Review of Policies and Procedures relating to the Identification of Listed NBN Points of Interconnect

An ACCC Report required under section 151DC of the *Competition and Consumer Act*

June 2013

Table of Contents

List of abbreviations and acronyms

AAR	**Access Aggregation Region** – The area served by a Point of Interconnect (POI) located in an Aggregation Node (AN) and connected via Transit Fibre to regional Fibre Access Node (FAN) sites. The backhaul from the regional FAN to the AN is termed Transit Backhaul.
AN	**Aggregation Node -** A facility that provides a Point of Interconnect (POI) to Retail Service Provider's (RSPs) / Wholesale Service Providers (WSPs) for an Access Aggregation Region (AAR), comprising a number of regional Fibre Access Node (FAN) sites. Note that an AN will also have a co-located FAN site for its local area.
CSA	**Connectivity Serving Area -** A logical collection of end user Premises defined by NBN Co. Each CSA has approximately the same number of End-User Premises.
EAS	**Ethernet Aggregation Switch -** An Ethernet switch that aggregates end-user traffic coming from Optical Line Terminals (OLTs) for high bit-rate transmission and logical separation to each Retail Service Provider (RSP) / Wholesale Service Provider (WSP).
EFS	**Ethernet Fanout Switch** - An Ethernet switch that provides Point of Interconnect (POI) for Retail Service Providers (RSPs) / Wholesale Service Providers (WSPs) to deliver telecommunication services to end-users on NBN Co's network.
ESA	**Exchange service area -** the area of CAN copper wire served by one Local telephone exchange.
FAN	**Fibre Access Node -** A facility that houses the active equipment providing services to a Fibre Serving Area (FSA). Note that urban Fibre Access Nodes (FANs) will also provide a Point of Interconnect (POI) to Access Seekers.
FDA	**Fibre distribution area -** the area served via a single fibre distribution hub (FDH).
FDH	**Fibre distribution hub -** a facility that houses the optical splitters between a single distribution fibre from the fibre access node and multiple local fibres to end-user premises
FSA	**Fibre service area -** the area served by a fibre access node

	(FAN), which will be a cluster of fibre distribution areas (FDAs).
GNAF	**Geocoded National Address File -** The authoritative address index for Australia, produced by PSMA Australia Limited.
GPON	**Gigabit Capable Fibre Optical Network -** A point to multi-point fibre to the premises network architecture that uses combination of electronics network and passive optical splitters to deliver speeds up to 1,000mbps to end users. The GPON active layer technology uses electronics that are designed to be compatible with a fibre that is subsequently split into multiple downstream fibres.
NBN	**National Broadband Network -** The nation-wide broadband network that will be deployed by NBN Co and third parties engaged on behalf of NBN Co.
OLT	**Optical Line Terminal** - The equipment to provide the Gigabit-capable Passive Optical Network (GPON) signals to each of the Fibre Distribution Areas (FDAs).
OTP	**Optical transport Platform -** The equipment providing data transport between Fibre Access Node (FAN) sites. It is also referred to as 'transmission' and 'transit backhaul – active equipment'.
POI	**Point of Interconnect -** The connection point that allows retail service providers (RSPs) and wholesale service providers (WSPs) to connect to NBN Co access capability.
POP	**Point of presence** – point on an access seeker's network that is closest to a NBN Co point of interconnect.
RBBP	**Regional backbone blackspots program –** An Australian Government initiative involving investment of up to $250 million to address backhaul blackspots in regional Australia as part of the National Broadband Network.
RSP	**Retail service provider -** The retail network service providers and application/content service providers are those that provide services to end users via the NBN and have a direct customer relationship with the end users. Wholesale service providers do not have this relationship.
TF	**Transit Fibre -** Connection between Points of Interconnect (POIs) where the Retail Service Providers (RSPs) connect to the NBN, and the regional based Fibre Access Node (FANs). Transit

	fibre can also provide connectivity for the metro FANs to Points of Interconnect (POIs) if required.
UNWP	**Uniform National Wholesale Price - Uniform National Wholesale Price –** The Australian Government's objective of charging access seekers uniformly for services across its network for all technologies and for the basic service offering.
WSP	**Wholesale service Provider -** A provider of wholesale services to Retail Service Provider (RSPs).

Executive summary

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1 Introduction

On 5 November 2012 the Australian Competition and Consumer Commission (ACCC) published a list (the List in Force) of points of interconnection (POIs) to the National Broadband Network (NBN) as required under section 151DB of the *Competition and Consumer Act 2010* (CCA). This list contains the location of 121 POIs where retail service providers can connect with the NBN network. These locations were identified following a comprehensive consultation process undertaken in 2010 and 2011.

Statutory review of policies and procedures relating to the identification of the Listed POIs

Subsection 151DC(1) of the CCA requires the ACCC to conduct a review of the policies and procedures relating to the identification of listed points of interconnection (Listed POIs) to the NBN before 30 June 2013 (see Box 1).[1] The review must consider any requests made by the ACCC to National Broadband Network Corporation (NBN Co) to agree to the variation of List in Force, any responses to such requests and the extent to which facilities are interconnected at Listed POIs.

Box 1: Section 151DC of the Competition and Consumer Act

151DC of the CCA: Review of policies and procedures relating to the identification of listed points of interconnection

(1) Before 30 June 2013, the Commission must cause to be conducted a review of the policies and procedures relating to the identification of listed points of interconnection.

(2) Without limiting subsection (1), a review under that subsection must consider:
  (a) the Commission's requests to NBN corporations to agree to the variation of the list in force under subsection 151DB(1); and
  (b) the responses of NBN corporations to such requests; and
  (c) the extent to which facilities are interconnected at listed points of interconnection.

(3) A review under subsection (1) must make provision for public consultation.

(4) The Commission must cause to be prepared a report of a review under subsection (1).

(5) The Commission must give the report to the Minister.

(6) The Minister must cause copies of the report to be tabled in each House of the Parliament within 15 sitting days of that House after receiving the report.

In accordance with subsection 151DC (3), the ACCC carried out a public consultation inviting industry participants, other stakeholders and the public more generally to

[1] Section 151DC (1) of the *Competition and Consumer Act 2010*

make submissions.[2] The ACCC must prepare a report of the review and provide it to the Minister.[3]

This report sets out the responses from stakeholders on the matters covered by the review and the ACCC's observations of those matters. These are discussed in Part A of Chapter 4 of the Report.

Additional Issues

In addition to the specific statutory matters that must be addressed as part of this review, the ACCC also invited submitters to provide comments on the overall impacts of the approach taken to identify the Listed POIs. Submitters raised a number of issues in response to this question, including the adequacy of the criteria adopted by the ACCC and NBN in identifying competitive transmission routes on which POIs are to be located.

Some submitters also raised more general issues in relation to the NBN POI structure, which, while outside the scope of this review, are central to the effectiveness of the approach that has been taken to setting the number and location of POIs. These issues are discussed in Part B of Chapter 4 of the Report.

These matters largely arise in response to the government's decision to direct the NBN to build a semi-distributed POI structure and as such, are outside of the ACCC's ability to change. However, the ACCC notes that given the limited rollout of the NBN at the time of this review, it is important to highlight these issues for further consideration or review by government as the rollout proceeds.

Structure of the report

Chapter 2 briefly describes the policy setting from which the NBN evolved and an overview of the ACCC's involvement in advising the government on the approach to identifying the preferred POI locations for the NBN.

Chapter 3 details the policies and procedures leading to the identification of POIs to the NBN, including a brief overview of the POI location options that had been proposed by NBN Co. It discusses the relationship between the government's objective of Uniform National Wholesale Pricing (UNWP) and the semi-distributed POI option.

Chapter 4 is divided into two Parts. Part A discusses the outcomes of the public consultation process on the policies and procedures relating to the identification of listed POIs to the NBN required under section 151DC of the CCA.

Part B examines the additional issues raised in submissions regarding the overall impacts of the identification of POIs to the NBN on the Australian community as far as assessable in light of the early rollout of the NBN

[2] Section 151DC (3) of the *Competition and Consumer Act 2010*. For the ACCC's public consultation.
[3] Section 151DC (4) and (5) of the *Competition and Consumer Act 2010.*

Chapter 5 provides a summary of the findings of the ACCC's review of the policies and procedures relating to the identification of the Listed POIs.

1.1 Framework for the National Broadband Network (NBN)

This section describes the initial stages of the formulation of the current NBN policy and an overview of the ACCC's involvement in advising the government on the approach to identifying the POI locations for the NBN.

The National Broadband Network

On 7 April 2009, the government announced the establishment of the National Broadband Corporation (NBN Co) that would, among other things, be a national, wholesale only, open access broadband network that would be rolled out, simultaneously in metropolitan, regional and rural areas.

Following its announcement the government commissioned an implementation study (NBN Implementation Study) in order to '...determine operating arrangements, detailed network design, methods to attract investment and provide procurement opportunities for business.'[4] The study was submitted to the government in March 2010 and 'confirm[ed] that high-speed broadband for all Australians is achievable, and [could] be built on a financially viable basis with affordable prices for consumers'.[5]

In September 2010, the government committed to ensuring uniform national wholesale prices (UNWP) with the aim that wholesale broadband prices would be the same for households and businesses regardless of where they are located in Australia.[6]

The definition of UNWP as articulated by NBN Co in its December 2010 Corporate Plan '...specifically does not cover any backhaul from the Point of Interconnect (POI), any inter-capital transmission or international capacity required, as the price of these facilities is not within the scope of NBN Co's network'.[7]

NBN points of interconnection

A POI in the NBN architecture is the inter-network location where end user traffic is handed over from the NBN onto a retail service provider's own network or onto a transmission provider's network for transport to the retail service provider's point of presence. If end user traffic is handed over to a transmission provider, the retail service provider is required to obtain the transmission capacity necessary to carry this traffic to their point of presence, usually located in a capital city.

POIs define the geographic boundaries of NBN Co's network and their locations determine the extent to which backhaul is required by each RSP to carry traffic

[4] From 'Parliamentary Joint Committee on NBN, Chp 1, see http://www.aph.gov.au/Parliamentary_Business/Committees/House_of_Representatives_Committees?url=jcnbn/./report/chapter1.htm#anc2.
[5] See, media release 6 May 2010.
[6] DBCDE, 'Broadband'.
[7] NBN Co, Corporate Plan 2011-2013, p110, footnote 27.

between the POIs they intend to interconnect to and their point of presence. In order to achieve aggregation and distribution of traffic, the NBN POI uses switching equipment (an Ethernet fan out/aggregation switch) to aggregate/distribute traffic from/to the premises connected to the NBN.

Of the 121 POIs within the NBN Co network, 111 are located in Telstra exchanges. The remaining 10 NBN POIs are located in NBN Co constructed, owned or leased facilities (due to insufficient space or power being available at the local Telstra exchange).

1.2 The ACCC's advice to the Government

In October 2010 the Government requested that the ACCC and NBN Co undertake a process, including public consultation, to seek agreement on the number and location of initial POIs for the NBN that would best meet the long-term interests of end-users (LTIE). The Government requested that the advice address:

- short and long-term competition impacts of the agreed position of NBN POIs on the backhaul and retail markets
- the current and prospective state of competition in the backhaul market including the extent of any asset stranding
- implications for potential future Layer 1 unbundling, and
- stakeholder responses to the consultation process.

The joint process was intended to inform both the ACCC and NBN Co of industry issues which could arise as a result of the approach taken to identify the location of NBN's initial POIs. It was also intended to inform the advice to government as to the most appropriate number and location of POIs that would be in the LTIE.

The ACCC Discussion Paper

In October 2010, the ACCC released a discussion paper[8], which examined the options for identifying the number and location of initial POIs to the NBN (the NBN POI Discussion Paper). The ACCC stated it would have regard to the objectives set out in subsection 152AB(2) of the CCA (see Box 2) when considering what option for identifying POI locations would be in the LTIE.

[8] ACCC, National Broadband Points of interconnect Discussion paper, October 2010.

Box 2: The long term interests of end users (LTIE) criteria test

The ACCC's LTIE criteria under section 151AB(2) of the CCA include:

- Promoting competition in markets for listed services
- Achieving any-to-any connectivity in relation to carriage services that involve communication between end-users
- Encouraging the economically efficient use of, and economically efficient investment in, infrastructure by which telecommunications services are supplied and any other infrastructure by which telecommunications services are, or are likely to become, capable of being supplied.

