

Report on essential facilities, access regulation and value-added wholesale services on the NBN

A Report for Telstra

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1st August, 2013

Executive Summary

In this report, I consider the economic theory behind access regulation for essential facilities and apply this theory to the NBN. This report is written to inform the Australian Competition and Consumer Commission's (ACCC) current inquiry into the declaration of certain fixed-line telecommunications services.¹

An essential facility involves two distinct characteristics. First, it must involve a natural monopoly technology. Second, the service provided by the essential facility must be an 'essential' or a non-substitutable input into further production. To satisfy this second element of the test, the access services provided by the facility must be required for downstream production and there must be no other final goods or services that are strong substitutes for the downstream goods or services that use the access service as an input.²

If we consider the NBN, it is reasonable to conclude that the NBN is an essential facility. In contrast, the value-added wholesale services provided by Wholesale Service Providers over the NBN are not essential services provided by an essential facility. They do not involve a natural monopoly technology. They are not an essential input for Retail Service Providers to effectively compete in the provision of retail-level telecommunications services.

I consider whether there is any economic basis for the ACCC regulating or reserving the right to regulate value-added wholesale services provided over the NBN. I find that there is no economic basis for such regulation over either the long term or as a transitional measure. Further there is no economic justification to regulate these value-added wholesale services to (supposedly) prevent 'leverage' by Telstra from its legacy network. Overall, regulation of value-added wholesale services provided over the NBN will not be in the long-term interests of end users.

Finally, I consider the consequences of the ACCC retaining the 'option' to regulate value-added wholesale services over the NBN if competition does not develop in a way that is 'effective' (as evaluated by the ACCC). By retaining a regulatory option, the ACCC risks distorting the way competition develops on the NBN. Indeed, the ACCC's stance may be self-fulfilling in the sense that by retaining a regulatory option the ACCC may undermine the development of competition and ensure that it is not effective.

My overall conclusion from this report is simple. In my opinion, as an outcome of its current review of fixed services declarations, the ACCC should make a clear and unequivocal statement that it will not intervene in the development of

¹ ACCC (2013) "Fixed services review: Discussion paper on the declaration inquiry", July

² Thus an essential facility is the same as an 'enduring bottleneck' as defined in ACCC (2013) "Fixed services review: Discussion paper on the declaration inquiry", July.

competition at either the retail or the wholesale level on the NBN. While the ACCC should vigorously enforce the access regime on the NBN, it should not attempt to 'guide' competition at either the wholesale or retail levels. To do so would potentially undermine competition and harm end users. By clearly stating that it will not intervene through access regulation in the development of competition, the ACCC will remove regulatory risk from market participants and will allow competition to develop.

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1 Introduction

The Australian Competition and Consumer Commission (ACCC) is currently undertaking an inquiry into the declaration of certain fixed-line telecommunications services.³ The inquiry is occurring at a time of significant change for the telecommunications industry in Australia, including the roll out of a National Broadband Network (NBN). As part of its inquiry, the ACCC will consider “the implications of ongoing industry changes ...”. The ACCC will review the current declarations of fixed line services and consider “whether new declarations should be made”.⁴

This report considers the economic theory that underpins essential facility access and applies that theory to the NBN.

Essential facility access has been a key component of infrastructure reform in Australia over the past two decades. It has underpinned the reform of a variety of sectors including telecommunications, electricity, gas, rail transport and ports. The economic theory that underpins access regulation is well developed and the situations where access regulation can and cannot be used to enhance competition are well understood.

The NBN represents a new telecommunications infrastructure that, potentially, is an essential facility. In this report I first present the economic theory of essential facilities. I then show that the NBN satisfies the economic requirements of an essential facility. I also consider value-added wholesale services that are provided on the NBN. I show that these services do not satisfy the requirements of essential facilities. Further, I show that there is no economic basis for regulating access to these value-added services, either in the long term, as a ‘transitional measure’ or to prevent the exercise of ‘leverage’ from the legacy PSTN.

Finally, I consider the consequences of the ACCC reserving the ‘option’ to regulate value-added wholesale services on the NBN. I show that this potential for future regulation can distort the development of competition. In particular, it may undermine the development of effective competition in value-added wholesale services on the NBN and lead to exactly the ineffective competition that concerns the ACCC. I conclude that, on the basis of economics, as part of its current fixed services review, the ACCC should make a

³ ACCC (2013) “Fixed services review: Discussion paper on the declaration inquiry”, July

⁴ Ibid at p.24.

clear and unequivocal statement that it will not intervene through access regulation in the development of competition in value-added services at either the retail or the wholesale level on the NBN.

2 The 'access problem' and access regulation

2.1 The Hilmer report approach

The report of the Hilmer committee into National Competition Policy was released in August 1993.⁵ The analysis in that report was the starting point for the 'essential facility' access regimes established in the *Competition and Consumer Act 2010* (CCA) and in related legislation such as the National Electricity Law and the national Gas Law.

The Hilmer report recognised that competition in markets is not always desirable. In particular, if the production of a particular good or service is most efficiently produced using a 'natural monopoly technology' then, by definition, competitive supply of that good or service will involve higher costs than if the good or service is produced by a single provider.

Chapter eleven of the Hilmer report considers the case of an essential input that is produced using a natural monopoly technology. While production of the services produced by an essential facility is most efficient (in terms of minimising costs) if produced by a single provider, this leads to a monopoly problem.

An 'essential facility' is, by definition, a monopoly, permitting the owner to reduce output and/or service and charge monopoly prices, to the detriment of users and the economy as a whole.⁶

Further, if the owner of an essential facility is vertically integrated, so it operates in a downstream market where the services provided by the essential facility are a necessary input to production, then there may be further anti-competitive incentives.

Where the owner of the 'essential facility' is vertically-integrated with potentially competitive activities in upstream or downstream markets ... the potential to charge monopoly prices may be combined with an incentive to inhibit competitors' access to the facility.⁷

⁵ Formally, Commonwealth of Australia (1993) "National Competition Policy: Report by the independent committee of inquiry", August. I will refer to this report as the Hilmer report.

⁶ Hilmer report at p.239.

⁷ Hilmer report at p.241.

