband that induces them to obtain the service (i.e. that exceeds the service’s start-up costs).[5]

7.10 The NBN proposal clearly addresses the speed issue (at least for 90 per cent of Australians); however, as discussed in the previous chapter, the committee remains

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3 Mr Stefan Keller-Tuberg, Chair, Regulation and Policy Committee, Fibre to the Home Council Asia Pacific, *Committee Hansard*, Canberra, 20 July 2009, p. 52.

4 Professor Joshua Gans, *Submission 42*, p. 1.

5 Henry Ergas and Alex Robson, *Submission 99*, p. 15.

concerned that the cost of retail services under the NBN may be prohibitive for many Australians. In developing its pricing model, including the regulation of prices by the ACCC, the government needs to ensure that the NBN is affordable to the majority of Australians so there is a potential market and supporting infrastructure that will encourage the development of applications.

7.11 Dr Rowan Gilmore, the CEO of the Australian Institute for Commercialisation (AIC), provided the committee with an example of a technology that failed to succeed because of a lack of applications:

> …ISDN is a good example of a technology that was grossly underutilised, and its take-up was substantially limited because there were no applications for it.[6]

7.12 Dr Gilmore cautioned against expending significant resources on infrastructure in order to support applications that do not yet exist:

> To have a legacy investment and then retrofit a legacy investment to an application that does not yet exist and spend billions of dollars to do that is, in my opinion, a risky investment.[7]

7.13 However, Dr Gilmore highlighted that the main purpose of their submission was not to question the overall NBN investment, but rather:

> Our submission was principally to point out the opportunity that the national broadband network presented for Australian [Research and Development] and for numerous small Australian suppliers to the telecommunications market and to express the concern that the opportunity not be squandered.[8]

7.14 Dr Gilmore later expressed concern that many of the applications touted by proponents of the NBN are already accessible using existing technology, yet have failed to drive demand for high-speed broadband. [9] He suggested that the main use of increased bandwidth was likely to be in entertainment, casting doubt on whether the government should invest such a significant amount of money into supporting high definition TV, video downloads and gaming.

7.15 The committee considers that, if well managed and appropriately regulated, a FTTP network may bring benefits to Australia. Discussion follows highlighting some key examples of applications already under development, including e-health, e-education, business applications, online government, and smart grids.

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6 Dr Rowan Gilmore, CEO, Australian Institute for Commercialisation, *Committee Hansard,* Canberra, 20 July 2009, p. 30.

7 Dr Gilmore, *Committee Hansard,* Canberra, 20 July 2009, p. 30.

8 Dr Gilmore, *Committee Hansard,* Canberra, 20 July 2009, p. 29.

9 Dr Gilmore, *Committee Hansard,* Canberra, 20 July 2009, p. 32.

e-Health

7.16 One of the key arguments cited in favour of FTTP is its necessity for the further development of e-health applications. The image of a doctor performing surgery remotely on a person in rural Australia is certainly a powerful argument in favour of the possibilities offered by high-speed broadband. However, as Professor Gans has argued, this is unlikely to be where the greatest benefits of high-speed broadband lie:

> Instead, it is the day-to-day medical needs of people that represent the greatest opportunity for improvement.[10]

7.17 To illustrate the potential benefits of e-health, Professor Gans walked through the scenario of a child with an earache:

> This requires bundling up your child, usually in the evening, and then a wait, perhaps up to an hour, for an unscheduled appointment. The GP will then examine your child's ear, proclaim an infection or not and prescribe pain killers or antibiotics…
>
> Suppose instead that you took a simple, already available $15 device that connected via USB to your computer and allowed you to take a high-resolution picture of your child's ear. You then emailed it to the GP, who would provide the diagnosis or, if there was an issue, call you in to the surgery…The savings in terms of time would be considerable for many households.[11]

7.18 At the Sydney pubic hearing, the National e-Health Transition Authority (NEHTA) spoke at length about the possible benefits that applications in e-health could provide, stating that:

> …the entire e-health agenda is underpinned by high quality, high-speed broadband networks.[12]

7.19 NEHTA also provided a submission noting that e-health applications will be used to: make patient health information easily accessible, allowing health professionals to make informed treatment decisions; enable patients to better manage their own health through access to information; and allow the Australian health care sector to function more effectively as an interconnected system, reducing duplication.[13] This would in turn provide potential savings in the health dollar.

7.20 The CSIRO also mentioned the use of high-speed broadband in improving health service delivery, citing applications is telemedicine, diagnostic services and health data management. The submission notes that;

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10 Professor Gans, *Submission 42*, p. 10.

11 Professor Gans, *Submission 42*, p. 10.

12 Dr Mukesh Haikerwal, NEHTA, *Committee Hansard* , Sydney, 5 August 2009, p. 28.

13 National e-Health Transition Authority, *Submission 54.*

> …the health sector represents almost 10% of the national economy, and eHealth activities have long held the promise of enhancing productivity in healthcare delivery. [14]

7.21 An example of e-health applications already in place was provided to the committee by witnesses from the Grampians Rural Health Alliance. As mentioned in chapter five, the Alliance was established to build a broadband network across the Grampians region. The network supports Voice over IP (VOIP) telephony and video conferencing applications to allow high quality clinical conferencing between medical professionals in the Grampians with those based in Ballarat and Melbourne hospitals and specialist centres.

7.22 The technology also includes a dialysis unit that can be monitored remotely, so that dialysis patients in rural Victoria do not have to travel three hours each way to have simple problems diagnosed. Other health services provided by over the fibre link include palliative care and speech pathology. [15]

7.23 The committee was also told about the potential benefits of applications for Australia's Deaf community. The Australian Federation of Deaf Societies (AFDS) submitted that the development of next generation Video Relay Services (VRS) 'would significantly support the *Social Inclusion* policy of the current government'.[16]

7.24 However, the committee cautions that the social benefits of applications such as VRS will not be available without appropriate government support. AFDS submitted that, currently, VRS is only available to 'the highest paying users of broadband internet', leaving 'much of the Deaf community without needed services'. [17] In the committee's view, the government needs to take positive action to ensure that necessary services such as VRS are accessible to all who need them, and that ongoing development of related applications is facilitated in Australia.

7.25 Professor Gans warned that high-speed broadband alone would not enable the development of e-health applications. He argued that the government will need to ensure that regulations enable the use of these applications, for example, by extending Medicare benefits to cover remote consultations and procedures, and ensuring medical liability insurance covered medical practitioners undertaking these procedures.[18]

7.26 Healthcare software developer iSoft also cautioned that the development and viability of e-health applications will depend on appropriate government regulation.

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14 CSIRO, *Submission 80,* p. 7.

15 Ms Sharon Tonkin, Employee, East Wimmera Health Service and Member, Grampians Rural Health Alliance, *Committee Hansard,* 7 October 2009, pp. 78-79

16 Australian Federation of Deaf Societies, *Submission 65,* p. [2].

17 Australian Federation of Deaf Societies, *Submission 65,* p. [2].

18 Professor Gans, *Submission 42*, p. 10.

For example, they noted that the benefits of an electronic health records management application cannot be realised without appropriate privacy regulations.[19]

7.27 The committee therefore urges the government to be cognisant of the fact that regulatory reform of other sectors, including the health sector, is necessary in order to ensure successful uptake of applications that the NBN will enable. Without these associated reforms, the development of applications such as e-health will be stifled.

> Broadband networks are of dubious value on their own. But the Government has a real opportunity to reform things under its control and to allow services to develop as complements to its proposed infrastructure investment.[20]

e-Education

7.28 One of the key potential benefits of a FTTH network is its potential to deliver high-quality and equitable education programs across Australia. The committee heard evidence that the rollout of high-speed broadband is critical to ensuring the quality and international competitiveness of Australia's education system.

7.29 The submission provided by Optus stated that:

> Australia has over 10,000 schools, but in 2008 less than half had direct optical fibre connection – limiting the speeds at which they could access the internet and particularly rich content.[21]

7.30 A government initiative has been announced to address this very issue: the Digital Education Revolution (DER), under which the government has allocated $100 million to facilitate the further development of affordable, fast broadband for school education. The DER is highly dependent on the deployment of the NBN, and in fact its progress has been delayed, as noted on the government website:

> Rollout of high speed broadband to schools under the DER has been delayed pending the outcome of the review of regulatory arrangements and the NBN implementation study (expected February 2010).[22]

7.31 This delay is of great concern to the committee, serving to further underscore the necessity for the government to expedite the Implementation Study to ensure that Australia's school students are not disadvantaged. The committee is also concerned that the 90/10 footprint of FTTP versus wireless and satellite services will result in

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19 iSoft Group Ltd, *Submission 91*, p. 8.

20 Professor Gans, *Submission 42*, p. 11.

21 Optus, *Submission 53*, p. 8.

22 Department of Education, Employment and Workplace Relations, 'High Speed Broadband to Schools Overview', at http://www.deewr.gov.au/Schooling/DigitalEducationRevolution/HighSpeedBroadband/Pages/HighSpeedBroadbandToSchoolsOverview.aspx (accessed 9 November 2009).

maintaining the disparity in the level of broadband accessibility between rural and urban school students.

7.32 Similar problems exist in accessing information and online learning in the tertiary education sector, particularly outside of metropolitan areas.[23] Compared to leading international universities, the committee heard that Australian students have access to far slower and more expensive broadband, with the consequence that the development of educational applications has been hindered in Australia.

7.33 The committee heard evidence of this from VERNet, a private, not-for-profit company operated by the nine Victorian universities and the CSIRO. VERNet explained that 'research and education has extremely high bandwidth requirements'.[24] This is because of factors such as these facilities requiring concurrent access to large datasets, real-time international collaboration and reaching remote instrumentation. The problem is particularly pronounced in rural campuses, which do not have access to backhaul.[25]

7.34 The committee secretariat saw first-hand evidence of a research facility that was hampered by a lack of broadband availability. Located within 45 km of Canberra, the Molonglo Observatory Synthesis Telescope (MOST) is operated by the School of Physics of the University of Sydney. Until recently, the lack of basic backhaul infrastructure severely limited the efficiency with which the staff could download, cleanse and process the massive amounts of data produced each night.

7.35 The provision of wireless broadband services by the small entrepreneurial company, YLess4U, has transformed the way in which the staff can now process data and share it internationally. The MOST telescope was recently awarded government funding to prototype technologies relevant to the next generation radio telescope, the Square Kilometre Array (SKA)[26]. The development of these prototype technologies will be more efficient and effective through the availability of wireless broadband. In addition, an upgrade in early 2010 'will enable the direct control of the MOST facility by international researchers.'[27] This is an example of the 'enabling' factor of high speed broadband.

7.36 VERNet contends that the provision of high speed broadband is essential for research and development institutions, noting that the government only mentions that

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23 Optus, *Submission 53*, pp. 8-9.

24 Ms Elizabeth Barnett, General Counsel, VERNet Pty Ltd, *Committee Hansard*, Melbourne, 7 October 2009, p. 11.

25 Ms Barnett, VERNet Pty Ltd, *Committee Hansard*, Melbourne, 7 October 2009, p. 12.

26 The SKA program is a collaboration between institutions in 19 countries that will see the completion by 2020 of the world's premier imaging and surveying telescope, which will be 50 times more sensitive and able to survey the sky 10,000 times faster than any imaging radio telescope. It will have an output data rate of 1TByte per minute. Information accessed 15 November 2009 at: http://www.skatelescope.org/PDF/brochure/SKABrochure_2008.pdf

27 Mr Anthony Goonan, YLess4U, *Committee Hansard*, Canberra, 1 October 2009, p. 49.

the network will connect 'schools'. VERNet believes that this needs to be extended to ensure research and tertiary institutions are included in the rollout due to their unique capacity requirements. Ms Barnett, from VERNet, told the committee that their network required 'scalable capacity' and that :

> …that is why we used dark fibre rather than managed services … [which] could not meet capacity and demand increases in a cost-effective way.[28]

7.37 Ms Barnett continued that VERNet because they had access to dark fibre that their networks were scalable and could be upgraded as required:

> …we have upgraded to 10 [Gbps] and … the technology we have chosen currently has product at the 10 [Gbps] and 40 [Gbps].[29]

7.38 In particular, deployment of the NBN fibre in more remote, less commercially viable regions will assist organisations like VERNet to connect education and research institutions in those more remote areas to their research network.

7.39 These issues serve to accentuate that, unless carefully implemented, the NBN proposal has the potential to worsen existing gaps in the resources available to metropolitan versus rural educational institutions. The committee cautions the government to ensure it does not inadvertently widen the 'digital divide' as the NBN is deployed.

7.40 Commenting on an issue closely related to the educational digital divide, the Fibre to the Home Council Asia Pacific submitted:

> There is a tangible threat that 'applications divides' (innovative applications being available to some communities but not others) might emerge if application providers cannot easily 'go national' with their innovative services. Applications divides could similarly emerge if innovative services are not nationally embraced by government and national applications providers, to assure critical mass.[30]

e-Business

7.41 The NBN has the potential to provide applications that lower the costs and improve the productivity of Australian businesses. As Optus submitted:

> The ability to access and share complex applications and databases and to work remotely will allow much lower costs and greater innovation for business.[31]

7.42 Many such applications are currently available, but may become more widely adopted in a faster speed broadband environment. A simple example is the

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28 Ms Barnett, VERNet Pty Ltd, *Committee Hansard*, Melbourne, 7 October 2009, p. 12.

29 Ms Barnett, VERNet Pty Ltd, *Committee Hansard*, Melbourne, 7 October 2009, p. 17.

30 Fibre to the Home Council Asia Pacific, *Submission 67*, p. 15.

31 Optus, *Submission 53*, p. 10

videoconferencing application. High-quality video-conferencing has the potential reduce travel and transport costs of businesses, as well as associated environmental impacts. The benefits of video-presence in the health services arena have already been discussed above and in chapter six.

7.43 Additionally, if the broadband prices and the regulatory environment are both favourable, the NBN has the potential to make Australian ICT businesses innovators in applications development and stimulate entrepreneurial activity. This potential has already been realised in the Ballarat region, as detailed in chapter six and also later in this section.

7.44 Again, the committee secretariat was able to see first hand several examples of businesses that have benefited from the provision of high speed broadband that have enabled the uptake of services and applications. One example was a teaching medical practice situated in Bungendore, about 45 km from Canberra, which has been provided with broadband by YLess4U. The company's Chief Executive Officer explained the setup to the committee at a subsequent Canberra hearing:

> We also equip the local medical teaching practice at Bungendore with two distinct high speed services – the first for the [benefit of the] medical practice and the second for the [benefit of the] out-posted medical undergraduates from the Australian National University who are undergoing rural field work as part of their undergraduate studies.[32]

7.45 The provision of wireless broadband to this medical practice has enabled the practitioner there to participate in peer-specialist group consultations via videoconferencing, saving valuable clinical time and reducing the travel the doctor would otherwise have to undertake. The medical students are able to access the university network and also participate in weekly meetings with peers and supervisors still in Canberra.