Competition is the process of rivalry between firms, where each market participant is constrained in its price and output decisions by the activity of other market participants. The benefits of competition to end-users are lower prices, better quality and a better range of services over time.

Any-to-any connectivity, which encompasses the objective of end-users on different networks being able to communicate with each other, is central to the NBN.

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. It also refers to the distribution of production costs amongst firms within an industry to minimise industry-wide costs.
- 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, such that the welfare of society is maximised over time.

The LTIE objectives are interrelated. In many cases, the LTIE may be promoted through the achievement of two or all three of these matters simultaneously. In other cases, there may be some trade-off between the different aspects and the ACCC will need to weigh up the different effects. In this regard, the ACCC interprets 'long-term' to mean a balancing of the flow of costs and benefits to end-users over time in relation to the criteria. Thus, it may be in the LTIE to receive a benefit for even a short period of time if its effect is not outweighed by any longer term cost.

Further detail of how the ACCC considers the LTIE is at Appendix A.

NBN Co Position paper

NBN Co prepared a Position Paper, *NBN Co Consultation Paper: Proposed NBN Co Points of Interconnect,* as part of this consultation process.[9] NBN identified four options for the locations of POIs which are listed in table 1 below. The inclusion of the high consolidated approach (NBN Co's option 3) by NBN Co was controversial at the time and created a lot of discussion within the industry (particularly as this option would likely strand or overbuild transmission infrastructure assets in what was a fairly well developed and increasingly competitive market).

Table 1: NBN Co proposed POI location options

Option	Number and location	Rationale
Option 1: Distributed (No consolidation)	718 - 950 POIs [10]	POIs are fully distributed and located at every FSA
Option 2: Semi-distributed (Low consolidation)	Indeterminate, depending on definition of contestable transmission	POIs are partially distributed, at the edge of where contested transmission currently exists
Option 3: Consolidated (High consolidation)	14 Aggregation POIs (4 x Sydney, 4 x Melbourne, 2 x Brisbane, 2 x Adelaide, 2 x Perth)	Traffic is carried to 'Aggregation POI' locations. POIs are centralised at five capital cities
Option 4: Composite	14 Aggregation POIs + up to ~195 CSAs	POIs available at five mainland state capital city locations, plus additional interconnection at up to ~195 Connectivity Serving Areas (CSAs)

Source: NBN Co, *Public Position Paper – Proposed NBN Co Points of Interconnect*, October 2010

[9] NBN Co, Public Position Paper – Proposed NBN Co Points of Interconnect, October 2010.

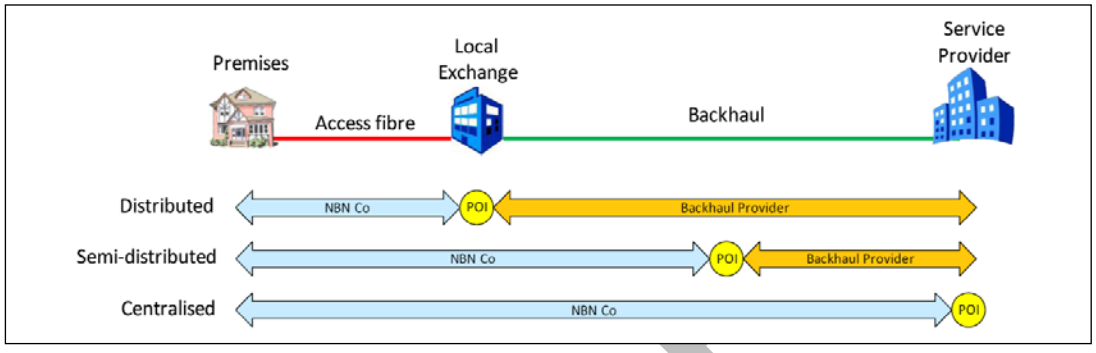
[10] NBN Co indicated that the 718 FSAs in its initial plan may change as its detailed network planning progresses. NBN Co currently predicts that approximately 950 FSAs (?) may be provided in its final design.

The ACCC's Advice to Government

After considering submissions from stakeholders to the NBN POI Discussion Paper, the ACCC provided its Advice to Government in November 2010.[11]

The ACCC's Advice considered three options, which essentially aligned to the options identified by NBN Co in its Position Paper. The options were: the 'fully distributed' option, the 'semi-distributed' option, and the 'centralised and composite' option. Figure 1 below illustrates these three options.

Figure 1 – NBN Co's depiction of the approaches to POI location



Source: NBN Co Position Paper 2010.

In the main, submissions from the operators of transmission infrastructure supported an approach that resulted in semi-distributed POIs (option 2); Telstra favoured fully distributed POIs (option 1) which resembled Telstra's existing network infrastructure; and a number of smaller internet service providers and some content service providers favoured centralised POIs (option 3).

The ACCC considered each option against the LTIE criteria and the matters set out in the government's request for advice. Its assessment of each of the options may be summarised as follows.

Option 1- fully distributed POIs: this option would result in the largest number of POIs estimated to be between 718-950. The ACCC acknowledged that this approach would likely preserve existing competition in transmission markets and theoretically provide the maximum opportunity for future competition to develop. It would also promote the efficient use of and investment in transmission infrastructure on competitive routes. However, given the likelihood of Telstra remaining in control of natural monopoly transmission routes (that is, regional routes), it considered that this could constrain the development of retail and wholesale competition in areas where Telstra was the sole provider of transmission.

Option 2 - semi-distributed POIs: the number of POIs in this option could vary considerably depending on the test for identifying the POI locations. Competition in retail and wholesale markets would likely be promoted under this option,

[11] ACCC, Advice to Government - National Broadband Network Points of Interconnect, November 2010.

particularly in regional areas that are served by natural monopoly routes. This approach would also significantly reduce the risk of asset stranding and promote the LTIE.

Option 3 - centralised POIs: under this option, there would only be a small number of POIs (estimated to be 14). The ACCC was concerned that the implementation of either a centralised and composite approach (as articulated by NBN Co) would represent a significant degree of 'mission creep' in relation to NBN Co's stated objective to "occupy as small a footprint as possible in the overall value chain".[12] The extension of NBN Co's network beyond the access network to also include a transmission network would represent a considerable departure from regulatory orthodoxy – namely that regulatory intervention should only focus upon markets where competition is not effective. The ACCC considered that this option would have a detrimental effect on competition in transmission markets as it would result in the removal of existing competition and the foreclosure of opportunities for future competition in the relevant markets. It was also considered that this option would reduce the effectiveness of competition between retailers, as the scope for differentiation on the basis of innovation and price would be reduced by the increased reliance upon NBN Co's services resulting in a reduction in dynamic competition. For example, retail service providers would be limited in the choices they are able to make regarding how and where they will deliver services to their customers.

The ACCC's recommended option

Having considered each of the options, the ACCC concluded that the semi-distributed approach to identifying the initial POIs is likely to best promote the efficient use of and investment in transmission infrastructure and to promote retail and wholesale competition across all geographic markets. [13]

The centralised POI approach advocated by NBN Co was considered by the ACCC to be the least likely of all of the options to promote efficient use and investment in infrastructure by eliminating existing competition and thereby reducing the efficient use of, or investment in transmission infrastructure. For the same reason, it was also thought that the centralised approach would detrimentally affect retail and wholesale competition.

The ACCC also found that the semi-distributed approach would likely reduce the extent of asset stranding.[14] For these reasons, the ACCC therefore recommended that the semi-distributed approach would be in the LTIE.

The ACCC noted that the government's UNWP objective could be achieved independently of decisions regarding NBN Co's network design.[15] The ACCC advised that the objective could be achieved either through the imposition of price caps on

[12] NBN Co, 'Consultation Paper: Proposed Wholesale Fibre Bitstream Products', at http://www.nbnco.com.au/assets/documents/nbn001-concept-paper-final-dec-09.pdf
[13] Ibid, p1.
[14] Ibid, p1.
[15] ACCC, Advice to Government, chapter 6, November 2010, pp.65-77.

monopoly routes or mechanisms such as direct government subsidisation. The subsidisation model would effectively adjust the prices charged by NBN for its product to the end user upwards or downwards, depending on the cost of transmission to that POI. The cost charged would be based on the national average cost of transmission to a POI.

The Competition Criteria

The ACCC recommended that the semi-distributed approach should be implemented by locating POIs where competitive transmission services were available or where there was evidence regarding the likelihood of competition. The ACCC took the view that interconnection to NBN's network should be permitted at locations which preserved existing competition in the provision of transmission services and where the potential for future competition is maximised.

The objective of minimising the risk of existing assets being 'stranded' was considered by the ACCC to be important for competition and therefore the LTIE. The ACCC also recognised that to promote a competitive retail market, retail service providers (RSPs) needed to be able to obtain competitive backhaul or aggregation services in order to be able to offer differentiated retail services directly to customers.

Wholesale providers had indicated their intention to offer aggregation services, which would allow content to be collected at multiple POIs and transported on an aggregated basis, which would be likely to be more economical for smaller RSPs.

The ACCC considered these factors to be persuasive when deciding where POIs should be located.

To support this approach, the ACCC developed criteria to determine where POIs should be located in order to achieve these objectives ('the Competition Criteria'). The Competition Criteria seek to provide a balance between the boundary of the NBN access network and the maintenance of existing transmission infrastructure.

The competition criteria as set out in the ACCC's Advice to Government are shown in Box 3.

Box 3: The ACCC Competition Criteria

The ACCC Competition Criteria for the Identification of POIs to the NBN

An initial POI best meets the long-term interest of end users when located where:

a) it is technically and operationally feasible to allow interconnection (usually at an Ethernet aggregation switch);

b) there are at least two competitors with optical fibres within a nominated distance from that location which:

   (i) connect that site to an optical fibre network which is connected to a capital city; and

   (ii) deliver wholesale transmission services which are suitable for use by service providers who wish to connect to the NBN at that location; and

c) there is other evidence that the particular route is, or is likely to become, effectively competitive.[16]

The transmission market

The transmission market has been largely dominated by the incumbent, Telstra, with two second tier transmission providers Optus and Nextgen. However, over the last decade strong competition has emerged in the transmission market. This is evident in the expansion of the networks operated by Optus, Nextgen, AAPT and Pipe Networks[17] and their ability to provide competing transmission and backhaul services in a number of areas across Australia.

This has been enhanced by smaller and more localised networks providing transmission services on a more limited scale including those provided by Primus, Amcom and various utility providers such as Aurora and Basslink.

Fibre providers are located in all CBDs and there are substantial amounts of competitive fibre present in metropolitan areas. However, competition in transmission markets in regional areas is less consistent but it has improved considerably as further infrastructure investments have taken place. Competition in rural and remote areas remains low, effectively creating monopoly routes.

[16] ACCC, *ACCC Advice to Government: National Broadband Network Points of Interconnect*, Public version, November 2010, p.4.

[17] All were considered to have optical fibre networks which connected to a capital city and had or would likely have (by the time the POIs are operational) suitable backhaul products.

The ACCC relied upon data about the location of transmission infrastructure assets to identify those transmission routes at which there was already competition or at which it was likely competition would develop.[18]

The ACCC sought stakeholder comments on the criteria that should be applied to identify where there is competitive backhaul. Submissions generally identified a test of either two or three competing backhaul providers being close to a particular POI. The ACCC considered that the existence of two backhaul suppliers should be used for a preliminary assessment of whether competitive transmission services are likely to be available, but should not be wholly determinative.

In analysing the level of competition on transmission routes relevant to the proposed locations of the POIs, the ACCC was aware that there would be at least three competing transmission providers at a large majority of the proposed POIs. At those where there were only two providers, prospects for new entry by a third player were considered to be high as the initial proposed POI locations were at locations in close vicinity to the major transmission hubs of potential alternative transmission providers to Telstra and Optus. In a couple of instances, primarily in regional or remote areas, the POI was serviced by only one provider (for example, Geraldton and Darwin). However, at those locations, the proposed POI was on the route of the Regional Backbone Blackspots Program (RBBP)[19] which would be operational in the near future (that is, there was evidence that the particular route is, or is likely to become, effectively competitive).

In addition, the transmission services required from the NBN POIs are high capacity services and likely to fall under the regulated domestic transmission capacity service (DTCS). In this way the Competition Criteria, combined with the declared DTCS, would likely mean that at each POI location there would either be effective competition through the presence of a number of transmission providers or, where there were only two providers (and competition was less effective) access seekers would have access to regulated prices through the declared DTCS.

