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Submission to:

The Senate Select Committee on the National Broadband Network

I am pleased to be able to provide this submission to the Senate Select Committee on the National Broadband Network, specifically to provide independent expert opinion and observations regarding the progress of NBN Co to date and against the recommendations and material contained within the KPMG/McKinsey NBN Implementation Study.

Overall the KPMG/McKinsey NBN Implementation Study reflected a very high quality of analysis and detail in the challenging area of advising the Government on how best to determine and implement various policies required to support the NBN and NBN Co as well as analysing in depth the potential business case for funding the NBN and achieving an acceptable return on investment. I say this upfront, as it has been difficult to analyse the complete report and provide useful feedback within the short time period allotted. As such, I have tended to focus on the points of contention more than the points of support. Whilst this document may appear represent a somewhat negative overview, is not the intention--as overall the NBN Implementation Study was a comprehensive, in-depth and accurate assessment of the problem space.

This response aims to represent the combined best interests of:

- **first** the Australian residential and business users (consumers);
- **second** an open, competitive and efficient retail service provider marketplace (producers); and
- **third** a long-term economically viable NBN Co wholesale access provider (enabler).

It is hoped that this hierarchy of consideration is aligned with the Governments vision for the NBN as well as the remaining stakeholders (end-users, NBN Co, other carriers, businesses, vendors and suppliers).

Section

1

Overview

Nationwide Broadband is a Noble Target

Providing all Australian's with available, accessible and affordable broadband, regardless of their geographical location or their socio-economic status will not only help to improve the quality of life for all citizens, it will also reduce costs and improve efficiency throughout the whole economy. In order to achieve this outcome though, it is crucial that the NBN successfully eliminate the existing digital divide in Australia such that **all** citizens have access to high performance broadband services regardless of location and it is crucial that the NBN also successfully eliminate the socio-economic divide such that **all** citizens, regardless of income, can afford at least a basic broadband service and its associated benefits of access to health, informational, entertainment, business and government services.

In economics, this combination of affordability, coverage and performance is achieved through a combination of addressing social welfare (making basic services affordable to all), ensuring increased output efficiency (making premium services available to those who demand and are willing to pay for them) and supporting a free, open and competitive marketplace where providers can actively innovate services for consumers (making services available to everyone at every price-point). Throughout this submission, the focus will be on ensuring that the NBN support innovation, support the evolution of a free, open and competitive marketplace and support affordability through social welfare without compromising the long term viability of the market itself.

Preserving Innovation in the context of NBN Co

Innovation by definition occurs only when people use products or services in entirely unanticipated and often unexpected ways! Innovation is fostered by increasing choice and flexibility around how product and service components can be acquired and then utilised; if products and services are constrained to say a single bundle or forced tie-in combinations--then innovation around those products and services will also be constrained and even at times completely prevented.

With this definition in mind, it is noted that NBN Co is being directed and seeks to "*occupy as small a footprint as possible in the overall value chain, leaving retail service providers (RSPs) with significant ability to innovate ...*". The challenge here of course, is knowing exactly where to balance the proverbial Occam's¹ razor with an alternative Einstein's² razor. The NBN Implementation Study and NBN Co independently have often confronted various challenges by analysing the options and then making a specific decision or choice. In some cases, these choices are made in an exclusive manner, i.e. to the exclusion of other options--I contend that in many of these cases the more correct approach would be to offer multiple choices into the market and then let natural market dynamics converge upon and determine the optimal balance. This is one of the areas of focus for this submission.

¹ Occam's razor can be paraphrased in this context as aiming to achieve some measure of perfection in a solution by removing complexity and simplifying to such a point that it precisely and only solves the problem at hand.

² Einstein's razor can be paraphrased in this context as aiming to achieve some measure of perfection in a solution by simplifying but not over-simplifying; noting that some problems are actually better addressed by a slightly more complex, generalised approach. The challenge is recognising when, where and why to stop simplifying.

Preserving an Open and Transparent engagement with NBN Co

The KPMG/McKinsey Implementation Study recommends several times (for instance page 122, 129, 453 and others) that NBN Co actively engage with end-user interest groups, industry players and the wider community to ensure the best-aligned delivery model for its wholesale services. The study goes further to say that such engagements should be conducted in "an open, transparent and consultative approach (which) will reduce the risk of misalignment and assist more rapid adjustment".

Open and transparent requires that NBN Co release information publicly in a timely manner that not just describes its actions and intentions (open) but also describes the means or process by which the company has arrived at various conclusions they may have formed (transparent). Unfortunately there have already been numerous engagements undertaken by NBN Co, which have neither been open (closed tenders and vendor selection, invite only technology briefing sessions) or may have been open (wholesale products specification industry engagement) yet failed to be transparent (summary response for the industry engagement did not disclose all the considerations or viewpoints used to support the decision processes of NBN Co).

I believe it is crucial that NBN Co become much more open and much more transparent in its operation, as it is ultimately being funded and supported by the elected Government of the peoples of Australia.

Key and immediate concerns (POIs, QoS & Engagement)

At the highest level, my key and immediate concerns regarding NBN Co and its activities are focused around the following:

