Australian
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Consumer
Commission

Superfast Broadband Access Service declaration inquiry

Discussion paper

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Australian Competition and Consumer Commission

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Contents

List of abbreviations and acronyms

ACCC	Australian Competition and Consumer Commission
ADSL	Asymmetric Digital Subscriber Line
BT	British Telecom
CAN	Customer Access Network
CBD	Central Business District
CCA	*Competition and Consumer Act 2010*
c-i-c	commercial in confidence
ComCom	Commerce Commission
CoS	class of service
CSP	carriage service provider
DSL	Digital Subscriber Line
DSLAM	digital subscriber line access multiplexer
ETP	external termination point
FAD	final access determination
FTTB	fibre to the basement
FTTN	fibre to the node
FTTP	Fibre to the premises
Gbps	gigabits per second
GPON	gigabit passive optical network
HFC	hybrid fibre-coaxial
HSBB	high speed broadband
IAD	interim access determination
L2TP	layer 2 tunnel protocol
LBAS	local bitstream access service
LLS	local loop service
LLU	local loop unbundling
LTIE	long-term interests of end-users
Mbps	megabits per second
MCMC	Malaysian Communications and Multimedia Commission
NBN	National Broadband Network
NGA	next generation access
PIA	physical infrastructure access

POI	point of interconnection
POTS	plain old telephone service
PPP	point-to-point protocol
QoS	quality of service
RSP	retail service provider
RMRC	retail minus retail costs
SAOs	standard access obligations
SBAS	superfast broadband access service
SAU	Special Access Undertaking
SIOs	services in operation
SMP	significant market power
SSNIP	small but significant non-transitory increase in price
Telco Act	*Telecommunications Act 1997*
UBA	unbundled bitstream access
ULLS	unconditional local loop service
UK	United Kingdom
VDSL	very-high-bit-rate digital subscriber line
VULA	virtual unbundled local access
VoIP	voice over internet protocol
WLA	wholesale local access

Glossary

access agreement	A commercial contract between the access provider and an access seeker which sets out negotiated terms and conditions of supply for an agreed period of time.
access determination	Written determination made by the ACCC relating to access to a declared service after conducting a public inquiry, specifying any or all of the terms and conditions for compliance with any or all of the standard access obligations.
access seeker	Telecommunications companies that seek access to the declared service (that is, the right to use the declared service).
access provider	Telecommunications companies that provide access to a declared service.
ADSL	Asymmetric Digital Subscriber Line. A technology for transmitting digital information at high data rates on existing copper phone lines. It is called asymmetric because the download and upload speeds are not symmetrical (that is, download is faster than upload).
backhaul	The line carrying traffic from a transmission point (generally the telephone exchange) to a central point (in the IP core).
CAN	Customer Access Network. The portion of the copper network that connects each telephone end-user to the network switch at their local exchange.
cable sheath	A cable sheath is the covering on the outside of a cable that holds and protects the copper pairs that are used to supply services to end-users
declaration inquiry	The process by which the ACCC holds a public inquiry to determine whether a service should be declared.
declared service	A service that the ACCC regulates under Part XIC of the CCA. Once declared, a service provider must supply the service to other parties in accordance with the standard access obligations and the terms and conditions set in any final access determination.
designated superfast telecommunications network	A designated superfast telecommunications network includes a telecommunications network (except the NBN) that: • is used, or is proposed to be used, to supply one or more layer 2 bitstream service wholly or principally to (prospective) residential or small business customers • is used or proposed to be used as a superfast carriage service. A superfast carriage service is a carriage service supplied by a line to a premises occupied by an end-user with a download speed of normally more than 25 megabits per second • came into existence after 1 January 2011 or was altered or upgraded after that time and as a result of the upgrade became capable of supplying a superfast carriage service. (s. 152AGA, CCA)
downstream	Further along the supply chain. For example, mandating access to network services can promote competition in downstream retail broadband services.

DSLAM	Digital Subscriber Line Access Multiplexer. A device which makes use of the copper access lines to provide high data rate services, enabling broadband services to be provided over copper lines. It is generally located in a telephone exchange that links many customer DSL connections (copper wires) to a core IP network via a backhaul system.
end-user	Retail consumer of telecommunication services.
exchange	Place where various numbers and types of communication lines are switched so as to establish a connection between two telephones. The exchange also houses DSLAMs, enabling broadband services to be provided over copper lines to end-users.
enduring bottleneck	A network element or facility that exhibits natural monopoly characteristics, and is essential in providing services to end-users in downstream markets.
FAD	Final Access Determination. The FAD is made by the ACCC and sets the terms and conditions (including prices) on which a service provider may be required to supply a declared service.
fixed line services	Telecommunications services provided over fixed networks, such as Telstra's copper network and HFC networks. The 'declared fixed line services' are the ULLS, LSS, WLR, LCS, wholesale ADSL, FOAS and FTAS.
FOAS	Fixed Originating Access Service. Allows a telephone call to be connected from the caller to a point of interconnection with another network (pre-selection and override). The FOAS allows call origination for the facilitation of special number services including 13/1300 and 1800 numbers (special number services). The FOAS does not include pre-selection and override services for telephone calls provided over the NBN.
FTAS	Fixed Terminating Access Service. Allows a telephone call to be carried from the point of interconnection to the party being called on another network.
HFC network	Hybrid Fibre-Coaxial Cable network. A combination of fibre optic and copper coaxial cables able to deliver large amounts of data. Typically used to deliver internet services and pay television services.
LBAS	The declared Local Access Bitstream Service. A point to point service used to carry communications in digital form between an access provider's network and a customer. Access seekers use the service to supply superfast broadband services to customers, connected to non-NBN networks, primarily in new housing estates.
LCS	The declared Local Carriage Service. For a 'per-usage' charge, allows access seekers to resell local calls to end-users without having to invest in their own network and switching equipment. The LCS is purchased in conjunction with the WLR service.
LSS	The declared Line Sharing Service. Allows access seekers to share the use of the copper line connecting consumers to the telephone exchange, allowing them to provide fixed internet services using their own equipment. An alternative provider provides the voice services.
NGA	Next Generation Access refers to the superfast broadband product supplied by British Telecom in the United Kingdom.

PSTN	Public Switched Telephone Network. The circuit-switched fixed telephone network that allows the public to make and receive telephone calls via switching and transmission facilities and utilising analogue and digital technologies.
retail service provider	Company that offer telecommunications services to end-users.
SIO	Service In Operation. Refers to an active telecommunications service provided to an end-user.
Special access undertaking	A document given by the access provider proposing the terms and conditions on which it will offer access to its services (if approved by the ACCC, access seekers can obtain supply on these terms).
transmission	The point-to-point carriage of voice, data or other communications at a fixed data rate.
ULLS	The declared Unconditioned Local Loop Service. Allows access seekers to use the copper line connecting end-users to the local telephone exchange, allowing them to provide both fixed internet (broadband) and voice services using their own DSLAMs and other exchange equipment.
VoIP	Voice over Internet Protocol (IP). A voice service provided over a packet switched network (for example, Skype) using packets of data as opposed to the traditional circuit-switched PSTN.
Wholesale ADSL	The declared Wholesale ADSL service. Allows access seekers to purchase a Wholesale ADSL product from an access provider and resell internet services to end-users.
WLR	The declared Wholesale Line Rental service. For a monthly ‘per-user’ charge, it allows access seekers to purchase a line rental service from an access provider, which includes access to the copper line and associated services (including a dial tone and telephone number) supplied using Telstra’s equipment.

1. Introduction

1.1 Purpose

The ACCC commenced this declaration inquiry on 11 September 2014 in response to specific competition concerns that may arise as a result of the technical limitations of vectored VDSL2 technology. These competition concerns arise from fact that in certain circumstances, competing vectoring systems can lead to the degradation of end-user services. These concerns may be such that declaration would enhance competition.

On 15 October 2014, the Government commenced a consultation on a carrier licence condition to be applied to designated networks supplying a superfast carriage service to residential customers and on 12 December 2014, the Minister for Communications released the Carrier Licence Conditions (Networks supplying Superfast Carriage Services to Residential Customers) Declaration 2014.

The ACCC has released this discussion paper having considered the implications of the Government's carrier licence condition and a range of other relevant processes and information, such as the Government's response to the recommendations made by the Vertigan Committee and the Communications Alliance's working Committee on VDSL2 and Vectoring, This discussion paper seeks comment on whether a superfast broadband access service (SBAS) should be declared. The ACCC can declare a service if it is satisfied that doing so would promote the long-term interests of end-users (LTIE) of carriage services, or of services supplied by means of carriage services.

1.2 Consultation

The ACCC encourages industry participants, other stakeholders and the public more generally to consider and make submissions on the issues set out in this discussion paper. A full list of questions is contained in **Appendix A**.

To foster an informed and consultative process, all submissions will be considered as public submissions and will be posted on the ACCC's website. Interested parties wishing to submit commercial-in-confidence material to the ACCC should submit both a public and a commercial-in-confidence version of their submission. The public version of the submission should clearly identify the commercial-in-confidence material by replacing the confidential material with an appropriate symbol or 'c-i-c'.

The ACCC expects that claims for commercial-in-confidence status of information by parties will be limited in nature in order to allow the widest possible participation in the public inquiry.

The ACCC has published a Confidentiality Guideline which sets out the process parties should follow when submitting confidential information to communications inquiries commenced by the ACCC. The Guideline describes the ACCC's legal obligations with respect to confidential information, the process for submitting confidential information and how the ACCC will treat confidential information provided in submissions. A copy of the Guideline can be downloaded from the ACCC's website.

The *ACCC-AER information policy: the collection, use and disclosure of information* sets out the general policy of the ACCC and the Australian Energy Regulator on the collection, use and disclosure of information. A copy of the guideline can be downloaded from the ACCC's website.

The ACCC seeks written submissions on the issues raised in this discussion paper **by no later than 12 June 2015**.

The ACCC prefers to receive electronic copies of submissions, either in PDF or Microsoft Word format which allows for the submission text to be searched. Please contact Nicole Ross regarding any questions you have regarding this consultation on (03) 9290 1957.

Please email submissions to:

superfastbroadbandinquiry@accc.gov.au

cc: Nicole.Ross@accc.gov.au

cc: Robert.Wright@accc.gov.au

The ACCC intends to consult on a draft decision on whether it should declare a SBAS in the September 2015 quarter.

1.3 Structure of this paper

This discussion paper is structured as follows:

Chapter 2 outlines the assessment framework that the ACCC intends to use in assessing whether declaring a superfast broadband access service will promote the LTIE.

Chapter 3 sets out relevant background to the ACCC's current consideration of declaration of a superfast broadband access service, and the context for issuing this discussion paper.

Chapter 4 outlines the ACCC's approach to assessing the state of competition in the relevant markets.

Chapter 5 outlines matters that would arise if the ACCC were to declare a superfast broadband access service, including the service description and terms of any access determination.

Appendix A sets out the full list of questions asked in this discussion paper.

Appendix B sets out the legislative framework.

Appendix C describes the ACCC's approach to the LTIE test, including defining the relevant markets and assessing the state of competition.

Appendix D sets out the LBAS service description.

Appendix E provides an overview of regulation of superfast broadband networks in other jurisdictions.

2. Assessment framework

This chapter explains the assessment framework the ACCC intends to adopt in deciding whether to declare a superfast broadband access service.

2.1 Legislative framework

In deciding to declare a service, the ACCC must be satisfied that declaring a service will promote the LTIE. In deciding whether declaration will promote the LTIE, the ACCC must have regard to the extent to which declaration is likely to result in the achievement of the following three objectives:

- promoting competition in markets for telecommunications services;
- achieving any-to-any connectivity; and
- encouraging the efficient use of and investment in infrastructure by which the service is supplied, or are capable of being supplied.