1.3 The Government's NBN Policy

The Government's Statement of Expectations

The government issued its *Statement of Expectations* for NBN Co in December 2010.[20] The Statement of Expectations outlined the Government's NBN vision and objectives, including its expectations for the structure of the NBN. In the Statement of Expectations, the government adopted the ACCC's advice regarding the semi-distributed approach to POIs:

[18] The Infrastructure RKR requires specified carriers to report on the locations of their core network and customer access network infrastructure. More information on the Infrastructure RKR can be found on the ACCC website.

[19] The RBBP is a government initiative involving investment of up to $250 million to address backhaul blackspots in regional Australia as part of the National Broadband Network.

[20] The Australian Government, Statement of Expectations for NBN Co, 17 December 2010.

> *The Government has determined that a semi-distributed POI structure which extends the NBN Co network to meet with, but not overbuild competitive backhaul routes is the preferred outcome…The Government expects that NBN Co will act to ensure that POIs are located in accordance with the 'competition criteria' formulated by the ACCC. It expects NBN Co to provision its physical infrastructure, including POIs and fibre exchanges, to accommodate reasonable expectations for retail competitors' equipment, in anticipation of multiple retail competitors. While NBN Co is expected to consult closely with the ACCC in relation to the POIs, the specific location of the POIs will be a matter for NBN Co.*(Statement of Expectations, p.7)

Telecommunications Legislation Amendment (National Broadband Network Measures – Access Arrangements) Bill 2011

In April 2011, the *Telecommunications Legislation Amendment (National Broadband Network Measures – Access Arrangements) Bill 2011* introduced legislative amendments to the CCA to, authorise certain conduct by the NBN Co relating to POIs that were identified in a written list. Section 151DB requires the ACCC to prepare a written list of POIs and publish a list in force on its website. Under subsection 151DB(2), a POI specified in a 'list in force' is a Listed POI for the purposes of Division 16 of the CCA, including the authorised conduct provisions under section 151DA(2).

Division 16 of Part XIB of the CCA authorises specific conduct by NBN Co (for the purposes of subsection 51(1) of the CCA) relating to, among other things, POIs where that conduct is reasonably necessary to achieve uniform national pricing of eligible services supplied by NBN Co. In particular, section 151DA(1) provides that where NBN Co refuses to permit interconnection at a location that is not a Listed POI and the refusal is reasonably necessary to achieve uniform national pricing of eligible services supplied by NBN Co to service providers and utilities, the refusal is authorised conduct for the purposes of the CCA.

The List of POIs was published on 5 November 2012 following extensive consultation with NBN Co and industry stakeholders. It identifies the name and location of 121 POIs. Until the Minister makes a declaration that the NBN should be treated as built and fully operational, the ACCC must not vary the list of POIs, except with the agreement of NBN Co.[21]

The policies and procedures that led to the List of POIs are set out in the following chapter.

Section 151DC was inserted into Division 16 to require the ACCC to conduct a review before 30 June 2013, of the policies and procedures for the identification of POIs. It was intended that such a review would ensure that any decisions by NBN Co to reject a request for a POI would be transparent.[22]

[21] Section 151DB(2A), (2B) of the CCA.

[22] See Speech of Senator Ludlum, *Telecommunications Legislation Amendment (National Broadband Network Measures – Access Arrangements) Bill 2011*, 24 March 2011.

2 Policies and Procedures

This chapter gives an overview of the policies and procedures relating to the identification of POIs to the NBN.

2.1 The ACCC's Confirmation Process of 2010-2011

2.1.1 The development of the Network Planning Rules

Following the development of the Competition Criteria, it was necessary for NBN Co to develop a practical set of network planning rules that would allow the location of POIs to be identified and which were consistent with the criteria that had been specified.

For the purposes of identifying the locations of initial POIs, it was assumed that Telstra exchanges would be used to provide the facilities for the POI and that NBN Co would be able to obtain access to those exchanges on the conditions provided for in the Financial Heads of Agreement (and at the time being detailed in the Definitive Agreements). If a Telstra exchange proved to be unsuitable for the location of a POI, for example because there was insufficient floor space, power or air-conditioning, then NBN Co would seek to relocate the POI as close as practicable to the nearest suitable Telstra exchange in an adjacent exchange service area (ESA).

The ACCC provided NBN Co with aggregated data showing, for each Telstra ESA, the number of competitive backhaul transmission providers with an optical fibre either connecting with, or in very close proximity to (within 150m), a Telstra exchange or within the relevant Telstra ESA.

The ACCC provided NBN Co with further guidance in relation to a number of specific aspects of applying the Competition Criteria, including:

- the appropriate approach to geographic diversity
- the treatment of backhaul NBN Co will need to acquire for the purposes of its wireless and satellite network elements and to fulfil its interception related obligations, and
- the treatment of services that may be provided using network constructed under the Government's RBBP.

The ACCC advised NBN Co that the 'technically and operationally feasible' element of the Competition Criteria was not intended to be treated as a separate, threshold consideration, but rather an element to be appropriately balanced with the other elements and that it could incorporate cost and efficiency considerations. For cost and efficiency reasons, NBN Co expected only to deploy Ethernet Aggregation and Fanout switches at the nominated POIs.

In addition, NBN Co was investigating the technical and operational issues of locating the POIs for wireless and satellite based services at the same location as the fibre

based services (i.e. all Geocoded National Address Files (GNAFs) in the same Access Aggregation Region (AAR) would use a common POI). The preliminary view was that this may have technical impacts (e.g. latency) on the wireless and satellite based services.

In relation to element (c) of the Competition Criteria (there is other evidence that the particular route is, or is likely to become, effectively competitive), the ACCC advised that a 'soft cap' of approximately 80,000 GNAFs[23] could be applied for metro AARs and approximately 100,000 GNAFs for outer metro/ regional AARs.

With the ACCC's guidance, NBN Co formulated more detailed planning and dimensioning rules and applied those rules to identify the proposed location of the NBN's initial POIs (see Box 4). The planning rules were provided for three 'bands' of fibre serving areas (FSAs) identified by the ACCC based on their location. These bands were:

- Metro: FSAs in metropolitan areas, including CBDs, in mainland state capital cities (excludes Darwin, Hobart and Canberra) that are limited by the size and/or access to suitable facilities for the active equipment.
- Outer Metro: FSAs in the metropolitan areas in mainland state capital cities (excluding Darwin, Hobart and Canberra) that are limited by the optical fibre budget (i.e. maximum fibre distance from the location housing the active equipment).
- Regional: FSAs in all other areas (i.e. not Metro or Outer Metro)

[23] The Geocoded National Address File or GNAF is an index which lists all valid physical addresses in Australia. Each address is linked to their geocode which is the specific latitude and longitude of the address.

Box 4: NBN Co's planning rules[24]

NBN Co Network planning Rules

The Metro POI planning rules

(i) Multiple FSAs (two or more) are aggregated along a contiguous boundary to provide an AAR of approximately 80,000 GNAFs.

(ii) The FSAs within the AAR are chosen so that the POI is in the maximally served Telstra exchange, with a minimum of 2 backhaul transmission operators, and the remaining contiguous FSAs (i.e. non-POI FSAs) are minimally served.

The Regional and Outer Metro POI planning rules

(iii) Multiple FSAs (two or more) are aggregated so that the POI is in the maximally served Telstra exchange, with a minimum of 2 backhaul transmission operators, is closer to the mainland state capital city along each of the transmission paths, and the remaining contiguous FSAs (i.e. non-POI FSAs) are minimally served.

(iv) A 'soft cap' of approximately 100,000 GNAFs should be applied to regional and outer-metro AARs.

Other relevant inputs to the selection of the location of the POI

(v) At least one of the backhaul transmission operators must provide a geographically protected transmission path to the capital of the mainland state in which the POI is located (i.e. to Sydney, Melbourne, Brisbane, Adelaide or Perth). NBN Co has assumed that Telstra will satisfy this criteria in each case.

(vi) POIs are not in pairs (FSAs are not dual homed).

(vii) FSAs should generally go to a POI in the same state (e.g. Broken Hill goes to Dubbo).

(viii) Each AAR must be a single contiguous region (however the FSAs within an AAR are not necessarily contiguous as there will be "gaps" covered by wireless and satellite).

(ix) Fibre installed under the RBBP is included.

(x) NBN Co's transit network should not be considered when assessing the number of operators.

[24] NBN Co, *Network Planning Rules*, December 2010.

The ACCC undertook a comprehensive consultation process to determine the final location of the POIs. As part of this process, the ACCC worked closely with NBN to make sure that the identification of possible POI locations satisfied the Competition Criteria.

The December 2010 and February 2011 lists

On 20 December 2010, the ACCC commenced a public confirmation process in respect of the 120 POIs which were identified by NBN Co as a result of applying the Competition Criteria and the Planning Rules.[25] The confirmation process sought feedback from stakeholders about the proposed location of POIs identified by NBN Co. Stakeholders were asked to consider whether the proposed locations met the Competition Criteria. The ACCC published the Planning Rules and the preliminary list of 120 POIs on its website.[26] The list of 120 initial POIs is available at Appendix B.

The ACCC received 8 submissions in response to this confirmation process and published them on the ACCC website.[27] As a whole, these recommended the:

- relocation of 7 POIs
- addition of 20 POIs, and
- consolidation of 9 POIs into 4 (generally where proposed POIs were close together).

NBN Co considered the recommendations and in consultation with the ACCC, NBN Co proposed to relocate five POIs, add two POIs and consolidate one POI. Other proposed additional or relocated POIs did not meet the Planning Rules. Three proposed relocations were considered redundant as they were covered by the additional POIs. The balance of the consolidated POIs proposed in submissions would have resulted in POIs that do not meet the Competition Criteria or the Planning Rules.

The ACCC and NBN Co were satisfied that the revised list of initial POIs was consistent with the Competition Criteria and the Planning Rules. The ACCC noted that the location of actual POI facilities (e.g. in an exchange building) were still subject to technical feasibility issues such as physical space and the availability of power and cooling.

In February 2011 the ACCC published a revised list of 121 POIs (the February 2011 list) along with an explanation of the changes made from the December 2010 list. The ACCC also noted that NBN Co would be constructing its own facilities in some Telstra exchange service areas as co-location of NBN equipment in some Telstra exchange buildings would not be technically feasible. NBN was required to advise

[25] This public consultation process was concurrent with the passage of the Telecommunications Legislation Amendment (National Broadband Network Measures—Access Arrangements) Bill 2010 described in chapter 2.
[26] See the ACCC website.
[27] See the ACCC website.

the ACCC as soon as possible when an alternative POI site had been identified and to demonstrate how the Competition Criteria and Planning Rules were met in respect of each alternative POI.

The February 2011 List of POIs is attached at Appendix C.

The May 2011 List

In the period between the publication of the February 2011 list and a further list published in May 2011, NBN Co and Telstra continued to assess the suitability of the proposed POI sites in Telstra exchanges for the location of NBN Co equipment.

NBN Co identified 10 locations where the proposed Telstra exchange location was unsuitable and alternative nearby exchanges did not meet either the Competition Criteria or the Planning Rules. The proposed Telstra locations commonly did not have enough space or water or power requirements that would have been necessary to accommodate NBN POI equipment. However, the alternative locations did not meet the Competition Criteria either because there were insufficient fibre providers with backhaul services or they did not meet NBN Co's technical requirements.

On 11 March 2011, NBN Co provided the ACCC with a list of potential sites NBN Co considered would be suitable for the location of POIs to be built by NBN Co. The sites were a mix of freehold development sites that NBN Co could purchase itself and leasehold sites that NBN Co could acquire on long term leases. NBN Co and the ACCC assessed each of the proposed sites against the Competition Criteria. Negotiations over the purchase and/or lease of sites continued over the course of 2011-12.

The NBN was unable to secure all of the proposed sites, and in late 2011, NBN Co advised the ACCC of changes to some of the proposed locations of the NBN built POIs. In November 2011 NBN Co advised that sites for all 10 NBN Co built POIs had been secured. All the sites that had been identified satisfied the Competition Criteria.

The ACCC identified the POIs that had changed from the February 2011 list and published an explanation of the changes on its website. In May 2011, the ACCC published a further revised list of POIs to the NBN (the May 2011 list of POIs), which included changes that arose as a result of technical necessity.

The May 2011 List of POIs is attached at Appendix D.

Telstra – NBN Co engagement - Definitive Agreements between Telstra and NBN Co

NBN Co advised the ACCC in May 2011 that it had commenced a series of negotiations with Telstra in relation to the contractual arrangements that would allow it to use Telstra's infrastructure for the rollout of the network (the Definitive

Agreements[28]). These negotiations included the use of 111 Telstra exchanges that would be used as NBN POIs.