7.46 Another example was that of an organic farmer in the vicinity of Canberra. Organic farming is very labour-intensive and consequently requires a higher proportion of workers for each organic crop or herd raised. This gives rise to potential safety issues due to having a large number of staff dispersed across the property and no means of contact with them.

7.47 Once broadband was provided to the business property, each staff member was provided with a hand-held device. Constant contact can now be maintained with the farm base, while staff can also download detailed crop information from the mainframe and/or record changes to conditions in the field, all in situ.. This subsequently allows full compliance with the very strict standards regulating the organic farming industry. The farmer is also contemplating the development of labour-saving applications, such as automated gates for animal yarding. The provision

32 Mr Anthony Goonan, YLess4U, *Committee Hansard*, Canberra, 1 October 2009, p. 49.

of broadband has enabled the development of applications that have resulted in greater diversification for the business owner than would otherwise have been possible.

e-Government

7.48 There are numerous benefits to making government services and information available electronically. The *Government Online* initiative commenced around 1999, with the Australian Government encouraging all government agencies to ensure as much of their information, and later their service delivery, was available online. Online government service delivery in an area such as social security can significantly improve the effectiveness and efficiency of service delivery and save time and travel for users of the service. Development of online services has gradually increased across all agencies and across the three levels of government over the past decade.

7.49 However, there are key issues that need to be addressed before government would be able to roll-out significant e-government applications. For example, the Australian Library and Information Association (ALIA) submitted that, anecdotally, a large portion of those accessing broadband services in libraries use those services to access and download government information and services, stating that:

> In some rural and regional communities the public library is the sole resource for access to government services and publications – e.g. the Centrelink fax machine is housed in the library at Hillston NSW. Government agencies are sending people to the local public library for government information …[33]

7.50 ALIA noted that many of those using free broadband in community libraries are economically disadvantaged, and likely cannot afford broadband. Furthermore, those people are also likely to have difficulty using computers and internet services because of their lack of access. Accordingly, librarians are frequently asked to assist people in using the internet to access government information and services.

7.51 If a greater portion of government services and information were only available online, then the resulting impact on local libraries would need to be considered, as would the capacity of disadvantaged groups to access the internet. ALIA suggests that training and support of the library customers is also necessary if e-government applications are to succeed. They recommended that:

> For sustainability, such training should be conducted by organisations such as libraries which are part of the long term community infrastructure rather than a short term project. [34]

7.52 The dependence on public libraries for basic government online services resurrects the previous suggestion by Professor Gans, detailed in chapter six, that the

33 Australian Library and Information Association, *Submission 71*, p. 5.

34 Australian Library and Information Association, *Submission 71*, p. 7.

government should include in its proposal the free provision of basic internet connectivity for socially and other disadvantaged sectors of the community.[35]

7.53 Evidence taken form representatives of the City of Whittlesea also highlighted that the uptake of smart forms was not possible until high speed broadband was provided throughout the council. However once that occurred additional smart forms were developed, producing increases efficiencies and productivity for the council. The initiative is now being applied more broadly across all 80 council in Victoria.[36]

Smart grids

7.54 Smart grid applications have the potential to significantly improve the efficiency of the energy sector by enabling better monitoring and control of energy networks. The committee heard evidence from a strong proponent and advocate of smart grid technology, Mr Robin Eckermann:

> The introduction of smart grid technology holds the key to modernising the electricity industry and providing a framework for next-generation energy management. The benefits are economical as well as environmental.[37]

7.55 Smart grids involve the installation of 'a small module of technology at every distribution transformer…to monitor voltages, current flows and various other environmental parameters'.[38] This allows rapid, remote fault recognition and rectification by energy suppliers and also the ability of suppliers and users to monitor the flow and use of energy at any point in time. As explained in Mr Eckermann's submission:

> An in-home display that shows current usage, costs etc, can also be provided to give consumers information about the energy they are using, its costs and its carbon impact.[39]

7.56 Accordingly, consumers can adapt their energy usage to make use of non-peak times, and proactively minimise the use of high-energy intensity appliances. The management system also allows electricity suppliers and distributors to optimise the effectiveness of the energy grid. For example they can detect 'inefficiencies resulting from the way the network was constructed'.[40]

7.57 Mr Eckermann outlined for the committee why the NBN is critical to ensure the benefits of smart grid technology can be optimised:

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35 Professor Gans, *Committee Hansard*, Melbourne, 7 October 2009. pp 66-69.

36 See discussion Mr Wynter, City of Whittlesea, *Committee Hansard*, Melbourne, 7 October 2009, pp 92-93.

37 Mr Robin Eckermann, *Committee Hansard*, Canberra, 1 October 2009, p. 80.

38 Eckermann & Associates, *Submission 100*, p. 3.

39 Eckermann & Associates, *Submission 100*, p. 4.

40 Eckermann & Associates, *Submission 100*, p. 2.

> So right now the electricity industry sits on the threshold of a radical transformation … The enabler for this transformation is the infusion of information and communications technology throughout the grid, from generation right through to consumption; and it is the pervasive real-time, grid-wide communications that underpins the possibility of synergies between smart grids and the National Broadband Network.[41]

7.58 In addition, smart grid technology can improve the reliability of energy supply by accurately identifying any problem, pin-pointing the location of the fault, and identifying whether or not it has been corrected; this cannot be performed by existing technology. [42]

7.59 The Australian Information Industry Association submitted to the committee that an investment of $3.2 billion into smart grid technology over five years will:

- lower electricity use by 4%
- increase the NPV [net present value] of GDP by $7-16 billion over 10 years, and
- create 17,600 jobs.[43]

7.60 However, as with other applications, smart grid technology will only be capable of achieving these benefits if the government provides the right regulatory and pricing environment. For example, by requiring greenfields developments to implement smart grid technology, the government could promote the development of this application.

7.61 The committee acknowledges that there are complex issues involved in gaining productive collaboration between the telecommunications and the energy utilities sectors. There is consequently a need to ensure there is adequate consultation within each of the sectors involved, and that this consultation commences as early as possible to ensure optimal outcomes for government and consumers. This was emphasised by Mr Eckermann when he stated that;

> I think at the earliest opportunity that [the NBN Co] has the resources to do so, it should engage the utilities collectively and/or individually… There are a lot of complex issues …that really need a solid engagement at an engineering level.[44]

7.62 The committee also notes that the utilisation of smart grid technology is likely to establish costs to consumers in relation to the installation of in-home equipment, necessitating broad community consultation and awareness campaigns.

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41 Mr Eckermann, *Committee Hansard*, Canberra, 1 October 2009, p. 81.

42 Eckermann & Associates, *Submission 100*, p. 2.

43 Australian Information Industry Association, *Submission 57*, p. 6.

44 Mr Eckermann, *Committee Hansard*, Canberra, 1 October 2009, p. 93.

How government can support the development of applications

7.63 The committee heard a range of suggestions from people inside the telecommunications and applications development industries about the measures government can employ to ensure the development of appropriate and beneficial applications in Australia. Many of these are noted in the discussion above, such as the importance of appropriate regulation for e-health, and the funding of training programs for online government applications. This section expands on a number of associated key issues that will facilitate the effective development of broadband applications; these include leadership and collaboration, regulation, flexibility and consultation.

Leadership and collaboration: Ballarat ICT case study

7.64 The committee heard from members of the Board of Ballarat ICT Ltd about the state and local government initiatives in Ballarat to develop the Ballarat ICT Cluster. The development was assisted through a range of initiatives including networking opportunities, business opportunities, the fostering of research and development partnerships, and stakeholder negotiation. As a consequence, Ballarat has become a hub for the ICT sector.[45]

7.65 Ms Helen Thompson, a Board Member of Ballarat ICT Limited, explained that the role their organisation had played was a multi-faceted one, but a major function had been in facilitating the networking and collaboration to optimise opportunities:

> Ballarat ICT Ltd has an active role in facilitating everything from networking events to breakfasts on a regular basis every month…We have forums and roundtables but we also identify project areas each year. Last year we had two examples. One was the e-health capability study…[46]

7.66 There are a range of businesses involved in the Ballarat ICT Cluster:

> At one end of the scale, we have a very large multinational corporation and at the other end of the scale is the 100-plus SMEs [Small and Medium Enterprises] that work in the ICT sector. That is where the Ballarat ICT Cluster comes in, recognising the role of those groups of small firms, understanding where they are at and what might add value to them.[47]

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45 Ballarat ICT Cluster, 'Frequently Asked Questions', at http://www.ballaratict.com.au/bict_cluster/faqs.php, (accessed 6 November 2009).

46 Ms Helen Thompson, Board Member, Ballarat ICT Ltd, *Committee Hansard*, Melbourne, 7 October 2009, pp. 25-6.

47 Ms Thompson, Board Member, Ballarat ICT Ltd, *Committee Hansard*, Melbourne, 7 October 2009, p. 25.

7.67 Ballarat ICT Ltd told the committee that the keys to its success have been 'the collaboration between the City of Ballarat and state, local and federal government' and 'leadership, doing it ahead of everybody else'.[48]

7.68 In addition, the building of a high speed fibre link has been critical to the ongoing success and continued growth of Ballarat ICT Ltd. Mr Mal Vallance, Chairman of Ballarat ICT Ltd, said:

> If you look at the development of technology, there is a strong correlation between the infrastructure in place, including really good optical fibre into the park, and the developments that occurred. The reality is that to attract investment out of capital cities you have to provide the appropriate infrastructure.[49]

7.69 The committee urges the government to take heed of the Ballarat ICT Cluster case study, and ensure that not only the appropriate technology, but also strong leadership and close collaboration between the business sector and all three tiers of government, are all utilised to encourage innovation in the Australian ICT sector.

A supportive regulatory environment for applications

7.70 Throughout its inquiry, the committee heard much evidence about the exciting possibilities that the NBN will create in terms of applications. Conversely, the committee also heard evidence of ways in which the NBN might fail to achieve its optimal potential if not properly regulated, particularly in relation to maintaining a competitive environment.

7.71 For example, the Fibre to the Home Council Asia Pacific warned:

> If the NBN and its [regulatory] competition framework is optimised to propagate today's kind of Internet access services, it will surely underachieve its transformative potential. New applications may not emerge on an inappropriately conceived NBN either.[50]

7.72 The Productivity Commission submitted that it supports the government's proposal of building a FTTP network on the basis of the Commission's previous work, which demonstrated a strong link between productivity and investment in ICT (see discussion in chapter six).

7.73 However, the Commission cautioned that:

> An equally important message emerging from a variety of Commission work is that the scope for Australia to reap the benefits potentially on offer from the NBN and other ICT innovations…will depend critically on strong

48 Ms Thompson, Board Member, Ballarat ICT Ltd, *Committee Hansard*, Melbourne, 7 October 2009, p. 28.

49 Mr Mal Vallance, Board Member, Ballarat ICT Ltd, *Committee Hansard*, Melbourne, 7 October 2009, p. 32

50 Fibre to the Home Council Asia Pacific, *Submission 67*, p. 14.

> competition among users to drive the search for profitable applications, and on a supportive, flexible and responsive policy and regulatory environment.[51]

7.74 The Productivity Commission's submission also pointed out the importance of ensuring that the telecommunications industry is open and competitive for fostering innovation. The Commission highlighted:

> [T]he Commission's Telecommunications Competition Regulation report found that open access networks, by encouraging downstream competition and innovation, have major advantages over those that restrict entry. [52]

7.75 Importantly, the Commission highlighted that the same is true of competition between network technologies:

> …exclusive arrangements for providing content to particular network technologies (satellite, cable, mobile or copper based) were unlikely to deliver the most efficient outcomes. [53]

7.76 This point emphasises the committee's concerns with the government's Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, which is discussed in chapter seven.

7.77 The Productivity Commission's submission also noted:

> [P]olicies or regulations that unnecessarily inflate the costs of using new ICTs, or that limit competition among potential users, will reduce or at least delay uptake and the associated benefits.[54]

7.78 As discussed in chapter six, the committee stresses the importance of undertaking a cost-benefit analysis, noting that without it the government cannot formulate policy to assist in maximising the benefits of the network and minimising its costs. The importance of this was echoed by the Productivity Commission, which submitted that certain applications, although not commercially viable, should be supported by government to ensure that the social benefits of the applications are realised. An example of this, as noted above, is the technology and applications which assist Australia's Deaf community.

7.79 Similarly, the Fibre to the Home Council Asia Pacific submitted that:

> We anticipate that Australia’s applications marketplace will be vibrant and competitive. Indeed, achieving these characteristics will be sure signs of the success of its FTTP deployment. In order to ensure this outcome, it might be necessary that some initial price controls be imposed for basic services. It might also be necessary that government departments and enterprises

51 Productivity Commission, *Submission 87*, p. 2.

52 Productivity Commission, *Submission 87*, p. 10.

53 Productivity Commission, *Submission 87*, pp 10-11.

54 Productivity Commission, *Submission 87*, p. 2.

> (including but not limited to the public health and education systems) actively move to establish service delivery via the applications marketplace.[55]

7.80 The committee acknowledges that achieving the right regulatory balance will be challenging. It will be required to underpin competition, facilitate applications development that will drive uptake, create affordable access to high-speed broadband for all Australians, all within a commercially viable NBN Co.

7.81 That said, ongoing, meaningful and productive consultation with the appropriate mix of key stakeholder organisations will be required in order to ensure that the regulatory environment supports the development of applications.

7.82 The committee is concerned, however, that the government is not cognisant of the appropriate mix of key stakeholders for consultation purposes, having heard that a number of key stakeholders, including the Productivity Commission and the CSIRO, have not been directly consulted in the NBN process.[56]

Flexibility

7.83 Another key theme raised during the committee's examination of applications is the need for flexibility in a number of associated areas. For example, as outlined above, a flexible and dynamic approach to regulation will be required, particularly as new applications create new and unanticipated regulatory issues.

7.84 Southern Cross Equities Ltd raised some concerns about the inflexibility of the government's current NBN policy. Southern Cross Equities Ltd Inc submitted that:

> We believe the NBN is focused on a technology solution when it should be focused on outcomes (i.e. what services and applications will be demanded with higher speed broadband access).[57]

7.85 This raises the question of whether part of the government's $43 billion investment in the NBN should be focussed on encouraging the development of appropriate and socially beneficial applications. For example, the government could support further development of online initiatives, including smart forms, that facilitate online completion and submission, as described to the committee by the City of Whittlesea.[58]

7.86 There is also the argument that investment is needed in more that just the infrastructure and the applications, and that investment funding for human resources is

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55 Fibre to the Home Council Asia Pacific, *Submission 67*, p. 16.

56 Mr Bernard Wonder, Head of Office, Productivity Commission, *Committee Hansard*, Canberra, 1 October 2009, pp. 27-28.

57 Southern Cross Equities, *Submission 50*, p. 4.

58 Mr Wynter, City of Whittlesea, *Committee Hansard*, Melbourne, 7 October 2009, pp. 92-93.

essential to support uptake by the consumers. As described by representatives from the Grampians Rural Health Alliance:

> We invest in technology but we do not invest in the people. … without that ongoing investment in the people and working with the people to demonstrate the value of broadband and videoconferencing in fact it would not be anywhere near where we are at. … It is all very well to have a technology infrastructure rollout, but unless the people use it and have a reason to use it and value it, it sits unused.[59]

Conclusion

7.87 The benefits of the NBN will not derive from the optical fibre itself, but the uses to which it is put through applications and services. There are many varied and exciting possibilities in the applications that may be developed through, and enabled by, the NBN.

