



Optus Submission

National Broadband Network

Points of Interconnection

November 2010

Public version

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1. Introduction

- 1.1 Optus welcomes the opportunity to respond to the ACCC discussion paper on the proposed Points of Interconnection (POI's) that will be offered to the National Broadband Network (NBN). This is an important issue that has the potential to significantly impact both current and future infrastructure investments and the level of competitive intensity in the provision of wholesale voice and broadband services.

2. Executive Summary

- 2.1 The proposed NBN has the potential to positively reshape the fixed line telecommunications sector in Australia and deliver significant benefits to Australian consumers and businesses. To realise its full potential it is important that the NBN remains true to the Government's overriding reform objectives that the network should focus on areas of market failure and operate as a structurally separated, wholesale-only network with access provided on genuinely open terms.
- 2.2 Optus recognises that implementing the NBN will necessarily require a significant re-engineering of the current market settings with the aim of finally addressing Telstra's control of the last mile infrastructure that has proved to be such an impediment to the development of competition. However, as we move from the policy vision to the policy detail care must be taken to ensure that the NBN remains true to its reform objectives and that it does not create a separate set of competition concerns.
- 2.3 The consultation paper from the ACCC on the location of POI's to the NBN might at first glance appear to deal with a rather arcane technical matter. This is not the case. The proposal under consideration from NBN Co, if implemented, represents a significant case of over-reach that would cross a very bright demarcation line between contestable and non-contestable infrastructure.
- 2.4 NBN Co has proposed a highly aggregated model for connecting to the NBN that would see interconnection practically offered at only a very small number of POI's located in each of the main capital cities. Optus is strongly opposed to this proposal since it will have a dramatic adverse impact on current and future investments and competition in the fixed line markets. In this submission Optus will argue that NBN Co's proposal is contrary to the long interest of end-users since it will;
- (a) Foreclose opportunities for the development of competitive wholesale markets in the provision of high-speed voice and broadband services;
 - (b) Undermine the opportunities to promote regional development by concentrating interconnect arrangements on the capital cities;
 - (c) Foreclose opportunities to exploit and develop existing competitive backhaul capacity ;
 - (d) Result in overbuild and the stranding of significant levels of competitive infrastructure;

- (e) Raise significant claims for compensation, likely to run into hundreds of millions of dollars, in respect of that infrastructure;
 - (f) Heighten sovereign risk associated with infrastructure investment in Australia; and
 - (g) Lead to the consolidation of current interconnection arrangements at the NBN POI's that will likely see NBN Co becoming the default carrier of all data and voice traffic between retail service providers.
- 2.5 Further, whilst NBN Co's proposed approach aims to deliver a uniform wholesale price structure, Optus will argue that it is likely to do so at the expense of higher prices for all customers (including regional customers) by removing any opportunity for competitive price tension to apply to the provision of backhaul services. Optus supports the ACCC's view that there is no dependency between the Government's objective for a geographically uniform wholesale access price with the location and number of POIs.
- 2.6 In contrast, Optus will argue that a model that provides interconnection at those exchanges where contestable backhaul transmission capacity is available will avoid all of the above issues and will promote the long term interests of end-users. This will provide interconnection at a minimum of 200 and possibly up to 400 POI's. Such an approach is consistent with previous recommendations of the ACCC on the appropriate architecture of interconnect arrangements for a high-speed broadband network and is in line with the recommendations of the McKinsey/KPMG Implementation Study.
- 2.7 The precise number and location of the POI's should not be a matter decided by NBN Co, rather it should be something determined on advice from the ACCC following a further process of detailed consultation with the industry.
- 2.8 In summary, Optus recommends that the ACCC rejects NBN Co's proposal in favour of a more pro-competitive approach to interconnection. Optus submits that decisions of this nature which raise significant competition issues should be determined independently of NBN Co. These are matters for the ACCC to rule on as the guardian of competition and consumer interests. It is also important that proper time is afforded for industry to respond to policy initiatives related to the NBN. Given the significant issues raised in this consultation the two week period allowed for industry to prepare submissions is manifestly inadequate.

3. NBN's proposal

- 3.1 In its Public Position Paper on the "Proposed NBN Co Points of Interconnection", NBN Co has put forward the following four interconnect options with a clearly stated preference for Option 4.
- (a) Option 1: 718 - 950 POIs. POIs are fully distributed and located at every Fibre Serving Area (FSA)
 - (b) Option 2: Indeterminate, depending on the definition of contestable backhaul. POIs are partially distributed, at the edge of where contested backhaul currently exists.