Since NBN Co was still consulting with Telstra as to the suitability of some Telstra exchanges, the ACCC refrained from publishing the List in Force until such time as those negotiations had been finalised. In July 2012 NBN Co advised the ACCC that it had finalised the location of POIs to be housed in Telstra exchanges and that there had been some minor additional changes from the May 2011 list of POIs (see section 3.2 below).

Internal ACCC Guidance Note

In 2011, the ACCC also developed *Internal Guidelines and Procedures: POIs to the NBN*. These guidelines and procedures have been prepared for staff in relation to the preparation of the list of POIs and for the identification of locations of POIs from time to time.[29] The guidelines set out the steps for internal analysis and consultation with NBN Co in order to determine whether a proposed POI location satisfied the Competition Criteria.

2.2 The s151DB List in Force

Consultation Paper August 2012

The ACCC prepared a final list of POIs in August 2012 and published a consultation paper seeking stakeholders' comments on the final form of the List in Force.[30] Three submissions were received from stakeholders and the ACCC took their comments into account in determining the List in Force and the form of that List.

Form of the list

In the consultation paper, the ACCC proposed to publish a public version of the Listed POIs with the following information:

- State
- POI name
- POI location (general area)
- POI type (metro/regional/outer metro)

The ACCC also proposed to maintain a confidential version of the Listed POIs, which in addition to the information to be included on the public version of the list, would also contain the physical address of each of the POIs. The ACCC accepted concerns raised by NBN Co and others about the security of infrastructure assets and decided

[28] The Definitive Agreements include, amongst other things, the use of Telstra infrastructure in the rollout of the NBN and came into force in March 2012. See: joint media release of Ministers Wong and Conroy, 7 March 2012.
[29] ACCC Internal Guidelines and Procedures: Points of Interconnection to the NBN.
[30] See the ACCC website.

not to publish this information. Access seekers would be able to obtain the address details directly from NBN subject to certain conditions.

Minor changes from the May 2011 List

The ACCC identified where there had been minor changes to the location of some POIs since the May 2011 list had been published and noted that these revised POI locations met the Competition Criteria.

Table 2 below sets out the changes between the list published in May 2011 and the Listed POIs to be published.

Table 2: Changes from the May 2011 list

State	POI Name	POI Location	Type	Located in	Previous Location of POIs (in May 2011 list)
NSW	* Eastern Creek	Eastern Creek	Metro	Adjacent ESA	*Edensor Park
NSW	* Asquith	Hornsby	Metro	Same ESA	*Hornsby
NSW	Parramatta	Parramatta	Metro	Adjacent ESA	North Parramatta
QLD	* Aspley Depot	Aspley	Metro	Adjacent ESA	*Chermside
QLD	* Acacia Ridge	Acacia Ridge	Metro	Adjacent ESA	Salisbury
SA	*Greenfields	Green Fields	Metro	Adjacent ESA	*Gepps Cross
SA	*Lonsdale	Lonsdale	Metro	Adjacent ESA	*Reynella
VIC	*Nunawading	Nunawading	Metro	Adjacent ESA	*Burwood
WA	*Wangara	Wangara	Metro	Adjacent ESA	*Kingsley
WA	*Bentley	Bentley	Outer Metro	Non-adjacent ESA	*Maida Vale

*Indicates NBN Co built POI

Publication of the List in Force November 2012

On 5 November 2012 the ACCC published the List in Force pursuant to section 151DB of the CCA.[31]

The Final List of POIs is attached at Appendix E.

[31] Seethe ACCC website.

3 Discussion of submissions received in response to the Statutory Review

As noted in Chapter 1, section 151DC of the CCA requires that the ACCC undertake a public consultation process as part of its review of the policies and processes relating to the identification of the location of Listed POIs.

The ACCC published a consultation paper in February 2013[32] and invited comments on each of the matters specified in subsections 151DC (1) and (2):

- the policies and procedures relating to the identification of POIs
- the extent of interconnection at POIs, and
- variations to the List in Force.

The ACCC also invited stakeholders to provide comments on the impacts of the approach taken to identify the POI locations and the effectiveness of that process.

Public and confidential submissions were received from a variety of stakeholders (see table 3). Public submissions are published on the ACCC website.[33] Telstra, NBN Co, and Macquarie Telecom provided confidential submissions only.

Table 3: Submissions to the s151DC review

Stakeholder	Type
AAPT	Asset owner
Australian Public Networks (APN)	Satellite service provider
BorderNET	Satellite service provider
Exetel	RSP
Fastel	RSP
Harbour IT	RSP/ Satellite service provider
Ipstar	Wholesale Satellite service provider
Macquarie Telecom	RSP
M&S Consultants	RSP
NBN Co	Asset Owner (Access Provider)
Nextgen	Asset owner
Optus	Asset owner
Telstra	Asset owner

[32] ACCC, Review of Policies and Procedures Relating to the Identification of Listed NBN Points of Interconnect, February 2013.
[33] See the ACCC website.

Part A – Section 151 DC Statutory Review

3.1 Policies and procedures relating to the identification of POIs

Stakeholder views

The ACCC sought comments generally on the policies and procedures relating to the identification of Listed POIs and specifically on the Competition Criteria and Planning Rules. It is intended that both of these policies will continue to apply to the identification of POIs in the future. Specific comments from stakeholders are noted below. As noted above, Telstra's, NBN Co's, and Macquarie Telecom' s views were expressed in 'c-i-c' submissions.

In its submission, Optus states that it had '...no specific concerns with the processes and procedures adopted by the ACCC and NBN Co in identifying the Permanent POIs' and that it had '...no concerns with the application of these process and procedures'.[34] Optus remained supportive of the semi-distributed approach to POI locations which it considers is best likely to promote competition in retail and wholesale markets and therefore was consistent with the long term interests of end-users[35]. Optus noted that:

> ...the current approach of having 121 POI's will facilitate investment in efficient backhaul infrastructure by Retail Service Providers which will encourage the development of vibrant wholesale market competition above the NBN POIs and provide for some level of infrastructure based differentiation in the delivery of fixed line broadband services.[36]

AAPT submitted that '...for the most part, [it] is satisfied, and agrees in principle, with the policies and procedures relating to the identification of listed points of interconnection (Listed POIs) to the NBN and its application by the ACCC and NBN Co'.[37] However, AAPT did not agree with the location of *some* of the POIs and would have liked more transparency in how the Competition Criteria were applied. AAPT noted that it was:

> ...generally satisfied with the Listed POIs in force. AAPT is currently making investment decisions based on the Listed POIs and therefore seeks certainty that any subsequent changes will follow a stringent and transparent process.[38]

AAPT also suggested that further information should be provided to access seekers to better enable interconnection at listed POIs. In particular, AAPT proposed that the identity of at least two service providers at each POI should be made public along with the nature of the services they are willing to provide.

[34] Optus Submission, p.2
[35] Optus submission, p1.
[36] Optus submission, pp.1-2
[37] AAPT submission, p.2.
[38] AAPT submission, p.4.

AAPT added that it was not appropriate to include utility providers when applying the Competition Criteria since the requirements involved in providing wholesale telecommunication services was beyond the scope of those market players' abilities.

APN's submission did not take issue with the number of the 121 POIs proposed for terrestrial broadband, but with the requirement that satellite service customers had to be interconnected by their service providers at the POI closest to the end customer. APN considered that the ACCC conducted the POI consultation process in 2010 under a very compressed timetable and did not consider the potential implications of its POI advice on the delivery of satellite services.

Nextgen also supported the approach taken to identified POI locations but noted. that:

> The final list of POI's represents a reasonable compromise between cost considerations and technical requirements which also takes into account existing competitive infrastructure in transmission backhaul markets. All 121 POI's are within the scope of existing competitive fibre transmission backhaul services.[39]

Nextgen considered that the Competition Criteria is appropriate for establishing the number and location of POI's and noted that it would promote the efficient use of existing infrastructure, efficient investment in new infrastructure in backhaul markets and support competition and innovative service delivery.[40]

Nextgen also pointed out that, given the majority of POIs are located at Telstra exchanges, the ACCC should carefully monitor facilities access arrangements to ensure no unnecessary bottlenecks were created for access seekers. Nextgen added that if further POIs were necessary they should be established where existing backhaul is in place and that interconnection would promote competition, facilitate mobile networks and promote investment.

[Start c-i-c]

Text has been removed.

[End c-i-c]

Effectiveness of the policies and procedures relating to the identification of Listed POIS

This review has found that the policies and procedures relating to the identification of the number and locations of Listed POIs were appropriate and effective in implementing the government's expectation that a semi-distributed POI structure be adopted to allow the NBN network to meet with, but not overbuild competitive backhaul routes. The ACCC is satisfied that NBN Co identified POI locations that met the Competition Criteria in accordance with the direction of the government set out in its Statement of Expectations.

[39] Nextgen submission, p.1.
[40] Nextgen submission, p.4.

The submissions received from infrastructure owners/wholesalers (such as transmission providers) and smaller retail service providers have demonstrated that the application of the Competition Criteria and the Planning Rules have resulted in the effective implementation of the semi-distributed approach for the location of POIs. The submissions suggest that this approach is best likely to promote competition in retail and wholesale markets.

The ACCC notes the comments made by AAPT regarding better transparency of the application of the Competition Criteria during the assessment of POI locations. The lengthy consultation process to settle the final List of POIs was, in part, to allow stakeholders the opportunity to consider whether the locations that had been proposed met the Competition Criteria. However, the commercial sensitivity about which providers offer wholesale transmission services has meant that it was necessary to rely on the aggregated data provided by the ACCC in order to determine whether the Criteria had been met.

The ACCC is satisfied that the process that was followed in relation to consultation with stakeholders regarding the various versions of the List of POIs was transparent.

The ACCC has considered some suggestions raised by submitters for refinement to the processes for identifying POIs. While the publication of the identity of at least two service providers at a Listed POI would be information that is commercially sensitive, the ACCC will continue to publish information about the availability of competitive fibre infrastructure in the form of an aggregated list of Exchange Service Areas with two or more fibre infrastructure owners present.[41] This list is available on the ACCC website. The ACCC proposes to regularly update this list.

Submissions received from satellite owners highlight an issue relating to the requirement that satellite service customers must be interconnected by their service provider at the POI closest to the end customer. This issue is not directly related to the decision about the location of POIs, but relates more generally to the semi-distributed NBN structure decided by government. However, it is an issue that may be better addressed under the broader review of the operation of Division 16 of Part XIB of the CCA.

The ACCC agrees with the concerns expressed regarding the inclusion of utility providers on particular transmission routes when applying the Competition Criteria, but notes that this issue is currently addressed in the Planning Rules. Those Rules require that the capability of whether a fibre provider could deliver wholesale transmission services or connect back to a capital city must be assessed. Utility providers will not generally meet this requirement and as such, this effectively precludes the use of utility provider infrastructure in the identification of a Listed POI.[42]

[41] See the ACCC website.
[42] See the ACCC website.

3.2 ACCC's request to NBN Co to agree to vary the List in Force

Under paragraph 151DB(1)(b) of the CCA, the ACCC may vary a list setting out the POIs (the List in Force). Until the Minister makes a declaration that the NBN should be treated as built and fully operational, the ACCC must not vary the List in Force except with the agreement of NBN Co. Under paragraph 151DC(2)(a), the review undertaken by the ACCC must consider any requests made by the ACCC to NBN Co to agree to a variation of the List in Force.

The List in Force was published by the ACCC in November 2012. As at May 2013 there were only 32 POIs ready to accept services.[43] The ACCC has not made any requests to vary the List in Force and did not seek stakeholder comments on this issue.

[43] NBN Co, Points of Interconnect Rollout Plan May 2013.

3.3 NBN Co's responses to any ACCC request to vary the List of POIs

Under paragraph 151DC(2)(b) of the CCA, the review undertaken by the ACCC must consider the responses of NBN Co to any requests made by the ACCC to vary the List in Force.

As noted in section 4.2 the ACCC has not made any requests to vary the List in Force and did not seek stakeholder comments on this issue.

3.4 The extent to which facilities are interconnected at Listed POIs

Paragraph 151DC(2)(c) of the CCA requires the ACCC to consider the extent to which facilities are interconnected at the Listed POIs. The ACCC asked stakeholders to provide the following information:

(a) the Listed POIs where interconnection has occurred,

(b) whether services are being provided from those Listed POIs, and

(c) if so, the type of service that is being provided.