Any-to-any connectivity refers to the ability of end-users on a particular network to communicate with end-users on any other network.

The legislative framework is described in further detail in Appendix B. The ACCC's approach to the LTIE test is described in Appendix C.

2.2 Economic rationale for declaring services

The ACCC uses well-established economic principles to analyse the expected impacts of regulating particular services on achieving the three objectives relevant to the LTIE. The economic principles most relevant to a decision on whether to declare fixed line services are:

- whether the relevant infrastructure exhibits enduring bottleneck characteristics that affect competition in related markets, any-to-any connectivity and have impacts on efficiency in the use of and investment in telecommunications infrastructure, including the infrastructure in question and related infrastructure
- whether requiring access to services provided by telecommunications infrastructure will promote economically efficient use of and investment in infrastructure and competition; and
- whether infrastructure operators are vertically integrated and the likely effect of that vertical integration on:
    - competition in related markets
    - any-to-any connectivity
    - efficiency in the use of and investment in telecommunications infrastructure.

2.2.1 Bottleneck and natural monopoly characteristics

The ACCC considers that declaration is likely to promote the LTIE where infrastructure facilities are enduring bottlenecks. Facilitating third party access to these infrastructure facilities will promote competition, any-to-any connectivity and efficiency in the use of and investment in telecommunications infrastructure. In the telecommunications industry, an enduring bottleneck is an element of the network that is essential to the supply of services to end-users in downstream (retail) markets, and exhibits natural monopoly characteristics.

A natural monopoly arises where it is more efficient for one infrastructure facility, as opposed to multiple duplicate facilities, to supply and meet the total demand for a good or service.[1] Natural monopoly infrastructure is characterised by economies of scale, economies of scope and/or network economies (or economies of density).

- Economies of scale exist where the unit cost of supply decreases as the quantity of products supplied increases. In the telecommunications industry, economies of scale mean that it will be cheaper to supply demand over a single network (up the level of demand over which economies of scale exist), than over multiple competing networks.

- Economies of scope exist when the unit cost of supplying certain products is lower when those products are supplied using a single infrastructure facility than when different facilities are used to produce those products separately. In the telecommunications industry, economies of scope mean that it may be cheaper for voice and broadband services, for example, to be provided on a single network than to have separate networks for supplying voice services and for supplying broadband services. This is because supplying these services use different parts of the same wire to an end-user's premises (see Appendix C).

- Network economies arise when there are lower costs, or benefits to consumers, from a larger customer base. Telecommunications networks are often characterised by network externalities because a network with a large customer base allows customers to make and receive calls from more people on the same network. If there are barriers to interconnection between networks, end-users will tend to prefer networks with larger customer bases because the costs of communicating with others will be lower when they are on the same network.

The existence of any of these economies can create significant barriers to entry, and cost disadvantages for, other firms wanting to supply telecommunications services. Such barriers to effective competition typically result in the operator of bottleneck infrastructure having market power, which it can use to charge monopoly prices for access to its infrastructure. The infrastructure operator may also have lower incentives to invest in maintaining or upgrading its infrastructure, to adopt new technology or innovations that improve service quality, and to expand the capacity of its network as a result of limited competitive pressures from other firms.

Requiring a network operator to provide access to bottleneck infrastructure could, by reducing barriers to entry and cost disadvantages for other firms, increase competition and promote the economically efficient investment in and use of infrastructure, and thereby promote the LTIE.

Natural monopoly characteristics may also be present where the features of a technology are such that the presence of multiple operators degrades the quality of the service. If a technology cannot support multiple operators using their own equipment to self-supply services of sufficient minimum quality, it may be more efficient for a single operator to supply wholesale services, rather than competitors duplicating the infrastructure to supply services that meet the quality of service standards.

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[1] ACCC, *Fixed services review – A second position paper*, April 2007, p. ii, available at http://transition.accc.gov.au/content/item.phtml?itemId=784802&nodeId=8241d42512e3efff76e447301d24d80c&fn=Fixed+services+review%E2%80%94a+second+position+paper+(Apr+07).pdf.

2.2.2 Promoting economic efficiency and competition

The ACCC considers that the primary objective of access regulation is the promotion of economic efficiency and competition in related markets, that is, markets upstream (wholesale markets) and downstream (retail markets) of bottleneck infrastructure.[2] Economic efficiency comprises three components:

- productive (or technical) efficiency, which is achieved where individual firms produce the goods and services at least cost
- allocative efficiency, which is achieved where resources are employed to produce products and services that are preferred (and most highly valued) by consumers
- dynamic efficiency, which reflects the timely adoption by firms of new technologies and development of innovative products in response to changes in consumer tastes and in production opportunities.

In regulating natural monopoly infrastructure, the ACCC aims to achieve the productive efficiency benefits of a single infrastructure operator while preventing or minimising the efficiency losses and higher prices that result from the use of monopoly power. In doing so, the ACCC aims to:

- ensure effective competition can occur in markets upstream and downstream of the natural monopoly infrastructure; and
- promote efficient investment in natural monopoly infrastructure and related sunk investments upstream and downstream of the natural monopoly infrastructure.

2.2.3 Market factors affecting reasonable terms of access

A further consideration is whether there are market factors that may inhibit access seekers negotiating reasonable terms of access with an infrastructure operator. One such factor could be the vertical integration of the infrastructure operator. Where the infrastructure operator is not competing in downstream markets—that is, it is not vertically integrated—access to the infrastructure facility is unlikely to be denied, subject to available capacity. Regulation may still be necessary to promote the LTIE since a vertically separated monopoly infrastructure operator will still have an incentive to use its market power to extract monopoly profits from users of the facility.

A vertically integrated infrastructure operator will, however, have an incentive to restrict access to the facility by its competitors in the downstream market. Alternatively, or in addition, it will have an incentive to charge monopoly prices to its downstream competitors to provide a competitive advantage for its own downstream operations. Such behaviour is likely to reduce competition in the downstream market and be to the detriment of end-users.

Where an infrastructure facility is a bottleneck to competition in downstream markets, access to the infrastructure must be provided on a non-discriminatory basis—that is, on equivalent terms and conditions for the infrastructure operator's own downstream operations and for its downstream competitors—to reduce barriers to entry to, and support effective competition in, downstream markets.

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[2] ACCC, *Productivity Commission, review of the National Access Regime, ACCC submission to Issues Paper,* February 2013, p. 12, available at www.pc.gov.au/__data/assets/pdf_file/0008/121967/sub016-access-regime.pdf.

2.3 Defining the relevant markets and assessing the state of competition

In applying the economic principles outlined in section 2.2 above, when determining whether declaring a service would promote the LTIE, the ACCC first identifies the market(s) relevant to the service. The ACCC then assesses the current state of competition in those markets. These are tools the ACCC uses to determine whether elements of the existing network infrastructure exhibit natural monopoly characteristics, if market power is being exercised and if requiring access on reasonable terms and conditions by declaring the services would promote the LTIE.

It is important to note that Part XIC of the CCA does not require the ACCC to precisely define the scope of relevant markets. Accordingly, a market definition analysis under Part XIC should be seen in the context of shedding light on how declaration would promote competition and the LTIE. For the purpose of this inquiry, the ACCC considers that it is sufficient to broadly identify the scope of the markets likely to be affected by any SBAS declaration.

Section 4E of the CCA provides that a market includes goods or services that are substitutable for, or otherwise competitive with, the goods or services under analysis. Accordingly, substitution is key to market definition.

Substitution involves switching from one service to another in response to a change in the relative price, service or quality of the product the subject of the inquiry. There are two types of substitution—demand-side substitution, which involves end-user switching at the retail level; and supply-side substitution, which involves access seeker-switching at the wholesale level.[3]

When considering whether a product is substitutable, the ACCC generally considers customer attitudes, the function or end-use of the service, the cost of switching to another service, past behaviours of buyers, relative price levels, and physical and technical characteristics of a product.[4]

The ACCC's approach to market definition and assessing the state of competition in these markets is explained in further detail in Appendix C.

[3] ACCC, Merger guidelines, November 2008, p. 16.
[4] Ibid, pp. 16-17.

3. Technology and regulatory framework

Technological developments can affect the degree of substitutability of particular telecommunications services, which can affect the scope of relevant markets and where bottlenecks occur in the telecommunications industry. In certain circumstances, regulation of technologies and services exhibiting bottleneck characteristics will promote competition, any-to-any connectivity and the efficient use of and investment in telecommunications infrastructure.

Parties should consider the statutory framework outlined in Chapter 2 (particularly the ACCC's approach to defining the relevant markets and assessing the state of competition) in preparing responses to the questions at the end of this chapter. In doing so, parties should also consider how the various technological characteristics may affect the scope of the relevant markets and the level of competition within them.

3.1 Methods of providing broadband internet

Broadband can be delivered over a range of different technologies. The most common technologies for delivering broadband in Australia are asymmetric digital subscriber line (ADSL), very-high-bit-rate digital subscriber line (VDSL), optical fibre, hybrid fibre-coaxial (HFC), wireless, satellite and mobile.

If the ACCC were to declare an SBAS, this declaration could apply to services supplied over one or multiple technologies. This is explored in the context of the appropriate service description in 4.1.1 below.

3.1.1 ADSL

ADSL technology gives basic broadband performance over copper telephone lines. ADSL download data speeds are up to 8 Mbps downstream. ADSL2+ is an enhancement to ADSL that uses a wider frequency range to achieve substantially faster speeds, but only over relatively short distances. ADSL2+ speeds reach up to 24 Mbps downstream and up to 1.4 Mbps upstream.

ADSL 2+ is widely available to end-users throughout Australia from a large number of retail service providers (RSPs). RSPs other than Telstra can supply ADSL services to end-users by:

1) building their own access network infrastructure

2) acquiring the unconditioned local loop service (ULLS) or line sharing service (LSS) from Telstra and installing their own digital subscriber line access multiplexors (DSLAMs), generally, inside Telstra's exchange buildings

3) acquiring wholesale ADSL services from Telstra

4) acquiring wholesale ADSL services from access seekers that have their own infrastructure and use the ULLS to sell wholesale services.

The ULLS, LSS and wholesale ADSL service are all declared services and the ACCC is currently conducting an inquiry into making access determinations for each of these services.[5]

3.1.2 VDSL2 (fibre to the node and fibre to the basement)

VDSL is a more recent generation of digital subscriber line technology. The second generation of this technology, VDSL2, is capable of delivering up to 100 Mbps in both directions simultaneously over a

[5] ACCC, *Fixed line services FAD inquiry 2013,* http://accc.gov.au/regulated-infrastructure/communications/fixed-line-services/fixed-line-services-fad-variation-inquiry-2014.

shorter length of copper.[6] VDSL2 is not widespread in Australia in the fibre to the node (FTTN) context, due in part to the operation of existing ULLS regulation.[7] Vectored VDSL2 technology is typically used in FTTN and fibre to the basement (FTTB) networks.