The report noted that:

[T]he preferred response to this [second] concern is usually to ensure that natural monopoly elements are fully separated from potentially competitive elements through appropriate structural reforms.⁸

The report recommended a regulatory approach to deal with the essential facility problem and these recommendations formed the basis of Part IIIA of the (then) *Trade Practices Act* 1974 and related access regulations.

2.2 What is an 'essential facility'?

An essential facility involves two distinct characteristics. First, it must involve a natural monopoly technology.⁹ Second, the service provided by the essential facility input must be 'essential' or a non-substitutable input into further production.¹⁰ To quote the ACCC, the facility must be an 'enduring bottleneck'.¹¹

A natural monopoly technology exists for a good or service if at all relevant levels of output it is more efficient (in terms of lower production costs) to have the output supplied by a single producer than by more than one producer.¹² While the existence of a natural monopoly technology is an empirical question, a natural monopoly

⁸ Hilmer report at p.241.

⁹ Following the High Court's decision in *The Pilbara Infrastructure Pty Ltd v Australian Competition Tribunal*, [2012] HCA 36, there has been debate about whether or not the legislative test set out in Part IIIA of the CCA applies to natural monopolies. The Productivity Commission in its recent draft report on the National Access Regime stated that the relevant test "is most appropriately applied as a natural monopoly test ...". See Productivity Commission (2013) "National access regime: Draft report", May at p.147.

¹⁰ For a more detailed discussion see S. King and R. Maddock (1996) *Unlocking the infrastructure: the reform of public utilities in Australia*, Allen and Unwin, Sydney and S. King and R. Maddock (1996) "Competition and almost essential facilities: making the right policy choices" *Economic Papers*, 15, 28-37.

¹¹ See ACCC (2013) "Fixed services review: Discussion paper on the declaration inquiry", July, which defines an 'enduring bottleneck' as "[a] network element of facility that exhibits natural monopoly characteristics, and is essential in providing services to end-users in downstream markets". In this report I use the term 'essential facility' rather than the terms 'enduring bottleneck' or 'bottleneck facility'. However the terms have the same meaning and an 'essential facility' is identical to an 'enduring bottleneck' as the term is used in the ACCC's Fixed Services Review discussion paper (2013).

¹² See J. Panzar (1989) "Technological determinants of firm and industry structure" in R. Scmalensee and R. Willig (eds) *Handbook of Industrial Organization*, volume one, North Holland, Amsterdam.

technology is most likely to arise when the efficient costs of production involve large fixed costs and relatively low variable costs. Fixed line telecommunications access networks, such as Telstra's copper CAN and the NBN, tend to have this type of cost structure and are often considered to have a natural monopoly technology.¹³ Other infrastructure facilities, such as electricity transmission and distribution networks, train lines, ports, gas transmission and distribution pipelines, may also have a natural monopoly technology.

The existence of a natural monopoly technology, by itself, however, does not mean that there is an essential facility. If there are substitute products that can be used as alternatives to the relevant service, or if there is downstream competition between alternative products, some of which do not require the relevant service as an input, then the service is not produced by an essential facility. Put simply, a facility that involves a natural monopoly technology is only an essential facility if its output is necessary for businesses to effectively compete in a downstream market.¹⁴

Formally:

An essential facility must produce an input to further production that passes two essentiality tests in addition to involving a natural monopoly technology.

For an input to be essential it must:

1. be used to manufacture a specific good or service and there must be no alternative input or process which enables a competitor to produce an equivalent final good or service at a comparable cost; and
2. there must be no alternative, substitutable final good or service that can be manufactured and sold at a comparable price without using that input.¹⁵

¹³ While the exact 'boundary' of a natural monopoly can be debated, it is often argued that, given the volume of telecommunications traffic, it is only the 'local loop' or the 'Customer Access Network' (CAN), the final part of the network that connects to individual premises, that involves a natural monopoly technology. See for example the discussion in J.J. Lafont and J. Tirole (2000) *Competition in telecommunications*, MIT Press at p.12-13. The ACCC concluded that the CAN "exhibited natural monopoly characteristics" in its 2009 declaration inquiry. See ACCC (2013) "Fixed services review: Discussion paper on the declaration inquiry", July, p.14.

¹⁴ For convenience I will focus on the case where the service in question is an input to downstream rather than upstream production. This is the situation for telecommunications networks.

¹⁵ S. King (1997) "National competition policy", *Economic Record*, 73, 270-284 at p.273.

An economic problem that requires access regulation only exists if the relevant facility involves a natural monopoly technology and passes both the essentiality tests. If this does not hold then there are no structural impediments to competition through an 'essential' facility that need correcting.¹⁶

To see this, note that if a facility does not involve a natural monopoly technology then competitive provision of the relevant good or service is both feasible and economically desirable.

Further, if the good or service produced by a facility does not satisfy both 'essentiality' tests, then the owner of the essential facility is constrained from exercising monopoly power or engaging in anti-competitive conduct due to either direct competition from substitute products or indirect competition because substitutes exist to products that use its input.

2.3 Access and essential facilities

If an essential facility forms part of a chain of production then, in the absence of regulatory intervention, effective competition is unlikely to develop in the relevant industry. The owner of the essential facility will have both the ability and the incentive to control production in the industry and ensure that consumers face monopoly prices.¹⁷ It may do this by vertically integrating and supplying end users directly. Alternatively, it may exploit its market power by setting monopoly prices for access to its facility and allowing downstream competition to 'pass' the inflated pricing onto end users.

Regulated infrastructure access is one way to deal with both of these problems. An 'access regime' requires that the owner of an essential facility provides access to the services provided by its facility to downstream suppliers. It also provides a process for setting the terms and conditions of access to avoid monopoly pricing of the essential facility's services.

¹⁶ Thus the Productivity Commission notes that "the [National Access] Regime can address market failure from a lack of effective competition in the provision of infrastructure services due to natural monopoly". See Productivity Commission (2013) "National access regime: Draft report", May at p.88. It also notes (p.78) that this market failure may not arise if there are constraints on the use of monopoly power such as substitutes (i.e. the services provided by the facility are not essential), countervailing power or the threat of entry.