Active POIs and temporary POIs

The ACCC acknowledges that at the time of this review, a relatively low number of Listed POIs are 'active' POIs that are ready to accept interconnection by access seekers. Instead, interconnection has been allowed at temporary POIs that have been established by NBN Co on an interim basis to facilitate the rollout of the NBN.

NBN Co is providing aggregation and backhaul from trial sites, new developments and other end-users to a temporary POI (not a Listed POI) while the permanent POI for the area is established. Temporary POIs will be closed following construction of the Listed POI and the migration of existing users to that POI.

Currently NBN services are primarily being provided through five temporary POIs in the mainland capital cities and an interim POI for NBN Co's Interim Satellite Service at Mascot in Sydney. Temporary POIs are currently located at Metronode data centres in Brisbane, Perth, Adelaide and Sydney and at the Global Switch data centre in Sydney.

Table 4 lists the 32 POIs that were classified as 'ready to accept access seeker Network-to-Network Interface (NNI) orders' in NBN Co's May 2013 POI rollout plan.[44] A list with NBN Co's projection for the rollout of the remaining 89 POIs is at Appendix F.

[44] NBN Co, Points of Interconnect Rollout Plan May 2013.

Table 4: NBN active POIs as at May 2013

POI Name	POI State	Commissioning status as at May2013
Applecross	WA	Active
Aspley	QLD	Active
Ballarat	VIC	Active
Berkeley Vale	NSW	Active
Blacktown	NSW	Active
Civic	ACT	Active
Coffs Harbour	NSW	Active
Cranbourne	VIC	Active
Darwin	NT	Active
Geraldton	WA	Active
Goodna	QLD	Active
Gosford	NSW	Active
Hamilton	NSW	Active
Hobart	TAS	Active
Ipswich	QLD	Active
Kings Park	VIC	Active
Launceston	TAS	Active
Maitland	NSW	Active
Mayfield	NSW	Active
Modbury	SA	Active
Pinjarra	WA	Active
Port Melbourne Depot**	VIC	Active
Prospect	SA	Active
South Morang	VIC	Active
Stirling	SA	Active
Tamworth	NSW	Active
Toowoomba	QLD	Active
Townsville	QLD	Active
Traralgon	VIC	Active
Windsor	NSW	Active
Wollongong	NSW	Active
Woolloongabba	QLD	Active

Source: NBN Co POI rollout plan May 2013

3.4.1 Access seekers submissions regarding the extent of interconnection

Stakeholders generally considered that information regarding the extent of interconnection at Listed POIs is commercially sensitive information.

[Start c-i-c]

Stakeholder	Interconnected at…	Planned interconnection
Data removed.	Data removed.	Data removed.

[End c-i-c]

Submitters raised a number of issues that related to the extent of interconnection and the services that are being offered from Listed or temporary POIs.

For example, the ACCC understands that Optus is offering an NBN aggregation service to RSPs and is delivering services to a number of RSPs where connected to a permanent NBN POI with active fibre serving area modules. In terms of non NBN related 'pure' backhaul products Optus is understood to be able to aggregate backhaul handoff at a single or multiple locations.

Telstra and Macquarie Telecom provided the ACCC with confidential submissions in relation to interconnection at the Listed POIs.

[Start c-i-c]

Text has been removed.

[End c-i-c]

3.4.2 NBN Co confidential submission

NBN Co provided the ACCC with a confidential submission in which it detailed the extent to which interconnection at Listed POIs has been achieved.

[Start c-i-c]

Text has been removed.

[End c-i-c]

The ACCC considers that as the number of active Listed POIs increases and the addressable footprint at each POI expands, RSPs will transition from providing services at Interim POIs to the Listed POIs and the level of connectivity and competition for end users will increase. The ACCC also notes the NBN's commitment to closing temporary POIs as soon as practicable. This would support the intended outcomes of the List in Force by shifting end users to the relevant established POI on that list, which is considered to promote the long-term interests of end-users.

Part B – Additional issues raised by submitters

3.5 Impacts of the Listed POIs

This section assesses the overall impacts of the identification of Listed POIs as far as assessable in light of the very early stage of the rollout.

As noted in Chapter 1, the ACCC invited stakeholders to provide comments on the overall impacts of the identification of Listed POIs. In addition to commenting on the identification of Listed POIs, a number of submitters also provided comments on the impact of the semi-distributed POI structure that has been adopted by government. This matter is outside the scope of this review.

However, given the importance of those matters and the fact that it is relatively early in the NBN rollout, the ACCC has noted those matters below for consideration or further review by government as the NBN rollout proceeds.

3.5.1 Maintenance of competitive transmission infrastructure

In its advice to government, the ACCC considered that the bypassing by NBN Co of existing transmission infrastructure on currently competitive routes would represent an inefficient use of existing infrastructure, as transmission links are largely sunk investments that have little or no value outside of their use in providing transmission services.[45] The semi-distributed approach to locating the Listed POIs preserves existing competition in transmission markets and allows future viable competition to develop.

As noted in Chapter 4, Optus considered that the current approach of 121 POIs will facilitate investment in efficient backhaul infrastructure and encourage the development of a vibrant wholesale market above the NBN POIs. Under this approach, RSPs will have a choice between connecting directly to each of the POIs or seeking access through aggregation products offered by one of the competing wholesale providers.

The ACCC considers that the approach adopted in determining the location of Listed POIs has preserved the infrastructure assets of the five major infrastructure providers and a number of smaller providers. In addition, data available to the ACCC suggests that transmission providers including Optus, Nextgen and Pipe Networks have expanded their networks most likely in response to anticipated increases in demand from NBN POIs. In addition, a number of providers have indicated to the ACCC that they have, or are in the process of developing, aggregation and backhaul products specifically targeted at the NBN market.

3.5.2 The Competition Criteria

Exetel submitted that the Competition Criteria and Planning Rules were influenced by the interests of fibre network owners and argued that the requirement of two

[45] ACCC, Advice to Government – National Broadband Network Points of Interconnect, November 2010, p. 52

fibre providers does not constitute a market in which competitive tension ensures efficient price outcomes. To illustrate this, Exetel provides the example of the route between Tasmania and the mainland which features only two competitors, Telstra and Basslink. Exetel claims that despite the ACCC's setting of a regulated price through the DTCS FAD the cost of 1Mbps between Hobart and Melbourne is 100 times more expensive than transmitting the same 1 Mbps between Brisbane and Perth.

Fastel submitted that the Competition Criteria should be changed to ensure a minimum of *four* fibre providers at each POI. Fastel claimed that it lost a significant amount of customers and wasted investment in marketing due to the lack of availability or serviceability at POIs. Fastel proposes that a volume-based threshold be established allowing small providers to remain connected to NBN Co's Temporary POIs (and thereby not having to face backhaul costs) until they reach sufficient scale to be able to migrate.

Nextgen, in its submission, considered that the ACCC should make sure that future POIs are located only where competitive backhaul is in place to ensure that interconnection at those locations will promote competition.

[Start c-i-c]

Text has been removed.

[End c-i-c]

The ACCC has a monitoring role in assessing competition in transmission markets. Since the Competition Criteria were formulated, the ACCC has obtained a more comprehensive data set of pricing information for wholesale transmission markets. The ACCC is actively monitoring pricing data and is examining trends in backhaul prices to Listed POIs. The ACCC is also conducting a review of regulated transmission prices as part of its declaration inquiry for domestic transmission capacity services.

3.5.3 The price for backhaul services

[Start c-i-c]

Text has been removed.

[End c-i-c]

As noted above, Nextgen commented that the ACCC make sure that future POIs are located where competitive backhaul is in place to ensure that interconnection at those locations will promote competition.

Small to medium sized RSPs and satellite providers seeking interconnection at active POIs argued in their submissions that there was a lack of sufficient competitors providing backhaul services at active POIs.

[Start c-i-c]

Text has been removed.

[End c-i-c]

Exetel submitted that the Competition Criteria and Planning Rules are influenced by the interests of fibre network owners. Exetel argued that the requirement of two fibre providers does not constitute a market situation in which competitive tension ensures efficient price outcomes.

Harbour IT submitted that under the proposed semi-distributed approach and with the current backhaul prices for regional routes, Harbour IT did not have a sustainable business model. HarbourIT claimed that there is a 'margin squeeze' effect when those constraints are applied to small RSPs, in particular for clients located in remote areas.

The ACCC notes that the Competition Criteria required the ACCC to identify POI locations on the basis of at least two fibre providers being present at the POI. There were at least three transmission operators at 90 per cent of Listed POIs based on publicly released 2011 data.[46] **[Start c-i-c]** Text has been removed. **[End c-i-c]**

The ACCC considers that while satellite providers and small RSPs have difficulties reaching sufficient scale (number of customers) to offset the high fixed costs of connecting to the NBN smaller RSPs have successfully connected to the NBN. The ACCC notes that the availability of aggregated wholesale products specifically designed for NBN Co services are becoming more widely available, although the development of these products also depends on scale and demand.

3.5.4 The impacts on satellite service providers and smaller RSPs

Several satellite providers and small RSPs expressed concern not with the location of the semi-distributed POIs but with the requirement to connect at the POI closest to the customer premise. They consider that the backhaul costs for smaller providers with low traffic volumes and the need to connect to all 121 POIs, particularly in regional and remote areas will be unviable in the long-term. The ACCC recognised in its advice to government, that competitive backhaul and the development of aggregation services was likely to be necessary developments for RSPs and satellite providers to be able to effectively compete in the market.

Those submissions are discussed below.

Satellite Providers

The government's policy announcement in April 2009 stated that the NBN would connect premises in rural and remote Australia outside of the fibre footprint with 'next generation wireless and satellite technologies that will deliver broadband

[46] This figure is derived from the table 'ESAs with two or more fibre providers' on the ACCC website.

speeds of 12 megabits per second'.[47] This policy objective was reiterated in the government's Statement of Expectations.

During the process to settle the number and location of POIs, stakeholders were asked whether different approaches to POIs should be considered depending on the technology (that is, fibre, wireless and satellite). Generally, submitters in that process argued that the same approach should cover all three technologies. However, some of the smaller satellite providers had argued that a different approach should be adopted for satellite services because of the small number of ground stations for all of their traffic.

Currently NBN Co connects eligible premises with their Interim Satellite Service scheduled to run until NBN Co commences its Long Term Satellite Service in 2015.[48] At the time of the consultation, there were 13 satellite service providers offering services through NBN Co's Interim Satellite Service[49] of which three made submissions to the ACCC.

In general, the satellite providers submitted that the requirement for them to interconnect at the POI closest to their customers was an unrealistic restriction which should not apply to the provision of satellite services. Satellite service providers argued that once NBN Co's Long Term Satellite Service (LTSS) is in place backhaul costs will make their business unviable. Instead, the satellite providers propose they be allowed to interconnect at a single nationwide POI for satellite services.

BorderNET submitted that maintenance costs of infrastructure to connect to the 121 POIs were a major concern for small satellite providers, since the investment required would not be viable at national scale. They argue that the requirement to connect to the end-user's closest POI lacks technical reasoning and will lead to a decrease in competition. BorderNET claims that the 121 POI approach will lead it to ignore large portions of the market due to the uncompetitive nature of backhaul. This will affect its ability to achieve sufficient scale and is a significant barrier to entry. BorderNET noted:

> We do not envisage any major move to offer national NBN fibre or NBN wireless services therefore a sizable investment would be required for a forecast number of only "3%" of the Australian population. With so many larger RSP's moving into this space, with more expected to join, any investment on this scale would not be viable nationally. (…)
>
> The proposal by NBN Co to require RSPs who offer satellite services to connect to NBN Co's proposed LTSS KA Band satellite by way of a 121 POIs network will mean only RSPs that aggregate other technology offerings will be able to adopt a

[47] Senator the Hon. Stephen Conroy, 7 April 2009, Joint Media Release – Prime Minister, Treasurer, Minister for Finance, Minister for Broadband.
[48] NBN Co, NBN Co launches Interim Satellite Service, July 2011.
[49] NBN Co, list of satellite service providers.