The maximum data rate depends on two factors:

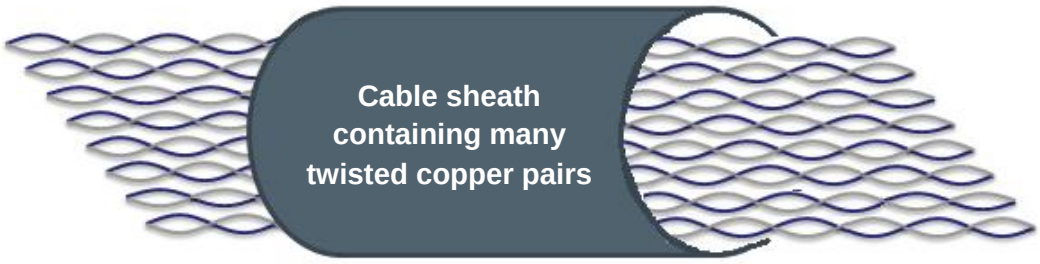
- the length of the copper cable between the VDSL2-enabled digital subscriber line access multiplexer (DSLAM) (which could be housed in a street cabinet or apartment complex basement) and end-user premises, as there is signal loss or attenuation as the length of the copper cable increases

- interference, which is also known as crosstalk, between the different copper lines in a cable sheath.[8] See the explanatory note below for further detail on cross-talk and how the impacts of cross-talk can be reduced

The maximum rate is delivered when the copper pair is less than around 300 metres from the VDSL2-enabled DSLAM. The data rate decreases to 50 Mbps when the copper line is around 500 metres from the DSLAM. Beyond that 500 metre distance, the data rate loss increases rapidly as the copper line length increases.[9]

Explanatory note – vectoring technology

A cable sheath is the covering on the outside of a cable that holds and protects the copper pairs that are used to supply services to end-users. There are a number of copper pairs in a cable sheath.



A portion of the signal transmitted over each copper pair interferes with the other copper pairs in the cable sheath. This is the interference that is also known as cross talk and it lowers the maximum data rate that can be obtained over the copper pair.

Vectoring technology can be used by an access provider to minimise the interference, in a manner similar to noise cancelling headphones. In effect, this cancels out the crosstalk between copper pairs.

Cancelling the interference enables end-users to obtain downstream data rates of over 100 Mbps.[10]

However, as set out in the Communications Alliance's Submission to the Vertigan Committee's statutory review of Part XIC of the *Competition and Consumer Act 2010* (CCA), deployment of more than one DSLAM that connects to a single cable sheath or the presence of multiple access technologies within a single cable sheath will significantly reduce the benefits of vectoring technology.[11] The Communications Alliance's submission is discussed in further detail in section 3.3 below.

6 The Broadband Forum, Marketing report 257, An Overview of G.993.5 Vectoring, May 2012, p5, available at http://www.broadband-forum.org/marketing/download/mktgdocs/MR-257.pdf.
7 Communications Alliance Ltd, *Industry paper on FTTN and VDSL2 regulation*, March 2014, p2, available at http://www.commsalliance.com.au/__data/assets/pdf_file/0004/43618/CA-Vertigan-Panel-Submission-final.pdf.
8 Ibid, p6.
9 Ibid.
10 Ibid
11 Ibid.

FTTN

FTTN describes the installation of optical fibre from a point of interconnect (or exchange) to a distribution point (a node or street cabinet) in a neighbourhood that serves a few hundred customers (typically) within a radius of about 1 km. The connections from the node to the customer premises use one of the digital subscriber line (DSL) standards. iiNet has an FTTN network in the ACT that uses VDSL2 technology. This network offers downstream speeds of up to 60 Mbps.[12] The government has announced that FTTN will be a key element of the multi-technology-mix NBN rollout.[13]

FTTB

FTTB is a variant of FTTN technology where the distribution point is much closer to the premises, generally in the basement of a multi-dwelling unit such as an apartment or office complex. In 2014, TPG commenced a FTTB rollout to an initial tranche of apartment buildings in Melbourne, Sydney, Brisbane, Adelaide and Perth. TPG's intended footprint will cover approximately 500,000 premises.[14] OPENetworks has also deployed FTTB technology in a small number of apartment buildings in Queensland.[15] OPENetworks operates on a wholesale only, open access basis.

RSPs can supply FTTN and FTTB services to end-users, where they are available, by:

1) acquiring the Local Bitstream Access Service (LBAS), for example OPENetwork's FTTN and FTTB services

2) acquiring an unregulated wholesale superfast broadband service.

The LBAS is a declared service. The LBAS declaration is described in further detail at 3.2.2 below.

3.1.3 Fibre to the premises (FTTP)

FTTP describes the installation of optical fibre from a point of interconnect all the way to a premises (residential or business). A common FTTP technology that is employed in residential scenarios is GPON – gigabit passive optical network (used by NBN Co). GPON delivers data rates of up to 1000 Gbps downstream in the NBN FTTP deployment.[16]

There are also a number of small scale FTTP networks in Australia, usually in greenfields areas. These include Telstra's South Brisbane Exchange Network and Velocity Estates and wholesale-only FTTP networks owned by Opticomm and OPENetworks.

RSPs can supply FTTP services to end-users, where they are available, by:

1) acquiring FTTP services from NBN Co

2) acquiring the LBAS, for example Opticomm or OPENetworks' FTTP services

3) acquiring an unregulated wholesale superfast broadband service.

NBN Co's FTTP services are currently regulated under CCA.[17]

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12 Dr Michael Vertigan AC et al, August 2014, p111 (citing ISPreview.co.uk).
13 Letter from the Hon. Malcolm Turnbull, MP, Minister for Communications and Senator the Hon. Mathias Cormann, Minister for Finance, 8 April 2014, Department of Communications, p2, available at: http://www.communications.gov.au/__data/assets/pdf_file/0014/221162/SOE_Shareholder_Minister_letter.pdf.
14 TPG Telecom, *2013 annual results presentation*, 17 September 2013, viewed 13 April 2015, available at: http://www.tpg.com.au/about/pdfs/TPG_FY13_Presentation_Final.pdf.
15 OPENetworks Pty Ltd, Network locations, viewed 13 April 2015, http://www.openetworks.com.au/network-locations.
16 NBN Co, *Corporate plan: 2012-2015*, p92.
17 Section 152AL(8E) of the CCA.

3.1.4 HFC

HFC is a network utilising both optical fibre and coaxial cable for the delivery of Pay TV, internet and voice services. Speeds of up to 100 Mbps downstream and 2 Mbps upstream are currently available on the HFC networks.[18]

In Australia, Telstra and Optus operate the two largest HFC networks. These networks are located in highly populated metropolitan areas. iiNet and OptiComm operate smaller HFC networks in regional Victoria and Butler, Western Australia respectively.

HFC networks are not currently subject to regulation under Part XIC of the Act. Operators of HFC networks are not therefore required to provide access to their HFC networks to other retail service providers.

Telstra and Optus (both of which are vertically integrated) do not offer other retail service providers access to their HFC networks. iiNet is also vertically integrated and offers wholesale HFC services. Opticomm operates on a wholesale only, open access basis.

On 8 April 2014, the government announced that HFC will be a key element of the multi-technology-mix NBN rollout.[19] On 14 December 2014, NBN Co announced that it had entered into agreements with Telstra and Optus to progressively take ownership of their HFC networks.[20]

Telstra's agreement with NBN Co (discussed further in section 4.1.1) is authorised under section 577BA of the *Telecommunications Act 1997* (the Telco Act). However, Optus's agreement with NBN Co is not. Optus has applied to the ACCC for authorisation to make and give effect to certain provisions of its agreement that would otherwise breach the competition provisions in Part IV of the CCA. The ACCC is currently considering this application.

3.1.5 Wireless, satellite and mobile

Wireless broadband services are similar to mobile broadband but use fixed receiving equipment, for example antennae mounted on roofs. Fixed wireless provides a more consistent and reliable service than mobile broadband due to reception advantages and controlled subscriber numbers.[21] Australia has several small-scale fixed wireless networks (for example, in Perth's CBD). NBN Co is currently supplying fixed wireless services in regional and rural Australia.[22]

Satellite broadband services are delivered using a geostationary satellite and dishes installed at customer premises. Satellite introduces significant latency (delay) which can impact some applications. Telstra and Optus supply wholesale satellite broadband services. NBN Co is currently supplying satellite services to remote parts of Australia that are outside its fixed-line and wireless footprint.[23]

Mobile broadband services delivered by mobile networks, such as '3G' or '4G' networks, offer mobility and flexibility for users of handheld and laptop devices. Telstra, Optus and Vodafone offer wholesale and retail mobile broadband services using their networks.

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18 Dr Michael Vertigan AC et al, August 2014, p111 (citing ISPreview.co.uk).

19 Letter from the Hon. Malcolm Turnbull, MP, Minister for Communications and Senator the Hon. Mathias Cormann, Minister for Finance, 8 April 2014, Department of Communications, p2, available at: http://www.communications.gov.au/__data/assets/pdf_file/0014/221162/SOE_Shareholder_Minister_letter.pdf.

20 NBN Co 'Landmark deal paves way for faster NBN rollout', Media Release dated 14 December 2014, viewed 13 April 2015, accessed at http://www.nbnco.com.au/corporate-information/media-centre/media-releases/landmark-deal-paves-way-for-faster-nbn-rollout.html
NBN Co, 'NBN Co to acquire Optus cables to enable faster NBN rollout', Media release dated 14 December 2014, viewed 13 April 2015, accessed at: http://www.nbnco.com.au/corporate-information/media-centre/media-releases/nbn-co-to-acquire-optus-cables-to-enable-faster-nbn-rollout.html.

21 Dr Michael Vertigan AC et al, August 2014, p111 (citing ISPreview.co.uk).

22 NBN Co, *Corporate plan: 2012-2015*, p20.

23 NBN Co, *Corporate plan: 2012-2015*, p20.

3.2 Existing regulation of high-speed broadband networks

The Telco Act and the CCA contain a number of provisions that are designed to ensure that NBN Co will be on a 'level playing field' with operators of other telecommunications networks that are capable of supplying 'superfast carriage services'.[24]

There are currently three types of regulation of high-speed broadband networks. Each form of regulation applies to networks that are capable of supplying superfast carriage services. Superfast carriage services are services supplied to end-users that have a normal download speed of more than 25 Mbps.[25]

The application of each type of regulation largely depends on whether the network was built, extended or upgraded after 1 January 2011.

The three types of regulation are as follows:

- NBN level playing field provisions in the Telco Act, which prohibit the use of a network to supply certain services if that network is used, or proposed to be used, to supply a superfast carriage service wholly or principally to residential or small business customers, or prospective customers, unless the network is open access and operated on a wholesale-only basis

- LBAS regulation under the CCA, which requires operators of networks that are capable of supplying superfast carriage services to offer wholesale services in accordance with the category A standard access obligations (SAOs) in the CCA

- The carrier licence conditions declared by the Minister on 12 December 2014 (carrier licence conditions), which include access obligations, price obligations and functional separation obligations. The carrier licence conditions are time limited and expire on 31 December 2016.

Unless an exemption under the Telco Act applies,[26] the NBN level playing field provisions and LBAS regulation apply to networks used, or proposed to be used, to supply superfast carriage services wholly or principally to residential or small business customers, or prospective residential or small business customers that were built after 1 January 2011, or to existing networks that have been extended by more than 1 kilometre or altered or upgraded on or after 1 January 2011 to make the network capable of supplying superfast carriage services (high-speed broadband networks).

The carrier licence conditions apply to fixed line networks which are used to supply superfast carriage services, regardless of when they were built, unless the conditions specify that the network is not covered by the conditions.[27] Networks that are not covered by the carrier licence conditions include the NBN, specified HFC networks, networks covered by the level playing field provisions in the Telco Act and networks which are subject to a ministerial exemption in force under s141A or 144 of the Telco Act.

As the carrier licence conditions apply to most networks used to supply superfast carriage services that are not captured by the level playing field provisions or the LBAS regulation, the carrier licence conditions are currently the only form of regulation that requires operators of certain networks to supply wholesale services to competitors.

Therefore, the key consideration for this declaration inquiry is whether there is a need for regulation of networks that are capable of supplying superfast carriage services following the expiry of the carrier licence conditions (31 December 2016).