- The decision to offer only the AEB product exclusively of the LEB product when backhaul to a local FSA is considered uncontested (affects roughly 1.5 million premises). This structure was first proposed as part of the NBN Co Wholesale Products Description Industry Engagement (Dec-2009), was re-affirmed recently in the summary response to industry consultation after reviewing the engagement submissions (Mar-2010) and is supported by the aforementioned recommendations (which should be rejected) within the NBN Implementation Study (May-2010). Although this decision assures a 'level playing field', it also creates a strong disincentive for new players to enter the competitive backhaul market (explicit concerns were raised by myself, Telstra, Nextgen, Macquarie Telecom and implicitly also raised by ATUG and ISOC-AU during the industry engagement). This approach reduces competition and removes all possibility of establishing market benchmark pricing naturally. In short, we will create another monopoly (albeit possibly regulated in a similar manner to how Telstra is currently regulated), namely in the backhaul of rural and isolated communities. We also create an environment that actively discriminates against local community services and potential local service providers, as well as constraining innovation. What the currently proposed solution fails to achieve is a "fair and competitive" environment despite delivering a colloquial 'level playing field'.
- The pending disclosure of the QoS implementation and subsequent product pricing to the ACCC. In particular, if NBN Co fail to define a capable end-to-end QoS architecture (as recommended by the Implementation Study) and a decision is made instead to offer a 'transparent pipe' type service over which RSPs are expected to manage their own QoS based purely on choosing to overbook their POI (with relative priority handling implemented by NBN Co)--then NBN Co will have missed a key market requirement to address social welfare along with efficient output (mandatory requirements for incumbent monopoly footprints). This

was the topic of a paper I have published on the subject which also notes that such an approach will force other market players to invest in and offer this capability (as it is absolutely necessary). Those players (there will be very few, due to the costs involved) will either indirectly monopolise the NBN Co assets and establish the necessary market pricing capability themselves; or worse they will directly compete against NBN Co which would damage cost effectiveness overall. Regardless, and of even greater concern, is that they will be able to do so without being subjected to any corresponding regulatory controls. This would be disaster in my opinion, especially if it happens and we were forewarned. As a consequence this also adds to the 'whole of network' cost structure and those additional costs will inevitably be extracted directly out of the end-users through increased prices. Again, an undesirable outcome.

I am also concerned about the efficiency of the current engagement model that is allowing risks such as those highlighted above to eventuate in the first place and to take such time and effort to potentially resolve (after 6 months, Dec-May, these issues are still unresolved). I see that this is happening for a number of reasons, but primarily they may all have a single root-cause. Namely NBN Co appear to be under such challenging time constraints (delivery deadlines), resourcing pressures (staff and contractors) and performance pressures (Government stakeholder) that they are unable to step aside from the traditional Telco models that their staff and advisors are most familiar with, to assess properly all the paths they could be considering. This 'time-poor' mode of operation is causing NBN Co to make the following mistakes at a crucial time in the early design and architecture phases that may impact the network, the market and the economy long-term:

- NBN Co are clearly over reliant on the input, guidance, feedback and support of the existing Telecommunication Carriers and Vendors in Australia. It is clear that these entities are acting purely for self-interests. This is especially evident when you consider that the Communications Alliance charter for their NBN working groups was to consolidate an agreed member position for NBN towards NBN Co. Yet despite this, all the larger members still felt compelled to submit their own private responses to NBN Co as part of the industry engagement process. This alone raises alarms bells for me, however I have no visibility on the submitted documents, so I am not in a strong position to comment. NBN Co need to be much less reliant and certainly much less receptive to the existing Telecommunications players, as all that will achieve is a replication of the same structures, behaviours and services that we have now, i.e. it will constrain opportunities for any disruptive innovation and/or change. We will simply be left with 'same old, same old'; potentially just the same players offering the same services within the same market structures which deliver the same fundamental outcomes. True innovation will require at the very least, a different and fresh approach to what we do now.
- NBN Co are clearly struggling to analyse all possible implementation decisions, hence they are being forced to focus on identifying a single solution and then implementing that. Whilst I understand that the defence internally will be something along the lines of 'we can always come along later and add something if we have too, this is just the starting point', that doesn't work in the cases above. This is the early design and architecture phase, this is where if mistakes are made, they are really expensive or even impossible to correct once deployment and operation has begun. In particular, once vendor selection has occurred, once a submission is approved by the ACCC and once legislation policies have been passed, it will be very hard to correct any mistakes. For so many reasons, this is neither the appropriate time nor the place to begin to compromise the future telecommunications access regime for the next half century. Forcing a 'one size fits all' approach will both hamper and constrain the intended innovation and competition objectives. The simple message here is DO NOT LIMIT choice. There is no need to force the 'one size fits all' paradigm, as

all that is going to do is appeal to the existing large and highly integrated players. Everyone is much better served by adopting a multi-size, multi-colour model, that is designed to address and appeal to all players in the market (both existing and new). Then natural market dynamics will kick in and take effect to the benefit of all users. If we maximise choice and maximise flexibility within the constraints of costs, then we ensure a healthy, vibrant, innovative and competitive market place. This ensures the best outcome possible.

- NBN Co have documented and presented verbally many times their 'primary objectives', namely "Coverage, Competition, Customer Care, Cost Effectiveness and Collaboration". These 'primary objectives' have been analysed and broken down internally into a number of 'guiding principals' which NBN Co use to test and evaluate all their decision points against. There are a number of critical mistakes being made in this process, especially around feedback analysis. Namely, again due to the 'time-poor' nature of their staff and contractors, NBN Co has failed to periodically re-evaluate the 'guiding principals' to ensure that they are still aligned with the original 'primary objectives'. A key example of this is whether or not the 'level playing field' principal does in fact support improved 'competition' in the market place? I contend that is not always the case as argued above in my concerns. There is also clearly great pressure on NBN Co to commit decisions and move forward in order to maintain progress; when you are required to make decisions under pressure you have a natural tendency to fall back on solutions you understand and know will work, rather than take risks by proposing novel and innovative (but untested) solutions. This clearly lends towards NBN Co simply re-inventing an old world telecommunications regime as that is what the telecommunications market understands best. Finally, this 'time-poor' culture also affects NBN Co's ability to properly re-asses their solutions and decisions against these 'primary objectives' as part of their engagement process. For example in the area of 'collaboration', it is clear that NBN Co are unable to appropriately consider and accommodate all the responses to the proposals they put out, before they are required to commit a decision and move on to the next problem phase. Worse, it is almost apparent that even if they could take the time to consider appropriately all the responses, there is little allowance being made to actually permit changes to the current path been taken. Their deadlines currently appear to have little if any flexibility for correcting mistakes, performing open discovery or possibly having to reconsider an entire solution or proposal in light of feedback. In other words, everything is practically a 'fait accompli' (i.e. decided before feedback can even be considered). This works if and only if you always get everything right the first time and never make a mistake. This is simply not realistic.