7.88 However, the committee concludes that these will only come to fruition and provide optimal benefits to all Australians if the right policies and consultation processes are in place. These policies will include: the parallel regulation of the ICT and other industry sectors to which individual applications relate; pricing to ensure the NBN remains affordable and hence accessible across all demographics; government investment in building the right collaborative and consultative environment in which ICT applications development can flourish; appropriate resources made available to illustrate the value of broadband applications to all Australians; as well as a flexible approach to both funding and regulation of the NBN to ensure that the best applications are developed using the most appropriate technology.

7.89 The committee strongly advocates that a greater focus be placed on fostering the development of applications that will drive demand and uptake of NBN services and consequently underpin the commercial viability of the network. The development of applications must occur in parallel with the development of the technology architecture.

7.90 More specifically, emphasis for development support must be placed on those applications that will facilitate economic development and/or productivity improvements, such as those detailed that can improve health, education and energy efficiency outcomes across Australia.

Recommendation 10

7.91 That the government provide greater opportunities for commercial viability of broadband networks by advocating the development of new applications that will facilitate economic development and improvements in health, education and energy efficiency outcomes.

59 Ms Gayle Boschert, Grampians Rural Health Alliance, *Committee Hansard*, Melbourne, 7 October 2009, p. 84.

Chapter Eight

Reforming the Regulatory Environment

8.1 This chapter considers the impact of the Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, particularly as it relates to the NBN.

Background[1]

8.2 Until 1997, Telstra, formerly Telecom Australia,[2] was a Commonwealth Government statutory authority under the *Telecommunications Act 1975*. That Act established Telstra as the monopoly provider of domestic telecommunications services with exclusive rights to supply, install, maintain, repair and operate the basic telecommunications services in Australia. Telstra was also the technical regulator of customer service equipment, private telecommunications networks and value-added services.

8.3 During the 1980s Telstra's monopoly position faced significant criticism on two main fronts: rapid changes in technology required significant new investment, which the government would struggle to afford; and pressure from businesses to relax Telstra's monopoly to create opportunities for private investment in the expanding telecommunications industry.

8.4 In 1989 an independent regulator, AUSTEL, was established and regulatory control of telecommunications was separated from Telstra. During the early 1990s the Australian telecommunications industry was gradually opened up to competition, in the first instance by allowing Optus to enter the domestic market, thus creating a duopoly; and also through enabling a triopoly in the mobile telecommunications market with Telstra, Optus and Vodafone. The *Telecommunications Act 1991* also merged Telstra and the Overseas Telecommunications Commission (OTC) - previously a separate statutory authority – into a single publicly owned carrier.

8.5 Under the previous Coalition Government, Telstra was privatised in three stages in 1997, 1999 and 2006. In 2006, the remainder of the government's shares (then comprising around 17 per cent) were transferred to the Future Fund.

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1 O'Leary, G, 'Telstra Sale: Background and Chronology', *Parliament House of Australia, Parliamentary Library*, 15 September 2003, available at http://www.aph.gov.au/library/pubs/chron/2003-04/04chr03.htm#appendixc (accessed 13 October 2009).

2 For the purposes of simplicity, the name 'Telstra' is used herein to refer to Telstra Corporation and its previous incarnations.

8.6 The privatisation of Telstra raised some difficult regulatory issues. On one hand, Telstra is bound by corporations law to act in the best interests of its shareholders. However, Telstra is also the owner of the vast majority of telecommunications infrastructure in Australia and provides essential services to Australians. Consequently it has to provide for the conflicting interests of ensuring a maximum return for its shareholders, while on the other hand, ensuring that its retail and wholesale customers receive an efficient and effective service level.

8.7 Accordingly, successive Commonwealth governments have, in a variety of ways, continued to regulate the way in which Telstra does business in order to ensure that the service needs of Australian telecommunications consumers are met, and that Telstra's competitors have reasonable access to its telecommunications infrastructure.

8.8 One of the key regulatory dilemmas for government has resulted from Telstra's vertical integration. Telstra is at the same time a wholesaler of telecommunications infrastructure, and a retailer in a competitive retail market. Therefore there is no ordinary incentive for Telstra to sell its wholesale product to its retail competitors at a reasonable price. The WA Chamber of Commerce and Industry (WA CCI) described this conundrum as follows:

> … a conflict of interest arises when a monopoly carrier is required by law to provide network access to its retail competitors, and is also required by law to maximise the return to its shareholders.[3]

8.9 As discussed in the committee's interim report, this conflict of interest has resulted in ongoing anti-competitive behaviour by Telstra.[4]

8.10 On 15 September 2009, the government introduced the Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009 into the House of Representatives, which attempts to overcome Telstra's current conflict of interest by separating Telstra's wholesale and retail arms.

Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009

8.11 Although the NBN will be a wholesale-only network, there is concern that, because the deployment of and transition to the new network is scheduled to take up to eight years, this period could be utilised by the incumbent to further strengthen its monopoly position and hence impact on the potential for the completed NBN to be competitive and commercially viable.

8.12 In response to these concerns, and to address the conflict of interest mentioned above, the government introduced the Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, (the Bill). This Bill

3 WA CCI, *Submission 17*, p. 3.

4 Senate Select Committee on the National Broadband Network, *Interim Report*, 2 December 2008, pp.49-51.

seeks to directly address the regulatory regime that enables Telstra's anti-competitive behaviour. The Bill seeks to address Telstra's vertical and horizontal integration, to streamline the access and anti-competitive conduct regime, and to strengthen consumer safeguards, including the Universal Service Obligation (USO) and the Customer Service Guarantee (CSG) and priority assistance.

8.13 The Department of Broadband, Communications and the Digital Economy (the Department) noted that 'this bill is primarily not about the NBN: it is about the regulatory structure of the industry in Australia today.'[5]

8.14 In his second reading speech of the Bill, the Minister for Infrastructure, Transport, Regional Development and Local Government, the Hon Anthony Albanese MP, described the purpose of the Bill:

> The Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009 is designed to reshape regulation in the telecommunications sector in the interests of consumers, business and the economy more broadly. It is also designed to position the telecommunications industry to make a smooth transition to the NBN environment as the new network is rolled out. The measures will provide the flexibility for Telstra to choose its future path and streamline the regulatory framework to enhance competition and better protect consumers.[6]

8.15 The Senate Standing Committee on Environment, Communications and the Arts has examined the Bill as a whole in greater detail, and from a broader policy perspective than this committee.[7] Noting the comments made above by Mr Harris, this section of the report will focus on the aspects of the Bill that will impact on the NBN, namely:

(i) the separation of Telstra's retail and wholesale arms;

(ii) the introduction of fall-back benchmark access terms for declared telecommunications infrastructure; and

(iii) strengthening and clarifying universal service obligations and customer service guarantees.

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5 Mr Peter Harris, Secretary, Department of Broadband, Communications and the Digital Economy (DBCDE), *Committee Hansard*, Senate Standing Committee on the Environment, Communications and the Arts (ECA), Canberra, 14 October 2009, p. 19.

6 The Hon Anthony Albanese MP, *House of Representatives Hansard*, 15 September 2009, p 9643.

7 Senate Standing Committee on Environment, Communications and the Arts, *Inquiry into the Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009*, October 2009.

Separation

8.16 The Bill proposes the separation of Telstra's retail and wholesale arms. This separation is aimed at addressing the widely-held belief that:

> Many of the problems with the current market structure and the regulatory arrangements have their root cause in the vertically integrated structure of Telstra and the corresponding misalignment of incentives this creates.[8]

8.17 The Bill gives Telstra two options for separation:

- Voluntary structural separation; or
- Government mandated functional separation.

Structural separation

8.18 Structural separation is the most extreme form of separation that would require the company to establish legal, separate entities responsible for the wholesale and retail services. To facilitate this, Part 1 of Schedule 1 to the Bill propose the addition of a new Part 33 to the *Telecommunications Act 1997* (the Act), which would allow Telstra to give, and the ACCC to accept, an undertaking that:

> (i) Telstra will not supply fixed-line carriage services to retail customers using a telecommunication network over which Telstra is in a position to exercise control; and
>
> (ii) Telstra will not be in a position to exercise control of a company that supplies fixed-line carriage services to retail customers using a telecommunications network over which Telstra is in a position to exercise control.[9]

8.19 Under proposed sections 577C and 577E respectively, Telstra may also make, and the Australian Competition and Consumer Commission (ACCC) may accept, undertakings in relation to hybrid fibre-coaxial (HFC) networks (the dominant infrastructure for supplying cable television) and subscription television broadcasting licences respectively. Such undertakings would involve Telstra not being in a position to exercise control over a HFC network or subscription television broadcasting licence. This seeks to address the horizontal integration also enjoyed by Telstra, and in effect will divest Telstra of its interests in cable television infrastructure or in Foxtel.

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8 Optus, Submission to Senate Standing Committee on Environment, Communications and the Arts, *Submission 47*, p. 5.

9 Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, clause 577A.

8.20 The desired outcome is that structural separation 'would be consistent with the wholesale-only open access market structure to be delivered through the National Broadband Network'[10] and consequently facilitate a smooth transition to the NBN.

8.21 There are two main consequences if Telstra chooses not to make undertakings to divest itself of control over its fixed line telecommunications networks, of its HFC infrastructure and of its interests in Foxtel. The first is that the Bill will require the functional separation of Telstra, which is expanded upon later in this chapter. In addition to requiring functional separation, the minister may prevent the Australian Communications and Media Authority (ACMA) from allocating Telstra the additional spectrum licences necessary for advanced wireless broadband services.[11]

8.22 The Bill, however, does contain provisions which enable the minister to waive the requirements relating to Foxtel and HFC infrastructure if the minister is satisfied that Telstra's structural separation undertaking is:

> …sufficient to address concerns about the degree of Telstra's power in telecommunications markets.[12]

8.23 The Explanatory Memorandum sets out how Telstra might choose to structurally separate in light of the NBN project:

> Structural separation *may*, but does not need to, involve the creation of a new company by Telstra and the transfer of its fixed-line assets to that new company. Alternatively it *may* involve Telstra progressively migrating its fixed-line traffic to the NBN over an agreed period of time and under set regulatory arrangements, and sell or cease to use its fixed-line assets on an agreed basis. This approach will ultimately lead to a national outcome where there is a wholesale-only network not controlled by any retail company—in other words, full structural separation in time. [13]

8.24 In response to the Bill's requirement to structurally separate on a voluntary basis, Telstra has submitted that:

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10 *Explanatory Memorandum*, Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, p. 4.

11 Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, clauses 577H and 577J.

12 *Explanatory Memorandum*, Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, p. 4; Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, Part 10.

13 *Explanatory Memorandum*, Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, pp. 3-4.

> [Structural separation] would only be considered if the Board and Management of the company were convinced it were in the best interests of Telstra shareholders.[14]

8.25 Telstra has also said that the structural separation proposed by the legislation:

> …does create a high degree of uncertainly around any structural separation undertakings, and this places constraints on our board.[15]

8.26 These uncertainties include the fact that the minister retains discretion in his decision to waive the requirement that Telstra divest its interests in the HFC and Foxtel, even if Telstra structurally separates, meaning that Telstra has no guarantee that if it separates it will receive that particular benefit. Telstra argued that this uncertainty means it is difficult for the Telstra board to make a judgment that separation is in the best interests of shareholders.[16]

Functional separation

8.27 If Telstra does not structurally separate, then the Bill contains provisions whereby the government may functionally separate Telstra. Functional separation would still be based on a behavioural remedy, modifying the current operational separation provisions. This is the course that was taken in the UK, with BT.

8.28 Item 22 of the Bill inserts a new Part 9 to the Telecommunications Act, which would allow the government to functionally separate Telstra. The Bill sets out a process for the minister to make a written determination specifying requirements which Telstra must meet in preparing a draft functional separation undertaking.[17]

8.29 If the minister makes such a declaration, Telstra would then have 90 days to prepare an undertaking which complies with those requirements, as well as the other requirements set out in clauses 73 and 74 of the Bill.[18] The minister may then approve or vary the undertaking.[19] Telstra must comply with a functional separation

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14 Telstra, Submission to Senate Standing Committee on Environment, Communications and Arts, Inquiry into Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, *Submission 88*, p. 3.

15 Mr Geoff Booth, Group Managing Director, NBN Engagement, Telstra Corporation Ltd, *Proof Committee Hansard*, Senate Standing Committee on Environment, Communications and Arts, Melbourne, 13 October 2009, p. 3.

16 Mr Booth, Group Managing Director, NBN Engagement, Telstra Corporation Ltd, *Proof Committee Hansard*, Senate Standing Committee on Environment, Communications and Arts, Melbourne, 13 October 2009, p. 3.

17 Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, clause 75.

18 Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, clause 76.

19 Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, clause 77.

undertaking, unless it has already made an undertaking to structurally separate under clause 577A.

8.30 Functional separation in essence involves the principles that:

- There should be equivalence in relation to the supply by Telstra of regulated services to Telstra's wholesale customers and its own retail business units;
- Telstra should maintain separate retail and wholesale business units, which operate at arms length from each other;
- Telstra should have systems, procedures and practices that relate to monitoring and reporting on compliance with, the development of performance measures for, and independent audits and checks of the final functional separation undertaking; and
- Telstra's wholesale business unit should not consult its retail unit regarding proposed services or development of those services unless it also consults with other wholesale customers at the same time and in the same manner.[20]

Impact of separation on the NBN

8.31 The aim of causing the separation of Telstra is to provide a telecommunications environment that would mirror the wholesale-only environment created by the NBN proposal. The government believes that the separation of Telstra will be:

> Consistent with the market structure that will be delivered through the NBN…[21]

8.32 However, the government has indicated that its principal reason for wanting to separate Telstra is to address concerns with the Australian telecommunications industry in the short term, prior to the rollout of the NBN. The Minister for Infrastructure, Transport, Regional Development and Local Government said, in the second reading speech of the Bill:

> As transformative as the NBN initiative is, it is a detailed and complex project. During the eight-year rollout of the NBN, the existing telecommunications regulatory regime remains critical to the delivery of affordable, high-quality services to businesses and consumers. Telecommunications services are a vital input to the daily functioning and activity in modern societies. The reforms being introduced today are required to address longstanding and widespread concerns that the existing telecommunications regulatory regime is failing Australian consumers and

20 Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, clause 74.

21 *Explanatory Memorandum*, Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, p. 1.