- (c) Option 3: 14 Aggregation POIs at the five capital cities;
- (d) Option 4: Composite 14 Aggregation POIs with up to 195 POI's in lower Connectivity Serving Areas (CSA).

3.2 Whilst NBN Co's preferred Option 4 is described as a "composite option" the detail suggests that this is not so. NBN Co makes it clear that the opportunity to interconnect at the distributed 195 CSA's will only be offered "*in limited circumstances, such as for technical reasons*"¹. Further, NBN Co notes that it will charge the same access price irrespective of the location of the POI, so there is no cost benefit from interconnecting at the 195 CSA's rather than at the 14 aggregated POIs. For all practical purposes NBN Co is, therefore, proposing to limit interconnection 14 aggregated POI's. That is, Option 4 is practically the same as the proposed Option 3.

3.3 In reality the level of aggregation is more pronounced than it might appear. Optus understands that it is NBN Co's intention that 7 of the 14 proposed POI's would be used to provide site diversity. This means that interconnection is only practically being offered at 7 POIs nationally.

4. Optus' position

4.1 Optus recognises that the architecture of a fibre based network will be significantly different to that of the legacy copper based network. This will necessarily lead to different interconnect arrangements in the future than currently apply today. However, in developing interconnect arrangements it will be important for NBN Co to strike an appropriate balance between efficient technical design imperatives and competition considerations.

4.2 Optus considers that with its current proposal NBN Co has got this balance wrong. Optus is strongly opposed to NBN Co's proposal. As we describe in section 5 below, this proposal will have significant adverse impacts on current and future investment in backhaul infrastructure. This in turn will have adverse impacts on the development of competition in the competitive backhaul and wholesale voice and broadband markets.

4.3 In contrast to NBN Co, Optus submits that Option 2 should be pursued with interconnection offered at an agreed number of distributed POI's, where contestable backhaul capacity is available. This would likely see interconnection offered at a minimum of 200 POI's and up to 400 POI's, located at those exchanges which are subject to existing contestability in the supply of backhaul services.

4.4 Importantly, this option will maximise the opportunities for service providers to utilise their existing infrastructure to provide services over the NBN. As will be demonstrated in section 5 below, there are a number of service providers who would be able to take advantage of this approach. This approach will also enable NBN Co to design POI's to serve a similar number of premises thereby providing a measure of design efficiency than a more fully distributed model.

¹ ACCC – "Discussion paper on points of interconnection to the National Broadband Network", page 14

4.5 Optus notes that this position is consistent with the conclusions of the McKinsey/KPMG Implementation Study. Recommendation 48 of that report states:

“That NBN Co be required to construct a transit backhaul network to connect all fibre exchanges to the nearest practical point where backhaul services are available from Government (e.g., Regional Backbone Blackspots Program) or multiple providers, not including NBN Co; for fibre exchanges that are already located at a point with multiple backhaul providers or Government backhaul services, NBN Co not to construct transit backhaul links”.

4.6 For completeness Optus notes that Option 1 should also be ruled out on competition grounds. Under a fully distributed model it is likely that a large number of POI’s (beyond around 400) would only be served by transmission capacity from a single player. This means service providers are unlikely to be able to source such transmission capacity on reasonable terms. For this reason, Option 1 should be ruled out. This position is also consistent with the McKinsey/KPMG Implementation Study which recognises that providing direct interconnection to all fibre exchanges;

“would not provide a level competitive playing field. Telstra is the most likely provider to seek this access”.²

4.7 The precise number and location of the POI’s should not be a matter decided by NBN Co, rather it should be something determined on advice from the ACCC following a further process of detailed consultation with the industry. Optus recommends that the following further processes should be undertake;

- (a) NBN Co should be required to submit a list of all feasible FSA’s to the ACCC;
- (b) The ACCC should then seek industry input on which of these FSA’s should be designated as a POI on the basis that it is served by contestable infrastructure; and
- (c) The ACCC should then make a recommendation based on that further industry input.

5. Market overview and competition issues

5.1 In the past decade Australia’s telecommunications regulatory policy has focused on infrastructure based competition, either through encouraging the roll-out of alternate networks to the Telstra Copper Access Network (CAN) or enabling interconnection at a deep level with the CAN through local unbundling. The roll-out of the NBN will challenge this approach. It will not be economically viable for alternate last mile fibre based networks to be deployed in competition to the NBN. Further, since fibre is less capable of being unbundled than copper, the prospect of replicating ULLS style competition is also limited. This means that policy settings are likely to need to be re-set to discourage alternate investment in last mile fixed fibre access. This fact is implicitly recognised in the recent Telstra/NBN Co heads of Agreement which effectively removes the opportunity for Telstra to compete with the NBN either on its HFC or copper networks.