Many of these issues really need to be looked at and resolved before vendor selection occurs for the active components (as decisions on QoS especially will have a material impact on vendor selection) and prior to approval of Policy Legislation and/or ACCC Delegated Service Submissions. Both of which would potentially commit the industry down a path that results in reduced end-user take-up through higher prices, lower service performance and reduced industry innovation.

In closing, I am strong supporter of adopting self enforcing solutions and then allowing natural market forces to evolve optimally fair solutions. I am also a strong supporter of fostering innovation by offering maximum choice and flexibility at minimal costs. Such systems provide for a rich and vibrant set of competing solutions to flourish.

Section

2 Response to NBN Implementation Study

How objectives can be misinterpreted during translation into principles

The NBN Implementation Study clearly defines Government objectives for the NBN, for instance the coverage objective laid is summarised as:

"Government has set an objective for the NBN initiative of delivering FTTP services enabling speeds of up to 100Mbps to at least 90 percent of premises in Australia, with the final 10 percent provided speeds of at least 12 Mbps. NBN Co will act as the primary vehicle for achieving this coverage objective and should ensure services are available to all valid premises in Australia, addressing infrastructure gaps and bottlenecks where necessary." (page 58)

The NBN Implementation Study however also defines some of its own guiding principles (which despite the attribution were not directly expressed or communicated by the Government), one of which is summarised as:

"Government's vision for the NBN is that it will provide a platform that allows service providers to compete on a level playing field to deliver retail services to end users." (page 59)

These guiding principles are then subsequently reused throughout the entire study³ as justification for many key decision points. Unfortunately and especially in the case of this example "level playing field" principle, the outcome can be one that hampers and/or prevents healthy market competition from evolving. In this particular case, the study often interchanges the concepts of an "open" or "fair" system as being representative of an economic "level playing field". This interpretation is incorrect on several accounts. First, there is no recognised concept of a "level playing field" in economics. In economic analysis of policy it is often interpreted to mean an "equal rules and equal opportunities" environment. Second, lacking a clear and precise definition of what a level playing field is really intended to be has meant that "some politicians, economists, lawyers and business people have seized on the level playing field as a utopian goal to be achieved by regulating away the differences between people. Of course, in a competitive economy, which seems to be the only sort that works, the field is never level. It is the irregularities that create competitive advantage"⁴.

Many studies show that true "open and fair" market which is devoid of any artificial handicap rules or processes, results in a better economic outcome for all parties concerned, as healthy market competition will occur naturally. A competitive market is the only known market that exhibits overall efficiency and benefit automatically.

³ The concept of a level playing field is referred to on pages 59, 73, 102, 146, 152, 199, 260, 323, 333, 334, 335, 387, 419, 429, 435, 451, 455, 457, 459, 461, 462, 463, 465, 476, 522, 530.

⁴ ANZ Financial Dictionary

What is really meant by the term "a level playing field"

The term "a level playing field" can be traced back to its first use in India in 1953 "In polo, better players 'give away' goals to their weaker opponents to create a level playing field for a match" in reference to the concept of handicapping in sports to allow competitors to appear to be more closely matched (and hence the game more exciting to watch). Its first use as a business colloquialism originates circa 1977 where John Bolger was quoted as saying "Our philosophy is that we have no problem competing with the mutual savings banks if they start from the level playing field" in reference to changing rules within the financial industry to permit improved entry for new players. Since then it has appeared numerous times in many contexts and with many different interpretations ranging from handicaps, subsidies and taxes all the way through to equal opportunities, fair rules and open access policies. It is clear then that the term is heavily loaded and lacks formal definition. As a result, there have been some recent examinations of the application of policies and incentives aimed at "levelling the playing field, many of which conclude that if the resulting policies are aimed at removing or masking the ability for market players to differentiate from one another and to leverage strategic advantage then the end result is a loss of healthy competition⁵⁶⁷⁸. In conclusion, it is dangerous to apply the loose concept of "levelling a playing field" without fully understanding the implications such actions or decisions based on an interpretation may have on the evolution of a truly competitive market.

The focus of any actions must really be towards ensuring an "open, fair, healthy and competitive marketplace" rather than on the colloquial "ensuring a level playing field" by removing opportunities for players to compete and differentiate. There are occasions within the document where this term has caused incorrect conclusions to be drawn and hence the recommendations (Recommendations 50, 51 and 52.3 specifically) are flawed and should be rejected in preference of mechanisms which re-establish a fair and competitive market environment.

Support for innovation, flexibility and ensuring healthy competition

In several areas, the Implementation Study was unsure of concrete recommendations that it could or should make due to conflicting information coming from the industry experts the study members interviewed or from the lack of formal industry standards to provide guidance. This situation was especially apparent in the areas of QoS and in the areas of promoting a strong, healthy and vibrant competitive marketplace. In both these areas, the Implementation Study correctly listed all the desirable outcomes and options available that may impact such outcomes, yet it sadly fell short by failing to determine the most appropriate mechanism by which to ensure the outcome. In the case of "levelling the playing field", the Implementation Study made serious errors. In the case of recommending an appropriate QoS strategy the Implementation Study delegated responsibility to NBN Co to determine the appropriate course of action.

This conflict and confusion is best illustrated by quoting from the Implementation Study directly. However, it is important to note, as mentioned earlier, that much of the concrete

⁵ "Equal rules or equal opportunities? Demystifying level playing field", Marja Appelman, Joeri Gorter, Mark Lijesen, Sandar Onderstal and Richard Venniker, CPB Document, No 34, October 2003.