> businesses. On a range of measures of price, quality of services and availability, Australia continually trails key international competitors.[22]

8.33 Telstra has disputed this rationale for separation, arguing that functional separation takes a number of years to implement, and accordingly:

> …would pose serious obstacles to the migration of Telstra traffic to a national broadband network. Given international experience, the time taken to implement functional separation would create at least a double migration for customers from the current Telstra legacy systems to the functionally separated legacy systems; … It really magnifies the potential for some chaos. [23]

8.34 Telstra bases its assertion that functional separation would take in the vicinity of six years on the experience in the UK and New Zealand. [24] Furthermore, Telstra has submitted that the cost of functional separation would be substantial, and estimates those costs to be between $500 million and $1.2 billion.[25] According to Telstra, the time and costs would predominantly be in developing IT infrastructure.[26] This sentiment was supported by evidence provided to the committee by BT in March 2009:

> …This was, and still is, one of the most complicated areas of the undertaking. …separation of our management information systems and our OSS, the systems that drive the actual delivery of service … we underestimated the complexity of this operation.[27]

8.35 Mr McCarthy-Ward went on to comment on the high cost of this separation, noting that:

> …it is moot whether or not the full cost of physical system separation is proportionate [to the benefit gained].[28]

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22 The Hon Anthony Albanese MP, *House of Representatives Hansard*, 15 September 2009, p. 9643.

23 Mr Booth, Group Managing Director, NBN Engagement, Telstra Corporation Ltd, *Proof Committee Hansard*, Senate Standing Committee on Environment, Communications and Arts, Melbourne, 13 October 2009, p. 3.

24 Dr Tony Warren, Executive Director, Regulatory Affairs, Telstra Corporation Ltd, *Proof Committee Hansard*, Senate Standing Committee on Environment, Communications and Arts, Melbourne, 13 October 2009, p. 7.

25 Telstra, Submission to Senate Standing Committee on Environment, Communications and Arts, Inquiry into Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, *Submission 88*, p. 8.

26 Mr Booth, Group Managing Director, NBN Engagement, Telstra Corporation Ltd, *Proof Committee Hansard*, Senate Standing Committee on Environment, Communications and Arts, Melbourne, 13 October 2009, p. 3.

27 Mr Peter McCarthy-Ward, BT Director East of England, *Committee Hansard*, Canberra, 4 March 2009, p. 5.

28 Mr McCarthy-Ward, BT Director East of England, *Committee Hansard*, Canberra, 4 March 2009, p. 5.

8.36 Telstra pointed out in its submission on the Bill that the diversion of resources, as required by separation, are likely to result in a decline in customer service.[29] Furthermore, Telstra submitted that resources will be diverted away from the NBN and that:

> In practice, Telstra would be forced to focus on meeting its functional separation milestones and defer any transition to the NBN until after separation was implemented. [30]

8.37 Telstra argued that its current tranche of IT reforms, which aim to 'hardwire' equivalence into its system, are sufficient to ensure that Telstra's competitors are given the same treatment as Telstra's own retail arm. Mr Booth told the Senate Standing Committee on Environment, Communications and the Arts that:

> The question then is how you give people certainty, and transparency then becomes the issue…We propose abilities for the ACCC, for example, to do audits and to come in and drop the two orders in the top and see if they come out the bottom in the way we say they will.[31]

8.38 Accordingly, Telstra argued that separation of any kind is an unnecessary expense, and disputes the government's assumption that horizontal and vertical integration is an 'unambiguous negative'.[32]

8.39 The Department has not disputed Telstra's costings, nor its anticipated time frame. However, the Department argued that, while it may take six years for total separation to occur:

> When you talk to people in the UK and New Zealand…the way they organise it is to actually have a set of steps to be undertaken and a set of milestones to be met. They require the most important measures to be taken up front. The system changes that are relatively minor are done towards the end of the process. So they tend to see the big gains from separation very much in the early years. They have tended to see positive benefits within 12

29 Dr Warren, Executive Director, Regulatory Affairs, Telstra Corporation Ltd, *Proof Committee Hansard*, Senate Standing Committee on Environment, Communications and Arts, Melbourne, 13 October 2009, p. 8.

30 Telstra, Submission to Senate Standing Committee on Environment, Communications and Arts, Inquiry into Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, *Submission 88*, p. 12.

31 Mr Booth, Group Managing Director, NBN Engagement, Telstra Corporation Ltd, *Proof Committee Hansard*, Senate Standing Committee on Environment, Communications and Arts, Melbourne, 13 October 2009, p. 6.

32 Telstra, Submission to Senate Standing Committee on Environment, Communications and Arts, Inquiry into Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, *Submission 88*, p. 5.

> months of embarking on functional separation, but it may well be the case that the less important measures do take a longer time to put in place.[33]

8.40 Optus, and other Telstra competitors, have also taken a different view to Telstra with regard to separation. The General Manager of Interconnect and Economic Regulation at Optus, Mr Andrew Sheridan, told the Senate Standing Committee on Environment, Communications and the Arts that:

> …from the evidence that we look at, the BT separation has been an undoubted success. I will just draw your attention to some comments from Ofcom, which very recently undertook one of its annual assessments of the undertakings that were given by BT, saying that the separation arrangements in the UK had led to 'greater choice and take-up of services, choice of suppliers, products and packages and increased value for money' for customers.[34]

8.41 Additionally, with regard to Telstra's suggestion that its current IT projects will achieve equivalence at a lower cost, Optus has said that it is not sufficient. One of the key deficiencies in Telstra's proposal, according to Optus, is:

> …that Telstra Retail will buy services directly from the network business—I think they talk about it—and Optus, Macquarie, AAPT et cetera would have to go through an intermediary, which is Telstra Wholesale. Therein lies the problem, because it is through that intermediary step that you lose transparency and these differences start to appear. [35]

8.42 Mr Sheridan continued, pointing out that the solution proposed by Telstra does not dramatically alter the status quo where, in response to arguments about lack of equivalence, Telstra says '[B]ut we take a different service to you'.[36]

Committee view

8.43 The committee considers that Telstra has been issued with an ultimatum to 'voluntarily' separate, and strongly questions the government's assertion that Telstra has been provided with a 'choice'.

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33 Mr Rohan Buettel, Assistant Secretary, Networks Regulations Branch, Department of Broadband, Communications and the Digital Economy, *Proof Committee Hansard*, Senate Standing Committee on Environment, Communications and the Arts, Canberra, 14 October 2009, p. 23.

34 Mr Andrew Sheridan, General Manager, Interconnect and Economic Regulation, Optus, *Proof Committee Hansard*, Senate Standing Committee on Environment, Communications and the Arts, Melbourne, 13 October 2009, p. 13.

35 Mr Sheridan, General Manager, Interconnect and Economic Regulation, Optus, *Proof Committee Hansard*, Senate Standing Committee on Environment, Communications and the Arts, Melbourne, 13 October 2009, p. 15.

36 Mr Sheridan, General Manager, Interconnect and Economic Regulation, Optus, *Proof Committee Hansard*, Senate Standing Committee on Environment, Communications and the Arts, Melbourne, 13 October 2009, p. 15.

8.44 The committee acknowledges that without considered, consistent regulation during the rollout of the NBN, NBN Co risks extensive over-build in deploying the FTTP network, particularly through not being able to make efficient use of existing Telstra infrastructure, and in possibly having to compete with Telstra simultaneously deploying its own fibre network.

8.45 While it is clear that current regulatory practices with regard to the telecommunications industry are not achieving maximum competition, or indeed fairness, it is not clear that the separation of Telstra—structural or functional—is necessary in order to achieve the government's stated aims with regard to the NBN. Compounding the issue is the government's insistence that the NBN Co is to be a profitable company, which then exacerbates the risk of over-build by an incumbent wielding significant market power.

8.46 Regardless of the fate of this bill, the committee believes the NBN cannot be commercially viable without the migration of existing Telstra customers to it. As telecommunications consultant, Mr Kevin Morgan, told the committee:

> …the NBN demands a monopoly. It will need probably every cent of existing public switch network revenue if it is to achieve a commercial return—and bear in mind that the government has stated this is going to achieve a commercial return.[37]

8.47 The committee also has significant concerns about the issues raised by Telstra, namely the cost of separation to that company, and the fact that this will prevent Telstra from investing that money into the new telecommunications infrastructure that this country needs.

8.48 The committee's concerns are supported by the views of economist, Mr Henry Ergas, who told the committee that separation has not been an overwhelming success in the UK, casting doubt on the government's fundamental assumption that vertical integration is bad for consumers:

> [T]here is no evidence of an improvement in performance in the UK and some evidence of a deterioration in at least relative performance in the UK. The difficulty one has, as with all such situations, is that there were several factors that were changed at once. … It is not easy to disentangle the impacts of functional separation from the impacts of those other changes but, to the extent to which people have tried to do so in a rigorous way, they have broadly taken the view that it is not obvious that the benefits from functional separation have outweighed the costs.[38]

8.49 Even if the separation of Telstra was seen to be the best solution, the committee fails to see how this decision can be made without a clear understanding of how the NBN will be deployed, and the likely effects of the NBN over the short and

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37 Mr Kevin Morgan, *Committee Hansard*, Melbourne, 7 October 2009, p. 52.

38 Mr Henry Ergas, *Committee Hansard*, Canberra, 1 October 2009, p. 41.

medium term. The committee's view is that it is essential to wait until the Implementation Study has reported before significant policy decisions concerning the regulation of the telecommunications market are made.

8.50 Telstra has also argued that the 'penalties' that the legislation puts in place for failure to structurally separate are themselves anti-competitive. Dr Warren said:

> We believe that taking us out of the upgrade path, the 4G market, would basically reduce competition in that market, particularly for rural and regional consumers, for whom we are the only network. Secondly, in the Foxtel space, clearly if we were forced to divest Foxtel it is most likely that a media player would acquire that, and we have not seen a good argument for how a greater concentration of media can be in the consumer interest. [39]

8.51 The committee shares these concerns about the short term impacts of the legislation on telecommunications. Indeed, the committee views the government's use of 'sticks' and 'carrots' to encourage Telstra to separate 'voluntarily' as more closely resembling a non-negotiable ultimatum.

8.52 Furthermore the committee fails to see that restricting Telstra's future expansion in the mobile market, and/or withdrawing from the Pay TV market, will either strengthen competition in the telecommunications industry or pave the way for the NBN. In fact, the restriction of access to spectrum can be interpreted as anti-competitive action by the same government that is legislating to reduce anti-competitiveness in the market.

Benchmark access terms

8.53 Currently Part XIC of the *Trade Practices Act 1974* (the TPA) provides for a regime through which the ACCC can declare certain telecommunications carriage services to be 'declared services', which results in standard access obligations applying to providers of access to that service.

8.54 The standard access obligations simply require that the access provider (in most cases Telstra) makes the service available to the carrier (generally other telecommunication carriers), but do not set out terms and conditions. Rather, these are subject to negotiation and agreement between the access seeker and the access provider. If agreement cannot be reached, then either party can notify the access dispute to the ACCC. The ACCC then arbitrates the dispute.

8.55 Currently the terms negotiated by the ACCC apply only to the two parties involved in a dispute, and also apply only to the particular service in question in that dispute. This process is known as the 'negotiate-arbitrate' model.

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39 Dr Warren, Executive Director, Regulatory Affairs, Telstra Corporation Ltd, *Proof Committee Hansard*, Senate Standing Committee on Environment, Communications and Arts, Melbourne, 13 October 2009, p. 10.

8.56 There has been widespread criticism of this model. As the Competitive Carriers Coalition (CCC) submitted to the Senate Standing Committee on Environment, Communications and the Arts' inquiry into the Bill:

> The experience of the industry has been that this approach has been a dismal failure. Telstra has no incentive to negotiate a realistic price of access. Rather, it benefits from delaying the finalisation of a price for a service for as long as possible.
>
> CCC members have waited seven years and more for price certainty on certain key access services. Telstra in the meantime operates freely in the retail market. These are not the circumstances under which businesses can be expected to invest and compete against a powerful incumbent.[40]

8.57 The problems with the model are discussed in detail in the government's April 2009 Discussion Paper on regulatory aspects of the NBN entitled *National Broadband Network: Regulatory Reform for the 21st Century*.[41] Stakeholder's principal concerns with the current model are that it is:

> …slow, cumbersome and open to gaming (obstruction), and that Part XIC does not provide sufficient regulatory certainty for investment.[42]

8.58 These deficiencies were noted not only by Telstra's competitors, but also by Telstra in its submission on the roll-out of the NBN.[43]

8.59 Of the current model, the ACCC has said:

> The tendency for Telstra to make continuous and incremental changes to undertakings and to keep raising both old issues and new cost claims means that resolution of access issues is cumbersome, vexatious and inefficient.[44]

8.60 The Bill seeks to address this problem by giving the ACCC the power to set up front prices and non-price terms and conditions of access for declared services.

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40 Competitive Carriers Coalition, Submission to the Senate Standing Committee on Environment, Communications and the Arts, Inquiry into Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, *Submission 48*, p. 9.

41 Australian Government, 'National Broadband Network: Regulatory Reform for the 21st Century', *Discussion Paper*, April 2009, available at http://www.dbcde.gov.au/__data/assets/pdf_file/0006/110013/NBN_Regulatory_Reform_for_the_21st_Century_Broadband_low_res_web.pdf, p. 12-13.

42 Australian Government, 'National Broadband Network: Regulatory Reform for the 21st Century', *Discussion Paper*, April 2009, available at http://www.dbcde.gov.au/__data/assets/pdf_file/0006/110013/NBN_Regulatory_Reform_for_the_21st_Century_Broadband_low_res_web.pdf, p. 13.

43 Telstra Corporation Limited, Public Submission on the Roll-out and Operation of a National Broadband Network for Australia, 25 June 2008, p. 23.

44 ACCC, *Telstra's Undertakings for the Unconditioned Local Loop Service Discussion Paper* (Public Version), March 2005, p. 2

These will create a fall back position if parties to an access dispute cannot agree on terms.[45]

8.61 In making access determinations, the Bill sets out certain matters that the ACCC must take into account in clause 152BCA. These include: the long-term interests of consumers; the business interests of the supplier; the interests of users of the declared service; the cost of providing access; the cost of upgrades to the service; technical requirements necessary for the safe and reliable operation of the service; and the economically efficient operation of the service. The ACCC must also hold a public hearing about its proposal to make an access determination.[46]

8.62 An access determination must set out a date of expiry,[47] which the Explanatory Memorandum states will ordinarily be 'set for a period between three and five years'.[48] The ACCC can also include 'fixed principles' in a determination, which only remain in force for a certain portion of the determination's duration, so that a determination can remain in force for a longer period and take account of inflation/depreciation etc.[49]

8.63 The Bill also gives the ACCC the power to make written, binding rules of conduct with respect to declared services. These rules can regulate the terms and conditions of providing access and obtaining access to declared services, and impose requirements on parties. Importantly, the Bill enables the ACCC to make rules that apply only to certain carriers, service providers or access seekers.[50]

8.64 Parties may continue to negotiate and make access agreements on different terms to a determination. Access agreements will have to be registered with the ACCC, however the ACCC will not have to approve the agreements.[51]

8.65 The Bill also amends the current oversight regime under the TPA by removing merits review of decisions under Part XIC. This means that decisions of the

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45 Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, Clause 152BC

46 Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, clause 152BCH.