² Implementation Study for the National Broadband Network, page , page 335

5.2 However, whilst it is appropriate to discourage investment in alternate last mile infrastructure it will be important to preserve opportunities for efficient infrastructure based competition at other layers within the network hierarchy. For this reason Optus supports NBN Co’s proposal to offer services at Layer 2 in the Open System Interconnection (OSI) stack as opposed to Layer 3 services. This should encourage the emergence of a Layer 3 Wholesale market on the NBN. Equally it will be important to ensure that NBN Co does not discourage opportunities for utilisation and investment in alternate contestable backhaul capacity especially in those areas where competitive supply is available today.

Transmission capacity markets (backhaul)

5.3 Acquiring transmission capacity on reasonable terms is a fundamental component in the ability of retail service providers to offer competitive voice and data services to end-users. Telstra’s transmission network is by the far the most extensive network and in many areas it retains a monopoly position in the provision of transmission capacity. Recognising the importance of backhaul capacity and the position of Telstra in the market, a Domestic Transmission Capacity Service (DTCS) has been declared since 1997.

5.4 However, over time there has been significant alternate investment in transmission capacity by new entrants. Whilst much of this investment was initially focused between the capital cities (inter-capital transmission), investment has also occurred in a number of metropolitan and regional locations.

5.5 Of further relevance, specifically in the context of an assessment relating to the location of POI’s, is that there has been extensive investment in recent years into Telstra’s local exchanges with the deployment of competitive DSLAM based infrastructure. Since 2006, service providers such as, Optus, iiNet, TPG and others have installed DSLAMs infrastructure in more than 200 Exchange Service Areas (ESAs). The following table provides a summary of the number of ESAs where carriers have deployed DSLAM infrastructure.

Table 1: DSLAMs coverage

	No. of active exchanges
Optus (incl. XYZed)	CIC
iiNet	387 ³
TPG	393 ⁴
Primus	250 ⁵
Telstra	2,754 ⁶

³ iiNet website

⁴ TPG website

⁵ iPrimus website

5.6 Further, Optus notes that in its submission NBN Co indicates that of the 195 distributed POI's referenced in its proposed Option 4, all of these are capable of being served by multiple backhaul providers. Of these 14 locations are served by at least two providers with the remaining 181 being served by three to six providers.

Table 2: Potential POIs and the total no. of backhaul providers

	Aggregation POIs (14 in total)	Potential Metro and Outer Metro Connectivity Serving Areas (114 in total)	Potential Regional Urban and Regional Connectivity Serving Areas (81 in total)
No. of backhaul providers (under 20km in distant)	No. of potential POIs	No. of potential POIs	No. of potential POIs
1 backhaul provider	0	0	0
2 backhaul providers	0	0	14
3 backhaul providers	0	10	21
4 backhaul providers	0	4	18
5 backhaul providers	2	9	20
6 backhaul providers	10	78	8
7 backhaul providers	2	13	0

5.7 The above analysis indicates that over the past decade there has been significant investment in contestable backhaul infrastructure in certain metropolitan and regional locations by a number of players. Within these locations there is clearly intense competition and contestability of supply in the provision of backhaul capacity.

5.8 **Commercial-in-Confidence**

5.9 As a result of this competitive investment the ACCC has been able to exempt certain nominated routes from the scope of the DTCS declaration because they are subject to contestable supply. Under the current declaration, which was reissued in March 2009 the following routes have been exempted from the scope of the declaration:

- (a) 23 nominated capital regional routes;
- (b) 16 routes in capital city areas; and
- (c) inter-exchange transmission for 72 ESA's in metropolitan areas

⁶ ACMA, Communications Infrastructure and Service Availability in Australia 2008, Chapter 1 p5

5.10 Clearly, outside these locations a different picture emerges and significant competition concerns arise for access to competitive backhaul services, since Telstra is the only option available⁷. However, a disturbing aspect of NBN Co's approach is that it effectively seeks to by-pass the ACCC's considered deliberations and rulings on this issue without having put forward any meaningful analysis to justify its position. For example, NBN Co alleges that backhaul services are "potentially expensive" without putting forward evidence to support its claim. This claim would hold on non-contestable routes, but Optus submits that it is not the case on contestable routes.