⁶ "The myth of the level playing field: Knowledge, affect & repetition in public debate", Jeremy N. Sheff, St. Johns University, 2009.

⁷ "The myth of the level playing field", Sam Bostaph, The Future of Freedom Foundation, 2005.

⁸ "Economic effects of 'leveling the playing field' in international trade", Alan V. Deardorff, The Journal of International Trade & Economic Development, Vol 19, Issue 1, March 2010 pp9--32.

guidance on establishing healthy competition and leveraging QoS mechanisms to deliver price differentiation and support social welfare were all covered in my original response to NBN Co's December 2009 Wholesale Products Engagement which I strongly recommend NBN Co adopt as a viable solution.

Pg 104: "The network needs to be designed in a manner that provides flexibility for future innovation. Without doing so, innovation is likely to be stifled on the network and there is a risk that the network will be unable to support cutting-edge services offered internationally. To support innovation, the design of the NBN should anticipate that innovation can occur along a number of dimensions, including the physical layer of the network, the end-user devices connected to the network and services offered across the network".

Agree.

Pg 122: "As custodian of Australia's principal broadband platform, NBN Co must consider the needs of consumers, business, public institutions, service providers, suppliers and many adjacent industries. The capacity of the NBN to serve the national interest through the economic and social benefits associated with its services will be correlated with responsiveness to stakeholder needs".

Agree.

Pg 142: "As new and innovative services emerge on the NBN, value will be created for industry, users and the wider economy. However, NBN Co, as a wholesale-only network provider, is unlikely to capture significant proportions of this value as direct revenue. This challenge is recognised when modelling revenue for the NBN. Hence, the modelling takes a conservative approach to new sources of revenue that NBN Co can reasonably expect to capture".

Disagree. NBN Co can capture some of this revenue which makes the business much more favourable and also works to ensure a more open, healthy and competitive RSP environment.

Pg 143: "In its broadest sense, NBN's service offering is defined by two considerations: the layer in the network stack in which it will operate; and the geographic extent of its offer. These considerations define the logical and physical boundaries of the network, and the activities that will need to be undertaken by service providers using the NBN to deliver services to end users. Therefore, these considerations influence the degree of innovation and control left open to service providers as well as the nature of their business models and the industry structure that is expected to emerge".

Disagree. NBN Co can further differentiate its services via QoS mechanisms if appropriately deployed. Again, such mechanisms foster innovation, support social welfare and ensure efficiency of output.

Pg 146: Provides much discussion about the compromise or trade-off between advantages and disadvantages for offering service at each layer in the stack (layer-1, layer-2 and layer-3), yet it is only

much later that the realisation occurs that it is possible for NBN Co to simultaneously offer wholesale access to all layers, just at different price points and with different levels of service capability.

Noted.

Pg 149: "A specific dimension of specialist connectivity is quality of service (QoS). QoS is a means of prioritising packet-switched traffic to create different classes of service to suit different application needs. Currently, wholesale bitstream services are mainly used to delivery Internet services--most notably in the UK and NZ, where ISPs leverage bitstream services on DSL platforms. Whilst creating QoS services across network boundaries at Layer 2 is still relatively unproven for mass-market advanced services such as IPTV, it is well established in carrier network management and be technically feasible within the fibre footprint".

Disagree. QoS across layer 2 is proven in many networks, including the FTTP networks of NZ and Singapore. Singapore however have a serious implementation error which should not be duplicated by NBN Co.

Pg 199: "Price differentiation is an important mechanism for network businesses to optimise revenues and demand. However, upselling on the basis of speed has proven difficult for ISPs in the DSL market, and it is a source of great market uncertainty".

Agree.

Pg 201: "NBN Co should create a broadband platform which anticipates the greatest range of potential services. ... NBN Co will have to enable higher levels of performance through quality of service (QoS) parameters. The challenge lies in anticipating the implementation of standards. Although protocols for providing end-to-end QoS across multiple networks are well advanced, such protocols have not yet been deployed at scale to support commercial services. Most implementations of QoS dependant services on telecommunications networks are still reliant on multiprotocol label switching (MPLS), or similar solutions which employ control planes within the same Layer 2 environment".

Strongly Disagree. I suspect KPMG/McKinsey were ill-advised in this area and I would welcome the opportunity to illuminate it a little.

Pg 202: "Recommendation 40: That NBN Co be required to offer wholesale services that support the implementation of carrier-grade QoS functionality, allowing retail service providers to deliver premium grade services from within their network to end users".

Agree. However indications are that NBN Co are just as unsure how to proceed with supporting QoS as KPMG/McKinsey were. I suspect that this is because they are talking to the same industry experts, many of whom have vested interests to protect their employers future business operations and revenue streams.

Pg 253:"Pricing of NBN services must reflect the needs of numerous stakeholder groups: Government, the ACCC (on behalf of end-users) and customers. These groups have a range of objectives of take-up and long-term commercial viability of NBN Co, amongst others".

Agree.

Pg 254:"Gradually increasing prices over time. The relative value of fibre is likely to increase over time as new services and uses emerge. As it does, NBN revenues should increase to provide a fair return on the network investment... this trajectory could be achieved in two ways: a change in demand for new or higher priced services; or a price increase on basic services (within the ongoing affordability requirement".

Warning. I agree with the former option and strongly am against the latter option. It is important to note that almost all technology based services have a tendency to follow Moore's Law, that being that as performance grows and capabilities improve the costs are reduced. Whilst it is important to ensure revenue growth, it should not happen through price growth. What should drive revenue growth is increased demand for higher-valued (QoS based) services.

Pg 255:"Demand for higher priced services will drive an increase in average revenue per user. However, the extent of this revenue opportunity is uncertain".

Noted. This highlights the lack of understanding KPMG/McKinsey had in assessing this area.