¹⁷ In theory the owner of an essential facility may not be able to exploit their position if the market is 'perfectly contestable'. However, the conditions that are required for 'perfect contestability' are onerous and unlikely to apply in almost any real-world situation with an essential facility. See Chapter 11 in S. Martin (1993) *Advanced Industrial Economics*, Blackwell.

Different access regimes operate in different parts of the Australian economy. For example, electricity transmission and distribution networks in eastern Australia are regulated under the National Electricity Law (NEL).¹⁸ This law empowers the Australian Energy Regulator (AER) to determine the appropriate terms and conditions of access to these networks, in order to best meet the national electricity objective:

The objective of this Law is to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to—

- (a) price, quality, safety, reliability and security of supply of electricity; and
- (b) the reliability, safety and security of the national electricity system.¹⁹

The AER has considerable powers to set the terms and conditions of access that it believes best meet this objective.

In contrast, the national Access Regime in Part IIIA of the CCA involves a 'declare, negotiate, arbitrate' process.

The national Access regime is a regulatory framework through which third parties may seek access to infrastructure services owned and operated by others. ... The Regime gives primacy to negotiations between infrastructure service providers and access seekers, with the threat of regulated access providing an incentive for the parties to reach private agreement".²⁰

The Part IIIA regime is a light-handed approach that aims at facilitating access with explicit price regulation operating as a fall-back. Indeed, in the 17 years since Part IIIA was enacted, only one matter has gone to arbitration with the Australian Competition and Consumer Commission (ACCC).

¹⁸ Formally these laws are a schedule to the *National Electricity (South Australia) Act 1996*, which have been adopted through application legislation in all Australian States and Territories with the exception of Western Australia.

¹⁹ Section 7 of the NEL.

²⁰ Productivity Commission (2013) "National access regime: Draft report", May at p.49.

3 Application – access and the NBN

3.1 Background

3.1.1 The NBN and the changing nature of Australian telecommunications.

On April 9, 2009, NBN Co was established to provide a national broadband network in Australia.²¹ The NBN Co is wholly owned by the Commonwealth Government.²² It is building a national broadband network and the NBN Co will be an upstream provider of high-speed telecommunications services. It will be a wholesale-only, open-access telecommunications network. Thus:

NBN Co will enable retail service providers (RSPs) to provide high-speed broadband services for all Australian premises, wherever they are located.²³

NBN Co has reached preliminary agreement with a large number of potential retail service providers:

In November 2011 we executed our Wholesale Broadband Agreement (WBA) after extensive industry consultation, and by the end of the reporting year 41 telecommunications and internet service providers had signed this agreement. This represents about 94 per cent of the retail broadband market.²⁴

NBN Co has also submitted a special access undertaking to the ACCC, although the ACCC has not accepted that undertaking at the time of writing this report.²⁵

²¹ NBN Co (2012) 2011-12 Annual Report, p.4

²² *ibid* p.5

²³ *ibid* p.7

²⁴ *ibid* p.11. See also Optus (2011) “Optus Submission in response to the ACCC’s discussion paper: Public Inquiry to make Final Access Determinations for the Declared Fixed Line Services”, June at paragraph 8.15.

²⁵ “The SAU has two key objectives: to provide an appropriate degree of regulatory certainty to Access Seekers (and through them, End-Users) and NBN Co; and to provide the long term framework reasonably necessary to achieve Uniform National Wholesale Pricing (UNWP) of eligible services supplied by NBN Co to service providers and utilities”. NBNC Co (2012) “Corporate plan 2012-15”, 6 August at p.31. In April 2013 the ACCC issued a draft decision where it provided a preliminary view that the SAU did not meet the relevant criteria for acceptance. See ACCC (2013) “ACCC draft decision on the special access undertaking lodged by NBN Co on 18 December 2012” (April).

The NBN will replace Telstra’s fixed-line Customer Access Network (CAN) as the ubiquitous fixed-line telecommunications network in Australia. As the NBN is rolled out, the CAN will be switched off. The NBN will also replace the existing HFC networks owned by Telstra and Optus, which provide services in some metropolitan regions of Australia. The ACCC has accepted the agreements underpinning the structural separation of Telstra and the agreement between Optus and NBN Co in 2012.^{26 27} NBN Co recently announced that it has reached an agreement to buy the TransACT/iiNet fibre-to-the-premises network in the ACT.²⁸

3.1.2 What access services will be provided by the NBN?

The NBN will provide ‘wholesale’ level access services (layer 2 bitstream services) on its network. It will charge a non-discriminatory, uniform, national wholesale access price to retail service providers.²⁹

The wholesale services provided by NBN Co can be purchased by telecommunications service providers as an input to the provision of either:

- (a) retail services that can be sold to end-user customers; or
- (b) ‘value-added’ wholesale services that can be sold to other service providers. These other service providers will use the value-added wholesale services as an input to the provision of their retail services to end users.³⁰

Thus:

Carriers will have the option to deal directly with NBN Co or use the services of a wholesaler or aggregator.³¹

²⁶ “In February 2012, the Australian Competition and Consumer Commission (ACCC) accepted Telstra’s plans for structural separation of its copper customer access network.”. NBN Co (2012) 2011-12 Annual Report, p.19.

²⁷ “On 19 July 2012, the ACCC authorised the agreement between NBN Co and Optus to migrate Optus’ HFC subscribers to the National Broadband Network”. Ibid p.20.

²⁸ NBNC Co (2013) “NBN Co deal with TransACT to speed ACT rollout and lower costs”, Media Release, 22 May.

²⁹ NBN Co (2012) 2011-12 Annual Report, p.7

³⁰ Optus (2011) “Optus Submission in response to the ACCC’s discussion paper: Public Inquiry to make Final Access Determinations for the Declared Fixed Line Services”, June at paragraph 8.11.

³¹ Optus (2011) “Optus Submission in response to the ACCC’s discussion paper: Public Inquiry to make Final Access Determinations for the Declared Fixed Line Services”, June at paragraph 8.13.