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[24] A service capable of ordinarily operating at a 'download speed' of 25 megabits per second (section 152AC of the CCA and section 141 of the Telco Act).

[25] Section 141(10) of the *Telecommunications Act 1997*.

[26] Sections 141A (Part 7) and 144-151 (Part 80), the *Telecommunications Act 1997*.

[27] Section 4, designated telecommunications network definition, Carrier Licence Conditions (Networks supplying Superfast Carriage Services to Residential Customers) Declaration 2014.

3.2.1 Level playing field provisions

Parts 7 and 8 of the Telco Act set out a range of obligations that apply to networks that are used or proposed to be used to supply a superfast carriage service wholly or principally to residential or small business customers, or prospective residential or small business customers and are known as the 'NBN level playing field obligations'.

The NBN level playing field provisions prohibit the use of networks that were built or extended by more than 1km, or upgraded after 1 January 2011, other than the NBN, to supply superfast carriage services wholly or principally to small business or residential customers or prospective small business or residential customers, unless the network operator:

- makes a layer 2 bitstream service available for supply to those customers or prospective customers using the network (Part 7 of the Telco Act) and
- supplies on a wholesale basis only (Part 8 of the Telco Act).

These services are also subject to the LBAS declaration (see section 3.2.2 below).

The level playing field provisions do not apply in circumstances where a ministerial exemption or statutory exemption applies.[28]

Ministerial exemptions

To date, five exemptions have been granted from the level playing field provisions:

- Telstra's South Brisbane Exchange Service Area
- specified Telstra Velocity networks
- specified iiNet fibre networks
- upgrades to iiNet's VDSL2 network
- certain very small scale iiNet networks.[29]

Statutory exemptions

The statutory exemptions under section 141 and 143 of the Telco Act apply to networks that were capable of supplying superfast carriage services to residential or small business customers at 1 January 2011 can still be used for that purpose without triggering the NBN level playing field provisions. These networks may also be extended and have additional buildings connected to them, provided that no point on the extended network is more than one kilometre from the network as it stood on 1 January 2011.

In 2014, the ACCC investigated whether TPG's FTTB network rollout was captured by the NBN level playing field provisions.

Following careful examination of TPG's plans, the ACCC concluded that TPG's networks were capable of supplying superfast carriage services to small business or residential customers at 1 January 2011 and confirmed that TPG is not extending the footprint of these networks by more than

[28] The statutory exemptions in subsections 141B(3) and (4) exempt networks that existed on 1 January 2011 or have been extended by less than 1 kilometre from where the network stood on 1 January 2011.

[29] These exemptions were made under section 141A of the Telco Act which provides for the minister to give exemptions (conditional or unconditional) from the level playing field provisions. Further information on these exemptions is available from: http://www.communications. gov.au/policy_and_legislation/ Telecommunications _Act_ Parts_7_and_8_requirements_and_exemptions.

one kilometre. The ACCC decided not to take further action in relation to TPG's planned fibre to the basement network rollout.[30]

3.2.2 LBAS declaration

Subsection 152AL(3C) of the CCA required the ACCC to declare a Layer 2 bitstream service. The ACCC made a decision to declare a layer 2 bitstream service, to be called the local bitstream access service (LBAS). The declaration commenced on 13 April 2012 and does not expire.[31] The LBAS is a layer 2 bitstream service that is supplied using a designated superfast telecommunications network and is a superfast carriage service, i.e. is capable of downstream speeds of more than 25 megabits per second.[32]

The LBAS declaration does not apply in circumstances where a ministerial or statutory exemption to the level playing field provisions applies (as described above).

The LBAS service description is set out at Attachment C.

The ACCC commenced a LBAS Final Access Determination (FAD) inquiry on 7 April 2015, as the current LBAS FAD expires on 5 October 2015. The ACCC intends to conduct the LBAS FAD inquiry concurrently with any SBAS FAD inquiry. This will take place after the conclusion of the SBAS declaration inquiry. The ACCC therefore expects that it may be necessary to extend the operation of the LBAS FAD and the period for the LBAS FAD inquiry.

3.2.3 Carrier licence conditions

The carrier licence conditions apply to operators if one or more local access lines forming part of the designated telecommunications network are used by the specified carrier or any of its associates to supply superfast carriage services or specified broadband services to residential consumers.[33] These carrier licence conditions apply for two years from 1 January 2015 and include two sets of obligations:

- Transitional obligations (1 January 2015 to 30 June 2015) that carriers supplying services over designated networks to supply superfast carriage services or specified broadband services, must provide wholesale services to other carriers or carriage service providers on a non-discriminatory and equivalent basis.

- Longer term obligations (1 July 2015 to 31 December 2016) that carriers supplying services over designated networks to supply superfast carriage services or specified broadband services must:

    - comply with wholesale/retail separation and supply obligations and

    - offer a 25/5 Mbps wholesale bitstream service at no more than $27 per month.

The explanatory materials for the carrier licence conditions state that "[t]he decision by the Minister to consult on a new licence condition declaration reflected concerns that carriers could use the exemptions under the Act to extend networks previously servicing business customers to service residential customers, contrary to the intention of the Act. This could allow them to operate FTTB networks on a vertically integrated basis, meaning they would have the ability and incentive to favour

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30 ACCC, *ACCC not to take action to block TPG's Fibre to the Basement network rollout*, media release, ACCC (Canberra), 11 September 2014.

31 Layer 2 bitstream service declaration Final report, February 2012, available at: https://www.accc.gov.au/system/files/Local%20bitstream%20access%20service%20declaration%20-%20final%20report.pdf

32 Final Access Determination No.2 of 2012 (LBAS), 3 October 2012, page 2, available at: *http://registers.accc.gov.au/content/item.phtml?itemId=1083316&nodeId=ab241815f9347f7eb9820a5c6dc9a6ab&fn=Final%20access%20determination%20(LBAS).pdf*

33 Section 5, Carrier Licence Conditions Conditions (Networks supplying Superfast Carriage Services to Residential Customers) Declaration 2014, available at http://www.comlaw.gov.au/Details/F2014L01699

their own retail operations. This would re-introduce the competition issues that the rollout of the NBN and the structural separation of Telstra were meant to address."[34]

3.3 Regulatory and industry context

3.3.1 The Vertigan Committee's statutory review of Part XIC of the CCA

In March 2014, the committee undertaking an independent cost benefit analysis of broadband and review of regulation (the Vertigan Committee) released a Telecommunications regulatory arrangements paper, seeking submissions on its statutory review into Part XIC of the CCA. This paper sought views from interested parties on whether there should be regulated access to services provided using vectored VDSL technology.[35]

The Vertigan Committee received a number of submissions from industry in relation to the need for regulation of vectored VDSL2 technology.

iiNet and Telstra's submissions supported regulating access to vectored VDSL2 networks and ensuring that vectored VDSL2 networks are wholesale only and open access.[36] Telstra's submission also noted that there should be a 'uniform approach to regulation of all third party network builders.'[37]

Macquarie Telecom and Optus submitted that NBN Co should be the sole provider of vectored VDSL2 networks.[38]

Vodafone Hutchison Australia also submitted that in-building cabling should be regulated under the Telco Act.[39]

TPG submitted that its vectored VDSL2 network will bring speedy and positive outcomes for end-users and should not be regulated unless there is evidence of an anti-competitive effect.[40] TPG also submitted that 'it is important to consider the balance between promoting economic efficiency through access regulation and encouraging infrastructure investment'.[41]

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[34] Carrier Licence Conditions (Networks supplying Superfast Carriage Services to Residential Customers) Declaration 2014, Explanatory statement, available at: http://www.comlaw.gov.au/Details/F2014L01699/Explanatory%20Statement/Text.

[35] Dr Michael Vertigan AC, Ms Alison Deans, Professor Henry Ergas and Mr Tony Shaw PSM, *Telecommunications regulatory arrangements consultation paper for the purposes of section 152EOA of the Competition and Consumer Act 2010,* March 2014, p 8, available at http://www.communications.gov.au/__data/assets/pdf_file/0006/240756/7._Telecommunications_Regulatory_Arrangements_Section_152EOA_Consultation_Paper_Final.pdf

[36] Submission by iiNet to the *Telecommunications regulatory arrangements consultation paper for the purposes of section 152EOA of the Competition and Consumer Act 2010*, April 2014, p10, available at http://www.communications.gov.au/__data/assets/pdf_file/0012/224121/iiNet_submission.pdf. Submission by Telstra to the *Telecommunications regulatory arrangements consultation paper for the purposes of section 152EOA of the Competition and Consumer Act 2010*, April 2014, p 16, available at http://www.communications.gov.au/__data/assets/pdf_file/0010/224200/Telstra_Submission.pdf.

[37] Telstra to the *Telecommunications regulatory arrangements consultation paper for the purposes of section 152EOA of the Competition and Consumer Act 2010*, April 2014, p 15, available at http://www.communications.gov.au/__data/assets/pdf_file/0010/224200/Telstra_Submission.pdf.

[38] Submission by Macquarie Telecom to the *Telecommunications regulatory arrangements consultation paper for the purposes of section 152EOA of the Competition and Consumer Act 2010*, April 2014, p 3, available at http://www.communications.gov.au/__data/assets/pdf_file/0011/224111/Macquarie_Telecom_Submission.pdf. Submission by Optus to the *Telecommunications regulatory arrangements consultation paper for the purposes of section 152EOA of the Competition and Consumer Act 2010*, April 2014, p 20, available at http://www.communications.gov.au/__data/assets/pdf_file/0014/224114/Optus_submission.pdf.

[39] Submission by Vodafone Hutchison Australia to the *Telecommunications regulatory arrangements consultation paper for the purposes of section 152EOA of the Competition and Consumer Act 2010*, April 2014, p 13, available at http://www.communications.gov.au/__data/assets/pdf_file/0011/224120/ Vodafone_Hutchison_Submission.pdf.

[40] Submission by TPG Telecom to the *Telecommunications regulatory arrangements consultation paper for the purposes of section 152EOA of the Competition and Consumer Act 2010*, April 2014, p 3, available at http://www.communications.gov.au/__data/assets/pdf_file/0016/224116/TPG_Submission.pdf.

[41] Ibid.

As part of its submission to the Vertigan Committee's statutory review of Part XIC of the CCA, the Communications Alliance prepared an industry paper on FTTN and VDSL2 regulation. This paper was developed as part of the Communications Alliance's Working Committee on VDSL2 and vectoring (Working Committee 58).

Working Committee 58 is a group of FTTN technical experts representing members of the communications industry. Working Committee 58 has been considering the introduction of VDSL2 and FTTN technology in light of the government's 'multi-technology mix' NBN policy that includes FTTN.[42]

The Communications Alliance considers that the deployment of more than a single DSLAM that connects to a cable sheath or the presence of multiple access technologies in a cable sheath will significantly reduce FTTN download and upload rates and increase service dropouts.[43] The Communications Alliance considers that the greatest vectored VDSL2 performance depends on there being one broadband operator per area.[44]

The Communications Alliance also states that in practice, more than one VDSL2 operator with services in the same cable sheath degrades broadband performance until the download and upload rates are similar to VDSL2 without vectoring.[45]

The Communications Alliance noted that there can only be one vectored VDSL2 operator in a cable sheath in order for performance to be optimised.[46] In order to coordinate and optimise performance of services supplied using vectored VDSL2 technology, the Communications Alliance recommended that there be a single design authority and that in-building cabling may need to be regulated.

The Vertigan Committee released its final report into Part XIC of the CCA and Market and Regulatory report in June 2014 and August 2014 respectively.