Pg 256:" Price architecture refers to the components and features of pricing for NBN services and how they come together. NBN Co must be allowed flexibility to develop this architecture to achieve commercial success. Pricing decisions are dynamic and challenging. They are best left to the company, within its regulatory and policy constraints... Pricing flexibility is important to network and telecommunications companies. It allows them to adapt to market conditions, create new revenue streams, even spur demand. Such pricing decisions are challenging and dynamic".

Agree. However, it is vital to ensure that NBN Co do successfully develop a rich and vibrant price architecture that supports and fosters a healthy competitive marketplace.

Pg 257-8:" A considerable body of literature exists regarding price differentiation of services on communications networks. There is broad agreement that some level of price differentiation in telecommunication and other high-fixed-cost industries (e.g. airlines) is appropriate to achieve social benefits, while helping in the pursuit of a commercial return. The alternative to differential pricing—in other words, to price all NBN connections at a single price—would be inefficient. A single price that provides a fair return on investment would be too high for many users, and therefore constrain take-up and usage. On the other hand, a single price that maximised take-up would be unlikely to provide the NBN with any reasonable return".

Completely agree. It is vital to ensure that NBN Co support differentiated pricing and not adopt a single price structure, especially one centred around just bandwidth throughput.

Pg 258:" Advice. That NBN Co Board consider reasonable differentiation of prices between discrete categories of end users and customer types:

1. Categories of end users. Different prices could apply between business users (i.e. those with an ABN) and residential users;
2. Customer types. Different price levels or structures could apply between retail service providers, e.g. ISPs serving individual premises, and commercial operators, e.g. mobile carriers serving multiple users from a single connection."

Disagree. This is price discrimination, not differentiation. It is a potential approach, however it is not the most appropriate, nor are these the only choices.

Pg 260:" Advice. That NBN Co Board avoid usage-based wholesale pricing for uncontended services in the long term, once the network is profitable and/or cost recovery is assured".

Agree. I would go further and mandate not at all under any conditions. If QoS is done correctly, these proviso's are not required.

Pg 261:" Advice. That NBN Co Board ensures general pricing for NBN services is transparent and modular—e.g. bundling services at a discount should be avoided, unless a discount is applied to certain legacy services or an entry-level offer".

Agree. However, later on the Implementation Study breaches this advice and constrains backhaul to force it to be tied or bundled with the local access service rather than componentised.

Pg 329:"... As a result of these factors, the conclusion of the Implementation Study is that a purely regulatory approach is not a robust solution to ensuring access to backhaul at competitive pricing, and direct provisioning of backhaul capacity by NBN Co should be a core element of the solution".

Agree.

Pg 334:" Defining the characteristics of the transit backhaul service

The transit backhaul service should have the following features:

- End-to-end. The transit backhaul product offered by NBN Co should be an end-to-end product for connection from the POI to the fibre exchange including redundancy for backup ...

- Modular. The NBN access service and transit backhaul should be offered as separate services. This will allow access seekers to choose appropriate backhaul products for their required capacity. It will also allow uniformity of pricing on the access products across the country".

Agree. Yet the Implementation Study then breaches these recommendations but forcing bundling of the transit backhaul when the AEB is offered.

Pg 423-4:" A new network such as the NBN should anticipate multiple paths of industry evolution. Industry consultation, debate, and public scrutiny should continue as the initial specifications for NBN services are developed. If poorly defined, these specifications could limit or bias the innovation paths through which new applications are developed, favouring some providers or business models and distorting healthy market competition".

Agree. This is the key area where I think the engagement is lacking. NBN Co needs to engage better with a wider variety of industry experts.

Pg 425:"However, backhaul-related risks to healthy retail competition remain even once affordable, open-access backhaul is available. As we discuss in Chapter 6, if Telstra is granted access to connect below NBN Co's POIs using its own backhaul network, it will gain a cost advantage over other retailers. Hence the Implementation Study recommends that such access not be permitted".

Disagree. This is misguided. The worst case scenario (which by the way is not sustainable by Telstra, so it can only be used short term) is that it will treat its backhaul asset as a zero-cost component (which it isn't, it has the same marginal cost structure as the equivalent NBN Co provided backhaul capacity, as both of the transit paths have had sunk costs. Telstra's has been fully depreciated and NBN Co was Government funded) then Telstra would be able to offer at best, marginally (10%) cheaper costs to the end-users in those remote and regional locations. This is the worst case outcome. The best case outcome is that Telstra actively compete for backhaul wholesale transit against NBN Co, keeping both providers honest and ensuring benchmark pricing. Either outcome will help to drive uptake by the remote community of advanced services which in turn will support future business cases for a potential third provider of competitive backhaul to enter the market. This is the natural evolution away from monopoly backhaul to a fully competitive market. The alternative approach destroys this opportunity and only allows for competition to occur if 3 or more market players simultaneously approach NBN Co to offer transit backhaul (in any other market, such behaviour is often called a 'cartel'). Neither unnatural monopolies, nor 'cartel' operations are desirable for the end-users.

Pg 431:" The risk of a commodity resale service price war in the retail market can be mitigated by preventing NBN Co from operating at Layer 3 (at least initially) and providing service providers with a portfolio of Layer 2 Ethernet products instead, to enable them to manage their own routing, backhaul capacity, CPE, and interconnect arrangements. Today, we see ULL operators using ULL to deploy IPTV and sophisticated VoIP solutions including hardware. Those same services could be deployed over the NBN using Layer 2 services and the available ports on the ONT. There will then be scope for premium service providers to differentiate themselves from low-cost operators that just sell best-efforts Internet connectivity at the lowest possible price.