47 Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, Paragraph 152BCF(5).

48 *Explanatory Memorandum*, Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, p. 5; Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009 item 84.

49 Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, clause 152BCD.

50 Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, clause 152BD.

51 *Explanatory Memorandum*, Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, p. 5; Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, clause 152BEA.

ACCC with regard to access determinations, binding rules of conduct, access agreements, and undertakings may only be reviewed by the Federal Court under the *Administrative Decisions (Judicial Review) Act 1977*, or under section 39B of the *Judiciary Act 1903*, on the grounds that the ACCC has made an error in law. The ability for telecommunications providers to appeal decisions of the ACCC on their merit has been removed.[52]

8.66 As discussed in the first interim report, the committee has heard abundant evidence from a wide range of stakeholders about the failings of the existing regulatory regime under the TPA.[53] That report also detailed the problems resulting from Telstra's 'gaming' behaviour, and noted the deficiencies of existing legislation in providing mechanisms to counteract this behaviour. Weighing up the evidence, the committee concluded that reform was necessary in some form, but that 'any new regulations that underpin the NBN should ensure that any operator/owner of the new network cannot participate in anti-competitive behaviour'.[54]

8.67 The amendments proposed by the Bill with respect to Part XIC of the TPA appear to offer a reasonable solution to some of the problems with the existing regulatory regime. Specifically, giving the ACCC the power to make determinations removes the existing system's reliance on good-faith negotiations between Telstra and its competitors, and has the potential to remove one aspect of Telstra's 'gaming' strategy.

Committee view

8.68 The committee generally supports the proposed changes to Part XIC of the TPA. However, the committee does hold significant concerns regarding the total inability for telecommunication providers to appeal any ACCC decision on merit. This equates to a proposal to waive procedural fairness. The committee strongly urges the government to incorporate an appropriate avenue for genuine cases of appeal.

Service obligations and customer guarantees

8.69 Part 4 of Schedule 1 to the Bill amends the *Telecommunications (Consumer Protection and Service Standards) Act 1999* to add a new obligation to the Universal Service Obligations (USOs), that the universal service provider supplies, on request, standard telephone services. The standard at which those services must be provided

52 *Explanatory Memorandum*, Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, p. 6.

53 Senate Select Committee on the National Broadband Network, *Interim Report*, December 2008, p. 51.

54 Senate Select Committee on the National Broadband Network, *Interim Report*, December 2008, p. 58.

are to be determined by the minister,[55] and the Explanatory Memorandum states that they might include:

> …maximum periods of time for new connections and fault rectification and reliability standards. There are also new provisions providing minimum performance benchmarks that the universal service provider must meet in fulfilling its responsibilities.[56]

8.70 The Bill introduces similar provisions relating to the supply, installation, maintenance and location of payphones.[57]

8.71 The aim of these amendments to the USO is to make the existing obligations more precise and easier to enforce. [58]

8.72 Part 5 of Schedule 1 to the Bill seeks to 'arrest the decline in telecommunications service quality standards'. Amendments to the Customer Service Guarantee (CSG) provisions in the Consumer Protection Act to allow the minister to establish minimum CSG benchmarks.[59] The Explanatory Memorandum explains that:

> While failure by a service provider to meet a CSG standard is not subject to a civil penalty under the Tel Act, failure to meet the minimum CSG performance benchmarks will be. [60]

8.73 The proposed amendments to both the CSG and USO will be enforced by ACMA's expanded powers to issue infringement notices under proposed Part 31B to the Consumer Protection Act. The Explanatory Memorandum states that these infringement notices:

> …will be a strong incentive on the industry to improve service quality. [61]

8.74 If CSG standards are not met, telecommunications companies may be required to provide customers with financial compensation. [62] The Bill does contain

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55 Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, item 166.

56 *Explanatory Memorandum*, Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, p. 7.

57 *Explanatory Memorandum*, Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, p. 7.

58 *Explanatory Memorandum*, Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, p. 7.

59 *Explanatory Memorandum*, Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, p. 7.

60 *Explanatory Memorandum*, Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, pp 7-8.

61 *Explanatory Memorandum*, Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, p. 8.

62 *Explanatory Memorandum*, Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, p. 8.

provisions for customer's CSG rights to be waived, but this must be done expressly and in writing. [63]

8.75 The Explanatory Memorandum states that the proposed amendments to the USOs and CSGs arise as a result of the fact that:

> The Government is committed to ensuring consumers are protected in the transition to the NBN. [64]

8.76 Telstra strongly argues that the Bill fails to achieve this aim for a number of reasons, highlighting their concern that:

> …there are no safeguards against burdensome regulations that do not recognise Telstra's unique challenge of providing quality services across Australia's vast and challenging terrain.[65]

8.77 Telstra continued by pointing out that the Bill also fails to address how USOs and CSGs will apply once the NBN is in operation, and more importantly in the short term, during the transition period to the NBN:

> Moreover, Telstra notes that the USO remains uncosted and underfunded. The Government's long term vision for the broader USO and the role of NBN Co. is not clear from the Bill, yet is a key issue to be addressed in the transition to the NBN.[66]

8.78 This is an issue of concern to the committee, particularly in a situation where Telstra is expending considerable resources on separation at the expense of its USOs and CSGs.

Conclusion

8.79 The committee does not make any findings or recommendations as to the Bill, as the Standing Committee on Environment, Communications and the Arts has examined the Bill in significantly more detail than is possible by this committee. The purpose of this chapter was simply to comment on the potential implications of the Bill for the NBN.

8.80 In that regard, the committee's view is that the Bill does not appear to be directly necessary for the success of an NBN, and in some ways, including the

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63 *Explanatory Memorandum*, Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, p. 8.

64 *Explanatory Memorandum*, Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, p. 7.

65 Telstra, Submission to Senate Standing Committee on Environment, Communications and Arts, Inquiry into Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, *Submission 88*, p. 13.

66 Telstra, Submission to Senate Standing Committee on Environment, Communications and Arts, Inquiry into Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, *Submission 88*, p. 13.

diversion of resources, the Bill may hinder the successful and expedient rollout of the network.

8.81 The committee acknowledges the complexity of the telecommunications industry and the issues that this Bill is attempting to address. The committee also notes these complex issues are subject to analysis within the Implementation Study, which is due for completion in February 2010.

8.82 The committee strongly believes that decisions on this Bill should not be made within a vacuum. Consequently consideration of this Bill should have been delayed until the Implementation Study is completed. At risk are the investments of millions of Australian Telstra shareholders, the potential investors in the NBN, and ultimately the long term interests of end users of the telecommunications network. Consequently, the committee reiterates the recommendation made within the report on the inquiry into this bill:

Recommendation 11

8.83 That further consideration of the bill not proceed until after the NBN Implementation Study has been completed, the government has tabled its response to the Implementation Study and the Senate has certainty about the network structure of the NBN Co and the regulatory framework which will surround it.[67]

67 ECA Committee Report, Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009, pp 44-45.

Chapter Nine

Concluding Remarks

9.1 The Committee is supportive of sensible and affordable government efforts to support the provision of enhanced broadband services. There is, however, a great deal of concern regarding the government's approach.

9.2 The NBN proposal is clearly under-developed and the government's preparedness to press ahead before impacting details are either known or finalised is not consistent with a commitment to evidence based policy.

9.3 The lack of clarity in relation to the overall cost of this project is disconcerting.

9.4 The government has also taken a quantum leap in committing to a project that by its own admission will cost up to $43 billion, with no apparent effort to explore potentially more cost effective remedies. Part of the problem is the fact the government has failed to clearly articulate the key problem it plans to address. For example, if high prices are a significant issue there is no evidence to suggest this proposition will result in lower prices.

9.5 There is little evidence to indicate consumer demand for speeds of 100 Mbps and the committee notes with concern that the NBN policy focus has resulted in a lack of immediate attention in relation to enhancing services to under-serviced parts of the country.

9.6 The committee remains concerned about the type of services that will be delivered to rural and regional Australians.

9.7 This report, and the two previous interim reports, has expanded on the complexities of interrelated issues that will require resolution to ensure the success of the NBN project. However, the examination of these issues has at times been hampered by a lack of information, or an unwillingness to provide it.

9.8 The committee puts on the public record the difficulty it has experienced throughout the inquiry due to the reluctance of key witnesses to appear before the committee or provide written submissions. In particular, the committee highlights that, in Tasmania where the NBN has been launched, vital witnesses that 'declined' the committee's invitation to appear at the Hobart hearing in October 2009 included:

- Aurora Energy – the joint partner with NBN Tasmania responsible for the roll-out and provider of infrastructure for the roll-out; as noted in the report, Aurora also declined to answer basic written questions sent by the committee following their declination;
- NBN Tasmania;

- Tasmanian Skills Institute; and
- Tasmania's Treasurer and Minister for Economic Development.

9.9 Another key witness that repeatedly declined the committee's invitation to appear was Infrastructure Australia, the agency established specifically to assess and prioritise the government's list of major infrastructure projects. Although Infrastructure Australia endorsed the government's decision to undertake the NBN, it was not required to place the NBN project under the same scrutiny as other projects it had prioritised. The committee was keen to understand why this had been allowed, but was not provided that opportunity.

9.10 At the time of reporting, the telecommunications industry and the Australian tax payers were still awaiting two critical sources of information that will underpin the fate of the NBN: the final report of the Implementation Study; and a rigorous cost-benefit analysis.

9.11 As a consequence, speculation will continue to hamper healthy discourse until that information is made publicly available. As long as this cloud of uncertainty persists, confidence of potential investors, the industry and the Australian public will continue to erode.

Government's response to previous committee recommendations

9.12 The committee draws attention to its recommendations and considerations documented in the two previous Interim Reports. Although a number of the committee considerations were made redundant when the FTTN proposal was terminated, the government has yet to respond to the majority of relevant recommendations.

9.13 The table below details the status of recommendations from the second interim report, as at the time of reporting.

Table 1: Status of previous recommendations

No	Recommendation	Status
1	That the Auditor General conducts a full review of the RFP process, to be commenced before the end of 2009.	**Underway**
2	That Infrastructure Australia be involved in the NBN process to the fullest capacity.	**Infrastructure Australia refused any committee interaction**
3	That the government: • provides the committee with the Final and any Interim Reports prepared by the Lead Advisor to the implementation study;	**No Action**

No	Recommendation	Status
3 (cont)	• table a progress report in the Senate on the implementation of the NBN by no later than 17 September 2009, and that this progress report detail timeframes, benchmarks and milestones for specified deliverables against which the implementation of the project can be measured, including costings; and • table further progress reports by the end of the Winter and Spring Sittings until such time as the NBN company's annual reports are available, which include evidence that the timeframes, milestones and benchmarks have been reached, the reasons for any failure to do so and remedial action to be taken.	**No Action** **No Action**
4	That the government provide the committee with a copy of: • the detailed implementation plan for the roll-out of the National Broadband Network, to be developed as part of the implementation study, on the first sitting day after it is provided to the Department; and • the risk management strategy for the NBN roll-out.	**No Action**
5	That, as soon as possible, but no later than the last sitting day of the Winter sittings, the government provide to the committee the following: • the Australian Competition and Consumer Commission's formal report on the National Broadband Network (NBN) proposals to the NBN Panel of Experts • the final report provided to the government from the NBN Panel of Experts on submissions to the NBN process.	**ACCC-only Actioned**
6	That those aspects of the Expert Panel and the ACCC reports that discuss or make any conclusions or recommendations about the existing regulatory framework and options for its reform be provided to the committee as soon as possible, but no later than the last sitting day of the Winter sittings.	**ACCC-only Actioned**

Committee's final recommendation

9.14 The committee notes that the government advocates evidence-based policy and decision making in its objective of achieving increased transparency and accountability.

9.15 There is no need to further emphasise the enormity of this project – its massive price tag of $43 billion does that well enough – nor the proportional levels of risk that this project shoulders.

9.16 Consequently, the committee concludes that there is an urgent need for this project to be the subject of ongoing scrutiny and reporting requirements throughout the life of the project.

9.17 In particular, the committee believes that the final Implementation Report, and the government's response to it, should be made available for public scrutiny as soon as they are finalised. Consequently, the committee makes this final recommendation:

Recommendation 12

9.18 That the Senate agree to extend the Select Committee on the National Broadband Network, under the following revised terms of reference:

a) That the resolution of the Senate of 25 June 2008, as amended, appointing the Select Committee on the National Broadband Network, be further amended:

- **to omit "25 November 2009", and substitute "30 April 2010"; and**
- **to add the following paragraph to the committee's terms of reference:**

(2A) The Committee is to examine the findings of the National Broadband Network Implementation Study, the Government's response to the Implementation Study and any subsequent implications of that report for the National Broadband Network policy.

……

Senator Mary-Jo Fisher

(Chair)

25 November 2009

Additional Comments - Senator Fiona Nash

1.1 The report comprehensively addresses the issues surrounding the National Broadband Network.

1.2 However, regarding the committee's consideration of the Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009:

- The legislation, while potentially providing a pathway to a future National Broadband Network, is not dependent upon the creation of an NBN. It stands alone in addressing the current concerns with the operation of the regulatory environment.
- While the alternate view has been put, Telstra has been provided with a choice to either structurally or functionally separate.
- Reference in the report to concerns regarding Telstra being precluded from investing money into new telecommunications infrastructure due to the potential cost of separation to the company, should be seen as Telstra's view.
- It should be recognised that while there has been a view put forward that separation had not been an overwhelming success in the UK, the alternate view also exists. Ofcom, the UK communications regulator, has said that the functional separation has been a success, and directly attributed rapid growth in broadband and dramatic falls in broadband prices to the structural reforms.
- The previous 'negotiate and arbitrate' models in dealing with access by the ACCC have not been effective. The changes in the legislation are a welcome step forward.
- While the committee notes that they fail to see how restricting Telstra's future expansion in the mobile market will strengthen competition, a contrary view also exists that precluding Telstra's access to further spectrum is appropriate in order to address anti-competitive practices.

……

Senator Fiona Nash

(Deputy Chair)

25 November 2009

Minority Report - Government Senators

1.1 Government Senators note that this is the third Interim Report of the Senate Select Committee on the National Broadband Network, with the earlier reports having been tabled in December 2008 and May 2009.

1.2 Consistent with the previous approach by Opposition Senators, we believe that the conclusions and recommendations arising from the Majority Report are not necessarily reflective of the evidence presented, rather an affirmation of the Opposition parties criticisms of the Government's telecommunications polices.

1.3 Accordingly, Government Senators disagree with all but one of the Opposition Senators recommendations. In particular, we highlight the contradictory stance of Opposition Senators that on the one hand argue for delay in proceeding with the NBN until further work is undertaken (Majority Report Recommendations 2, 4, 5 and 6) and on the other hand complains that the Government is not moving fast enough to build the NBN and recommends (Majority Report Recommendation No. 3) to bring the NBN-specific legislation forward.