Wholesale Broadband competition

5.11 It is also important to recognise that competition in the backhaul supply market also supports competition in the provision of voice and broadband services. Specifically, in those locations where DSLAM infrastructure has been deployed wholesale based voice and broadband services are offered in direct competition to Telstra. **Commercial-in-Confidence**

5.12 This fact is recognised in the McKinsey/KPMG report which notes that

*"There are several participants in the Layer 3 Wholesale market today, although mainly in the enterprise space, with national mass-markets access offers served primarily by Telstra and Optus"*⁸

Promoting competition

5.13 Given the level of infrastructure based investment noted above, Optus submits that enabling interconnection at a greater number of POI's will have a number of significant competition benefits;

- (a) First, it would enable access seekers to better utilise their existing infrastructure thereby promoting efficiency and maximising the opportunities for price and service differentiation between service provider;
- (b) Second, providing interconnection at a greater number of POI's provides maximum scope for wholesale based competition to develop in the provision of both backhaul and Layer 3 access services;
- (c) Third, it will encourage additional efficient investment and promote competition, especially in regional locations; and
- (d) Fourth, it will lower overall costs for the industry.

5.14 Each of these benefits is examined in more detail below.

Promoting efficiency and differentiation

5.15 Optus submits that the roll-out of alternate transmission infrastructure as identified above, has promoted competition in the provision of transmission services and in

⁷ For this reason the Government has committed to fund investment in regional transmission services through its Regional Backbone Blackspots Programme

⁸ Implementation Study for the National Broadband Network, page 427

related retail and wholesale voice and broadband markets. Optus agrees with the ACCC's conclusions that this *"rivalry in the transmission markets has contributed to providing innovation, lower prices and choice amongst RSPs in the related retail markets"*.⁹

- 5.16 Given that such investment has been recognised to be in the long-term interests of end-users, policy settings should encourage opportunities to maintain and nurture these benefits with the migration to fibre. Such opportunities will be greatly influenced by the number and location of POI's offered to the NBN. Optus notes that the ACCC has previously recognised the competition benefits associated with the location and number of POI's both in terms of promoting service differentiation and innovation and also enabling access seekers to utilise their existing infrastructure investments. In its draft decision on the FANOC Special Access Undertaking the ACCC noted that:

"The deeper/lower layer in the network an access service is, the greater access seekers can control the service they deliver to customers. As a result, they will have a greater ability to control their own costs and supply chain, differentiate service offerings, innovate and improve service quality. The ACCC considers that an approach to regulation that provides access seekers with this greater level of control over their own business and products is likely to promote the LTIE".

"Further, many access seekers have existing investments in DSLAMs and backhaul at those places. Having interconnection near existing investments will facilitate a smooth migration and is a relevant factor to be taken into account both in considering the promotion of competition and the interests of persons who have a right to use the service".¹⁰

- 5.17 This led the ACCC to recommend that;

"It does not appear justifiable to restrict interconnection to points higher in the network where greater aggregation of traffic has occurred".¹¹

- 5.18 This position is backed up in a report from Ovum Consulting to the ACCC on the appropriate specifications for a Broadband Access Service, which recommended that interconnection arrangements should include:

"Points of interconnection which are commercially feasible for service providers and support competition including competition for backhaul services from the first point of aggregation".¹²

⁹ ACCC – "Discussion paper on points of interconnection to the National Broadband Network", page 18

¹⁰ ACCC, Assessment of FANOC Special Access Undertaking in relation to the Broadband Access Service- Draft Decision, December 2007, page 67.

¹¹ i.b.i.d page 67

¹² Ovum Consulting, *Bitstream and Voice Services in a Next Generation Network*, 15 April 2008, page 67

- 5.19 A clear risk with NBN Co's proposal is that it may result in higher end-user prices because it eliminates any opportunity for competitive price tension to apply in the provision of backhaul services.

Wholesale Broadband market

- 5.20 As noted above, there is a wholesale market today for the provision of both voice and broadband services. With NBN Co's intention to limit the provision of access services at Layer 2 in the OSI stack there is a clear opportunity for this wholesale market to be maintained in the transition to the NBN. This fact is explicitly identified in the McKinsey/KPMG Implementation Study which notes that:

"It is reasonable to expect that given low barriers to entry, wholesale Layer 3 providers will emerge – either as standalone businesses or as wholesale arms of retail providers".¹³

5.21 **Commercial-in-Confidence**

- 5.22 However, the number and location of POI's will have a significant impact on the likely development of a layer 3 wholesale service market. Optus agrees with the ACCC's analysis that a key component of a Layer 3 service is the provision of backhaul aggregation, which would necessarily be restricted under NBN Co's proposed POI model. If interconnection is restricted to only 7(14) POI's it is unlikely that a sustainable Layer 3 wholesale services market will emerge.