Given the uncertain nature of telecommunications market evolution, such a premium strategy will not necessarily be available to retail providers. For example, this strategy would be frustrated if the evolution of the market led to a scenario where innovation had moved predominantly to the cloud—to managed standalone applications—or to devices, with a limited intermediary role for the retailer. The best way to judge whether a healthy market is evolving will be to compare the services available in Australia to international markets, to verify that separation of Layer 2 and Layer 3 services in the industry structure is not preventing the deployment of value-creating services. For example, retail providers around the world may deploy useful services which remain unavailable in Australia due to a lack of appropriate network services at economic prices".

Noted. KPMG/McKinsey are all over the place on this one. It is clear some help in understanding how such structures can be supported in Australia on NBN Co is required. I can help in this regard.

Pg 440:" Flexibility to differentiate pricing by service and user type will be important to achieving take-up and usage on the network. Offering dark fibre too soon is likely to reduce scope for price differentiation in the market ... Offering active rather than merely passive services allows the company to differentiate pricing between a greater diversity of products to maximise both penetration and revenue. NBN Co can extract more value from the active layer, at a wider range of price points, and thereby cross-subsidise the passive investment".

Agree except with respect to risk associated with offering dark fibre too soon. If the QoS architecture and differentiated pricing is done correctly, this risk is eliminated.

Pg 443:" While NBN Co should be encouraged to use its powerful position to deliver a solution for today, it must not be allowed to become the central obstacle to competition in the future. This is particularly important given the prospect of private ownership, as the unpredictable evolution of the industry will make it more difficult to balance private shareholder interests with public policy goals".

Agree.

Pg 457:" Therefore, to the extent that a large and sophisticated end user business finds it more efficient to establish such a shell retailer, this would indicate a lack of efficiency or value-add on the part of the major retailers. On balance, there is a strong practical argument that such an outcome would represent enhanced competition at a retail level, rather than being interpreted as an implicit entry of NBN Co into the retail market. Accordingly, the Implementation Study believes there is no need at present to make a special provision in relation to this scenario".

Agree. Strongly agree. NBN Co should by nature create wholesale products that any customer should be able to purchase on open and fair terms. This is the case with BT.

Pg 459:" Equivalence is a more complex principle. The strictest interpretation of equivalence, known as equivalence of inputs, would require all customers to be provided with services at identical prices, on identical terms and using identical technical and business process interfaces with NBN Co. While this would achieve a theoretical equity between retailers, it would provide too little flexibility to recognise the

different needs of the diverse range of potential customers of NBN Co. Interfaces that might suit a large retailer with substantial market share around the country are likely to be ill-suited to a boutique ISP operating in a single area.

The case for a more flexible interpretation of equivalence is strengthened by the wholesale-only nature of NBN Co. As NBN Co is not competing against its customers, it has less incentive to discriminate between them in a harmful way than does a vertically-integrated network owner.

We therefore believe that equivalence should be implemented principally by means of transparency and common availability".

Agree.

Pg 462:" As discussed in Section 3.3, some retailers will wish to provide bundled services such as triple-play packages, while others may wish to become niche providers offering individual services. To enable vibrant competition between alternative business models at the retail level, it is important to ensure that NBN Co's service offering and pricing architecture are not prejudiced in favour of a particular model.

This will require NBN Co to offer services on a modular basis to avoid conferring a price advantage on large retailers who seek a discount on bundled services that would undermine the competitiveness of single-service retailers.

NBN Co should endeavour to offer a range of service and pricing options that maintains neutrality between competing business models".

Agree. Yet this again advice is countered by specific recommendations.

Pg 496:" NBN Co's corporate plan will serve two important purposes:

- It will assist NBN Co in ensuring that it has a clear roadmap of actions to address implementation challenges and give effect to its objectives;
- It will provide a mechanism for Government to verify that plans are consistent with Government's objectives and to identify issues that warrant Government intervention".

Agree.

Pg 500-1:" The complexity of the project and its implications across multiple departmental portfolios means that substantial interdepartmental coordination will be required. It will be important to implement a governance model that keeps stakeholder agencies updated on the project's progress, so that decisions with policy implications can be syndicated and resolved. Each agency will have its own legal and administrative responsibilities and processes, which must be respected, but coordinated in a way that is practical and efficient for NBN Co management.

Similarly, the cross-portfolio implications of the project will mean that multiple Government stakeholders will be inclined to make requests of, or present views to, NBN Co. In the absence of a governance model that manages this process, uncoordinated communications from different Government

stakeholders are likely to act as an unnecessary distraction to NBN Co management and leave NBN Co in the awkward position of having to resolve potentially conflicting messages from different parts of Government".

Agree.

Other specific areas which should be promoted or supported

The Implementation Study includes a large number of separate "Advice" comments as well as recommendations. Many of these are quite valid (and some are not) and deserve some attention and coverage as well. Unfortunately I do not have the time to write up an extensive overview of them in this submission. I would like to draw attention to the ones that mention NBN Co seeking innovative and new approaches to construction methods, the ones that recommend NBN Co and the Utilities cooperate in rolling out their infrastructure and the ones that recommend the Government ensure that NBN Co have access to timely, reliable and capable policy advice in order to ensure its aggressive timelines are not compromised.

Section

3 Response to specific Recommendations

Recommendation 1: That NBN Co only enter markets where there is insufficient infrastructure to support superfast broadband or where retail service providers are unable to access bottleneck assets on reasonable terms.

[Agree] The NBN is being funded in order to address a fundamental market failure; namely the lack of a naturally evolved free, open and competitive market place delivering service innovation and price reduction to end-users. Due to this market failure and coupled with Australia's unique geographical dispersion, we are seeing an increasingly concerning digital divide amongst the general population. This will have serious long-term consequences on Government expenditure and citizen quality of life (especially as the population ages) unless early measures are taken to address the shortcomings. In addition, Australia continues to slip behind in OECD measures of telecommunication services and again if we do not take action to improve soon, we are likely to further slip with potentially direct economic consequences. This is especially true as other OECD countries begin to actively deploy high coverage, high speed broadband capabilities to their population footprints. It is unfortunate that the NBN Implementation Study was specifically excluded from considering the macro-economic and social-benefits that would result from an NBN deployment.