1.4 In addition, the Opposition Senators recommend (Majority Report Recommendation No. 1) the consecutive roll-out across metropolitan, regional and rural areas while at the same time recommending (Majority Report Recommendations No. 7, 8 and 9) that no further work take place until all implementation studies and cost analyses are completed, made public and assessed independently, and then reviewed annually by the Productivity Commission.

1.5 This indicates their continuing opposition to the Labor Government’s policy of a National Broadband Network. This opposition is thinly veiled in a series of recommendations that seek to delay the complex process of preparing the implementations study but it is overt in Recommendation 11, which specifically seeks to delay the necessary regulatory reform that would ensure that while the NBN is rolled out, the necessary reforms are made to the existing regime to ensure more effective competition and stronger consumer safeguards.

1.6 The Government seeks to press ahead with their visionary policy for a National Broadband Network for all Australians to ensure that our economy and society is well placed to secure the productivity and connectivity benefits afforded by an efficient, future-proof high-bandwidth network.

1.7 The Opposition has not articulated an alternative policy to deliver a universal high-bandwidth network to all Australians, choosing instead to represent the interests of the residual monopoly incumbent Telstra throughout the course of the inquiry.

1.8 Whilst not directly related to the establishment of the NBN Co, the Telecommunications Competition and Consumer Safeguards Bill was explored

towards the end of this committee's considerations, notwithstanding its consideration by another Senate Committee.

1.9 Government Senators note that this Bill, if passed, would improve competition in the telecommunication sector and strengthen consumer protections while the NBN is rolled out over the next eight years by rectifying the well-established deficiencies in the existing regulatory framework. The recommendation to delay the consideration of this Bill is therefore further evidence of the Opposition's intent to delay and obfuscate the necessary reforms to the existing telecommunications regulatory regime.

1.10 Government Senators would like to acknowledge and thank witnesses for appearing, some for third time, and providing their evidence, much of which is informative and useful to the public understanding of the progress of the national Broadband Network. Where this evidence has been accurately reflected in the body of the report, we Government Senators are happy to associate with it.

1.11 Only one recommendation, No.10, is supported by Government Senators as this is work already being embarked upon by a range of organisations and firms across the public and private sector. This recommendation advocates the development of new applications for use on the National Broadband Network, a task the Government is already enthusiastically engaged in.

1.12 Government Senators noted with great interest the examples of high-bandwidth applications and services being developed in health, education, community and emergency services. The "Realising our Broadband Future" Forum announced by the Minister for Broadband, Communications and the Digital Economy for the December 10 2009, is an example of the strong Government focus that is building around the new and innovative services and applications that will be possible with a universal high bandwidth network for all Australians such as the NBN will provide.

Senator Kate Lundy Senator Glenn Sterle

25 November 2009

Additional Comments - Australian Greens

1.1 The Australian Greens welcome the opportunity to provide additional comments to the report of the Select Committee.

1.2 Early drafts of the report would probably have read as a balanced assessment of the historic, technological and economic contexts within which to assess the current proposal for a National Broadband Network. The report as printed unfortunately reflects a tone of partisan bitterness and suspicion which reflects poorly on the collaborative and diligent way in which the committee and its staff undertook the research, field trips and public hearings. Reading between the lines to filter out the political positioning, the report is still an extremely valuable record of where the NBN has come from, its technological underpinnings, and what to look for in the future.

1.3 The Australian Greens were broadly supportive of the government's announcement in April 2009 that the RFP process for a fibre-to-the-node network had been terminated and a vastly more ambitious fibre to the premises network would be built and operated by the Commonwealth Government.

1.4 The need for this massive public investment, and the parallel process of painful telecommunications market reform that is proceeding alongside it, is partly due to the dysfunctional state of the market resulting in the privatisation of the vertically integrated monopoly provider Telstra.

1.5 The issues raised by the Australian Greens in our earlier contributions still stand. In our first 'dissenting report' of 2 December 2008, we noted:

> …the Australian Greens urge the Government to hold its nerve with regard to the RFP, and insist on taking a majority equity stake in the National Broadband Network and operating it as a competitively neutral, open access network.

1.6 We were therefore pleased when the government's expanded proposal for a FTTP network adopted precisely this formulation. As always however, there was a catch. As the report notes at 2.12, the government intends to build the NBN with a substantial investment of public funds, and then privatise it all over again five years after it is operational. No justification is provided for this incongruous and retrograde policy, which the Australian Greens oppose. We await the publication of the implementation study and the tabling of substantive NBN legislation to assess whether the government has thought through the costs and consequences of privatising the network all over again.

1.7 Much of the debate since the announcement of the policy has turned on the absence of a rigorous cost-benefit analysis of the project. In our view this issue, while

important, risks become something of a red herring. We certainly concur that a detailed assessment of the project's commercial viability is essential, given the wildly divergent estimates of the wholesale costs of access to the network which have begun to flourish in the information vacuum.

1.8 Questions of cost-benefit analysis were clouded in our view by the presentation of Professor Ergas to the committee of the only real attempt to conduct such an analysis to date. During this presentation, the impossibility of accurately monetising the intangible future benefits of an enabling network such as this were laid bare. In analyses of this kind, a series of mathematical fudges and assumptions are used to lend an appearance of rigour and precision where none really exists. This was tacitly acknowledged by the Productivity Commission in their evidence, as outlined at 6.23 of the report.

1.9 One aspect of the project for which a detailed cost-benefit analysis would be valuable concerns the choice of underground or overhead cabling. The report canvases the arguments well, and notes how difficult it was for the committee to get an accurate idea of the relative short and long-term costs of the different options. The Australian Greens believe that as much of the network as possible should be underground, for all the reasons stated in the report, but until reliable cost estimates are made available it is difficult to reach a final conclusion. An interim implementation study report as proposed by the committee – before 31 December 2009 - would be an appropriate time to provide a costed analysis of the options.

1.10 In the most recent round of hearings the committee heard evidence – at last – that went to the question of what the network will actually be used for. The end-user, and the services that the NBN will host, have been largely ignored in the debate thus far which has largely turned on questions of competition and market structure. It was therefore refreshing to hear the evidence given by various witnesses covered in chapters 6-7 relating to research, e-health, e-governance, smart grids, remote education and so on.

1.11 These sessions left the committee in little doubt that as the network approaches ubiquity and hosts more and more services, it will approach the status of essential service (there are arguments that this has already occurred.) Questions of equity then come to the fore, whether geographic or social. In an age of ubiquitous connectivity, the disconnected and the disadvantaged will find themselves further isolated on the wrong side of the digital divide. Apart from ensuring that backhaul and FTTP infrastructure target undeveloped and under serviced areas first, the Australian Greens urge the government to undertake detailed consultations with social justice advocates and consumer groups to ensure that the network makes a strong contribution to the government's social inclusion agenda.

1.12 The final chapter of the report dealing with proposals to undertake reforms of telecommunications markets are where the Australian Greens part company with the majority report. The Australian Greens views on this bill are contained in our

dissenting report on the Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009.

Senator Scott Ludlam

25 November 2009

APPENDIX 1

Terms of Reference

(1) That a select committee, to be known as the Select Committee on the National Broadband Network, be established to inquire into and report by 30 March 2009 on:

(a) the Government's proposal to partner with the private sector to upgrade parts of the existing network to fibre to provide minimum broadband speeds of 12 megabits per second to 98 per cent of Australians on an open access basis; and

(b) the implications of the proposed National Broadband Network (NBN) for consumers in terms of:

(i) service availability, choice and costs,

(ii) competition in telecommunications and broadband services, and

(iii) likely consequences for national productivity, investment, economic growth, cost of living and social capital.

(2) That the committee's investigation include, but not be limited to:

(a) the availability, price, level of innovation and service characteristics of broadband products presently available, the extent to which those services are delivered by established and emerging providers, the likely future improvements in broadband services (including the prospects of private investment in fibre, wireless or other access networks) and the need for this government intervention in the market;

(b) the effects on the availability, price, choice, level of innovation and service characteristics of broadband products if the NBN proceeds;

(c) the extent of demand for currently available broadband services, what factors influence consumer choice for broadband products and the effect on demand if the Government's fibre-to-the-node (FTTN) proposal proceeds;

(d) what technical, economic, commercial, regulatory and social barriers may impede the attainment of the Government's stated goal for broadband availability and performance;

(e) the appropriate public policy goals for communications in Australia and the nature of regulatory settings that are needed, if FTTN or fibre-to-the-premise (FTTP), to continue to develop competitive market conditions, improved services, lower prices and innovation given the likely natural monopoly characteristics and longevity of the proposed network architecture;

(f) the possible implications for competition, consumer choice, prices, the need for public funding, private investment, national productivity, if the Government does not create appropriate regulatory settings for the NBN;

(g) the role of government and its relationship with the private sector and existing private investment in the telecommunications sector;

(h) the effect of the NBN proposal on existing property or contractual rights of competitors, supplier and other industry participants and the exposure to claims for compensation;

(i) the effect of the proposed NBN on the delivery of Universal Service Obligations services;

(j) whether, and if so to what extent, the former Government's OPEL initiative would have assisted making higher speed and more affordable broadband services to areas under-serviced by the private sector; and

(k) the cost estimates on which the Government has based its policy settings for a NBN, how those cost estimates were derived, and whether they are robust and comprehensive.

(3) That, in carrying out this inquiry, the committee will:

(a) expressly seek the input of the telecommunications industry, industry analysts, consumer advocates, broadband users and service providers;

(b) request formal submissions that directly respond to the terms of reference from the Australian Competition and Consumer Commission, the Productivity Commission, Infrastructure Australia, the Department of the Treasury, the Department of Finance and Deregulation, and the Department of Infrastructure, Transport, Regional Development and Local Government;

(c) invite contributions from organisations and individuals with expertise in:

(i) public policy formulation and evaluation,

(ii) technical considerations including network architecture, interconnection and emerging technology,

(iii) regulatory framework, open access, competition and pricing practice,

(iv) private sector telecommunications retail and wholesale business including business case analysis and price and demand sensitivities,

(v) contemporary broadband investment, law and finance,

(vi) network operation, technical options and functionality of the ‘last mile' link to premises, and

(vii) relevant and comparative international experiences and insights applicable to the Australian context;

(d) advertise for submissions from members of the public and to the fullest extent possible, conduct hearings and receive evidence in a manner that is open and transparent to the public; and

(e) recognise the Government's NBN proposal represents a significant public sector intervention into an increasingly important area of private sector activity and that the market is seeking openness, certainty and transparency in the public policy deliberations.

(4) That the committee consist of 7 senators, 2 nominated by the Leader of the Government in the Senate, 4 nominated by the Leader of the Opposition in the Senate, and 1 nominated by any minority party or independent senators.

(5) (a) On the nominations of the Leader of the Government in the Senate, the Leader of the Opposition in the Senate and any minority party and independent senators, participating members may be appointed to the committee;

(b) participating members may participate in hearings of evidence and deliberations of the committee, and have all the rights of members of the committee, but may not vote on any questions before the committee; and

(c) a participating member shall be taken to be a member of the committee for the purpose of forming a quorum of the committee if a majority of members of the committee is not present.

(6) That the committee may proceed to the dispatch of business notwithstanding that all members have not been duly nominated and appointed and notwithstanding any vacancy.

(7) That the committee elect as chair one of the members nominated by the Leader of the Opposition in the Senate.

(8) That the chair of the committee may, from time to time, appoint another member of the committee to be the deputy chair of the committee, and that the member so appointed act as chair of the committee at any time when there is no chair or the chair is not present at a meeting of the committee.

(9) That, in the event of an equally divided vote, the chair, or the deputy chair when acting as chair, have a casting vote.

(10) That the committee have power to appoint subcommittees consisting of 3 or more of its members, and to refer to any such subcommittee any of the matters which the committee is empowered to examine.

(11) That the committee and any subcommittee have power to send for and examine persons and documents, to move from place to place, to sit in public or in private, notwithstanding any prorogation of the Parliament or dissolution of the House of Representatives, and have leave to report from time to time its proceedings and the evidence taken and such interim recommendations as it may deem fit.

(12) That the committee be provided with all necessary staff, facilities and resources and be empowered to appoint persons with specialist knowledge for the purposes of the committee with the approval of the President.

(13) That the committee be empowered to print from day to day such papers and evidence as may be ordered by it, and a daily Hansard be published of such proceedings as take place in public.

APPENDIX 2

Revised Terms of Reference

1. That a select committee, to be known as the Select Committee on the National Broadband Network, be established to inquire into and report by **23 November 2009** on:

    a. The Government's decision to establish a company to build and operate a National Broadband Network (NBN) to:
        i. connect 90 per cent of all Australian homes, schools and workplaces with optical fibre to the premise (FTTP) to enable broadband services with speeds of 100 megabits per second;
        ii. connect all other premises in Australia with next generation wireless and satellite technologies to deliver broadband speeds of 12 megabits per second or more;
        iii. directly support up to 25,000 local jobs every year, on average, over the eight year life of the project.

    b. The implications of the NBN for consumers and taxpayers in terms of:
        i. service availability, choice and costs,
        ii. competition in telecommunications and broadband services, and
        iii. likely consequences for national productivity, investment, economic growth, cost of living and social capital.

2. That the committee's investigation include, but not be limited to:
    a. any economic and cost/benefit analysis underpinning the NBN;
    b. the ownership, governance and operating arrangements of the NBN company and any NBN related entities;
    c. any use of bonds to fund the NBN;
    d. any regulations or legislation pertaining to the NBN;
    e. the availability, price, level of innovation and service characteristics of broadband products presently available, the extent to which those services are delivered by established and emerging providers, and the prospects for future improvements in broadband infrastructure and services (including through private investment);

f. the effects of the NBN on the availability, price, choice, level of innovation and service characteristics of broadband products in metropolitan, outer-metropolitan, semi-rural and rural and regional areas and towns;

g. the extent of demand for currently available broadband services, the factors influencing consumer choice for broadband products and the effect on demand if the Government's FTTP proposal proceeds;

h. any technical, economic, commercial, regulatory, social or other barriers that may impede attaining the Government's stated goal for broadband availability and performance in the specified timeframe;

i. the appropriate public policy goals for communications in Australia and the nature of any necessary regulatory settings to continue to develop competitive market conditions, improved services, lower prices and innovation;

j. the role of government and its relationship with the private sector and existing private investment in the telecommunications sector;

k. the effect of the NBN on the delivery of Universal Service Obligations services;

l. whether, and if so to what extent, the former Government's OPEL initiative would have assisted making higher speed and more affordable broadband services available.