> business case for satellite services in a large amount of this underserved population.[50]

APN also submitted that the likely impacts of the selected approach are excessive backhaul costs for niche satellite service providers with low traffic volumes per region:

> ...backhaul costs to the access seeker will be excessive (i.e. backhaul costs could be significant in comparison to access costs) and this is particularly the case for a niche broad satellite service provider with low traffic volumes per region.[51]

APN also argued that this approach will have adverse effects on latency-sensitive applications (e.g. VOIP and gaming) as a result of having to transport traffic over multiple interconnected links. APN proposes that the ACCC require retail service providers only to connect to the NBN at a single POI nationwide given the 'distance independent nature' of satellite services.

Ipstar expressed its view that the current approach represents an artificial barrier that will disadvantage small satellite RSPs in respect to big nationwide providers:

> It's the scale that counts. But if the [service provider] has to connect to a POI where they only have a handful of customers, the cost per customer for the POI is high.[52]

Ipstar also argued that without a diversity of providers the end-user will no longer have access to the personalised customer service that only niche satellite RSP can provide. Ipstar proposed two alternative solutions:

- NBN Co should provide traffic aggregation to earth stations linking it with a relatively small number of POIs, or
- NBN Co should offer RSPs flexibility to connect to a POI of their choice.

Smaller RSPs

HarbourIT also suggested that satellite service providers should be able to continue getting interconnection at capital city POIs as they currently do under NBN Co's Interim Satellite Service:

> Backhaul imposes a major cost disadvantage relative to the large, vertically integrated ISPs with their own backhaul infrastructure.[53]

HarbourIT noted that at the '...prices necessary to effectively compete with the national ISPs, the proposed semi-distributed POI architecture and current regional backhaul prices, Harbour ISP does not have a sustainable business model in regional and remote areas'.[54]

[50] Bordernet submission, p.2
[51] APN submission, p.4.
[52] Ipstar submission, p3.
[53] HarbourIT submission, p1.
[54] HarbourIT submission, p5.

4 Findings of the Review

The ACCC notes that the requirements of the statutory review are limited to an appraisal of the policies and procedures used to identify points of interconnect including a consideration of any variations to the List in Force and the extent of interconnection. Submitters have also identified industry concerns which are outside the scope of this legislative review. However, because of the importance of those issues and the fact that it is an early stage of the NBN rollout, the ACCC has noted those matters in this review for consideration as the rollout proceeds.

This review has found that, in general, the policies and procedures relating to the identification of the Listed POIs are appropriate and effective. Although no requests have been made as at the date of this review, to vary the List in Force, the policies, procedures and guidelines that are in place to identify the location of POIs will apply to any request that is subsequently made. The review has also found that at this point in time, those policies and procedures will be effective in making sure that the identification of the location for any further POIs will meet the semi-distributed approach and promote the long-term interests of end-users.

The review found that the extent of interconnection at the Listed POIs is limited at the moment due to the relatively small number of active POIs (to date only 32 of the 121 Listed POIs are active). The majority of the remaining POIs are planned by NBN Co to become active in 2013 and the remainder in 2014.

The details of which providers have interconnected at Listed POIs are constrained by confidentiality considerations. This lack of transparency makes it difficult for the market to assess how competition is developing on specific transmission routes. However, submitters have identified that they are either currently providing backhaul and aggregation services or intend to do so at active POIs at which they are interconnected. It is expected that as demand and scale increase, the provision of these services will also increase.

The ACCC's advice to government considered an approach to the location and number of POIs that would best meet the LTIE. The ACCC advised that the semi-distributed approach to POI locations would promote the LTIE by maintaining competition in transmission markets, ensuring that infrastructure will be used efficiently and minimising transmission asset stranding. However, the effectiveness of this approach depended on identifying locations that were competitive or which were likely to become competitive. The ACCC considered that the existence of at least two transmission operators would be a good starting point for assessing competitiveness. There were at least three transmission operators at 90 per cent of Listed POIs based on 2011 data. Confidential current information provided to the ACCC under the Infrastructure RKR suggests that this figure is higher for the Listed POIs.

Submitters remain divided as to whether a requirement to have either two or three transmission providers at a POI location would deliver a more competitive outcome.

As noted above, there are at least three competing infrastructure providers at a large majority of the Listed POIs. In those limited instances, mainly in more remote or regional areas, where a POI is served by only two operators, the pricing of the transmission service is likely to fall within scope of the regulated DTCS service.

On balance, this review finds that the current criterion of at least two providers is probably sufficient, but that monitoring competition at those sites where there are only two competitors will be important to ensure those POI locations are in the LTIE. The additional criterion that there must be other evidence that a particular route is likely to become competitive should ensure that the Listed POIs will promote competition.

This review has found that the policies and procedures applied to this process have been effective in identifying POI locations which are competitive and promote the LTIE.

Considering the nascent state of the NBN Co rollout at the time of this review, the ACCC finds that the evidence obtained during the public consultation as well as in direct engagement with stakeholders supports the conclusion that the policies and procedures for the identification of Listed POIs are reasonable and have been effective in promoting the long term interests of end-users.

As the remaining Listed POIs are being progressively rolled out during 2013 and 2014 and reliance on temporary POIs diminishes, the ACCC expects that interconnection at Listed POIs will expand and the services, including competitive backhaul and aggregation services will also increase.

The ACCC considers that the review confirms the policies and procedures relating to the identification of POIs have been effective at meeting the objective of ensuring that the location of POIs is in the LTIE.

APPENDIX A
Long-term interests of end-users

In considering the promotion of the LTIE under Part XIC of the TPA, the ACCC will have regard only to the extent to which something achieves the following objectives:

- promoting competition in markets for listed services;
- 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: (i) the infrastructure by which listed services are supplied; and (ii) any other infrastructure by which listed services are, or are likely to become, capable of being supplied.[55]

Promoting competition

Competition is the process of rivalry between firms, where each market participant is constrained in its price and output decisions by the activity of other market participants. The benefits of competition to end-users are lower prices, better quality and a better range of services over time.

Below are some concepts relevant to the consideration of promoting competition in the markets for listed services.

Market Power

Competition may be inhibited where the structure of the market gives rise to market power. Market power is the ability of a firm or firms to constrain or manipulate the supply of products from the levels and quality that would be observed in a competitive market for a significant period of time.

Competition will be promoted when market structures are altered such that the exercise of market power becomes more difficult. For example, barriers to entry may have been lowered (permitting more efficient competitors to enter a market and thereby constraining the pricing behaviour of the incumbents) or because the ability of firms to raise rivals' costs is restricted.

Identifying the relevant markets

To assist in determining the impact of a particular thing on markets, the ACCC will first need to identify the relevant market(s) and then assess the likely effect on competition in each market.

Section 4E of the TPA provides that the term 'market' includes a market 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 its 2008 Merger Guidelines, is canvassed in its information paper, *Anti-competitive conduct in telecommunications*

[55] Section 152AB(2) of the TPA.

markets, August 1999 and is also explored in the ACCC's second *Fixed Services Review position paper,* April 2007.

Assessing the impact of the declaration on relevant markets

Once markets have been identified, the next step is to assess the likely effect of the particular thing on competition in each relevant market. Subsection 152AB(4) of the TPA requires that regard must be had to the extent to which a particular thing will remove obstacles to end-users gaining access to listed services.

Any-to-any connectivity

Subsection 152AB(8) of the TPA states that the objective of any-to-any connectivity is achieved if, and only if, each end-user who is supplied with a carriage service that involves communication between end-users is able to communicate, by means of that service, or a similar service, with other end-users whether or not they are connected to the same network.

The any-to-any connectivity requirement is particularly relevant when considering services that involve communications between end-users. When considering services which do not require user-to-user connections (such as carriage services that are inputs to an end-to-end service or distribution services, such as the carriage of pay television), the ACCC generally gives less weight to this criterion.

Efficient use of, and investment in, infrastructure

In considering what is efficient use or, and investment in, infrastructure, regard must be had (but is not limited) to the technical feasibility of providing the service, the legitimate commercial interests of the supplier, 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. It also refers to the distribution of production costs amongst firms within an industry to minimise industry-wide costs.
- *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, such that the welfare of society is maximised over time.

Paragraph 152AB(6)(a) of the TPA requires the ACCC to have regard to a number of specific matters in examining whether declaration will lead to achievement of this objective. Some of these are outlined below.

Technical feasibility

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

- technology that is in use, available or likely to become available,
- costs involved, and whether it is reasonable or likely to become reasonable, and
- effects or likely effects on the operation or performance of telecommunications networks.

The ACCC will look to an access provider to assess whether it is technically feasible to supply the relevant service, and will also consider experiences in other jurisdictions.

The legitimate commercial interests of the supplier

A supplier's legitimate commercial interests are its obligations to the owners of the firm, including the need to recover the cost of providing services and to earn a normal commercial return on the investment in infrastructure. The ACCC considers that allowing for a normal commercial return on investment will provide 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 TPA also requires the ACCC to have regard to whether the access arrangement may affect the owner's ability to realise economies of scale or 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 from a production process 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.

The ACCC will assess the effects on the supplier's ability to exploit both economies of scale and scope on a case-by-case basis.

Incentives for investment

Firms should have the incentive to invest efficiently in infrastructure. The ACCC must also consider the effects of any expected disincentives to invest arising from anticipated increases in competition.

These objectives are interrelated. In many cases the LTIE may be promoted through the achievement of two or all three of these considerations simultaneously. In other cases, there may be some trade-off between the different aspects and the ACCC will need to weigh up the different effects. In this regard, the ACCC will interpret 'long-term' to mean a balancing of the flow of costs and benefits to end-users over time in relation to the objectives. Thus, it may be a promotion of the LTIE to receive a benefit for even a short period of time if its effect is not outweighed by any longer term cost.

APPENDIX B

The initial NBN Co list of POIs of December 2010

State	*POI name*	*ESA name*	*Approximate number of premises served (GNAFs)*	*Number of FSAs served*
NSW	Albury	ALBURY	83674	16
NSW	Ashfield	ASHFIELD	71275	3
NSW	Blacktown	BLACKTOWN	76433	3
NSW	Campbelltown	CAMPBELLTOWN	120908	8
NSW	Carramar	CARRAMAR	73475	3
NSW	Castle Hill	CASTLE HILL	58931	3
NSW	Chatswood	CHATSWOOD	57170	3
NSW	City South	CITY SOUTH	62048	2
NSW	Coffs Harbour	COFFS HARBOUR	123259	15
NSW	Cranebrook	CRANEBROOK	70942	4
NSW	Dalley	DALLEY	58224	2
NSW	Dubbo	DUBBO	123789	32
NSW	Edensor Park	EDENSOR PARK	76622	4
NSW	Edgecliff	EDGECLIFF	64166	3
NSW	Frenchs Forest	FRENCHS FOREST	76353	4
NSW	Glebe	GLEBE	56675	3
NSW	Gosford	GOSFORD	85553	4
NSW	Grafton	GRAFTON	150052	16
NSW	Hornsby	MOUNT KURING-GAI	60166	5
NSW	Kensington	EAST	82882	4
NSW	Lakemba	LAKEMBA	72129	3
NSW	Lidcombe	LIDCOMBE	74027	4
NSW	Liverpool	LIVERPOOL	62305	2
NSW	Mayfield	MAYFIELD	162619	19
NSW	Miranda	SYLVANIA	76985	3
NSW	Mosman	MOSMAN	75571	5
NSW	New Lambton	NEW LAMBTON	155882	6
NSW	Newtown	NEWTOWN	74939	3
NSW	North Parramatta	NORTH PARRAMATTA	61428	4
NSW	Nowra	NOWRA	101698	14
NSW	Peakhurst	PEAKHURST	82865	4
NSW	Pendle Hill	PENDLE HILL	53788	2
NSW	Rockdale	MASCOT	81513	3
NSW	Ryde	RYDE	71010	3