It is appropriate that NBN Co should be constrained to operate only within those telecommunications market spaces that have failed to deliver a healthy and competitive, free and open market. At this juncture that market is the 'last-mile' broadband access market and segments of monopoly 'back-haul' markets. Where NBN Co are to invest in order to address market failure they should do so by constructing infrastructure with a long-term outlook of at least 30 years and preferably 50 years. Also, NBN Co should be constrained to operate in a manner which not only supports but further fosters the development of naturally open, free and competitive market places which economic theory proves is an efficient means to deliver innovation and price competition to all players including the end-consumers. To this end then, at every decision juncture--reasonable evaluation, analysis and testing should be undertaken to ensure that the policy or implementation decision supports the natural evolution of market competition rather than potentially and artificially stifling or threatening it (such as would happen if recommendations 50, 51 and 52.3 were to be accepted and hence why I believe they should be rejected).

Recommendation 4: That Government permit NBN Co to provide connections to non-premises on a commercial basis; that Government retain the option to require NBN Co to cover specified classes of non-premises on terms approved by Government.

[Agree] This recommendation should be expanded to permit NBN Co to, on a commercial basis, prioritise the deployment and coverage of 'premises' by area as well. This would provide mechanisms for local areas, councils, communities or non-fibre serving area premise owners to voluntarily and commercially subsidise their own infrastructure deployment, should they so wish, with NBN Co ultimately providing the construction and

then taking subsequent ownership control of the assets. This is complementary to Recommendation 7 and is aligned with commentary from the report regarding the Netherlands OnsNet deployment on page 76 of the Implementation Study.

Recommendation 6: That NBN Co select a number of priority areas for roll-out that together comprise a representative mix of the country; that, once NBN Co has completed its roll-out to these priority areas Government review whether NBN Co is on track to achieving the objective of 93 percent FTTP coverage and use performance management mechanisms as required; that the Minister request NBN Co include details of its progress in achieving the 93 percent FTTP coverage objective in each corporate plan.

[Agree] This recommendation could be expanded to have NBN Co prioritise deployment in areas where say less than 50% of premises currently have access or availability of broadband services supporting at least 12Mbps. This approach would accelerate the rate at which the current digital divide could be closed and would allow early deployment of innovative applications and services prior to the full deployment and availability of the NBN. This will help to significantly accelerate the market development and will promote rapid experience with delivering (and consuming) services across ubiquitous national broadband.

Recommendation 9: That NBN Co be granted a right of access to shared property in multi-dwelling units to undertake the inspection, installation and maintenance of FTTP infrastructure and that an obligation be imposed on building managers and bodies corporate to facilitate NBN Co exercising that right of access.

[Agree] The Government should accept this recommendation and move quickly to provide NBN Co with the necessary powers to be able to meet its obligations of ubiquitous coverage. In addition, legislation and processes for filing and settling grievances or handling damage claims possibly resulting from NBN Co construction activities should also be defined and established.

Recommendation 13: That NBN Co be required to act as the network provider of last resort for premises constructed within, or adjacent to, NBN Co's fibre access network; that developers be required to cover the costs of trenching and providing the duct, pit and pipe network; that NBN Co cover the costs of installing all other FTTP network infrastructure up to the premises.

[Agree] This recommendation requires a substantial amount of work also be completed as part of redefining the Universal Service Obligation (USO as per Recommendation 30) and how it should be split reasonably and effectively between an access network provider (eg NBN Co) an interconnect or backhaul provider and a retail service provider such that customers are provided with an end-to-end 'network service' capability. This service capability should provide for at least voice (or its equivalent) connectivity to the PSTN (Public Telephony Network) and quite likely should include some data connectivity to the Internet (Public Data Network) as well. Such a specification will require discussion and debate amongst various end-user groups and service providers, however as a starting point it should be noted that Finland have achieved themselves certain aspects of this basic service definition by for instance declaring 1Mbps Internet access as a basic human right.

Recommendation 30: That a review be undertaken to determine how the universal service regime and other carrier and service provider obligations may apply to NBN Co and other carriers and service providers; that this review be completed by the end of 2011.

[Agree] The universal service obligation will be significantly impacted by the introduction of NBN Co into the Australian telecommunications eco-system. It will be necessary to not only redefine the USO to make it more universally compatible with today's service expectations (for instance refer to Finland's declaration of 1Mbps Internet service as a basic human right), but to also define the USO in terms of sub-service components, each of which may be deliverable by independent service providers.

Recommendation 31: That NBN Co be directed to develop a Charter that outlines how it will conduct its affairs to best meet the needs of stakeholder groups--for example, the Charter should state a commitment to consultation with the industry and end-user groups

[Agree] It is imperative that NBN Co consultations be bidirectional in nature and hence must involve the collection, analysis and discussion of (for instance) end-user group requirements, in addition to simply providing activity report briefings. Where requirements from the different stakeholders conflict, a process should be defined to ensure such conflicts are resolved or at least mediated as efficiently as possible, preferably by the Government as the primary stakeholder.

Recommendation 32: That NBN Co only be permitted to operate at the lowest layer of the network stack that enables sufficient retail competition and diversity of services for end users. Initially, this will translate into Layer 2 bitstream services in the FTTP network, and Layer 3 IP services in the satellite access footprint; that Government request that the ACCC periodically monitor competition, and recommend necessary modifications of the service portfolio to best serve the long term interests of end users; that this include considering the offering of passive services.