Promotion of efficient infrastructure investment and promoting regional based competition

- 5.23 As has been noted above, there has been significant investment in alternate transmission infrastructure in the past decade. Optus submits that enabling interconnection at a lower level within the NBN is likely to promote opportunities for further efficient investment in additional alternate infrastructure over time.

- 5.24 NBN Co's paper makes it clear (at page 20) that The Fibre Serving Areas on the proposed NBN will have a much greater scope in terms of premises passed than is the case with the Exchange Serving Areas on the current copper network. This coupled with the ability for access seekers to develop a broader national presence on an open access NBN is likely to encourage opportunities for further investment in transmission capacity. That is, the migration to the NBN ought to open opportunities for further investment in backhaul capacity not foreclose those opportunities.

- 5.25 Optus submits that the opportunity for further investment will be greatest for regional areas, which have witnessed only limited competitive infrastructure investment to date. This opportunity has long been recognised by the Minister Conroy, who noted in an address to the ATUG Regional Communications Conference in May 2009 that;

"Broadband service providers have given a strong indication that improved backbone competition will allow them to expand further into regional Australia and deliver new options for users".¹⁴

¹³ Study page 427

¹⁴ Minister Conroy, Address to ATUG Regional Communications Conference May 2009

- 5.26 However, a solution which limits interconnection to only 7(14) POI's will focus all infrastructure investment in the capital cities. This will not only have significant adverse consequences for existing infrastructure, as discussed below, it will clearly do nothing promote investment in regional areas and will raise barriers to entry for regional based service providers.
- 5.27 For example, under NBN Co's proposed model, a regional service provider in Townsville that is largely focused on providing services to end-users within Townsville would need to establish interconnection with the NBN in Brisbane. This will require the service provider to locate much of its facilities and infrastructure in Brisbane. It will also mean that most of the traffic it carries will have to trombone between Townsville and Brisbane. That is, traffic from an end-user in Townsville connected to the service provider would have to be transferred to Brisbane and back Townsville to connect to, say, a local Government service also connected to that service provider in Townsville. Such an approach will represent a barrier to entry for regional or community based service providers.
- 5.28 This in turn will limit the opportunity to use the NBN to drive regional development, which is contrary to the Government's commitment to regional Australia as outlined in its recent agreement with the independent MPs.¹⁵

Lower costs for the industry

- 5.29 Optus submits that a distributed model in line with our recommendation in section 4 above is likely to be a lower cost solution for the industry, which will benefit end-users.
- 5.30 Firstly, it will enable service providers to leverage the benefits of rivalry from competing backhaul providers. This is likely to result in lower backhaul costs than a model which requires all service providers to source capacity from one provider (i.e. NBN Co).
- 5.31 Secondly, by leveraging existing sunk infrastructure investments it necessarily avoids the costs associated with building duplicate infrastructure such as asset stranding (refer to section below). As indicated in paragraph 5.24 above a distributed POI model will lower barriers to entry for regional or community based retail service providers who will avoid the need to backhaul all their traffic to a capital city POI.

Stranding of assets and sovereign risk

- 5.32 Given the analysis above it is clear that a proposal to enable interconnection only at the capital cities will lead to the stranding of significant amounts of existing transmission infrastructure that has been deployed by a range of service providers. This issue is explicitly recognised in the McKinsey/KPMG Implementation Study that warns of the significant stranding risks associated NBN Co only offering POI's at a highly aggregated level in its network;

"It would be possible for the NBN Co to further aggregate traffic and offer POIs in capital cities. This would enable smaller providers with limited network footprints, such as ASPs, to connect easily to the NBN at an affordable price. However, this would involve stranding significant lengths of competitive backhaul that have been deployed through

¹⁵ <http://www.alp.org.au/federal-government/government-agreements/>

*healthy market investment and would harm incentives for ongoing investment. It would also be an inefficient use of funds for NBN Co to procure access to backhaul which is already available to service providers at competitive prices”.*¹⁶

5.33 Optus notes that this backhaul infrastructure has been deployed in good faith and often in response to policy measures from the regulators that have encouraged such alternate investment. If the infrastructure is then stranded through new policy initiatives, NBN Co will necessarily face claims for compensation. Such compensation is likely to run into hundreds of millions of dollars.

5.34 **Commercial-in-Confidence**

5.35 The stranding of transmission services used to support fixed line services will also have flow-on implications for other services. For example, it is likely to become uneconomic in the future for mobile carriers to self-supply backhaul capacity to mobile base stations, when the scale advantages mean that cheaper services will be available from the NBN.