The recommendations in the Vertigan Committee's report into Part XIC of the CCA included:

- The ACCC should commence a public inquiry with a view to declaring vectored VDSL services and making wholesale bitstream services available to access seekers.[47]

- Part XIC of the CCA should be amended so that provision of access to in-building cabling controlled by a carrier or service provider for use in conjunction with a declared service is included in the SAOs.[48]

- Interference between competing vectored VDSL systems should at this stage be dealt with through industry processes managed by the Communications Alliance and the regulators. However, if suitable arrangements cannot be put in place via these mechanisms, then the government should take further necessary action.[49]

The Vertigan Committee's Market and Regulatory report recommended that the level playing field provisions in the Telco Act (described above), which requires superfast broadband networks to be open access and operate on a wholesale-only basis, be amended. In particular, the Vertigan Committee recommended structural separation of all superfast broadband network operators unless the ACCC approves a functional separation undertaking submitted by the operator.

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42 Communications Alliance Ltd, *Industry paper on FTTN and VDSL2 regulation*, March 2014, p2.
43 Communications Alliance Ltd, March 2014, p2.
44 Ibid.
45 Ibid, p. 6
46 Submission by the Communications Alliance to the *Telecommunications regulatory arrangements consultation paper for the purposes of section 152EOA of the Competition and Consumer Act 2010*, April 2014, p 4, available at http://www.commsalliance.com.au/__data/assets/pdf_file/0004/43618/CA-Vertigan-Panel-Submission-final.pdf.
47 Dr Michael Vertigan AC, Ms Alison Deans, Professor Henry Ergas and Mr Tony Shaw PSM, *Statutory review under section 152EOA of the Competition and Consumer Act,* June 2014, p 29, available at http://www.communications.gov.au/__data/assets/pdf_file/0008/240767/3._Section_152EOA_Report.pdf
48 Ibid, p28.
49 Ibid, p30.

3.3.2 The government's response to the Vertigan Committee's recommendations

On 11 December 2014, the government released its response to the Vertigan Committee's recommendations. The government's response outlined new regulatory arrangements to apply from 1 January 2017 and a set of interim arrangements intended to apply in the transition period, from 1 January 2015 to 31 December 2016.

Carrier licence conditions

As set out in 3.2.3 above, on 12 December 2014, the Minister for Communications, the Hon. Malcolm Turnbull, MP, declared Carrier Licence Conditions (Networks supplying Superfast Carriage Services to Residential Consumers) 2014 (the carrier licence conditions). These carrier licence conditions apply from 1 January 2015 to 31 December 2016.

Regulation of in-building cabling

The Communications Alliance is considering the technical issues that may arise due to competing providers of VDSL2 in a single multi-dwelling building.[50] The government announced that it is considering rules to address the situation of interference and co-existence between competing VDSL2 networks.[51]

New regulatory framework – 2017 onwards

The government announced that it will introduce legislation to repeal Part 7 of the Telco Act.[52] Part 7 prohibits, with limited exemptions, the use of a high-speed broadband network built after 1 January 2011 unless the network operator makes a layer 2 bitstream service available to access seekers.

The government also announced it will introduce legislation to amend Part 8 of the Telco Act. Part 8 prohibits, with limited exemptions, the use of a superfast carriage service built after 1 January 2011 unless the network operator operates the network on a wholesale-only basis. The government has announced that the amendments to Part 8 will:

- require new networks aimed at residential customers and offering broadband superfast carriage services to be structurally separated as a default and offer non-discriminatory access[53]
- remove the 1 kilometre statutory exemption[54]
- give the ACCC the power to authorise the functional separation arrangements of a carrier, as opposed to structural separation, in circumstances where it considers that an undertaking submitted by the carrier stipulates acceptable arrangements for access and equivalence and minimises potential anti-competitive effects[55]
- provide for grand-fathering arrangements for high-speed broadband networks that were in place prior to 2011 and any networks rolled out under the interim carrier licence condition described above, but not to future extensions of those networks.[56]

The proposed repeal of Part 7 and amendments to Part 8 of the Telco Act are planned to come into effect on 1 January 2017. From that time, access to services will be dealt with under Part XIC of the CCA.[57]

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50 Australian Government, Telecommunications Regulatory and Structural Reform, December 2014, p5.
51 Ibid.
52 Ibid, p10.
53 Ibid.
54 Ibid.
55 Ibid.
56 Ibid, p7.

Questions

1. What are the relevant markets for the purpose of this Discussion Paper and the application of the LTIE test?

2. Would declaring a superfast broadband access service promote the long-term interests of end users? Please give reasons, referring to the implications for competition, any-to-any connectivity (where relevant) and the efficient use of and investment in infrastructure.

3. Do any superfast broadband networks represent, or are they likely to represent in the future, a bottleneck for providing broadband services to end-users? Please give reasons referring to the state of competition in broadband (and other relevant) markets, any-to-any connectivity and the efficient use and investment in infrastructure.

4. Do you consider that any existing wholesale commercial terms and conditions of access to superfast broadband networks inhibit competition? If so, what have been the effects on the ability of access seekers to compete? In the future, what are the likely effects on the ability of access seekers to compete?

[57] Ibid, p10.

4. Considerations if the ACCC were to declare a superfast broadband access service

If the ACCC were to declare an SBAS it would be necessary to consider:

- the appropriate service description and coverage
- the expiry of the declaration.

Further, the ACCC must commence an inquiry into the setting of a final access determination (FAD) within 30 days after the declaration is made (a FAD inquiry).[58] An access determination can cover a broad range of terms and conditions but must specify the price or a method of ascertaining the price for access to the declared service.[59] It may also contain non-price terms and conditions and/or impose other requirements on a carrier or carriage service provider in relation to access to the declared service.

If the ACCC considers that it will not be able to complete the FAD inquiry within six months, or there is an urgent need, it can make an interim access determination (IAD).[60]

4.1 Service description and coverage of the declaration

If the ACCC decides to declare an SBAS, a key element of the decision will be the scope of the SBAS service description.

4.1.1 Service description

The ACCC commenced this declaration inquiry in response to specific competition concerns that may arise as a result of the technical limitations of vectored VDSL2 technology as set out in 3.1.2 above. Accordingly, this declaration inquiry is focused on fixed line services with a downstream rate of at least 25Mbps provided using FTTN and FTTB technology.

The use of vectored VDSL2 technology may give rise to competition concerns such that declaration could be appropriate. However, the suitability of including a service description that specifically refers to vectoring technologies in a declaration needs to be considered. Depending upon the service description adopted, declaration of a vectored service may close off the potential for more infrastructure-based competition to develop or create incentives to use alternative technologies to avoid the application of the regulation.

While declaration could require access providers to supply a wholesale vectored service to competitors, declaration alone may not be sufficient to address all concerns and additional regulation may be required– for example, the development of rules of priority through an industry code or industry standard. Further, if the ACCC were to declare a SBAS, it may not be appropriate to limit it to vectored VDSL2 services, as ACCC service descriptions are generally technology neutral and not limited to services with particular performance characteristics. Ongoing developments in the regulation of superfast carriage services may also affect any declaration decision (and the associated service description). The ACCC has decided not to commence an inquiry into declaring similar services supplied by NBN Co as NBN Co has already announced an intention to supply these services and these services must be regulated under the CCA prior to NBN Co commencing supply of the services.[61]

[58] Subsections 152BCH(1) and 152BCI(1) of the CCA.
[59] Subsections 152BC(3) and 152BC(8) of the CCA.
[60] Subsection 152BCG(1) of the CCA.
[61] Section 152AL(3B) of the CCA.

Further, on 14 December 2014, NBN Co announced that it had entered into agreements with Telstra and Optus to progressively take ownership of their HFC networks. As NBN Co is required to operate these networks on a wholesale-only basis and will be subject to non-discrimination and access obligations, the ACCC does not consider that it is necessary to consider the supply of services over Telstra and Optus' HFC networks as part of this inquiry.[62] However, this depends upon the ACCC's authorisation decisions in respect of these agreements.

NBN Co's agreement with Telstra to acquire its HFC network is authorised under section 577B of the Telco Act. This means that this agreement will not breach the competition provisions in Part IV and XIB of the CCA.

However, NBN Co's agreement with Optus to acquire its HFC network is not authorised under the Telco Act. Accordingly, on 12 February 2015, NBN Co lodged an application to the ACCC seeking authorisation to make and give effect to certain provisions of its agreement that would otherwise breach the competition provisions in Part IV of the CCA. This ACCC is currently considering this application as well as conducting an informal review of the acquisition under section 50 of the CCA. The Telecommunications (Migration Plan Principles) Determination 2015 requires Telstra's migration plan to specify that Telstra is not required to supply wholesale services using a HFC network. The inclusion of such a provision in Telstra's migration plan would mean that Telstra would not be required to supply another service provider with access to its HFC network even if the ACCC were to declare a HFC access service.[63]

The ACCC considers that the following principles are essential to developing a service description:

- while some degree of technical specification will be required, the ACCC's preference is to make the service description in terms which give the access provider flexibility to determine the most efficient way of supplying the service.
- the eligible service should be described in a manner which provides sufficient clarity for application of the SAOs in the CCA
- the service should be technically feasible to supply and charge for. Additionally, the service should be one which potential access providers are supplying to themselves and others
- terms and conditions of access should not be included in the service description
- it must be broad enough to ensure that access providers cannot avoid the scope of the declaration by changing their network configuration or specifications.

LBAS service description

In 2012, the ACCC declared the LBAS. The LBAS service description was drafted in general, technology neutral terms to ensure that it is relevant in the future (see **Attachment D**).[64] This service description excludes any service supplied by a network operator that is subject to either a ministerial or statutory exemption under Part 7 of the Telco Act.

In setting the service description for the LBAS, the ACCC considered the regulation of access to wholesale broadband services in international jurisdictions where a monopoly provider had installed (or was installing) a superfast broadband network and would retain ownership over the majority of the broadband network.

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62 The Telecommunications (Migration Plan Principles) Determination 2015 requires Telstra's migration plan to specify that Telstra is not required to supply wholesale services using a HFC network. The inclusion of such a provision in Telstra's migration plan would mean that Telstra could not be required to supply another service provider with access to its HFC network even if the ACCC were to declare a HFC access service.

63 Subsection 152AR(4)(f) of the CCA provides that Telstra is not required to engage in conduct in connection with matters that are the subject of its migration plan. Further, section 152BCCA provides that Telstra's migration plan prevails over any inconsistent access determination.

64 ACCC, Layer 2 bitstream service declaration final report, February 2012, p11.

In these jurisdictions, the relevant regulator has regulated access to wholesale broadband services in a way that encourages the monopoly provider or other providers to continue to invest and innovate while establishing a competitive retail sector.

The ACCC considers that regulation in these jurisdictions will be as relevant to the service description for an SBAS service, if declared, as it was to the LBAS service description. **Attachment E** provides an overview of regulation of superfast broadband networks in similar jurisdictions.

Questions

5. If the ACCC were to declare a superfast broadband access service:

(a) What would be an appropriate service description?

(b) Should the service description be technology neutral?

(c) What specifications, if any, should the service description include? For example, should the service description include specifications as to quality of service (for instance, speed)?

(d) Which types of services should be captured and/or excluded by the service description? Please give reasons, referring to the implications for competition, any-to-any connectivity (where relevant) and the efficient use of and investment in infrastructure.

(e) Do you consider that the LBAS service description is an appropriate starting point for the SBAS service description?

4.1.2 Coverage

When it makes a decision to declare a service, the ACCC has the discretion to confine the service description to specific geographic areas (geographic exemptions). The ACCC may also exempt certain service providers/classes of service providers from the application of the SAOs (carrier-specific exemptions).[65]

The ACCC has previously included geographic exemptions in service descriptions. For example, until April 2014, the service descriptions for wholesale line rental service and local carriage service included exemptions for voice calls originating in the Central Business District Area of Sydney, Melbourne, Brisbane, Adelaide or Perth.