3.1.3 The ACCC’s role in regulating ‘value added’ wholesale services provided by wholesale service providers

Under the Part XIC (s.152AL) of the CCA, the ACCC has the power to declare certain telecommunications services. Under s.152AQ of the CCA, the ACCC must keep a register of relevant declared telecommunications services. Currently the register details eleven declared telecommunications services.³²

Under s152BC of Part XIC of the CCA, the ACCC can make access determinations for declared telecommunications services. In July 2011, the ACCC released its final report on the access determinations for six declared fixed line services.³³ In July 2013, the ACCC released its discussion paper for its next fixed services review.³⁴

The six fixed line services covered by the access determinations in the July 2011 ACCC review all related to Telstra’s PSTN. During its 2011 determination process, however, the ACCC also asked market participants to comment on the possibility of the ACCC regulating “NBN-based wholesale services” provided by telecommunications carriers using the wholesale products purchased from the NBN.³⁵ In particular:

The ACCC seeks industry submissions on whether the FADs for the WLR, LCS, PSTN OA and PSTN TA services should apply to NBN-based wholesale services.³⁶

The ACCC drew particular attention to the potential for regulation of NBN-based wholesale services during a ‘transition period’.³⁷

³² See <http://transition.accc.gov.au/content/index.phtml/itemId/777921>. Register accessed on May 30, 2012.

³³ ACCC (2011) “Inquiry to make final access determinations for the declared fixed line services: Final report”, July. The six fixed line services covered by the final report are listed in footnote 1 and on page 13 of the report. “The declared fixed line services are the: line sharing service (LSS); local carriage service (LCS); public switched telephone network originating access service (PSTN OA); public switched telephone network terminating access service (PSTN TA); unconditioned local loop service (ULLS) and wholesale line rental (WLR)”.

³⁴ ACCC (2013) “Fixed services review: Discussion paper on the declaration inquiry”, July.

³⁵ Formally, “[t]he ACCC uses the term “NBN-based wholesale services” to refer to any wholesale services which are supplied by NBN access seekers using the NBN access network”. ACCC (2011) “Public inquiry to make final access determinations for the declared fixed line services: discussion paper”, April at p.249.

³⁶ Ibid.

³⁷ Ibid.

Similarly, in its 2013 discussion paper the ACCC has noted that “[t]he rollout of the NBN raises the question of whether ... resale services should be supplied on a declared basis when they are provided using NBN infrastructure”.³⁸ The ACCC asks whether “potential access seekers face significant barriers to entry in supplying services over the NBN? If so, would declaring resale services provided using NBN infrastructure promote the LTIE?”³⁹

In its 2011 final report the ACCC “concluded that the case for access regulation of NBN wholesale aggregation services over the long-term is not clear”.⁴⁰ The ACCC decided not to regulate NBN-based wholesale services, but the ACCC also noted that:

If competitive markets for NBN wholesale aggregation services and/or retail services do not emerge over time, the ACCC may then reconsider regulation.⁴¹

3.2 Essential facilities and the NBN

3.2.1 Is the NBN an essential facility?

In recent years, there has been some debate about whether or not traditional fixed-line telecommunications networks are essential facilities. While it is generally (but not universally) recognised that the ‘local loop’ involves a natural monopoly technology,⁴² it can be argued that technological change has meant that the services provided by traditional fixed line telephone networks no longer satisfy the ‘essentiality tests’. For example:

In the telecommunications industry, the natural-monopoly features of the traditional fixed-line networks seem to be losing in importance as technical progress facilitates the development of

³⁸ ACCC (2013) “Fixed services review: Discussion paper on the declaration inquiry”, July, at p.30.

³⁹ Ibid at p.31, question 10.

⁴⁰ ACCC (2011) “Inquiry to make final access determinations for the declared fixed line services: Final report”, July at p.165.

⁴¹ Ibid. The ACCC reiterated that it would “re-examine the issue of regulation of the NBN wholesale aggregation market at the end of the regulatory period (June 2014)” in ACCC (2012) “Inquiry into varying the final access determinations for the WLR, LCS and PSTN OA – where these services are supplied over the NBN: Discussion paper”, April at p.7.

⁴² See for example the discussion in D. Spulber and C. Yoo (2008) “Towards a unified theory of access to local telephone systems”, *Federal Communications Law Journal*, 61, 44-117.

alternative networks as a basis for service provision. Network monopolies are being replaced by systems of networks that are in competition with each other. The paradigmatic example is provided by mobile telecommunications where, in any given country, we see a handful of operators building up networks and acquiring customers in competition with each other. We also see competition between fixed-line and mobile telecommunications, or between fixed-line and cable networks. Telecommunications services through different kinds of networks may not be perfect substitutes, but, even so, the imperfect substitutes that are available can impose effective constraints on the behaviours of the presumed network monopolists.⁴³

Further the existence or otherwise of an essential facility in the fixed line telecommunications network and the appropriate way to deal with that essential facility can differ between different geographic locations. For example, between 2009 and 2011, a number of exchange service areas were exempt from fixed-line access determinations, based on the level of competition provided by telecommunications providers using access to the unbundled local loop service.⁴⁴ Similarly, as early as 2001, the ACCC looked at removing access regulations from fixed line carriers in certain CBD areas:

Based on evidence that in the specified CBD areas enough alternative facilities have developed to ensure competition in the provision of local call services on a wholesale and retail basis without the need for regulation.⁴⁵

While these same arguments can be raised with regards to the NBN, they are weaker than for a traditional customer access network based on copper wire technology. The NBN (as currently being rolled out) involves fibre-to-the-premises, offering significantly higher speeds for both uploads and downloads than services offered over copper-based fixed line networks. Similarly, the NBN will offer greater functionality

⁴³ M. Hellwig (2008) “Competition policy and sector-specific regulation for network industries”, Max Planck Institute, Bonn 2008/29 at p.3-4.

⁴⁴ See ACCC “Implementation of Exemptions - Under Clause 5 of the ACCC's Interim Access Determinations”, <http://transition.accc.gov.au/content/index.phtml/itemId/934407> accessed on June 12, 2013.

⁴⁵ ACCC (2001) “ACCC to deregulate wholesale local call services in CBD areas of major capital cities”, 13 September.

than digital mobile networks, albeit without the same degree of mobile access.