5.36 Any policy which results in stranding of existing competitive infrastructure will heighten sovereign risk attached to infrastructure investment in Australia.

Summary

5.37 In summary, Optus submits that there are compelling competition arguments to require NBN Co to offer interconnection at a greater number of POI's than it has proposed. Such a policy is clearly more consistent with the long-term interests of end-users than that advanced by NBN Co.

6. Universal Wholesale National price

6.1 One of the key arguments NBN Co has raised in favour of its approach is that it will help to facilitate the achievement of the Government's objective for Universal National Wholesale Pricing (UNWP). Central to this is NBN Co's apparent insinuation that under a more distributed model access seekers would be unable to access transmission on reasonable terms and that there are significant cost differentials between metropolitan and regional transmission routes. However, NBN Co has not put forward any compelling evidence to back up this claim, nor has it adequately assessed alternative solutions to address the issue it raises.

6.2 Optus acknowledges that there is a clear difference in the competitive dynamic and cost structures between the provision of transmission capacity between contestable and non-contestable routes. However, in respect of routes that are contestable the cost differences across these are not significant. Optus agrees with the ACCC that “it is possible that the UNWP – or more specifically, the *delivery of a geographically uniform cost structure to retailers – could be achieved independently of POI location considerations*¹⁷”.

¹⁶ Implementation Study for the National Broadband Network, page 333.

¹⁷ ACCC – “Discussion paper on points of interconnection to the National Broadband Network”, page 21

- 6.3 Under Optus' preferred model service providers would have the choice of interconnecting directly at between 200 and 400 locations and using their own transmission backhaul infrastructure or sourcing competitive backhaul services to carry traffic from these POI's to their own specified aggregated Point of Presence. Alternatively, service providers could take Layer 3 services from wholesale providers delivered to their point of presence.
- 6.4 Uniform averaged wholesale prices would be achieved under this arrangement since NBN Co could be required to charge similar access fees for services provided between the end-user and each of these POI's.
- 6.5 Whilst different access seekers might face slightly different cost structures for carriage of services above the POI, those cost structures are likely to be reasonably uniform across the country. The cost differentials on a per user basis associated with different POI locations should be no more significant than those that would arise from other costs inputs to an end-user service (such as those arising from inter-capital transmission, international capacity, provision of applications and back office systems and services). Put simply, the location of POI's will not undermine the Government's objective of ensuring that end-users face similar prices for accessing services on the NBN wherever they are located.
- 6.6 As indicated above, there is a clear risk by placing primacy on the achievement of a uniform wholesale price structure, NBN Co's proposal may raise end-user prices by removing any opportunity for competitive price tension to apply to the provision of backhaul services.
- 6.7 A concern which has been identified but which ultimately addressed in the McKinsey/KPMG report with this approach is the ability of access seekers without their own infrastructure to secure competitively priced backhaul services from third parties. This issue is unlikely to eventuate in practice since competitively priced backhaul services are currently available. As noted in table 2 above, of the 195 distributed POI's identified by NBN Co, all are addressed by at least two backhaul providers and 181 are addressed by 3 or more backhaul providers. As indicated in table 1 above, three players currently have a presence in 400 Telstra local exchanges. In any event if a concern arose about the pricing of backhaul services above the POI, then options are available to address such concerns. For example, the ACCC could set a benchmark price for backhaul services and existing providers could tender to meet that price point. If they were unwilling to do so then NBN Co could be permitted to consolidate the POI at the location where the specific concern arises.
- 6.8 This issue is recognised in the McKinsey/KPMG Implementation Study which notes in support of its recommendation 51, that:
- "On a regular basis the location of POIs should be reviewed to determine if they need to be taken higher or lower in the network. POI's would be taken higher if the presence of multiple backhaul operators did not translate into affordable pricing on selected routes. In other words, NBN Co would over build duopoly routes in this instance".¹⁸*

¹⁸ Implementation Study for the National Broadband Network, page 334

- 6.9 For completeness, Optus notes that it should not be NBN Co's role to define how the Government's objective of ensuring end-users face uniform wholesale prices is to be met.