In addition, the ACCC may also exempt certain providers and geographic areas from the application of a FAD. For example, the ACCC included terms and conditions in the wholesale ADSL FAD that effectively exempted non-Telstra providers from having to comply with the SAOs and price and non-price terms and conditions of the FAD.

When determining whether to include geographic or carrier-specific exemptions, the ACCC will consider whether the exemptions promote the LTIE.

Questions

6. If the ACCC were to declare a superfast broadband access service:

(a) Should the service description cover the SBAS nationally, or be limited in geographic scope? Please give reasons why/why not.

(b) Will carrier-specific exemptions promote the LTIE? Please give reasons why/why not.

[65] Section 152ASA of the CCA.

4.1.3 Duration of declaration

Section 152ALA(1) of the CCA requires the ACCC to specify an expiry date for a declaration. In specifying an expiry date, the ACCC must have regard to the principle that an expiry date should occur between three and five years after the declaration was made, unless the ACCC forms the opinion that there are circumstances that warrant a longer or shorter declaration period. This is intended to enable the ACCC to provide longer-term regulatory certainty, where appropriate, in order to promote competition and investment.

Subsection 152ALA(4) allows the ACCC to extend or further extend the expiry date of a specified declaration as long as the extension or further extension is for a period of not more than five years.

While a longer regulatory period can provide certainty and facilitate business planning, a shorter period may be appropriate if there was significant uncertainty regarding the factors that influence the decision to declare.

Questions

7. What is an appropriate duration for the declaration? Please give reasons.

4.1.4 Pricing

If the ACCC were to declare a superfast broadband access service, it may initially set price terms in an IAD in order to provide certainty for industry. If the ACCC were to make an IAD, it would likely use a methodology that can be quickly implemented.

If the ACCC decides to declare SBAS, it will seek views on pricing at a later date.

4.1.5 Regulatory burden associated with declaration

As set out above, the practical effect of declaration is that access providers must supply any services that are captured by the service description in accordance with the category A SAOs in the CCA. This may result in some costs to access providers in ensuring that they are able to supply services in accordance with the SAOs.

The category A SAOs require an access provider to:

- supply the service to an access seeker on request
- take all reasonable steps to ensure that the technical and operational quality and fault detection, handling and rectification of the service provided to the access seeker is equivalent to that which it provides to itself; and
- allow interconnection.[66]

As set out in 3.2 above, the SBAS declaration is likely to apply to access providers of networks currently regulated by the carrier licence conditions and so the key consideration for this declaration inquiry is whether there is a need for regulation of networks that are capable of supplying superfast carriage services, in addition to networks that supply the LBAS, following the expiry of the carrier licence conditions (31 December 2016).

The ACCC considers that the access providers likely to be affected by an SBAS declaration are generally already providing access to wholesale services under commercially agreed terms. In addition, at least one access provider will have taken steps to comply with the carrier licence conditions prior to any SBAS declaration taking effect. The ACCC considers that in this case, there will be minimal additional costs imposed on access providers to comply with the category A SAOs.

[66] Section 152AR of the CCA.

This is consistent with the Regulation Impact Statement issued by the Minister for Communications in relation to the carrier licence conditions. The Regulation Impact Statement noted that the carrier licence conditions were only likely to apply to one carrier and that this affected carrier:

> …was already in the process of building a wholesale product platform. That is, a commercial decision to develop these systems and offer wholesale services to access seekers has already been made in the absence of any such regulatory requirement. This limits the substantive costs of achieving the outcome sought given business as usual costs already included development of provisioning and billing systems. Therefore, the costs incurred primarily arise from the need to 'ring-fence' wholesale and retail systems and workforce restructuring.[67]

As declaration requires an access provider to meet the category A SAOs, the ACCC considers that to the extent that there are additional costs, these are likely to relate to internal and external legal advice to ensure that access providers are supplying the SBAS in compliance.

The Office of Best Practice Regulation's (OBPR) framework for measuring regulatory burden identifies the following types of costs:

- Compliance costs:
    - Administrative costs incurred by regulated businesses primarily to demonstrate compliance with the regulation, for example reporting and record keeping costs
    - Substantive compliance costs to deliver the regulated outcome, for example IT and billing system changes associated with the supply of wholesale services
- Delay costs, which are expenses and loss of income incurred by a regulated entity through an application delay and/or an approval delay.

The ACCC considers that the only costs that are likely to arise as a result of declaration are administrative costs that may be incurred by businesses undertaking their own internal compliance processes to ensure that they are supplying services in a manner that meets the obligations in the CCA.

Questions

8. Having regard to the potential sources of regulatory burden listed above, would declaration of an SBAS lead to a substantial increase in regulatory burden on your business? If so, please provide details and where possible evidence of the likely increase in regulatory burden.

[67] Minister for Communications, Explanatory statement for the Carrier Licence Conditions (Networks supplying Superfast Carriage Services to Residential Customers) Declaration 2014, page 31, available at: http://www.comlaw.gov.au/Details/F2014L01699/Explanatory%20Statement/Text.

Appendix A: Questions on which submissions are sought

1. What are the relevant markets for the purpose of this Discussion Paper and the application of the LTIE test?

2. Would declaring a superfast broadband access service promote the long-term interests of end users? Please give reasons, referring to the implications for competition, any-to-any connectivity (where relevant) and the efficient use of and investment in infrastructure.

3. Do any superfast broadband networks represent, or are they likely to represent in the future, a bottleneck for providing broadband services to end-users? Please give reasons referring to the state of competition in broadband (and other relevant) markets, any-to-any connectivity and the efficient use and investment in infrastructure.

4. Do you consider that any existing wholesale commercial terms and conditions of access to superfast broadband networks inhibit competition? If so, what have been the effects on the ability of access seekers to compete? In the future, what are the likely effects on the ability of access seekers to compete?

5. If the ACCC were to declare a superfast broadband access service:

   (a) What would be an appropriate service description?

   (b) Should the service description be technology neutral?

   (c) What specifications, if any, should the service description include? For example, should the service description include specifications as to quality of service (such as speed)?

   (d) Which types of services should be captured and/or excluded by the service description? Please give reasons, referring to the implications for competition, any-to-any connectivity (where relevant) and the efficient use of and investment in infrastructure.

   (e) Do you consider that the LBAS service description is an appropriate starting point for a SBAS service description which may apply to a broader range of services or network providers?

6. If the ACCC were to declare a superfast broadband access service:

   (a) Should the service description cover the SBAS nationally, or be limited in geographic scope? Please give reasons why/why not.

   (b) Will carrier-specific exemptions promote the LTIE? Please give reasons why/why not.

7. What is an appropriate duration for the declaration? Please give reasons.

8. Having regard to the potential sources of regulatory burden listed above, would declaration of an SBAS lead to a substantial increase in regulatory burden on your business? If so, please provide details and where possible evidence of the likely increase in regulatory burden.

Appendix B: Legislative framework

Part XIC of the *Competition and Consumer Act 2010* (CCA) sets out a telecommunications access regime. The ACCC may declare an eligible service, making it subject to regulation under the Part XIC access regime.

An eligible service is a carriage service or a service that facilitates the supply of a carriage service.[68] A carriage service is defined in the *Telecommunications Act 1997* as a service for carrying communications by means of guided and/or unguided electromagnetic energy.[69] This includes communications services, such as telephone and internet services, that are provided using fixed lines, satellite-based facilities, mobile towers and certain radio communications links. The unconditioned local loop service is an example of a carriage service, while access to facilities (such as ducts and exchange space) are examples of services that facilitate the supply of carriage services.

Once a service is declared, an access provider (typically an infrastructure operator) that supplies the declared service to itself or others must also supply the service, upon request, to service providers (or access seekers) in accordance with the standard access obligations set out in section 152AR of the CCA. The ACCC must also commence a public inquiry into making an access determination for that service. The access determination may include a broad range of terms and conditions but must specify price or a method of ascertaining price.[70]

Declaration inquiries

The ACCC may declare a specified eligible service if we:

- hold a public inquiry about its proposal to make a declaration
- prepare a report about the inquiry
- publish that report within a 180-day period ending when the declaration is made, and
- are satisfied that the declaration will promote the LTIE of carriage services or of services provided by means of carriage services (the LTIE test).[71]

Prior to commencing a public inquiry about a proposal to declare a service that is not already declared, the ACCC must consider whether to hold a public inquiry for an equivalent service that is supplied or capable of being supplied by a specified NBN Corporation.[72]

Where a service is already declared, the ACCC must commence an inquiry during the 18 months prior to the expiry of the declaration about whether to extend, vary or revoke the declaration, or let the declaration expire with or without issuing a new declaration.[73] The ACCC can combine two or more public inquiries about proposals to declare services.[74]

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68 Where the service is supplied, or capable of being supplied, by a carrier or carriage service provider (whether to itself or other persons). Subsection 152AL(1) of the CCA.
69 Section 7 of the Telecommunications Act 1997.
70 Subsections 152BC(3) and 152BC(8) of the CCA.
71 Subsection 152AL(3) of the CCA.
72 Subsections 152AL(3), 152AL(3B) and 152AL(8A) of the CCA.
73 Subsection 152ALA(7) of the CCA.
74 Section 152AN of the CCA.

The ACCC's approach to the LTIE test

Part XIC of the CCA provides that the ACCC may declare a service if it is satisfied that the declaration of the service will promote the LTIE. When determining whether something promotes the LTIE, the ACCC must have regard to the extent to which declaration is likely to result in the achievement of the following three objectives:

- promoting competition in markets for listed services[75]
- achieving any-to-any connectivity in relation to carriage services that involve communication between end-users, and
- encouraging the economically efficient use of, and the economically efficient investment in, infrastructure.[76]

Promoting competition

Competition is the process of rivalry between firms, where each firm is constrained in its price and output decisions by the activity of other firms. Competition benefits consumers (the end-users) through lower prices, the level of service quality preferred by end-users, and a greater choice of services.

Subsection 152AB(4) of the CCA provides that, in determining the extent to which declaration is likely to result in the objective of 'promoting competition', regard must be had (but is not limited)[77] to the extent to which declaration will remove obstacles to end-users of listed services gaining access to listed services.

Denying service providers access to necessary wholesale services on reasonable terms is a significant obstacle to end-users gaining access to services. Declaration can remove such obstacles by facilitating the entry of service providers, which promotes competition in markets supplying end-users.

When conducting a declaration inquiry, the ACCC is required under subsection 152AB(2) of the CCA to consider whether declaration of a service is likely to promote competition in relevant markets. The ACCC's approach to assessing this objective involves defining the relevant markets and assessing the level of competition in those markets. These concepts are explained below.

Identifying the relevant markets

Section 4E of the CCA provides that the term 'market' means a market in Australia for the goods or services under consideration, as well as any other goods or services that are substitutable for, or otherwise competitive with, those goods or services. The ACCC's approach to market definition is discussed in the ACCC's 2008 merger guidelines.[78]

Section 4E of the CCA provides that a market includes any goods or services that are substitutable for, or otherwise competitive with, the goods or services under analysis. Accordingly, substitution is key to market definition. The ACCC's approach to market definition in the 2008 merger guidelines focuses on two dimensions of substitution – the product dimension and the geographic dimension.[79]

Substitution involves switching from one product to another in response to a change in the relative price, service or quality of the product that is the subject of the inquiry. There are two types of substitution:

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75 Listed services include carriage services and services supplied by means of carriage services.
76 Section 152AB of the CCA.
77 Subsection 152AB(5) of the CCA.
78 ACCC, *Merger guidelines*, November 2008.
79 Ibid, pp. 15–19.