Further, the nature of the roll-out of the NBN has eliminated some of the potential competition that exists in other countries. Alternative fixed line networks, that could potentially provide wholesale services to compete with the NBN, are being disestablished as the NBN is rolled out. In particular, the Optus HFC cable network, and both Telstra’s CAN and its HFC cable network, will not be operational once the NBN is fully in operation. This means that the NBN is likely to satisfy both essentiality tests even though similar networks in other jurisdictions may not satisfy those tests.

In summary, it is reasonable to classify the NBN as an essential facility.⁴⁶ It is likely that it will involve a natural monopoly technology, at least outside metropolitan CBDs and high-density inner-city areas. Further, it is unlikely that there are substitute products that would prevent the wholesale services provided by the NBN from being essential.

3.2.2 Is there an essential facility at the wholesale service provider level?

As discussed above, the NBN Co will provide wholesale access services to the network. These services will either be bought directly by retail service providers (RSPs) of telecommunications services, or will be bought by wholesale service providers (WSPs). The WSPs or ‘aggregators’ will add value to the standard NBN wholesale services and then resell these wholesale services to retail service providers.

An essential facility would only exist at the WSP level if:

- (a) The provision of ‘value added’ wholesale services involved a natural monopoly technology; and
- (b) These services satisfied the two essentiality-tests discussed above.

In my opinion, there is no evidence to suggest that the products provided by WSPs will either involve a natural monopoly technology or satisfy either essential facility test.

First, consider the existence of a natural monopoly technology. In general natural monopoly technologies involve large fixed costs and relatively low marginal costs. It could be argued that the provision of value-added wholesale services, using the NBN wholesale services as an input, might satisfy these requirements. To sell value-added wholesale services, a WSP will need to establish infrastructure for these services. This will involve relevant hardware and software that

⁴⁶ Or to use the term from the ACCC (2013) “Fixed services review: Discussion paper on the declaration inquiry”, July, it is an ‘enduring bottleneck’.

must be in place before any value-added services can be sold. Further, while the marginal cost of providing these services will depend on the prices set by NBN Co, unless these prices are high and increase with volume, it could be argued that the average cost of providing value-added wholesale services will decrease as the volume of services provided increases.

Such an analysis would be misleading. A natural monopoly will only arise if there is an undifferentiated product such that one business can meet market demand at a lower cost than multiple businesses. In contrast, the value-added wholesale services provided by WSPs are likely to be significantly differentiated. Different services will offer different functionality and will appeal to different RSPs. In such a situation there is likely to be robust competition between different WSPs providing their specific portfolio of value-added wholesale services.⁴⁷

Robust competition among WSPs is predicted by the ACCC. Thus the ACCC has noted that:

The NBN presents a significant structural change away from the previous vertically integrated industry structure, which should in turn promote competition in downstream markets.⁴⁸

Similarly the ACCC has recognised that:

Other than Telstra, various access providers have already indicated a willingness to provide wholesale services over the NBN.⁴⁹

Optus notes that :

the level of concentration in the wholesale market of Layer 2 service is unlikely to be high, which will place a competitive constraint on providers of NBN based wholesale products.⁵⁰

⁴⁷ Such an industry structure is sometimes referred to as ‘monopolistically competitive’. While these market structures are not ‘perfectly competitive’ they involve robust, workable competition and would not normally be subject to regulatory intervention.

⁴⁸ ACCC (2012) “Inquiry into varying the final access determinations for the WLR, LCS and PSTN OA – where these services are supplied over the NBN: Discussion paper”, April at p.17.

⁴⁹ ACCC (2012) “Inquiry into varying the final access determinations for the WLR, LCS and PSTN OA – where these services are supplied over the NBN: Discussion paper”, April at p.14. See also ACCC (2012) “Inquiry into varying the final access determinations for the WLR, LCS and PSTN OA – where these services are supplied over the NBN: Final report”, June at p.11.

⁵⁰ Optus (2011) “Optus Submission in response to the ACCC’s discussion paper: Public Inquiry to make Final Access Determinations for the Declared Fixed Line Services”, June at paragraph 8.19. Similarly, the ACCC noted in July 2011 that “[o]n

In summary, it is unlikely that the services provided by WSPs involve a natural monopoly technology and, as such, fail the first requirement for the existence of an essential facility.

Even if the value-added wholesale services provided by a WSP involved a natural monopoly technology, it is clear that these services would fail the first ‘essentiality’ test. That test notes that an input is only ‘essential’ if there is no alternative input or process that enables a competitor to produce an equivalent final good or service at a comparable cost.

In the case of the NBN, alternative inputs are provided to RSPs directly by NBN Co. These inputs – which are the same inputs that are purchased by the WSPs at the same price paid by the WSPs – are clearly excellent substitutes for the value-added services provided by WSPs. RSPs can purchase the same inputs as the WSPs, can add value to these services themselves or through other value-adding providers, and then can sell final telecommunications services based on these inputs.

In this sense there is no analogue to the ‘stepping stones’ or ‘ladder of investment’ theory that the ACCC drew on when considering the declaration of wholesale line rental and local carriage services on the CAN. A ‘new’ RSP can access relevant services from a variety of sources, including the NBN. The RSP can use these NBN services, or those of a WSP who competes with (and on) the NBN, while developing its own wholesale services if it decides to do so.⁵¹

The value-added services provided by Telstra or any other WSP are not required by an RSP to be able to effectively compete in the sale of telecommunications services to end users. In summary, it is clear that there are significant alternative inputs that can be used by any RSP as an alternative to purchasing the value-added wholesale services provided by any specific WSP. These alternative inputs are supplied by NBN Co.

In summary, the value-added wholesale services provided by WSPs over the NBN are not essential services. They do not involve a natural monopoly technology. They are not an essential input for RSPs to effectively compete in the provision of retail-level telecommunications services. In such a situation there is no economic argument, based on the concept of essential service, for the ACCC to regulate the prices or other terms and conditions of any particular

6 July 2011, Telstra wrote to the ACCC to highlight that four companies have recently publicly stated they intend to offer NBN wholesale aggregation services”. See ACCC (2011) “Inquiry to make final access determinations for the declared fixed line services: Final report”, July at page 165.

⁵¹ See ACCC (2013) “Fixed services review: Discussion paper on the declaration inquiry”, July, p.58.