7. Other Technical considerations

- 7.1 The discussion paper and NBN Co's proposal also highlights the need to carefully consider how migration to the NBN will impact on current interconnection arrangements. NBN Co will offer a wholesale carriage service that is contended to support a particular high-speed broadband access service. NBN Co will not offer voice capability which will remain the responsibility of retail service providers, such as Optus and Telstra etc.
- 7.2 Optus submits that NBN Co's proposed approach to POI's will have significant flow-on impacts on the architecture of existing interconnect arrangements between market participants. This can best be illustrated by examining the existing fixed voice interconnect arrangements.
- 7.3 Currently Optus has around **Commercial-in-Confidence** into the Telstra network for the termination of fixed voice traffic and origination and termination of Long Distance, International and 13,1300,1800, 1900 traffic. Under NBN Co's proposed model, once the NBN is fully operational it would highly problematic for Optus to maintain interconnection on the basis of the current arrangements. To do so would require the double tromboning of traffic. This is illustrated in the diagram set in Attachment 1 to this paper.
- 7.4 The diagram in Attachment 1 provides an overview of the routing of a local call from an Optus customer located in Newcastle to a Telstra customer in Newcastle, the call would be carried to the NBN POI in Sydney, then onto the Optus network back to Newcastle, across the POI to Telstra in Newcastle and Back up to the Telstra POI in Sydney for final carriage on the NBN network back to Sydney.
- 7.5 Similarly as set out in Attachment 2, for an Optus preselected customer located in Newcastle, making a long distance call to a Telstra customer in Melbourne, the call will be carried to the NBN Access POI in Sydney, then onto the Telstra network back to Newcastle, across the Optus POI to Optus in Newcastle. The Optus network will then carry the call to the Optus POI in Melbourne hand it to Telstra for termination. Telstra will then carry the call to the NBN POI in Melbourne for terminating to the customer.
- 7.6 Clearly, such an approach would be highly inefficient and, therefore, existing interconnect arrangements will need to change. It is likely that this will result in all interconnect traffic, both voice and data, being handed over in the capital cities. This would effectively lead to the establishment of a small number of Mega POIs in each of the capital cities. Such an outcome would have a number of unforeseen and potentially adverse consequences.
- (a) It will mean that NBN Co will become the default carrier for all voice traffic within each state, including local, long distance, calls to special services, fixed to mobile and mobile to fixed calls;

- (b) It could raise the costs of termination since carriers would not be able to utilise current far end handover arrangements which help to reduce interconnect payments; and
- (c) It will heighten the risks associated with network failure. If a facility goes down in Sydney, for example, it would take out the entire traffic for all of New South Wales.

7.7 These issues are likely to be further complicated in the transition period to the NBN with significant additional complexity introduced as traffic is carried on both the legacy and new networks. It will not be possible to distinguish between whether a call is to a customer on the NBN or the Telstra CAN by simply analysing the calling and called numbers.

Appendix

No.	ACCC Question	Optus Response
1	<i>To what extent will the number and location of POIs impact competition in the backhaul market in the short term and in the long term?</i>	NBNCo location of POIs is a critical component in the market for backhaul services in short and long term. Refer main submission.
2	<i>To what extent (if any) do you anticipate that any of your transmission assets (or other relevant assets) will become stranded under any of the proposed approaches to POIs on the NBN? What is the value of and location of those assets?</i>	See Section 5
3	<i>What is the current state of competition in the relevant backhaul markets? To what extent are backhaul services priced competitively in CBD, metro, regional and remote areas?</i>	See section 5
4	<i>How would investment in backhaul infrastructure used for other networks, such as mobile and non-NBN fixed networks, be affected by the number and location of NBN POIs?</i>	Investment will be impacted by the number and placement of POIs. Refer section 5.
5	<i>To what extent will the number and location of NBN POIs impact competition at the retail level in the short term and in the long term?</i>	Refer Section 5.
6	<i>Is the emergence of a Layer 3 wholesale sector likely under the NBN? If so, how will the location of NBN Co's POIs affect this market in the short</i>	Refer section 5.21