3. That, in carrying out this inquiry, the committee will:

a. expressly seek the input of the telecommunications industry, industry analysts, consumer advocates, broadband users and service providers;

b. request formal submissions that directly respond to the terms of reference from the Australian Competition and Consumer Commission, the Productivity Commission, Infrastructure Australia, the Department of the Treasury, the Department of Finance and Deregulation, and the Department of Infrastructure, Transport, Regional Development and Local Government;

c. invite contributions from organisations and individuals with expertise in:

i. public policy formulation and evaluation,

ii. technical considerations including network architecture, interconnection and emerging technology,

iii. regulatory framework, open access, competition and pricing practice,

iv. private sector telecommunications retail and wholesale business including business case analysis and price and demand sensitivities,

v. contemporary broadband investment, law and finance,

vi. network operation, technical options and functionality of the ‘last mile' link to premises, and

vii. relevant and comparative international experiences and insights applicable to the Australian context;

d. advertise for submissions from members of the public and to the fullest extent possible, conduct hearings and receive evidence in a manner that is open and transparent to the public; and

e. recognise the Government's NBN proposal represents a significant public sector intervention into an increasingly important area of private sector activity and that the market is seeking openness, certainty and transparency in the public policy deliberations.

4. That the committee consist of 7 senators, 2 nominated by the Leader of the Government in the Senate, 4 nominated by the Leader of the Opposition in the Senate, and 1 nominated by any minority party or independent senators.

5. a. On the nominations of the Leader of the Government in the Senate, the Leader of the Opposition in the Senate and any minority party and independent senators, participating members may be appointed to the committee;

b. participating members may participate in hearings of evidence and deliberations of the committee, and have all the rights of members of the committee, but may not vote on any questions before the committee; and

c participating member shall be taken to be a member of the committee for the purpose of forming a quorum of the committee if a majority of members of the committee is not present.

6. That the committee may proceed to the dispatch of business notwithstanding that all members have not been duly nominated and appointed and notwithstanding any vacancy.

7. That the committee elect as chair one of the members nominated by the Leader of the Opposition in the Senate.

8. That the chair of the committee may, from time to time, appoint another member of the committee to be the deputy chair of the committee, and that the member so appointed act as chair of the committee at any time when there is no chair or the chair is not present at a meeting of the committee.

9. That, in the event of an equally divided vote, the chair, or the deputy chair when acting as chair, have a casting vote.

10. That the committee have power to appoint subcommittees consisting of 3 or more of its members, and to refer to any such subcommittee any of the matters which the committee is empowered to examine.

11. That the committee and any subcommittee have power to send for and examine persons and documents, to move from place to place, to sit in public or in private, notwithstanding any prorogation of the Parliament or dissolution of the House of Representatives, and have leave to report from time to time its proceedings and the evidence taken and such interim recommendations as it may deem fit.

12. That the committee be provided with all necessary staff, facilities and resources and be empowered to appoint persons with specialist knowledge for the purposes of the committee with the approval of the President.

13. That the committee be empowered to print from day to day such papers and evidence as may be ordered by it, and a daily Hansard be published of such proceedings as take place in public.

APPENDIX 3

Submissions Received

Submission No.	Submitter
001	Paul Budde Communication
001a	Paul Budde Communication
002	WA Department of Industry and Resources
003	iiNet Ltd
004	AAPT
005	QLD Government
006	Internet Society of Australia
007	Australian Telecommunications Users Group Ltd
008	Competitive Carriers Coalition
008a	Competitive Carriers Coalition
008b	Competitive Carriers Coalition
008c	Competitive Carriers Coalition
008d	Competitive Carriers Coalition
008e	Competitive Carriers Coalition
008f	Competitive Carriers Coalition
008g	Competitive Carriers Coalition
009	Vodafone Australia
010	Australian Federation of Deaf Societies/
010	Australian Communication Exchange
011	Infrastructure Partnerships Australia
012	Terria Ltd
013	Professor Trevor Barr
014	Mr Doug McArthur
015	Professor Joshua Gans
016	AUSTAR United Communications Ltd
017	Chamber of Commerce and Industry WA
018	Digital Tasmania
018a	DigitalTasmsania
018b	Digital Tasmania
019	Optus
019a	Optus
019b	Optus
020	Primus Telecom
020a	Primus Telecom
021	Mr Gregory Schiemer
022	Mr Kevin Morgan
022a	Mr Kevin Morgan
023	Electronic Frontiers Australia
024	Dr Ross Kelso
025	Adam Internet

026	**Torres Shire Council**
026a	**Mr Russell Barkus in conjunction with Torres Shire Council**
027	**Northern Territory Government**
028	**Consumers' Telecommunication Network**
029	**Google**
030	**GetUp!**
031	**Communications Experts Group Pty Ltd**
031a	**Communications Experts Group Pty Ltd**
031b	**Communications Experts Group Pty Ltd**
032	**Australian Industry Group**
033	**Axia NetMedia**
034	**BT Global Services**
034a	**BT Global Services**
035	**Attorney General's Department, Territories and Native Title Division**
036	**C-COR Broadband**
036a	**C-COR Broadband**
037	**Communications Law Centre, University of Technology Sydney**
038	**Mr J Scott Marcus**
039	**Juniper Networks**
040	**ADTRAN Networks Pty Ltd**
041	**Mr Fraser Swift**
041a	**Mr Fraser Swift**
42	**Professor Joshua Gans**
43	**Mr Serge Jean Noel Perombelon**
44	**Optical Network Engineering**
45	**Mr Malcolm Moore**
45a	**Mr Malcolm Moore**
45b	**Mr Malcolm Moore**
46	**Australian Institute for Commercialisation**
47	**Professor Trevor Barr**
48	**The Hon. Bob Such MP JP**
49	**Creative Commons Clinic**
50	**Southern Cross Equities**
51	**Alcatel-Lucent**
52	**Business Council of Australia**
53	**Optus**
54	**National e-Health Transition Authority**
55	**C-COR**
56	**Market Clarity**
57	**Australian Information Industry Association**
58	**Indigenous Remote Communications Association**
59	**VERNet**
60	**Mr Richard Hockey**
61	**Energy Networks Association Ltd**

62	**Australian Mobile Telecommunications Association (AMTA)**
63	**Mr Russell Barkus**
64	**INTELSAT Asia Pty Ltd**
65	**Australian Federation of Deaf Societies (AFDS)**
66	**Australian Industry Group**
67	**Fibre to the Home Council Asia Pacific**
67a	**Fibre to the Home Council Asia Pacific**
68	**Mr Patrick Kelso**
69	**NICTA**
70	**Office of the Privacy Commissioner**
71	**Australian Library and Information Association**
72	**Australian Institute of Family Studies**
73	**AUSTAR United Communications Limited**
74	**Australian Office of Financial Management**
75	**Australian Local Government Association**
76	**Deutsche Bank Australia**
77	**Standards Australia**
78	**Department of Commerce WA**
79	**AusCERT**
80	**CSIRO**
81	**Infrastructure Partnerships Australia**
82	**03b Networks**
83	**Google**
84	**Mr Francis Young**
85	**Northern Territory Government: Department of Business and Employment**
86	**Bullseye**
87	**Productivity Commission**
88	**AC3 Australian Centre for Advanced Computing and Communications**
89	**Chief Minister's Department**
90	**Axia NetMedia**
91	**iSoft Group Ltd**
92	**Mr Kevin Morgan**
93	**Government of Western Australia**
94	**Dr Ross Kelso & Mr Peter Downey**
95	**Cables Downunder**
95i	**Cables Downunder- Attachment A**
95a	**Mr Greg Bleazard**
95b	**Mr Peter Downey**
95c	**Mr Peter Downey**
96	**The Haberfield Association Inc**
97	**Senetas**
98	**Adelaide Hills Regional Development**

99	**Mr Henry Ergas**
100	**Eckermann & Associates**
100a	**Eckermann & Associates**
101a	**Mr David Fagan**
101b	**Mr David Fagan**
102	**Mr Wijitha Gunaratne**

Appendix 4

Documents Tabled at Public Hearings

Sydney
Tuesday, 7 October 2008

Consumers' Telecommunications Network
Accessible Broadband for All Australians
Policy Paper, April 2008

Melbourne
Tuesday, 28 October 2008

Professor Trevor Barr, Swinburne University of Technology
It's the consumers stupid! Broadband Policy, Presentation

Perth
Thursday, 6 November 2008

Mr Anson Cheng, Manager, Broadband Infrastructure, Western Australian Department of Industry and Resources
Smart Network WA: Submission to the Regional Telecommunications Independent Review Committee

Mr Anson Cheng, Manager, Broadband Infrastructure, Western Australian Department of Industry and Resources
Ngaanyatjarra Indigenous Community, Series of photographs

Mr Peter Monks, Acting Chief Executive Officer, City of Perth
Pit lid covers on the footpaths of Perth, Series of photographs

Brisbane
Friday, 21 November 2008

Mr Dave Jackson, City of Brisbane
Series of diagrams regarding internet speed and price

Sydney
Tuesday, 3 March 2009

Mr David Quilty, Telstra Corporation Ltd
Critical issues to be addressed in the NBN decision, Document

Canberra
Wednesday, 4 March 2009

Ms Deidre O'Donnell, Telecommunications Industry Ombudsman
Complaints and Complaint Issues (July 2008 –January 2009), Table and Graphs.

Canberra
Monday, 20 July 2009

Mr Malcolm Moore
'Simplified Structural Network', Power point presentation

Fibre to the Home Council Asia Pacific (FTTH)
Pole mounted splitter, Fibre splitter instrument

Sydney
Wednesday, 05 August 2009

Dr Alex Zelinsky, CSIRO
'Broadband for Australia', Power point presentation

Dr Mukesh Haikerwal, National E-Health Transition Authority (nehta)
Closing Comments

Melbourne
Wednesday, 07 October 2009

Ballarat ICT
Power point presentation to 'Senate Select Committee on the National Broadband Network'

Hobart
Thursday, 08 October 2009

Tasmania Chamber of Commerce Industry, TCCI
*Draft NBN policy***,** Document

APPENDIX 5

Answers to Questions on Notice

Public Hearings:	**Received**
Sydney 7 October 2008	
AAPT	
(asked at public hearing)	25 February 2009
Canberra 8 October 2008	
Infrastructure Australia	
(asked at public hearing)	11 November 2008
Dept of Broadband, Communications and the Digital Economy	
(asked at public hearing)	31 October 2008
Melbourne 28 October 2008	
Digital Tasmania	
(asked at public hearing)	27 February 2009
Internet Society of Australia	
(asked at public hearing)	24 February 2009
Primus Telecom	
(asked at public hearing)	27 November 2008
Perth 6 November 2008	
City of Perth	
(asked at public hearing)	20 November 2008
WALGA (WA Local Government Association)	
(asked at public hearing)	24 December 2008
Canberra 11 November 2008	
Telstra	
(asked at public hearing)	24 February 2009
Brisbane 21 November 2008	
IRCA (Indigenous Remote Communications Association)	
(asked at public hearing)	19 January 2009
Mr Russell Barkus	
(asked at public hearing)	15 January 2009

Sydney 3 March 2009

Primus Telecom	
(asked at public hearing)	20 April 2009
(additional questions on notice)	20 April 2009
Telstra	
(asked at public hearing)	28 April 2009
(additional questions on notice)	28 April 2009
Optus	
(additional questions on notice)	6 April 2009
AUSTAR	
(additional questions on notice)	3 April 2009
ACCC (Australian Competition & Consumer Commission)	
(additional questions on notice)	7 April 2009

Canberra 4 March 2009

Mr Kevin Morgan	
(asked at public hearing)	5 March 2009
Department of Broadband, Communications and the Digital Economy	
(asked at public hearing)	6 April 2009
(additional questions on notice)	6 April 2009
Australian Industry Group	
(asked at public hearing)	20 May 2009
(additional questions on notice)	20 May 2009
Axia	
(additional questions on notice)	16 April 2009
Telecommunications Industry Ombudsman	
(additional questions on notice)	6 April 2009
Department of Broadband, Communications and the Digital Economy	
(asked at public hearing)	3 April 2009
(additional questions on notice)	3 April 2009
Attachment 1	3 April 2009
Attachment 2	3 April 2009
Attachment 3	3 April 2009
Attachment 4	3 April 2009
Attachment 5	3 April 2009
Attachment 6	3 April 2009

Monday 20 July 2009

Department of Broadband, Communications and the Digital Economy (DBCDE)
(asked at public hearing) 14 August 2009

Wednesday 5 August 2009

Australian Information Industry Association
(asked at public hearing) 3 September 2009

CSIRO
(asked at public hearing) 4 September 2009

National e-Health Transition Authority
(asked at public hearing) 4 September 2009
Standards Australia
(asked at public hearing) 22 October 2009

01 October 2009 Canberra, ACT

Mr Henry Ergas
(asked at public hearing) 12 November 2009
Attachment _ accessingprice 12 November 2009
Attachment _ pricesetting 12 November 2009

Professor Rod Tucker
(written questions on notice) 13 October 2009

Cables Downunder
(asked at public hearing) 23 October 2009

Productivity Commission
(asked at public hearing) 27 October 2009

NBN Co. Limited
(asked at public hearing) 13 November 2009

Australian National Audit Office (ANAO)
(asked at public hearing) 28 October 2009

Department of Finance and Deregulation
(asked at public hearing) 28 October 2009

Department of Treasury
(asked at public hearing) 2 November 2009

Department of Broadband, Communications and the Digital Economy (DBCDE)
(asked at public hearing) 11 November 2009

07 October 2009 Melbourne, VIC

City of Whittlesea
(asked at public hearing) 22 October 2009

Ballarat ICT Limited
(asked at public hearing) 29 October 2009

Professor Gans
(asked at public hearing) 30 October 2009

VERNet
(asked at public hearing) 13 November 2009

08 October 2009 Hobart, TAS

Local Government Association of Tasmania
(asked at public hearing) 29 October 2009

Digital Tasmania
(asked at public hearing) 2 November 2009

Sorell Council
(asked at public hearing) 6 November 2009

Aurora Energy
(written questions on notice) 11 November 2009

Answers to Written Questions on Notice

Questions on notice: correspondence re declining invitation to make a submission to the inquiry

	Response Received
Mr John Stanhope MLA Chief Minister, ACT Legislative Assembly	2 October 2008
Mr David Bartlett MP Premier of Tasmania, Tasmanian Government	26 September 2008
Ms Patricia Scott Secretary, Department of Broadband, Communications and the Digital Economy	25 September 2008
Dr Ian Watt, AO Secretary, Department of Finance and Deregulation	25 September 2008
Dr Ken Henry, AC Secretary, Department of the Treasury	24 September 2008
Mr Michael Taylor Secretary, Department of Infrastructure, Transport, Regional Development and Local Government	24 September 2008
Mr Gary Banks, AO Chairman, Productivity Commission	23 September 2008
Mr Brian Cassidy ACCC (Australian Competition and Consumer Commission)	22 September 2008
Professor Rod Tucker	13 October 2009
Mr John Hasker AM Aurora Energy	11 November 2009

APPENDIX 6

Witnesses Who Appeared Before the Committee

Sydney, Tuesday 7 October 2008

BREALEY, Mr Michael, Manager, Public Policy
Vodafone Australia

BUDDE, Mr Paul, Managing Director
Paul Budde Communication Pty Ltd

CHAPMAN, Mr Alexander, Executive Officer, Policy and Strategy Coordinator
Australian Federation of Deaf Societies

CORBIN, Ms Teresa, Chief Executive Officer
Consumers Telecommunications Network

HICKS, Mr Gregory, Chairman
Adam Internet Pty Ltd

POOLMAN, Mr Clive, General Manager Strategy
AAPT

SCHUBERT, Ms Georgia Kate, General Manager, Public Policy
Vodafone Australia

WALTERS, Ms Sheena, Manager, Interpreting and Advocacy
Deaf Society of New South Wales

WEIR, Ms Deanne, Group Director, Corporate Development and Legal Affairs
AUSTAR United Communications Ltd

Canberra, Wednesday 8 October 2008

COBCROFT, Mr Simon, Acting Assistant Secretary, Broadband Infrastructure Branch
Department of Broadband, Communications and the Digital Economy

COSGRAVE, Mr Michael, Group General Manager, Communications Group
Australian Competition and Consumer Commission

DIMASI, Mr Joe, Executive General Manager, Regulatory Affairs Division
Australian Competition and Consumer Commission

EGAN, Hon. Michael Rueben, Chairman
Terria Pty Ltd

FORMAN, Mr David, Executive Director
Competitive Carriers Coalition

HEALY, Mr Matthew, Chair
Competitive Carriers Coalition

KING, Ms Marianne, Assistant Secretary, National Broadband Network Taskforce
Department of Broadband, Communications and the Digital Economy

LYON, Mr Brendan Curtis, Executive Director
Infrastructure Partnerships Australia

LYONS, Mr Colin, Deputy Secretary, National Broadband Network Taskforce
Department of Broadband, Communications and the Digital Economy

SIMMONS, Mr Michael John, Managing Director
Terria Pty Ltd.