WSP operating on the NBN or any group of WSPs operating on the NBN.

Further, if the ACCC did decide to regulate these services on the (erroneous) belief that they were ‘essential’ then this would not be in the long term interest of end users. Regulation of a developing market, such as the supply of value-added wholesale services over the NBN, is likely to dampen investment in the development of alternative wholesale services and reduce the level of innovation and product differentiation in these services. The possibility of regulation would reduce the level of innovation and risk-taking by WSPs. I discuss this further below.

4 Access and the transition to the NBN

4.1 Access as a tool of transition

A regulator may be tempted to use access regulation as a ‘temporary’ tool to assist the transition of a market from an uncompetitive to a competitive structure. For example, suppose that the market historically has been dominated by a government-owned monopoly. Even if there is no natural monopoly problem, a regulator or government might attempt to use access regulation to speed up new entry and quicken the move to a more competitive market structure.

I have previously analysed the use of access as a regulatory tool to ‘assist’ the development of competition.⁵² I considered the situation where a facility does not have a natural monopoly technology but where its output is ‘essential’ in the short run due to a transition, say, from a regulated monopoly. I noted that there may be benefits from short term access so long as the relevant access prices are high enough to ensure that competition evolves through the development of alternative services.⁵³

In my earlier work, however, I noted the risks of trying to ‘engineer’ a competitive solution. For example, if the regulated access price is not set high enough, then firms that could develop competing infrastructure may be tempted to delay their investment. The firms will trade off the expense of the costly investment with the alternative of using regulated infrastructure access, at least in the short term. In such a situation, ‘transitional’ access regulation may deter investment and lead to a situation where some competitors are dependent on regulated access even in the longer term. The ‘temporary’ regulation to assist market development will have distorted that development.

It may be argued that a ‘wait and see’ approach to the regulation of value-added wholesale services provided using the NBN may be an appropriate approach. This option would involve the ACCC imposing regulation as a ‘transition’ measure if, in the view of the ACCC, appropriate levels of competition do not develop over time.

It should be noted, however, that the value-added wholesale services supplied by WSPs do not satisfy *any* of the requirements for transitional access. These services are neither natural monopolies nor

⁵² S. King and R. Maddock (1996) “Competition and almost essential facilities: making the right policy choices” *Economic Papers*, 15, 28-37.

⁵³ This analysis provides the economic foundations for the ‘ladder of investment’ approach used to justify the declaration of LCS and WLR services on the CAN.

essential. In this sense, there is no economic basis for the ACCC introducing access regulations on the services provided by WSPs, even on a transitional basis.

4.2 Access and the leverage of market power

It may be argued that an access provider will have incentives to 'leverage' its control of an essential facility in one market, to undermine competition in other markets where the access provider does not control an essential facility.

To see this, suppose that access to an essential facility is only required to compete in the first of the two markets. Would the access provider have an incentive to distort competition in one market in order to 'leverage' its market power from the first market into the second market?

While such leverage is possible it would require very specific conditions. In particular the two markets would need to be connected through complementarity. Either the end products would need to be:

- Complements in demand – so that purchasers of a specific product in one market are more likely to purchase the product from the same supplier in the other market; or
- Complements in supply – so that a competitor can produce the second product more cheaply the more of the first product that it produces and sells.

In these situations, the access provider may have an incentive to try and manipulate the terms and conditions of access in the first market in order to undermine its competitors. By undermining its competitors in the first market, those competitors will be less able to compete in the second market and the access provider may be able to gain a competitive advantage.

While manipulation of access to leverage market power is theoretically possible, it is far from clear how often it will arise in practice. Further, care will be needed if a regulator wishes to 'fix' the competitive problem.

The source of the problem is the ability of the access provider to manipulate the terms and conditions of access in the first market. The obvious solution to the problem is to improve the access regulation in that market.

However, a regulator may also perceive there as being a problem in the related 'second' market. Attempts to intervene in that market, however, are likely to harm consumers. To 'solve' the competitive problem in the second market the regulator would have to artificially

constrain the access provider when competing in that market. Such a constraint is likely to further reduce competition in that market, leading to higher prices and poorer outcomes for end customers.

To see this, consider a simple example where the two markets are joined by complementarity in supply. The access provider in the first market will have an increased incentive to raise the price of access or limit the supply of access in the first market because this will increase its competitors' costs in the second market. If access is regulated, the access provider will have an increased incentive to attempt to avoid or undermine the regulation in the first market in order to undermine its competitors in the second market.

Suppose that the regulator intervenes by restricting the ability of the access provider to compete in the second market. Remember that this is *not* the market where access is an issue. Such regulatory intervention will have two effects. First it will change the incentives for the access provider to manipulate the terms and conditions of access in the first market. However, depending on the exact nature of the regulatory intervention, the incentives for manipulation may increase or decrease. Second, it will limit the ability of the access provider to effectively compete in the second market. This second effect will necessarily raise prices and reduce customer welfare in the second market.

Overall, intervention in the second market (where there is not an access problem) may help to protect competitors. But this will involve a significant risk of harming both competition and customers. Put simply, if there is an access problem in the first market, it should be dealt with in the first market, not in other markets where intervention may not be in the long-term interests of end users.

4.3 Access and leverage during the rollout of the NBN

During the roll-out of the NBN, there will be two fixed-line telecommunications access networks operating in geographically distinct parts of Australia. The first will be the NBN itself. As noted above, it is reasonable to classify the NBN as an essential facility, at least outside high population density locations such as CBDs and inner city areas. The second network will be the Telstra CAN in areas where the NBN has not been rolled out. The CAN is likely to be an essential facility in some geographic locations before the NBN is built in those areas.

The existence of separate essential facilities in different geographic areas raises the question of leverage by the owner of one of the

essential facilities. In particular, could Telstra leverage its ownership of the CAN in one geographic area to negatively impact competition in a distinct area (for example, in those areas where the NBN Co has deployed its network)?

As discussed above, leverage is only profitable if the relevant downstream products are either complements in demand or complements in supply. Thus, if we consider value-added wholesale services provided on the NBN, Telstra would only find it profitable to distort access in a geographic region where its CAN is an essential facility in order to leverage into services provided in a different and distinct NBN region, if the downstream services that Telstra and its competitors provide in the CAN-regions are complements in either demand or supply for the value-added wholesale services that Telstra and its competitors provide in NBN-regions.