	<i>and long term?</i>	
7	<i>What is the preferred number and location of initial NBN POIs and why? How would this be different in the short term and the long term</i>	It is understood that in the very short term (i.e. NBN Co 1 st release sites) it may be necessary to consolidate POIs from a logistic perspective, however it is considered imperative from a competitive standpoint that once NBN Co has stabilised the provision of services over its networks it provide POIs at all contestable locations. Refer section 4 of submission.
8	<i>What are the strengths and weaknesses of NBN Co's preferred 'composite model' outlined in its Public Position Paper?</i>	Refer main submission.
9	<i>Where a composite or low-medium consolidation approach is adopted for NBN Co's POI location, what factors should be taken into account in determining the location of the distributed POIs? For example, is the number of available backhaul routes relevant? If so, what should be the threshold?</i>	A minimum of 2 competing backhaul providers close to the POI should be the threshold for the decision on POI. This should be aligned with an efficient architecture and design from NBN Co. Optus submits that POIs with similar scale in terms of the number of premises served should be one of the criteria resulting in consolidation of smaller fibre serving areas.
10	<i>On what terms should NBN Co supply backhaul from the small number of centralised aggregation POIs to the decentralised disaggregated POIs if its 'composite model' is adopted?</i>	Optus does not consider it appropriate for NBN Co to provide backhaul between its POIs. Optus considers that POIs should be provided at locations with competitive backhaul and NBN Co should not enter this market.
11	<i>If NBN Co supplies backhaul, should this be on a Layer 2 Ethernet basis or in the form of dark fibre (or both)?</i>	NBN Co should be restricted to providing only layer 2 access services. These services should be from a POI to a premises or other non POI location (such as a base station).
12	<i>Under NBN Co's 'composite model', what "business rules" should govern when NBN Co will allow interconnection at the distributed POIs?</i>	Optus considers that the composite model proposed by NBN Co will distort the backhaul market. NBNCo should not be able to 'rule' on the types of services offered at their POIs. Interconnection to the POIs should be at the discretion of the RSPs.
13	<i>What should be the process to coordinate the addition of interconnection at the</i>	The process for interconnection at all POIs should be the same.

	<i>disaggregated POIs?</i>	
14	<i>What factors should trigger a review of the location of NBN Co's initial POIs?</i>	A review of the location of POIs should be based on the expansion of competitive backhaul to an NBN Co fibre serving area. Optus recommends that the ACCC should monitor the likely availability of contestable backhaul in line with recommendation 51 of the McKinsey/KPMG Implementation Study.
15	<i>What mechanisms should be used to effect a change to the location of NBN Co's POIs? (i.e. consultation requirements and notification periods)</i>	Extensive consultation should be undertaken with a significant migration period to enable effective delivery of competing backhaul to the POI and associated delivery of layer 3 wholesale services from the new POI.
16	<i>What are the implications of the number and location of POIs for potential Layer 1 unbundling and home-run network topology for the NBN?</i>	Consistent with its response to the Implementation Study, Optus does not consider that either a home run architecture or unbundling of dark fibre is an appropriate solution for further unbundling from the POIs. Optus considers that wavelength unbundling is the appropriate mechanism to trade off the increased cost of the home run architecture and the need to provide higher capacity over the fibre access.
17	<i>To what extent can UNWP be achieved independently of decisions about the number and location of POIs?</i>	Refer to section 6 in Optus submission
18	<i>Is NBN Co's definition of UNWP "...that Access Seekers should face the same total wholesale cost from any premises to a designated state capital city point of presence" an appropriate one? If not, what alternative definition would you propose?</i>	It should not be NBN Co's role to define how the Government's objective of ensuring end-users receive uniform wholesale prices is to be met. The definition should relate to the delivery of traffic from an end-user to one of the distributed POI's.
19	<i>To what extent can it be ensured that Access Seekers face the same total wholesale cost in supplying services to end-users across regions independently of decisions about the number and location of POIs? That is, are there alternative ways to the approach proposed by NBN</i>	Refer section 6 of Optus submission.

	<i>Co of ensuring that Access Seekers face the same total wholesale cost in supplying services to end-users across regions?</i>	
20	<i>If NBN Co's preferred composite model were to have no price differentiation between interconnecting at designated capital cities or at CSA locations, what impact would this proposal have, particularly on regional retail markets and regional backhaul transmission markets?</i>	Refer section 5 and 6.
21	<i>Should the same approach for the number and location of POIs for NBN Co's fibre services be adopted for wireless and satellite services? Why and/or why not?</i>	<p>NBN Co should adopt the same approach for the wireless service as the technical architecture for a layer 2 wireless service is similar to that of the fibre service.</p> <p>However whilst the architecture of a satellite based service does lend itself to a consolidated POI model NBN Co could architect the network to allow a more distributed POI solution for the satellite with coverage areas for the POIs aligned to those of the fibre and wireless delivered services.</p>
22	<i>In relation to the data provided in Appendix A of NBN Co's Public Position Paper, do you believe that NBN Co's input information is accurate, and has NBN Co correctly assessed the current state of the backhaul and competitive DSLAM markets?</i>	<p>Optus does not have sufficient details of the networks of all other backhaul providers to verify the data provided by NBN Co.</p> <p>As a general point, Optus does not believe that NBN CO has effectively or accurately analysed the state of competition in the backhaul market. If it had, it would not have proposed an aggregated POI model.</p>
23	<i>Are there any other considerations or information that you think are relevant to the selection of NBN Co's POI locations?</i>	See section 7