NSW	Shalvey	SHALVEY	64419	4
NSW	St Leonards	ST LEONARDS	69182	3
NSW	Tamworth	TAMWORTH	92301	22
NSW	Wagga Wagga	GLENFIELD	64477	17
NSW	Wollongong	WOLLONGONG	147479	7
NSW	Wyong	WYONG	89356	5
VIC	Ballarat	BALLARAT	86446	10
VIC	Bendigo	BENDIGO	92688	15
VIC	Berwick	BERWICK	79716	8
VIC	Brunswick	BRUNSWICK	68537	4
VIC	Burwood	BURWOOD	86724	4
VIC	Caulfield	CAULFIELD	75198	4
VIC	Cheltenham	CHELTENHAM	76619	3
VIC	Croydon	CROYDON	85477	7
VIC	Dandenong	DANDENONG	85913	5
VIC	Exhibition	EXHIBITION	85307	4
VIC	Footscray	FOOTSCRAY	85926	4
VIC	Frankston	FRANKSTON	72850	4
VIC	Geelong	GEELONG	140500	13
VIC	Hawthorn	HAWTHORN	82151	4
VIC	Horsham	HORSHAM	61388	22
VIC	Kew	KEW	80634	4
VIC	Kings Park	ST ALBANS	84528	4
VIC	Mount Eliza	MOUNT ELIZA	85702	7
VIC	Narre Warren	NARRE WARREN	78567	3
VIC	North Balwyn	NORTH BALWYN	79134	4
VIC	Reservoir	RESERVOIR	68677	3
VIC	Ringwood	RINGWOOD	77947	4
VIC	Shepparton	SHEPPARTON	82243	17
VIC	South Morang	SOUTH MORANG	78681	4
VIC	St Kilda	ST KILDA	65059	3
VIC	Tarneit	TARNEIT	80810	4
VIC	Traralgon	TRARALGON	99725	19
VIC	Tullamarine	TULLAMARINE	81085	4
VIC	Wangaratta	WANGARATTA	46650	18
VIC	Wheelers Hill	WHEELERS HILL	74192	3
VIC	Windsor	WINDSOR	77056	3
QLD	Ashmore	ASHMORE	87881	4
QLD	Aspley	ASPLEY	70038	4
QLD	Beenleigh	BEENLEIGH	99934	8
QLD	Bundaberg	BUNDABERG	132319	17
QLD	Bundamba	BUNDAMBA	86706	7
QLD	Caboolture	CABOOLTURE	71968	9
QLD	Cairns	CAIRNS	99174	10

QLD	Camp Hill	CAMP HILL	84205	5
QLD	Chermside	CHERMSIDE	83391	3
QLD	Eight Mile Plains	EIGHT MILE PLAINS	78492	6
QLD	Goodna	GOODNA	95812	8
QLD	Ipswich	IPSWICH	50413	7
QLD	Kallangur	KALLANGUR	80050	4
QLD	Nambour	NAMBOUR	162497	10
QLD	Robina	ROBINA	90021	5
QLD	Rockhampton	ROCKHAMPTON	131227	25
QLD	Salisbury	SALISBURY	96791	4
QLD	Southport	SOUTHPORT	113912	5
QLD	Toowoomba	TOOWOOMBA	136645	43
QLD	Townsville	TOWNSVILLE	125344	20
QLD	Woolloongabba	WOOLLOONGABBA	89309	4
SA	Edwardstown	EDWARDSTOWN	78583	4
SA	Gawler	GAWLER	105002	13
SA	Modbury	MODBURY	72657	3
SA	Murray Bridge	MURRAY BRIDGE	92960	22
SA	Port Adelaide	PORT ADELAIDE	85987	4
SA	Port Augusta	PORT AUGUSTA	69205	30
SA	Prospect	PROSPECT	94072	4
SA	Reynella	REYNELLA	71666	4
SA	St Marys	ST MARYS	84119	3
WA	Applecross	APPLECROSS	78294	3
WA	Armadale	ARMADALE	76724	5
WA	Bassendean	BASSENDEAN	72315	3
WA	Bunbury	BUNBURY	99589	14
WA	Cannington	CANNINGTON	75628	4
WA	Doubleview	DOUBLEVIEW	80051	4
WA	Geraldton	GERALDTON	72367	25
WA	Hilton	HILTON	63088	3
WA	Joondalup	JOONDALUP	77548	4
WA	Katanning	KATANNING	100794	31
WA	Kingsley	KINGSLEY	73929	3
WA	Maida Vale	MAIDA VALE	51085	6
WA	Rockingham	ROCKINGHAM	87365	4
WA	Subiaco	SUBIACO	83874	4
TAS	Hobart	DAVEY	115334	17
TAS	Launceston	LAUNCESTON SOUTH	116254	27
ACT	Civic	CIVIC	131532	11
ACT	Queanbeyan	QUEANBEYAN	89146	10
NT	Darwin	DARWIN	72057	9

APPENDIX C

The February 2011 List of POIs

State	*POI name*	*Metro, Outer Metro or Regional*	*Approximate number of premises served (GNAFs)*	*Number of FSAs served*
ACT	Civic	Regional	131,532	11
ACT*	Queanbeyan	Regional	89,146	10
NSW	Albury	Regional	102,490	24
NSW	Ashfield	Metro	71,275	3
NSW	Blacktown	Metro	76,433	3
NSW	Campbelltown	Outer Metro	120,908	8
NSW	Carramar	Metro	73,475	3
NSW	Castle Hill	Metro	58,931	3
NSW	Chatswood	Metro	57,170	3
NSW	City South	Metro	62,048	2
NSW	Coffs Harbour	Regional	123,259	15
NSW	Dalley	Metro	58,224	2
NSW	Dubbo	Regional	123,789	32
NSW	Edensor Park	Metro	76,622	4
NSW	Edgecliff	Metro	64,166	3
NSW	Frenchs Forest	Metro	76,353	4
NSW	Glebe	Metro	56,675	3
NSW	Gosford	Regional	85,553	4
NSW	Grafton	Regional	150,052	16
NSW	Hornsby	Metro	60,166	5
NSW	Kensington	Metro	82,882	4
NSW	Lakemba	Metro	72,129	3
NSW	Lidcombe	Metro	74,027	4
NSW	Liverpool	Metro	62,305	2
NSW	Maitland	Regional	80,269	7
NSW	Mayfield	Regional	82,350	12
NSW	Miranda	Metro	76,985	3
NSW	Mosman	Metro	75,571	5
NSW	New Lambton	Regional	155,882	6
NSW	Newtown	Metro	74,939	3
NSW	North Parramatta	Metro	61,428	4
NSW	Nowra-Bomaderry	Regional	101,698	14
NSW	Peakhurst	Metro	82,865	4
NSW	Pendle Hill	Metro	53,788	2
NSW	Penrith	Metro	70,942	4
NSW	Rockdale	Metro	81,513	3

NSW	Ryde	Metro	71,010	3
NSW	St Leonards	Metro	69,182	3
NSW	Tamworth	Regional	92,301	22
NSW	Wagga Wagga	Regional	64,477	17
NSW	Windsor	Metro	64,419	4
NSW	Wollongong	Regional	147,479	7
NSW	Wyong	Regional	89,356	5
NT	Darwin	Regional	72,057	9
QLD	Aspley	Metro	70,038	4
QLD	Beenleigh	Metro	99,934	8
QLD	Bundaberg	Regional	132,319	17
QLD	Bundamba	Metro	86,706	7
QLD	Caboolture	Outer Metro	71,968	9
QLD	Cairns	Regional	99,174	10
QLD	Camp Hill	Metro	84,205	5
QLD	Chermside	Metro	83,391	3
QLD	Eight Mile	Metro	78,492	6
QLD	Goodna	Metro	95,812	8
QLD	Ipswich	Outer Metro	50,413	7
QLD	Kallangur	Metro	80,050	4
QLD	Mackay	Regional	62,015	11
QLD	Nambour	Regional	162,497	10
QLD	Nerang	Regional	87,881	4
QLD	Robina	Regional	90,021	5
QLD	Rockhampton	Regional	69,212	14
QLD	Salisbury	Metro	96,791	4
QLD	Southport	Regional	113,912	5
QLD	Toowoomba	Regional	136,645	43
QLD	Townsville	Regional	125,344	20
QLD	Woolloongabba	Metro	89,309	4
SA	Edwardstown	Metro	78,583	4
SA	Gawler	Outer Metro	105,002	13
SA	Modbury	Metro	72,657	3
SA	Murray Bridge	Regional	92,960	22
SA	Port Adelaide	Metro	85,987	4
SA	Port Augusta	Regional	69,205	30
SA	Prospect	Metro	94,072	4
SA	Reynella	Metro	71,666	4
SA	St Marys	Metro	84,119	3
TAS	Hobart	Regional	115,334	17
TAS	Launceston	Regional	116,254	27
VIC	Ballarat	Regional	86,446	10
VIC	Bendigo	Regional	100,850	17
VIC	Berwick South	Outer Metro	79,716	8
VIC	Brunswick	Metro	68,537	4

VIC	Burwood	Metro	86,724	4
VIC	Caulfield	Metro	75,198	4
VIC	Cheltenham	Metro	76,619	3
VIC	Croydon	Metro	91,097	8
VIC	Dandenong	Metro	85,913	5
VIC	Exhibition	Metro	85,307	4
VIC	Footscray	Metro	85,926	4
VIC	Frankston	Metro	72,850	4
VIC	Geelong	Regional	140,500	13
VIC	Hawthorn	Metro	82,151	4
VIC	Horsham	Regional	61,388	22
VIC	Kew	Metro	80,634	4
VIC	Kings Park	Metro	84,528	4
VIC	Mount Eliza	Metro	85,702	7
VIC	Narre Warren	Outer Metro	78,567	3
VIC	North Balwyn	Metro	79,134	4
VIC	Reservoir	Metro	68,677	3
VIC	Ringwood	Metro	77,947	4
VIC	Shepparton-Mooroopna	Regional	94,443	23
VIC	South Morang	Metro	80,533	5
VIC	St Kilda	Metro	65,059	3
VIC	Tarniet	Metro	80,810	4
VIC	Traralgon	Regional	99,725	19
VIC	Tullamarine	Regional	81,085	4
VIC	Wheelers Hill	Metro	74,192	3
VIC	Windsor	Metro	77,056	3
WA	Applecross	Metro	78,294	3
WA	Bassendean	Metro	72,315	3
WA	Bunbury	Regional	99,589	14
WA	Cannington	Metro	75,628	4
WA	Doubleview	Metro	80,051	4
WA	Geraldton	Regional	72,367	25
WA	Hilton	Metro	63,088	3
WA	Joondalup	Outer Metro	77,548	4
WA	Katanning	Regional	100,794	31
WA	Kelmscott	Outer Metro	76,724	5
WA	Kingsley	Metro	73,929	3
WA	Maida Vale	Outer Metro	51,085	6
WA	Rockingham	Regional	87,365	4
WA	Subiaco	Metro	83,874	4

APPENDIX D

The May 2011 List of POIs, including changes from the February 2011 List

State	*POI name*	*Metro, Outer Metro or Regional*	*POI relocated from*
ACT	Civic	Regional	
ACT*	Queanbeyan	Regional	
NSW	Albury	Regional	
NSW	Berkeley Vale	Regional	Wyong
NSW	Blacktown	Metro	
NSW	Campbelltown	Outer Metro	
NSW	Campsie	Metro	Ashfield
NSW	Carramar	Metro	
NSW	Castle Hill	Metro	
NSW	Chatswood	Metro	
NSW	City South	Metro	
NSW	Coffs Harbour	Regional	
NSW	Dalley	Metro	
NSW	Dubbo	Regional	
NSW	Edensor Park**	Metro	
NSW	Edgecliff	Metro	
NSW	Frenchs Forest	Metro	
NSW	Glebe	Metro	
NSW	Gosford	Regional	
NSW	Grafton	Regional	
NSW	Hamilton	Regional	New Lambton
NSW	Hornsby**	Metro	
NSW	Kensington	Metro	
NSW	Lakemba	Metro	
NSW	Lidcombe	Metro	
NSW	Liverpool	Metro	
NSW	Maitland	Regional	
NSW	Mayfield	Regional	
NSW	Miranda	Metro	
NSW	Mosman	Metro	
NSW	Newtown	Metro	
NSW	North Parramatta	Metro	
NSW	Nowra-Bomaderry	Regional	
NSW	Peakhurst	Metro	

State	POI name	Metro, Outer Metro or Regional	POI relocated from
NSW	Pendle Hill	Metro	
NSW	Penrith	Metro	
NSW	Rockdale	Metro	
NSW	Ryde	Metro	
NSW	St Leonards	Metro	
NSW	Tamworth	Regional	
NSW	Wagga Wagga	Regional	
NSW	Windsor	Metro	
NSW	Wollongong	Regional	
NT	Darwin	Regional	
QLD	Aspley	Metro	
QLD	Bundaberg	Regional	
QLD	Bundamba	Metro	
QLD	Caboolture	Outer Metro	
QLD	Cairns	Regional	
QLD	Camp Hill	Metro	
QLD	Chermside**	Metro	
QLD	Eight Mile**	Metro	
QLD	Goodna	Metro	
QLD	Ipswich	Outer Metro	
QLD	Mackay	Regional	
QLD	Merrimac	Regional	Robina
QLD	Nambour	Regional	
QLD	Nerang	Regional	
QLD	Petrie	Metro	Kallangur
QLD	Rockhampton	Regional	
QLD	Salisbury	Metro	
QLD	Slacks Creek	Metro	Beenleigh
QLD	Southport	Regional	
QLD	Toowoomba	Regional	
QLD	Townsville	Regional	
QLD	Woolloongabba	Metro	
SA	Edwardstown	Metro	
SA	Elizabeth	Outer Metro	Gawler
SA	Modbury	Metro	
SA	Gepps Cross**	Metro	
SA	Port Augusta	Regional	
SA	Prospect	Metro	
SA	Reynella**	Metro	
SA	St Marys	Metro	
SA	Stirling	Regional	Murray Bridge
TAS	Hobart	Regional	