It is far from clear that the necessary complementarity condition for leverage to be at least theoretically profitable is satisfied. Consider complementarity in supply. It seems unlikely that being a provider of either retail or wholesale services in a legacy CAN-based region would make it cheaper to produce value-added wholesale services on the NBN. The services that Telstra and other WSPs provide on the NBN will involve different hardware and software from the services provided on the CAN.

Alternatively, consider complementarity in demand. For such complementarity to exist, purchasers of either retail or wholesale services from a specific supplier in a legacy CAN-region must find it desirable to purchase value-added services from the same supplier in an NBN-region. I have seen no information to suggest that this complementarity exists in a way that impacts on wholesale NBN services. Complementarity *might* exist at the consumer level for retail services, for example, if customers sought to have a single nationwide retail supplier that covered both NBN and residual CAN geographic areas. However, such complementarity has nothing to do with the supply of value-added wholesale services on the NBN and could not be used to justify any regulation of those wholesale services. Overall it is not clear that any demand side complementarity exists that involves value-added wholesale services on the NBN.

In summary, I have seen no information to show that the necessary complementarity condition for leverage is satisfied between regions where the CAN is an essential facility and where the NBN is an essential facility or between products provided on the using CAN access and products provided using NBN access. Indeed, it is far from obvious how such complementarity would arise.

Notwithstanding the above, suppose that such complementarity did arise. In other words, assume that there is a telecommunications product that is produced using CAN access that is a complement in

supply or in demand for value-added wholesale services produced using the NBN. If this assumption held then, at least in theory, Telstra might have an incentive to leverage its position as owner of the legacy CAN during the roll out of the NBN to raise its profitability in NBN-based services.

To engage in leverage, however, Telstra would have to undermine the complementary product that is produced by its competitor using legacy CAN access. After all, Telstra does not control the NBN and is an access seeker on the NBN. Telstra cannot distort access on the NBN and NBN Co (due to its equivalence obligations) will not favour Telstra. So if leverage is a possibility, it is due to ineffective access regulation on the legacy CAN.

In such a situation, the correct economic approach is to try and directly overcome the problems of legacy CAN access. It would be undesirable to try and solve an economic problem that is sourced on the legacy CAN by interfering with competition in NBN-based services. As discussed above, it is likely that services provided using access to the NBN, including value-added wholesale services, will be effectively competitive. If a regulator attempted to interfere in the provision of NBN-based services in an attempt to rectify a regulatory problem that occurs in a completely separate geographic region using a completely different network, it is likely that the regulator will harm competition, not improve it.

For example, suppose that the regulator believed that Telstra could leverage its control of the legacy CAN to distort competition in value-added wholesale services on the NBN during the roll out of the NBN.⁵⁴ The regulator might believe that requiring Telstra's competitors to have access to Telstra's NBN-based wholesale service products could solve this problem. In my opinion, the regulator would be clearly wrong. Requiring access to Telstra's NBN-based wholesale services would:

- Distort the incentives for other telecommunications providers to develop their own value-added wholesale services on the NBN and potentially undermine long-term competition; and
- Not reduce Telstra's incentives to leverage legacy CAN access and indeed may increase those incentives.

With regards to the second point, note that requiring access to Telstra's wholesale services on the NBN reduces Telstra's competitive options on the NBN. However, it does nothing to address the source of the leverage problem on the legacy CAN. At the margin, Telstra is likely to face increased incentives to 'compete'

⁵⁴ It is far from clear how this leverage could arise.

by distorting legacy CAN access given that it faces reduced options to compete on the NBN.

Of course, such a situation of leverage is hypothetical and I have seen no information to show that leverage would be profitable for Telstra. But if leverage from the legacy CAN were a regulatory problem during the rollout period of the NBN, this would not provide any justification for the regulator to intervene in effectively competitive NBN-based markets. Indeed, such intervention may be counterproductive, reducing competition and harming the long term interests of end users.

4.4 The costs of the threat of future regulation.

As noted above, there is no basis in economics for the ACCC maintaining an option of regulating NBN-based wholesale services in the future if competition in these services is not developing in a way that the ACCC judges appropriate.⁵⁵ However, the threat of future regulation that is raised by this position may itself deter competition in NBN-based wholesale services.

The development of wholesale services on the NBN is not riskless. The relevant wholesale service providers will develop these services against a backdrop of significant risk. In particular, given that the NBN will sell regulated wholesale access services directly to RSPs, it is far from clear what the extent of demand will be for value-added wholesale services provided by WSPs.

In the absence of regulatory threat, we would expect to see service providers developing competing and differentiated NBN-based value-added wholesale services so long as the expected profits on those services are positive. Given the lack of barriers to entry in the provision of value-added wholesale services, the successful development of such services is likely to lead other WSPs to enter and mimic successful wholesale offerings. In this sense, any economic profits from the development of successful value-added wholesale services on the NBN will be derived from a first-mover advantage in the successful product. The first service provider to develop such a successful wholesale product will be able to build up its customer base while ‘followers’ develop competing services. Any economic profits, however, will be transitory.

⁵⁵ For the purpose of this section I assume that the ACCC could legally regulate access to value-added wholesale services on the NBN. Given this assumption, the holding of a ‘real option’ by the ACCC through the threat to potentially regulate value-added wholesale services on the NBN has costs to market participants as discussed below.

The threat of regulation undermines this competitive process in two ways. First, suppose a provider makes a risky investment in developing a value-added wholesale service. If this service is successful and is then subject to regulation, the service provider will not expect to make economic profits on this service once regulation is introduced. For example, if the ACCC uses a building block methodology to set the regulated price for the wholesale service, this price will not include economic profits.

In contrast, suppose that the NBN-based wholesale service developed by the WSP is unsuccessful. In that situation, regardless of whether or not the service is later regulated, the service provider will make an economic loss on its innovation.

In such a situation, regulation of ‘successful’ products will reduce the economic returns on those products and distort the distribution of expected returns as seen by the service provider *ex ante*. The service provider will note that, if its development is unsuccessful, it will bear all the cost, but if the development is successful, regulation will intervene and reduce the economic returns.