- demand-side substitution, which involves customer switching, and
- supply-side substitution, which involves supplier switching.

There may be associated switching costs or difficulties which, if significant, can impede the substitutability of products.

When considering whether a product is substitutable, the ACCC may consider customer attitudes, the function or end use of the technology, past behaviours of buyers, relative price levels, and physical and technical characteristics of a product.[80]

A method to determine if a product or service is a close substitute for the purposes of market definition is to use the hypothetical monopolist or 'SSNIP' test.[81] The test establishes an area of product and geographic space over which a hypothetical monopolist would likely impose a 'small but significant non-transitory increase in price' (SSNIP). A SSNIP in the context of the hypothetical monopolist test usually consists of a price rise for the foreseeable future of 5 to 10 per cent above the price level that would prevail under competitive market conditions.

Part XIC of the CCA does not require the ACCC to precisely define the scope of the relevant markets in a declaration inquiry. The ACCC considers that it is sufficient to broadly identify the scope of the relevant market(s) likely to be affected by the declaration. Accordingly, a market definition analysis under Part XIC should be seen in the context of shedding light on how declaration would or would not promote competition and the LTIE in those markets.

In the 2009 fixed services review declaration inquiry,[82] the ACCC determined that the relevant markets for the fixed line services were the national markets for:

- the retail and wholesale provision of fixed voice services
- the retail and wholesale provision of fixed broadband services, and
- the retail and wholesale provision of bundled fixed voice and fixed broadband services.

Assessing the state of competition

Once the relevant markets have been defined, the next step in the analysis is to assess the state of competition in relevant markets. If competition is determined to be effective, then declaration of the eligible services is not likely to have an effect in terms of promoting further competition or the LTIE. In assessing the state of competition, the ACCC considers dynamic factors such as the potential for sustainable competition to emerge and the extent to which the threat of entry (or expansion by existing suppliers) constrains pricing and output decisions.

At the theoretical level, the concept of 'perfect competition' describes a market structure in which no producer or consumer has the market power to influence prices. Economic theory suggests that perfectly competitive markets have a large number of buyers and sellers, goods or services are perfect substitutes, all firms and consumers have complete knowledge about the pricing/output decisions of others and all firms can freely enter and exit the relevant market. In reality, these conditions are rarely found in any market or industry, even those where competition between rival firms is relatively intense.

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80 A useful list of information the ACCC may consider when identifying close substitutes to the relevant product is contained in the 2008 Merger Guidelines, p. 19.

81 SSNIP stands for small but significant non-transitory increase in price.

82 ACCC, *Fixed services review declaration inquiry for the ULLS, LSS, PSTN OA, PSTN TA, LCS and WLR*, Final Decision, July 2009, available at transition.accc.gov.au/content/item.phtml?itemId=882454&nodeId=c85a32b46aa23d506e6b67498c115562&fn=Fixed+Services+Review+Declaration+Inquiry+final+decision+(July+2009).pdf.

The concept of 'effective competition' recognises the practical limitations of the theory of perfect competition, especially when applied to the fixed line telecommunications markets. Some characteristics of effective competition are that it:

- is more than the mere threat of competition – it requires that competitors are active in the market, holding a reasonably sustainable market position[83]
- requires that, over the long run, prices are determined by underlying costs rather than the existence of market power
- requires that barriers to entry are sufficiently low and that the use of market power will be competed away in the long run, so that any degree of market power is only transitory
- requires that there be 'independent rivalry in all dimensions of the price/product/service [package]',[84] and
- does not preclude one party from holding a degree of market power from time to time but that power should 'pose no significant risk to present and future competition'.[85]

These five factors are indicators of the extent to which competition constrains market participants to supply products and services of a given quality at prices that are based on efficient costs.

When assessing whether effective competition exists in a relevant market, the ACCC examines certain structural and behavioural factors in the market, including but not limited to:

- structural factors, including the level of concentration in the market
- the potential for the development of competition in the market including planned entry, the size of the market and the existence and height of barriers to entry, expansion or exit in the relevant market
- the dynamic characteristics of the market, including growth, innovation and product differentiation as well as changes in costs and prices over time, and
- the nature and extent of vertical integration in the market.

Our assessment of the current state of competition during this review will be used to assist us in determining whether declaration will promote the LTIE.

Any-to-any connectivity

The objective of any-to-any connectivity is achieved when each end-user is able to communicate with other end-users, whether or not they are connected to the same telecommunications network.[86]

The any-to-any connectivity requirement is particularly relevant when considering services that require interconnection between different networks.

Efficient use of, and investment in, infrastructure

In determining the extent to which declaration is likely to encourage the economically efficient use of, and investment in, infrastructure, subsections 152AB(6) and (7) of the CCA provide that regard must be had (but is not limited) to the technical feasibility of providing and charging for the services, the

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83 Olivier Boylaud and Biuseppe Nicoletti, *Regulation, market structure and performance in telecommunications*, OECD Economics Studies, no. 32, 2001/1.
84 Re Queensland Co-operative Milling Association Ltd and Defiance Holding Ltd (1976) 25 FLR 169.
85 This is not intended to be an exhaustive list of the characteristics of effective competition.
86 Subsection 152AB(8) of the CCA.

legitimate commercial interests of the supplier(s) of the services, and the incentives for investment in infrastructure.

Economic efficiency has three components:

- Productive efficiency refers to the efficient use of resources within each firm to produce goods and services using the least cost combination of inputs.
- Allocative efficiency is the efficient allocation of resources across the economy to produce goods and services that are most valued by consumers.
- Dynamic efficiency refers to efficiencies flowing from innovation leading to the development of new services or improvements in production techniques. It also refers to the efficient deployment of resources between present and future uses so that the welfare of society is maximised over time.

Facilitating access plays an important role in ensuring that existing infrastructure is used efficiently where it is inefficient to duplicate the existing networks or network elements. An access regime must not discourage investment in networks or network elements where such investment is efficient.

Subsections 152AB(6) requires the ACCC to have regard to a number of specific matters in examining whether declaration is likely to encourage the economically efficient use of, and investment in, infrastructure in accordance with paragraph 152AB(2)(e). Some of these are outlined below.

Technical feasibility

In assessing the technical feasibility of supplying and charging for a service, the ACCC considers:

- the technology that is in use, available or likely to become available
- whether the costs that would be involved are reasonable or likely to become reasonable, and
- the effects or likely effects of supplying and charging for the service on the operation or performance of telecommunications networks.

The ACCC assesses the technical feasibility of supplying the relevant service by examining the access provider's ability to provide the service and considering experiences in other jurisdictions.

The legitimate commercial interests of the infrastructure operator

An infrastructure operator's legitimate commercial interests relate to its obligations to the owners of the firm, including the need to recover the costs of providing services and to earn a normal commercial return on the investment in infrastructure. Allowing for a normal commercial return on investment provides an appropriate incentive for the access provider to maintain, improve and invest in the efficient provision of the service.

Paragraph 152AB(6)(b) of the CCA also requires the ACCC to have regard to whether providing access may affect the infrastructure operator's ability to exploit economies of scale and scope. Economies of scale arise from a production process in which the average (or per unit) cost of production decreases as the firm's output increases. Economies of scope arise where it is less costly for one firm to produce two (or more) products than it is for two (or more) firms to each separately produce the relevant products.

Declaration may be more likely to impact on an infrastructure operator's ability to exploit economies of scope than economies of scale. A limit in the capacity available to the owner may constrain the number of services that the owner is able to provide using the infrastructure and thus prevent the realisation of economies of scope associated with the production of multiple services. In contrast, economies of scale derive from the use of the capacity of the network and can be realised regardless of whether that capacity is being used by the owner or by other carriers or carriage service providers.

The ACCC assesses the effects on an infrastructure operator's ability to exploit both economies of scale and scope on a case-by-case basis.

Incentives for efficient investment

Infrastructure operators should have the incentive to invest efficiently in the infrastructure by which the services are supplied (or are capable, or likely to become capable, of being supplied). In determining incentives for investment, regard must be had (but is not limited) to the risks involved in making the investment.[87]

Access regulation may promote efficient investment in infrastructure by avoiding the need for access seekers to duplicate existing infrastructure where duplication would be inefficient. It reduces the barriers to entry for competing providers of services to end-users and promotes efficient investments by these service providers in related equipment required to provide services to end-users.

[87] Subsections 152AB(7A) and (7B) of the CCA.

Appendix C: LBAS service description

Declared Service

The Australian Competition and Consumer Commission declares, pursuant to section 152AL(3) of the *Competition and Consumer Act 2010* (Cth) (the Act), that the local bitstream access service (LBAS) is a "declared service" for the purposes of Part XIC of the Act.

Date

This declaration comes into effect on the commencement of subsection 152AL(3C) of the Act, which will be 13 April 2012. This declaration does not expire.

Service Description

The local bitstream access service is a point to point service for the carriage of communications in digital form between a **network-network interface** and a **user-network interface** supplied using a **designated superfast telecommunications network** that is:

(a) a **Layer 2 bitstream service**; and

(b) a **superfast carriage service**.

This declaration does not apply to services supplied, or capable of being supplied:

(a) using a specified network; or

(b) using a specified local access line; or

(c) by a specified owner of a local access line;

where that network, local access line or owner is the subject of a Ministerial exemption under section 141A or statutory exemption under subsection 141B(3) or 141B(4) of the *Telecommunications Act* and any conditions that apply to the exemption are satisfied.

Definitions

Where words or phrases used in this declaration are defined in the *Competition and Consumer Act 2010* or the *Telecommunications Act 1997*, they have the meaning given in the relevant Act.

Layer 2 bitstream service has the meaning given in section 152AC of the *Competition and Consumer Act 2010*

designated superfast telecommunications network has the meaning given in subsection 152AGA of the *Competition and Consumer Act 2010*

a **network-network interface** means an interface provided by an access provider at a **point of interconnection** where the access seeker's telecommunications network can interface to the access provider's **designated superfast telecommunications network**

a **point of interconnection** is a physical point of interconnection which allows the interconnection of facilities in accordance with subsection 152AR(5) of the *Competition and Consumer Act 2010*

superfast carriage service has the meaning given in section 152AC of the *Competition and Consumer Act 2010*

a **user-network interface** means an interface located at a physically defined end-user's premises where the access provider's **designated superfast telecommunications network** is present to an end-user

Appendix D: Overview of regulation of superfast broadband networks in other jurisdictions

United Kingdom

Ofcom is the communications regulator in the United Kingdom (UK). In 2010, Ofcom adapted the existing regulatory framework to reflect the emergence of super-fast broadband. There are three key aspects to the regulatory model imposed on British Telecom and KCOM Group, two providers with significant market power in the UK:

- Virtual Unbundled Local Access (VULA) which will allow competitors to provide services over BT's new next generation access (NGA) network, with a degree of control that is similar to that achieved when taking over the physical line to the customer.

- Physical Infrastructure Access (PIA) to allow competitors to deploy their own NGA equipment between the customer and the local exchange.

- Local Loop Unbundling (LLU) to continue to allow for access on the current generation network.[88]

Ofcom defines the following relevant markets to be relevant to its consideration of whether an access provider has significant market power:

- the supply of loop-based, cable-based and fibre-based wholesale local access at a fixed location in the UK excluding the Hull Area (where British Telecom has significant market power); and

- the supply of loop-based, cable-based and fibre-based wholesale local access at a fixed location in the Hull Area (where KCOM Group has significant market power).[89]

The key characteristics of VULA include:

- interconnection by the access seeker should occur locally; that is at the first technically feasible aggregation point. In practice this is likely to be in the local serving exchange where the first Ethernet switch is located. (i.e., before backhaul etc.)