State	POI name	Metro, Outer Metro or Regional	POI relocated from
TAS	Launceston	Regional	
VIC	Ballarat	Regional	
VIC	Bendigo	Regional	
VIC	Burwood**	Metro	
VIC	Caulfield	Metro	
VIC	Cheltenham	Metro	
VIC	Cranbourne	Outer Metro	Berwick South
VIC	Dandenong	Metro	
VIC	Exhibition	Metro	
VIC	Footscray	Metro	
VIC	Geelong	Regional	
VIC	Hawthorn	Metro	
VIC	Horsham	Regional	
VIC	Karingal	Metro	Frankston
VIC	Kew	Metro	
VIC	Keysborough	Outer Metro	Narre Warren
VIC	Kings Park	Metro	
VIC	Lilydale	Metro	Croydon
VIC	Mount Eliza	Metro	
VIC	North Balwyn	Metro	
VIC	Reservoir	Metro	
VIC	Ringwood	Metro	
VIC	Shepparton	Regional	Shepparton-Mooroopna
VIC	South Morang	Metro	
VIC	St Kilda	Metro	
VIC	Thornbury	Metro	Brunswick
VIC	Traralgon	Regional	
VIC	Tullamarine	Regional	
VIC	Werribee	Metro	Tarneit
VIC	Wheelers Hill	Metro	
VIC	Port Melbourne**	Metro	
WA	Applecross	Metro	
WA	Bassendean	Metro	
WA	Cannington	Metro	
WA	Doubleview	Metro	
WA	Geraldton	Regional	
WA	Hilton	Metro	
WA	Katanning	Regional	
WA	Kelmscott	Outer Metro	
WA	Kingsley**	Metro	
WA	Maida Vale**	Outer Metro	

State	*POI name*	*Metro, Outer Metro or Regional*	*POI relocated from*
WA	Mullaloo	Outer Metro	Joondalup
WA	Pinjarra	Regional	Bunbury
WA	South Coogee	Regional	Rockingham
WA	Subiaco	Metro	

*The Queanbeyan POI will be located in NSW but will predominantly serve premises in the ACT

** Indicates POI where the facility will be built by NBN Co.

APPENDIX E

Public version of the Final List of POIs under s151DB of the CCA

	State	POI name	POI location	Type
1	ACT	Civic	Braddon	Regional
2	ACT[56]	Queanbeyan	Queanbeyan	Regional
3	NSW	Albury	Albury	Regional
4	NSW	Asquith*	Hornsby	Metro
5	NSW	Berkeley Vale	Berkeley Vale	Regional
6	NSW	Blacktown	Blacktown	Metro
7	NSW	Campbelltown	Campbelltown	Outer Metro
8	NSW	Campsie	Campsie	Metro
9	NSW	Carramar	Carramar	Metro
10	NSW	Castle Hill	Castle Hill	Metro
11	NSW	Chatswood	Chatswood	Metro
12	NSW	City South	Sydney	Metro
13	NSW	Coffs Harbour	Coffs Harbour	Regional
14	NSW	Dalley	Sydney	Metro
15	NSW	Dubbo	Dubbo	Regional
16	NSW	Eastern Creek*	Eastern Creek	Metro
17	NSW	Edgecliff	Edgecliff	Metro
18	NSW	Frenchs Forest	Frenchs Forest	Metro
19	NSW	Glebe	Glebe	Metro
20	NSW	Gosford	Gosford	Regional
21	NSW	Grafton	Grafton	Regional
22	NSW	Hamilton	Hamilton	Regional
23	NSW	Kensington	Kensington	Metro
24	NSW	Lakemba	Lakemba	Metro
25	NSW	Lidcombe	Lidcombe	Metro
26	NSW	Liverpool	Liverpool	Metro
27	NSW	Maitland	East Maitland	Regional
28	NSW	Mayfield	Mayfield	Regional
29	NSW	Miranda	Miranda	Metro
30	NSW	Mosman	Mosman	Metro
31	NSW	Newtown	Newtown	Metro
32	NSW	Nowra-Bomaderry	Nowra	Regional
33	NSW	Parramatta	Parramatta	Metro
34	NSW	Peakhurst	Peakhurst	Metro
35	NSW	Pendle Hill	Pendle Hill	Metro
36	NSW	Penrith	Penrith	Metro
37	NSW	Rockdale	Rockdale	Metro

[56] The Queanbeyan POI will be located in NSW but will predominantly serve premises in the ACT.

	State	POI name	POI location	Type
38	NSW	Ryde	Ryde	Metro
39	NSW	St Leonards	St Leonards	Metro
40	NSW	Tamworth	Tamworth	Regional
41	NSW	Wagga Wagga	Wagga Wagga	Regional
42	NSW	Windsor	Windsor	Metro
43	NSW	Wollongong	Wollongong	Regional
44	NT	Darwin	Darwin	Regional
45	QLD	Acacia Ridge*	Acacia Ridge	Metro
46	QLD	Aspley	Aspley	Metro
47	QLD	Aspley Depot*	Aspley	Metro
48	QLD	Bundaberg	Bundaberg	Regional
49	QLD	Bundamba	Bundamba	Metro
50	QLD	Caboolture	Caboolture	Outer Metro
51	QLD	Cairns	Cairns	Regional
52	QLD	Camp Hill	Camp Hill	Metro
53	QLD	Eight Mile	Eight Mile Plains	Metro
54	QLD	Goodna	Goodna	Metro
55	QLD	Ipswich	Ipswich	Outer Metro
56	QLD	Mackay	Mackay	Regional
57	QLD	Merrimac	Merrimac	Regional
58	QLD	Nambour	Nambour	Regional
59	QLD	Nerang	Nerang	Regional
60	QLD	Petrie	Petrie	Metro
61	QLD	Rockhampton	Rockhampton	Regional
62	QLD	Slacks Creek	Logan Central	Metro
63	QLD	Southport	Southport	Regional
64	QLD	Toowoomba	Toowoomba	Regional
65	QLD	Townsville	Townsville	Regional
66	QLD	Woolloongabba	Kangaroo Point	Metro
67	SA	Edwardstown	Glandore	Metro
68	SA	Elizabeth	Elizabeth	Outer Metro
69	SA	Greenfields*	Green Fields	Metro
70	SA	Lonsdale*	Lonsdale	Metro
71	SA	Modbury	Modbury	Metro
72	SA	Port Augusta	Port Augusta	Regional
73	SA	Prospect	Prospect	Metro
74	SA	St Marys	Daw Park	Metro
75	SA	Stirling	Stirling	Regional
76	TAS	Hobart	Hobart	Regional
77	TAS	Launceston	Launceston	Regional
78	VIC	Ballarat	Ballarat	Regional
79	VIC	Bendigo	Bendigo	Regional
80	VIC	Caulfield	Caulfield	Metro

	State	POI name	POI location	Type
81	VIC	Cheltenham	Cheltenham	Metro
82	VIC	Cranbourne	Cranbourne	Outer Metro
83	VIC	Dandenong	Dandenong	Metro
84	VIC	Exhibition	Melbourne	Metro
85	VIC	Footscray	Footscray	Metro
86	VIC	Geelong	Geelong	Regional
87	VIC	Hawthorn	Hawthorn	Metro
88	VIC	Horsham	Horsham	Regional
89	VIC	Karingal	Frankston	Metro
90	VIC	Kew	Kew	Metro
91	VIC	Keysborough	Keysborough	Outer Metro
92	VIC	Kings Park	St Albans	Metro
93	VIC	Lilydale	Lilydale	Metro
94	VIC	Mount Eliza	Mt Eliza	Metro
95	VIC	North Balwyn	Balwyn North	Metro
96	VIC	Nunawading*	Nunawading	Metro
97	VIC	Port Melbourne*	Port Melbourne	Metro
98	VIC	Reservoir	Reservoir	Metro
99	VIC	Ringwood	Ringwood	Metro
100	VIC	Shepparton	Shepparton	Regional
101	VIC	South Morang	Mill Park	Metro
102	VIC	St Kilda	St Kilda	Metro
103	VIC	Thornbury	Thornbury	Metro
104	VIC	Traralgon	Traralgon	Regional
105	VIC	Tullamarine	Tullamarine	Regional
106	VIC	Werribee	Werribee	Metro
107	VIC	Wheelers Hill	Wheelers Hill	Metro
108	WA	Applecross	Applecross	Metro
109	WA	Bassendean	Bassendean	Metro
110	WA	Bentley*	Bentley	Outer Metro
111	WA	Cannington	Cannington	Metro
112	WA	Doubleview	Doubleview	Metro
113	WA	Geraldton	Geraldton	Regional
114	WA	Hilton	O'Connor	Metro
115	WA	Katanning	Katanning	Regional
116	WA	Kelmscott	Kelmscott	Outer Metro
117	WA	Mullaloo	Craigie	Outer Metro
118	WA	Pinjarra	Pinjarra	Regional
119	WA	South Coogee	Wattleup	Regional
120	WA	Subiaco	Subiaco	Metro
121	WA	Wangara*	Wangara	Metro

*Indicates NBN Co built POI

APPENDIX F

NBN Co Rollout forecast May 2013
(source: NBN Co POI Rollout Plan May 2013)

POI Name	POI State	Commissioning forecast as at May2013
Rockhampton	QLD	Q2/2013
Dubbo	NSW	
South Coogee	WA	
Shepparton	VIC	
Castle Hill	NSW	
Chatswood	NSW	
City South	NSW	
Edgecliff	NSW	
Bundamba	QLD	
Camp Hill	QLD	
Mackay	QLD	
Merrimac	QLD	
St Marys	SA	
Edwardstown	SA	
Elizabeth	SA	
Bassendean	WA	
Hilton	WA	
Mullaloo	WA	
Bendigo	VIC	
Penrith	NSW	
Exhibition	VIC	
Liverpool	NSW	
St Leonards	NSW	
Petrie	QLD	
Eight Mile	QLD	
Subiaco	WA	
Lidcombe	NSW	Q3/2013
Ryde	NSW	
Asquith Depot**	NSW	
Slacks Creek	QLD	
Cairns	QLD	
Doubleview	WA	
Kelmscott	WA	
Dalley	NSW	

Miranda	NSW	
Footscray	VIC	
Nunawading Depot**	VIC	
Newtown	NSW	
Parramatta	NSW	
Pendle Hill	NSW	
Nowra-Bomaderry	NSW	
Southport	QLD	
Caboolture	QLD	
Acacia Ridge Depot**	QLD	
Aspley Depot**	QLD	
Greenfields Depot**	SA	
Werribee	VIC	
Mount Eliza	VIC	
Wangara Depot**	WA	
Bentley Depot**	WA	
Campsie	NSW	**Q4/2013**
Carramar	NSW	
Kensington	NSW	
Lakemba	NSW	
Mosman	NSW	
Peakhurst	NSW	
Rockdale	NSW	
Wagga Wagga	NSW	
Port Augusta	SA	
Cannington	WA	
Eastern Creek Depot**	NSW	
Lonsdale Depot**	SA	
Caulfield	VIC	
Dandenong	VIC	
Hawthorn	VIC	
Kew	VIC	
Lilydale	VIC	
North Balwyn	VIC	
Tullamarine	VIC	
Wheelers Hill	VIC	
Katanning	WA	
Queanbeyan	ACT	
Campbelltown	NSW	
Glebe	NSW	

Bundaberg	QLD	
Keysborough	VIC	
St Kilda	VIC	
Ringwood	VIC	
Frenchs Forest	NSW	
Cheltenham	VIC	
Karingal	VIC	
Reservoir	VIC	
Thornbury	VIC	
Albury	NSW	**2014**
Geelong	VIC	
Horsham	VIC	
Grafton	NSW	
Nambour	QLD	
Nerang	QLD	