This truncation problem, where regulatory intervention has an asymmetric affect on the returns from risky investment, is well known.⁵⁶ It cannot be avoided by having a ‘lighter’ regulatory regime or trying to set regulated prices that ‘reflect’ the investment risk. Necessarily, any regulated price on successful value-added wholesale services that is less than the profit maximizing unregulated price, will ‘truncate’ and distort the distribution of returns to the service provider.⁵⁷

The issue of regulatory uncertainty deterring socially desirable investment has been recognised under the National Gas Laws. Chapter 5 of these laws states that “[a] service provider for a greenfields pipeline project may apply to the [National Competition] Council for a 15-year no-coverage determination”. If granted, such a determination “means that the pipeline cannot be covered for 15 years from the commissioning of the pipeline”.⁵⁸

Second, by maintaining the potential threat of future regulation for value-added wholesale services, the ACCC is distorting the incentives for service providers to be first movers in developing those services.

⁵⁶ For example, see J. Gans and S. King (2004) “Access holidays and the timing of infrastructure investment”, *Economic Record*, 80, 89-100.

⁵⁷ Of course, if the regulated price were set at the unregulated profit maximizing level, the regulation would be redundant.

⁵⁸ National Competition Council (2011) “National gas law – overview”, May at paragraph 4.13.

When considering the risky investment in developing a wholesale service, a WSP will consider the relative benefits of that investment relative to a wait-and-see alternative. In the absence of regulation, the wait-and-see alternative means that the (potential) WSP can wait until another party has developed a successful value-added wholesale service and then seek to mimic that service. The wait-and-see alternative lowers the risk to the service provider. The main market risk is borne by the party who first develops the wholesale service. Of course, the wait-and-see alternative has a cost in that the WSP relinquishes the any first mover advantage to the service provider who develops the service.

In an unregulated market we would expect to see the benefits from these options equated at the margin. The greater the first mover advantage, the greater will be the degree of product innovation in value-added wholesale services on the NBN.

Regulation (or the threat of regulation) tends to reduce the first mover advantage. WSPs who follow the wait-and-see strategy do not have to develop their own version of a successful wholesale service if the service is regulated. Rather, they can simply use the regulated access regime to quickly mimic the service and effectively compete.

Of course, the ‘followers’ will still have the ability to develop their own competing service. Access regulation does not in general remove this option. In this sense, regulation can only increase the return from the wait-and-see strategy, it cannot reduce it. Further, the possibility that its own version of the successful wholesale product will also be subject to regulation will reduce the second-mover’s incentives to develop its own service, biasing its decision towards seeking access to the competitor’s service.

By increasing the relative return to the wait-and-see strategy, regulation (or the threat of regulation) will depress investment in new value-added wholesale services. We would still expect that new investment will occur until the marginal return from investing is equated with the marginal return from following a wait-and-see approach. But because regulation (or the threat of regulation) raises the return on the wait-and-see approach, this implies that there can only be an equality of returns ‘at the margin’ if the level of return to investment in wholesale services increases, which implies that the level of investment will fall.

In summary, the threat of future regulation of value-added wholesale services on the NBN will retard the development of those services by:

- a. Truncating the return on risky investments in developing wholesale services; and

- b. Distorting the relative returns to service providers from being a first mover in developing services and being a follower in the service market.

Finally, as noted above, the ACCC has stated that it will consider regulation of NBN-based wholesale services “if competitive markets for NBN wholesale aggregation services and/or retail services do not emerge over time”. However, such a statement risks being self-fulfilling. The threat of regulation will depress the investment in developing NBN-based wholesale services. The risk of future regulation will make service providers reluctant to invest in these services and this will impede the development of competition in these services. Put simply, the regulatory ‘threat’ imposed by the ACCC if competition does not emerge may, indeed, ensure that effective competition does not occur. It would be economically inefficient and clearly not in the long-term interest of end users if the threat of regulation prevented the development of effective competition.

5 Conclusion

In this report, I have considered the economic theory behind access regulation for essential facilities and applied this theory to the NBN.

An essential facility involves two distinct characteristics. First, it must involve a natural monopoly technology. Second, the service provided by the essential facility must be an ‘essential’ or a non-substitutable input into further production. To satisfy this second element of the test, the access services provided by the facility must be required for downstream production and there must be no other final goods or services that are strong substitutes for the downstream goods or services that use the access service as an input.

If we consider the NBN, it is reasonable to conclude that the NBN is an essential facility. In contrast, the value-added wholesale services provided by WSPs over the NBN are not essential services. They do not involve a natural monopoly technology. They are not an essential input for RSPs to effectively compete in the provision of retail-level telecommunications services.

I have considered whether there is any economic basis for the ACCC regulating or reserving the right to regulate value-added wholesale services provided over the NBN. I find that there is no economic basis for such regulation (or the ‘option’ for such regulation) over either the long term or as a transitional measure. Further there is no economic justification to regulate these value-added wholesale services to (supposedly) prevent ‘leverage’ by Telstra from the legacy PSTN. Overall, regulation of value-added wholesale services provided over the NBN will not be in the long-term interests of end users.

Finally, I consider the consequences of the ACCC retaining the ‘option’ to regulate value-added wholesale services over the NBN if competition does not develop in a way that is ‘effective’ (as evaluated by the ACCC). By retaining a regulatory option, the ACCC risks distorting the way competition develops on the NBN. Indeed, the ACCC’s stance may be self-fulfilling in the sense that by retaining a regulatory option the ACCC may undermine the development of competition and ensure that it is not effective.

My overall conclusion from this report is simple. In my opinion, as an outcome of its current review of fixed services declarations, the ACCC should make a clear and unequivocal statement that it will not intervene in the development of competition at either the retail or the wholesale level on the NBN. While the ACCC should vigorously enforce the access regime on the NBN, it should not attempt to ‘guide’ competition at either the wholesale or retail levels. To do so would potentially undermine competition and harm end users.

By clearly stating that it will not ‘intervene’ in the development of competition, the ACCC will remove regulatory risk from market participants and will allow competition to develop.