WAGG, Dr Michael, General Manager, Networks Strategy
Terria Pty Ltd.

WINDEYER, Mr Richard, Acting First Assistant Secretary, National Broadband Network
Taskforce
Department of Broadband, Communications and the Digital Economy

Melbourne, 28 October 2008

BARR, Professor Trevor Frank, Media and Telecommunications
Swinburne University of Technology

BHATIA, Mr Ravi, Chief Executive Officer
Primus Telecom

CONNOR, Mr Andrew, Spokesperson
Digital Tasmania

GANS, Professor Joshua
Private capacity

HORAN, Mr John, Regulatory and Legal Counsel
Primus Telecom.

KRISHNAPILLAI, Mr Maha, Director, Government and Corporate Affairs
Optus

MORGAN, Mr Kevin
Private capacity

RAICHE, Ms Holly, Executive Director
Internet Society of Australia

SHERIDAN, Mr Andrew, General Manager, Economic Regulation
Optus

SINCLAIR, Ms Rosemary Anne, Managing Director
Australian Telecommunications Users Group

WHITE, Mr Gerry, Director
Internet Society of Australia

Perth, Thursday 6 November 2008

BAIN, Mr Martin, Member and Representative
Chamber of Commerce and Industry Western Australia

BUCKINGHAM, Mr David, Chief Financial Officer
iiNet Ltd

CHENG, Mr Anson, Manager, Broadband Infrastructure
Western Australian Department of Industry and Resources

DALBY, Mr Stephen, Chief Regulatory Officer
iiNet Ltd

de JONG, Mrs Julie, Director for Innovative Industries
Western Australian Department of Industry and Resources

DIGNARD, Mrs Sharon Anne, Senior Adviser Industry Policy
Chamber of Commerce and Industry Western Australia

FRONTINO, Mr Anthony, Managing Director
CipherTel Pty Ltd

GREEN, Professor Walter Battman, Director
Communications Experts Group Pty Ltd

GROCOTT, Mr Stephen, General Manager, ICT, Biotechnology and Trade Services,
Western Australian Department of Industry and Resources

HAILES, Ms Allison, Executive Manager
Western Australian Local Government Association

HILL, Mr Christopher Richard, Member and Representative
Chamber of Commerce and Industry Western Australia

MALONE, Mr Michael, Managing Director
iiNet Ltd

McGUIGAN, Mr Philip
Western Australian Local Government Association

MONKS, Mr Peter, Acting Chief Executive Officer
City of Perth

Canberra, Tuesday 11 November 2008

GALLAGHER, Mr William David, General Counsel, Public Policy &
Communications, Telstra Corporation Limited

QUILTY, Mr David, Group Managing Director, Public Policy
Telstra Corporation Limited

WARREN, Dr Tony, Executive Director, Regulatory Affairs
Telstra Corporation Limited

Brisbane, Friday 21 November 2008

CHELLEW, Ms Linda, Manager
Indigenous Remote Communications Association

CLAPPERTON, Mr Dale, Spokesperson
Electronic Frontiers Australia Inc

JACKSON, Mr David Gavin, Manager, Economic Development
Brisbane City Council

KELSO, Dr Ross
Private capacity

McCARTHY, Mr Bernie, Chief Executive Officer
Torres Shire Council

STEPHEN, Councillor Pedro, Mayor
Torres Shire Council

SUZOR, Mr Nicolas, Vice Chair
Electronic Frontiers Australia Inc

Canberra, Monday 24 November 2008

PRICE, Mr Arthur, Chairman and Chief Executive Officer
Axia NetMedia Corporation

Sydney, Tuesday 3 March 2009

BUDDE, Mr Paul
Private Capacity

CONNOR, Mr Andrew, Spokesperson
Digital Tasmania

GALLAGHER, Mr Bill, General Counsel, Public Policy and Communications
Telstra Corporation Ltd

GREEN, Professor Walter Battman, Director
Communications Experts Group Pty Ltd

HORAN, Mr John, General Counsel
Primus Telecom

KELSO, Dr Ross
Private Capacity

KRISHNAPILLAI, Mr Maha, Director, Government and Corporate Affairs
Optus

QUILTY, Mr David, Group Managing Director, Public Policy and Communications
Telstra Corporation Limited

SHERIDAN, Mr Andrew, General Manager, Economic Regulations
Optus

WARREN, Dr Tony, Executive Director, Regulatory Affairs
Telstra Corporation Ltd

WEIR, Ms Deanne, Group Director, Corporate Development and Legal Affairs
AUSTAR United Communications Ltd

WILLETT, Mr Edward, Chair, Communications Committee and
Commissioner, Australian Competition and Consumer Commission

Canberra, Wednesday 4 March 2009

BROCKMAN, Mr David, Manager, Planning and Stakeholder Engagement
Telecommunications Industry Ombudsman

BRYANT, Mr Simon, Acting First Assistant Secretary, Broadband Division
Department of Broadband, Communications and the Digital Economy

COX, Mr Dermot, Managing Director
C-COR Broadband Australia Pty Ltd

FORMAN, Mr David, Executive Director
Competitive Carriers Coalition

KING, Ms Marianne, First Assistant Secretary, National Broadband Network Taskforce
Department of Broadband, Communications and the Digital Economy

LYONS, Mr Colin, Deputy Secretary, National Broadband Network Taskforce
Department of Broadband, Communications and the Digital Economy

MARCUS, Mr J Scott,
Private Capacity

MASON, Mr Philip, Assistant Secretary, National Broadband Network Taskforce
Department of Broadband, Communications and the Digital Economy

McCARTHY-WARD, Mr Peter, BT Director East of England
BT

MORGAN, Mr Kevin
Private Capacity

O'DONNELL, Ms Deidre, Ombudsman
Telecommunications Industry Ombudsman

PETRESKI, Dr Bill, Principal Adviser – ICT, Electronics and Electrical Sectors
Australian Industry Group

PRICE, Mr Arthur, Chairman and Chief Executive Officer
Axia NetMedia Corporation

SHARP, Mr Roger, Principal Adviser, Public Policy
Australian Industry Group

Canberra, 20 July 2009

BLAIR, Mr Daniel, Telco and Media Analyst,
Southern Cross Equities

CHOPRA, Mr Sameer, Director,
Australian Equities Research, Deutsche Bank

COLACINO, Mr Peter, National Manager, Policy,
Infrastructure Partnerships Australia

COSGRAVE, Mr Michael, General Manager,
Communications Group, Australian Competition and Consumer Commission

DOMELOW Mr John, Board Director,
Fibre to the Home Council Asia-Pacific

GILMORE, Dr Rowan, Chief Executive Officer,
Australian Institute for Commercialisation

HEAZLETT, Mr Mark, Assistant Secretary,
National Broadband Network Implementation, Department of Broadband, Communications and the Digital Economy

HOME, Mr Richard, General Manager, Strategic Analysis and Development Branch, Australian Competition and Consumer Commission

HUTLEY, Ms Sue, Executive Director,
Australian Library and Information Association

KELLEHER, Mr Brian, Assistant Secretary, Priority Backhaul Implementation, Department of Broadband, Communications and the Digital Economy

KELLER-TUBERG, Mr Stefan, Chair, Regulation and Policy Committee, Fibre to the Home Council Asia-Pacific

LYON, Mr Brendan, Executive Director,
Infrastructure Partnerships Australia

LYONS, Mr Colin, Acting Secretary, Department of Broadband, Communications and the Digital Economy

MOORE, Mr Malcolm Ian,
Private capacity

NESS, Dr John, Chairman,
EM Solutions

PEARSON, Mr Mark, Executive General Manager, Regulatory Affairs Division, Australian Competition and Consumer Commission

RICHARDS, Ms Jan, President,
Australian Library and Information Association

SAGLIETTI, Mr Peter Louis,
Fibre to the Home Council Asia-Pacific

SAMUEL, Mr Graeme, Chairman,
Australian Competition and Consumer Commission

SPENCE, Ms Pip, First Assistant Secretary, Networks Policy and Regulation, Department of Broadband, Communications and the Digital Economy

WILLETT, Mr Edward, Commissioner,
Australian Competition and Consumer Commission

WINDEYR, Mr Richard, Acting First Assistant Secretary, National Broadband Network Strategic Policy,
Department of Broadband, Communications and the Digital Economy

Sydney, 5 August 2009

BYATT, Mrs Anne, Relationship Manager,
Standards Australia

DOHERTY, Mr Gary, Director, Business Development,
Commonwealth Scientific and Industrial Research Organisation

FLEMING, Mr Peter, Chief Executive Officer,
National e-Health Transition Authority

GRANT, Mr John, Chairman of Board,
Australian Information Industry Association

HAIKERWAL, Dr Mukesh, Head of Clinical Leads,
National e-Health Transition Authority

INGRAM, Mr Graham, General Manager,
AusCERT

JAKUBOWSKI, Ms Liz, Director, Government Relations,
NICTA

JOHNSON, Ms Loretta, General Manager Policy and Government Relations,
Australian Information Industry Association

KRISHNAPILLAI, Mr Maha, Director, Government and Corporate Affairs,
Optus

McKERLIE, Mr James David, Chief Executive Officer,
Bullseye

MOODY, Dr James, Executive Director, Development,
Commonwealth Scientific and Industrial Research Organisation

PERCIVAL, Dr Terence Michael, Director, Neville Roach Laboratory,
NICTA

PRICE, Mr Arthur Richard, Chief Executive Officer and Chairman,
Axia NetMedia Corporation

SENEVIRATNE, Professor Aruna, Director, ATP Laboratory,
NICTA

STEPHENS, Dr David, Government and Stakeholder Relations Advisor,
Standards Australia

ZELINSKY, Dr Alex, Director, ICT Centre,
Commonwealth Scientific and Industrial Research Organisation

Canberra 1 October 2009

ARCHER, Mr Brad, Manager, Competition and Consumer Policy Division,
Department of the Treasury

BEAUCHAMP, Ms Glenys, Deputy Secretary, Governance,
Department of the Prime Minister and Cabinet

CAINE, Mr Grant, Senior Director,
Australian National Audit Office

CASS, Ms Barbara, Executive Director,
Australian National Audit Office

DICKSON, Dr Rhondda, First Assistant Secretary, Industry, Infrastructure and Environment Division,
Department of the Prime Minister and Cabinet

DOWNEY, Mr Peter, Chairman,
Cables Downunder

ECKERMANN, Mr Christopher Robin,
Private capacity

EDGE, Mr John, Division Manager, Government Business, Special Claims and Land Policy Division,
Department of Finance and Deregulation

ERGAS, Mr Henry,
Private capacity

FOSTER, Mrs Alana, Executive Director,
Australian National Audit Office

GOONAN, Mr Anthony John, Chief Executive Officer,
YLess4U Pty Ltd

HOFFMAN, Mr Martin, Executive Coordinator, Strategic Policy and Implementation,
Department of the Prime Minister and Cabinet

LEWIS, Mr Simon, PSM, General Manager, Asset Management Group,
Department of Finance and Deregulation

McDONALD, Mr Tony, General Manager, Macroeconomic Policy Division,
Department of the Treasury

McPHEE, Mr Ian, Auditor-General,
Australian National Audit Office

MURRAY, Mr Richard, Executive Director, Policy Coordination and Governance,
Department of the Treasury

QUIGLEY, Mr Michael Patrick, Chairman and Chief Executive Officer,
NBN Co. Ltd

SAUNDERS, Mr Peter, Division Manager, Budget Review Division,
Department of Finance and Deregulation

WONDER, Mr Bernard, Head of Office,
Productivity Commission

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BARNETT, Ms Elizabeth May, General Counsel,
VERNet Pty Ltd

BOSCHERT, Ms Gayle, Clever Health Project Manager,
Grampians Rural Health Alliance

DU BOIS, Mr John Hilton, CEO,
Senetas Corporation Ltd

FRY, Mr Ian, Board Member,
Ballarat ICT Ltd

GANS, Professor Joshua Samuel,
Private capacity

MORGAN, Mr Kevin Leonard,
Private capacity

RYAN, Mr David John, Executive Officer and Chief Information Officer,
Grampians Rural Health Alliance

THOMPSON, Ms Helen, Board Member,

Ballarat ICT Ltd

TONKIN, Ms Sharon, Employee, East Wimmera Health Service; and Member,
Grampians Rural Health Alliance

VALLANCE, Mr Mal, Chairman,
Ballarat ICT Ltd

WESTON, Mr John Francis, Engineering Manager,
Senetas Corporation Ltd

WILLEMER, Ms Maree, Board Member,
Ballarat ICT Ltd

WYLER, Mr Gregory, Founder and Chief Executive Officer,
O3b Networks

WYNTER, Mr Brad, Manager Organisation Development,
City of Whittlesea

Hobart 8 October 2009

ALEXANDER, Mr Darren, President, TAS ICT, and Chief Executive,
Austech

BALL, Mr David, Regional Vice-President for Asia-Pacific,
Intelsat Corporation

CHARLES, Ms Sue, Manager Finance and Information,
Sorell Council

CONNOR, Mr Andrew, Spokesperson,
Digital Tasmania

COSTIN, Mr William Glenn (Bill), General Manager,
Sorell Council

CRAM, Mrs Gail, Sales Director Australia,
Intelsat Corporation

GARCIA, Mr Allan, Chief Executive Officer,
Local Government Association of Tasmania

REID, Mr Stephen, Economist,
Tasmanian Chamber of Commerce and Industry

SCOBIE, Mr Andrew, Managing Director,
Tasmanian Chamber of Commerce and Industry