- VULA should be a generic access product. It should provide service agnostic connectivity, replicating one of the key features of LLU

- there should be uncontended access to the connection to the end user

- service providers should have a high degree of access control to allow them to offer differentiated products in a manner similar to ULLS. In particular, VULA gives access seekers a sufficient degree of control over quality of service, over the local connection to the end-user.

- service providers should be able to control customer premises equipment and not be restricted by the access provider in doing so.[90]

Ofcom regulates access providers with significant market power through imposing remedies on them under sections 45, 87 and 88 of the *Communications Act 2003*.

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88 Ibid, pp1-2

89 Ofcom, *Fixed access market reviews: Statement on market definition, market power determinations and remedies*, 26 June 2014, p. 4

90 Ofcom, *Review of the wholesale local access market, Statement on market definition, market power determinations and remedies*, 7 October 2010, pp125-126. Ofcom found that these characteristics continued to be relevant in its 2014 statement.

The requirement for BT to give access to VULA is set out as follows:

> 1 (Interpretation)
>
> (n) "Local Serving Exchange" means the site of an operational building of the Dominant Provider, where Interconnection is made available by the Dominant Provider to a Third Party for Network Termination Points served by that site for the provision of Virtual Unbundled Local Access…
>
> (w) "Network Termination Point" means the physical point at which a Relevant Subscriber is provided with access to a Public Electronic Communication Network…
>
> (cc) "Point of Connection" means a point at which the Dominant Provider's electronic communications network and another person's electronic communications network are connected…
>
> (qq) "Virtual Unbundled Local Access" means network access comprising of a virtual circuit between a Point of Connection at the Local Serving Exchange and a Network Termination Point, which circuit provides such specified capacity as is agreed between the Dominant Provider and the Third Party for the Third Party's exclusive use
>
> …
>
> FAA1.1 – The Dominant Provider must provide network access to a Third Party where that Third Party, in writing, reasonably requests it.
>
> FAA1.2 – Except where condition 1.3 applies, the provision of network access by the Dominant Provider in accordance with this condition must:
>
> (a) take place as soon as reasonably practicable after receiving the request from a Third Party (and, in any event, in accordance with condition 12); and
>
> (b) be on:
>
> (i) fair and reasonable terms, conditions and charges; and
>
> (ii) such terms, conditions and charges as OFCOM may from time to time direct.
>
> …
>
> FAA1.4 – The provision of network access by the Dominant Provider in accordance with this condition must also include such associated facilities as are reasonably necessary for the provision of network access and such other entitlements as OFCOM may from time to time direct.
>
> …
>
> FAA2.1A – Without prejudice to the generality of condition 1, the provision of network access under that condition must include, where the Third Party, in writing, reasonably requests, the following specific forms of network access–
>
> (b) Virtual Unbundled Local Access including such VULA Ancillary Services as may be reasonably necessary for the use of Virtual Unbundled Local Access.[91]

[91] Ofcom, *Notification of the identification of markets, the making of market power determinations and the setting of SMP services conditions in relation to BT and KCOM under section 45 of the Communications Act 2003*, 16 June 2014, available at: http://stakeholders.ofcom.org.uk/binaries/telecoms/ga/fixed-access-market-reviews-2014/statement-june-2014/Annex_29.pdf.

New Zealand

The Commerce Commission of New Zealand (ComCom) can make standard terms of access under the *Telecommunications Act 2001* (NZ) to promote competition in the telecommunications market for the long term benefit of end-users.

The ComCom issued a standard terms determination (the UBA determination) on how Telecom must make its Unbundled Bitstream Access (UBA) service on its copper network available to other operators on 12 December 2007. On 30 November 2011, Telecom and Chorus (the network infrastructure division), structurally separated creating two entities. [92]The UBA service description was updated on 30 November 2011, prior to the structural separation of Telecom under which Chorus became a separate entity in its own right.[93]

The Commerce Commission defines the UBA service in the UBA determination as:

> 2.2 The UBA Service is a DSL enabled service (and its associated functions, including the associated functions of Chorus' operational support systems) that enables access to, and interconnection with, that part of Chorus' fixed PDN (defined below) that connects the End User's building (or, where relevant, the building distribution frames) to Chorus' first data switch (or equivalent facility), other than DSLAM.[94]

The UBA service is divided into two further service descriptions, basic and enhanced. The service description of the Basic UBA Service provides that it:

> 3.9.1 is an internet grade service, delivering a point-to-point protocol (PPP) bitstream to the End User and Layer 2 Tunnel Protocol (L2TP) to the Access Seeker;
>
> 3.9.2 is supplied to an End User by a DSLAM in their local exchange or cabinet and bitstream rate limits (if any) are applied at the DSLAM in their local exchange or cabinet; and
>
> 3.9.3 transports Access Seeker's internet traffic from the ETP (defined below) at an End User's premises to the Handover Point (as described in clause 3.19 below) for the Coverage Area which hosts the DSLAM.[95]

The Enhanced UBA Services are described as follows:

> 4.1 The Enhanced UBA Services enable an Access Seeker to offer its End Users simultaneous delivery of IP traffic and real time grade IP traffic over a single UBA service connection. The Enhanced UBA Services provide connectivity between the ETP and the Access Seeker side of the first Ethernet aggregation switch.[96]

The Enhanced UBA Service enables an Access Seeker to offer its End Users simultaneous delivery of internet grade IP traffic and real time grade IP over a single UBA service connection.[97]

The Enhanced UBS Services can be provided with or without an active analogue telephone service on the same copper pair (with or without POTS respectively).[98]

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[92] ComCom, Standard Terms Determination for the designated service Telecom's unbundled bitstream access, Decision 611, Determination under section 30M of the Telecommunications Act 2001, 12 December 2007.

[93] ComCom, Consulataion on possible section 30R review of the UBA STD General Terms and Service Description, 2 December 2014, page 1.

[94] ComCom, Standard Terms Determination for Chorus' Unbundled Bitstream Access Service – Schedule 1 UBA Service Description – Public Version 12 December 2007 (incorporates clarifications up to 30 November 2011), p. 3.

[95] Ibid, p5.

[96] Ibid, p7.

[97] ComCom, Standard Terms Determination for Chorus' Unbundled Bitstream Access Service – Schedule 1 UBA Service Description – Public Version 12 December 2007 (incorporates clarifications up to 30 November 2011), p. 7.

[98] ComCom, Standard Terms Determination for Chorus' Unbundled Bitstream Access Service – Schedule 1 UBA Service Description – Public Version 12 December 2007 (incorporates clarifications up to 30 November 2011), page 1-3.

Definitions of the points in the networks used in the service description:

'Coverage Area' – means the geographic area serviced by a given Handover Point

'ETP' – is the External Termination Point at an End User's premises or, where there is no termination point external to the premises, the first jack on the premises wiring, or the building distribution frame.

'Handover Point' – means Chorus' first data switch, or equivalent facility, located in the Coverage Area.

PDN – Public Data network means a data network used, or intended for use, in whole or in part, by the public.[1]

Malaysia

In Malaysia access to telecommunications infrastructure is regulated by the Malaysian Communications and Multimedia Commission (MCMC). In Malaysia the owner of a network must offer any facility or service that appears on an Access List determined by the MCMC, upon the written request of an access seeker.[99] It must do so in a way which provides the same level of control over the owner's network as it provides to itself.[100]

The MCMC made a determination on access in 2005 which added descriptions for 'Bitstream with Network Service' and 'Bitstream without Network Service' to the Access List. For Bitstream with Network Services the Point of Interconnection (POI) is situated at an Access Seeker's premises (i.e., includes backhaul).Conversely if Bitstream is provided without Network Services the POI is at the Access Provider's premises.[101]

In 2009 a description of High-Speed Broadband (HSBB) Access Services (with and without Quality of Service (QoS) controls) was included on the Access List. This is to provide access to services to be provided over a high-speed broadband network.

MCMC is of the view that the access service provided over the high speed broadband network should be provided at Layer 2. This allows Access Seekers to control QoS. New entrants who acquire Layer 2 services are required to invest in infrastructure such as routers and are responsible for IP addressing.[102]

The descriptions of the Bitstream without Network Service and HSBB Access Service which appear in the determination are:

> The **Bitstream without Network Service** is a Facility and/or Service for the provision of Layer 2 connectivity for the carriage of certain communications (being data in digital form and conforming to Internet Protocols) between customer equipment at an end user's premises and a POI at the Access Provider's premises, where:
>
> (i) the Customer's equipment is directly connected to an Access Provider's network; and
>
> (ii) the Access Seeker, but not the Access Provider, assigns the Customer with an IP address.

99 MCMC, *What triggers an Access Provider's obligation to provide facilities and services?, Available at:* http://www.MCMC.gov.my/FAQs/Access-To-Facilities-And-Services/Determination-on-Access-List-(1-of-2005)-and-Manda/What-triggers-an-Access-Provider's-obligation-to-p.aspx.

100 MCMC, Public Inquiry Paper, Review of Access List and Mandatory Standard on Access, 25 September 2008, p. 207.

101 Ibid, p232

102 Ibid, p214

Bitstream without Network Service includes shared splitting services, interfaces to operational support systems and network information.[103]

The **HSBB Network Service with QoS** is an access and transmission Facility and/or Service for the provision of Layer 2 connectivity for the carriage of certain communications (being data in digital form and conforming to Internet Protocols) between customer equipment at a Customer's premises and a POI at the Access Seeker's premises, where in respect of the service:

(i) the customer equipment is directly connected to an Access Provider's High-Speed Broadband Network;

(ii) the Access Seeker selects the bit rate;

(iii) the Access Seeker selects the QoS Class;

(iv) the Access Seeker selects the Contention Ratio; and

(v) the Access Seeker assigns the Customer with an IP address.[104]

An Access Seeker is given options for Bit Rates, QoS Class and Contention Ratios that they may choose.

The **HSBB Network Service without QoS** is an access Facility and/or Service (including transmission only to the POI) for the provision of Layer 2 connectivity for the carriage of certain communications (being data in digital form and conforming to Internet Protocols) on a best efforts basis and delivered over the High-Speed Broadband Network with a predefined Contention Ratio and delivered to a POI which is co-located with an aggregation router or other aggregation device, and where the bit rate is controlled by the Access Seeker.[105]

This service roughly equates to Bitstream without Network Service provided over the extant network infrastructure.

The MCMC defines the key terms as follows:

'High-Speed Broadband Network' means an IP-based network capable of providing services of at least 10 Mbps. For the avoidance of doubt, High-Speed Broadband Network in this Determination includes but is not limited to the "high-speed broadband network" specified in the Ministerial Direction on High-Speed Broadband and Access List, Direction No. 1 of 2008.

'IP' or 'Internet Protocols' means network-layer (Layer 2) protocol, as defined by the Internet Engineering Task Force, that contains addressing information and some control information that enables packets to be routed.

'MyIX' means the Malaysian Internet Exchange.

'POI' or 'Point of Interconnection' means any technically feasible point which demarcates the network of an Access Provider and the network of an Access Seeker (collectively referred to as the 'Interconnecting Networks') and is the point at which communication is transferred between the Interconnecting Networks. An example of a POI is MyIX.

[103] MCMC, Communications and Multimedia Act 1988, Commission Determination on Access List, Determination No. 1 of 2005, p. 10.
[104] MCMC, Communication and Multimedia Act 1998, Variation to Commission Determination on Access List (Determination No. 1 of 2005), Determination No.1 of 2009, p. 8.
[105] Ibid, p11.