[Agree] It is vital that such an independent review process be established to ensure that an open, free and competitive layer-3 wholesale market evolves nationally and that open/free (non-discriminatory) layer-1 wholesale access is provided by NBN Co to other access seekers as required. These will ensure a healthy, competitive marketplace which will deliver innovative services, at reduced prices and thus ultimately will serve the long term interests of end users. It should be noted that there is much discussion in the NBN Implementation Study made around the concepts of "levelling the playing field" and assuming that a single choice must be made and enforced. With regard to the former, it is important to note that "levelling the playing field" is not an economics term, rather it merely a business colloquialism originating from circa 1970's (actual origin 1953 in India regarding handicapping in Polo) and is used primarily by inefficient businesses looking for artificial subsidies/policy to support/hampers competitive market entry. Economic theory does not provide any guidance or analysis on the effects of a "level playing field", however economics does recognise the benefits resulting from an open, free and competitive market (also referred to as a fair and "equal rules" environment). With regard to the latter "single choice", other markets such as Singapore and the UK do not constrain themselves in this manner and again economics recognises that it is the differences that exist between market players which is further supported by allowing them to leverage flexibility and

choices in order to improve efficiency of their operation, that results in healthy competition. This is the desirable target outcome and the ACCC should periodically monitor and ensure that this is being actively promoted and delivered.

Recommendation 35: That NBN Co be required to provide a wholesale Layer 2 bitstream service which enables multi-operator delivery of next-generation video services (e.g. high definition, video-on-demand) that meets industry standards.

[Agree] This recommendation is preceded by discussion regarding the delivery of end-to-end QoS capabilities, specifically to support premium services such as video. References are made within the report that industry stakeholders are not clear (page 161) on how this can be achieved and thus the Implementation Study recommends that "NBN Co provide the protocols and functionality to enable service providers to deliver QoS across the network boundary" in a manner that supports "sophisticated IPTV functionality".

Extensive discussion is also made throughout the document with regards to supporting "differentiated services" to permit "differentiated pricing" in order to address "social welfare" and ensure optimum output efficiency. Together, these concepts deliver what economics theory describes as an optimal model, especially for "natural monopolies", which in the case of a national broadband access network, NBN Co represent. Unfortunately no discussion or recommendation is made on how NBN Co can achieve these outcomes.

It is imperative that NBN Co not fail to define and deliver this outcome. To date it is clear that the same existing stakeholders are still not aligned on how to achieve and support this. In my submission to the NBN Co Wholesale Product Specification engagement, I covered the approach that I believe is necessary to adopt in order to deliver the market structure that healthy competition requires. Regardless of which model NBN Co decide to adopt, careful and detailed analysis of the proposal against competing models should be done by the ACCC to ensure the highest likelihood of a healthy, competitive marketplace evolving that also supports the social welfare requirements of Government and preserves the economic viability of NBN Co.

Recommendation 39: That an entry-level wholesale bitstream service for NBN Co's fibre network be defined that would be the minimum acceptable service for residential broadband use, specifically:

1. That this bitstream service enable a significant improvement over typical experiences on other fixed networks, and offer at least a 20 Mbps peak download speed within the fibre access network;
2. That this entry-level speed be reviewed over time to ensure it continues to deliver sufficient performance relative to other fixed broadband networks;
3. That exceptions for a lower-speed entry-level service be considered for commercial reasons where most end-users will take retail services using at least a 20 Mbps wholesale bitstream service.

[Disagree] There is substantial inconsistency within the Implementation Study as to the form of data services and their inherent capabilities. Whilst other sections clearly make the

point for multiple QoS levels to support premium video, interactive telephony as well as Internet use; this section defaults to differentiating services based on their peak or "headline" speed only. If this were the only valuable dimension of a data service (the peak speed) then the recommendation here would be valid, however if NBN Co deliver differentiated QoS capabilities then this recommendation for a "minimum or entry-level" wholesale bitstream service should be rejected as it stands.

Even if it is assumed that NBN Co do not deliver differentiated QoS or even worse are unable to establish a cooperative agreement with Telstra for asset transfer/reuse and hence decides to enter the market as a competitive operator; then such a restriction of service offering will still limit the flexibility of NBN Co to market aggressive "social welfare" access services and/or other specialised telemetry type services. This recommendation should be rejected.

Recommendation 40: That NBN Co be required to offer wholesale services that support the implementation of carrier-grade QoS functionality, allowing retail service providers to deliver premium services from within their network to end users:

1. Initially, this means ensuring that the appropriate specifications are adopted through consultation with industry and potential customers;
2. Over time, this may require offering services that are higher in the network stack, as has already been considered for IPTV, where IGMP functionality is being considered, and/or extending the geographic extent of the Layer 2 network (i.e. further upstream); such decisions to expand the scope of NBN Co operations should not be taken lightly, and should be based on demonstrated inability of NBN wholesale services to enable services that are feasible within other networks internationally and for which there is demand.

[Comment] This recommendation is again preceded by discussion regarding the requirement for support of robust end-to-end QoS capabilities, specifically to support "the greatest range of potential services". Once again, references are made within the report that industry stakeholders and standards bodies are not clear (page 201) on how this can be achieved over FTTP and thus the Implementation Study falls back to recommend that "NBN Co will need to strive to employ the best standards available, and be open to modifying its wholesale services accordingly".

It is imperative that NBN Co not fail to define and deliver this outcome or worse, take steps now which significantly prohibit this outcome from being achieved in the future. This is a serious catch-22 for NBN Co as active Ethernet vendor selection (which is pending) and wholesale product implementation (which is currently lending towards placing the full Ethernet QoS mechanisms under the control of the RSPs) may prevent the necessary solution from being deployable in the future. If no-one knew any better then this situation would be almost forgivable, however in my submission to the NBN Co Wholesale Product Specification engagement, I covered the approach that I believe is necessary to adopt in order to deliver the market structure that healthy competition requires. Regardless of which model NBN Co decide to adopt, careful and detailed analysis of the proposal against competing models should be done by the ACCC to ensure the highest likelihood of a healthy, competitive marketplace evolving that also supports the social welfare requirements of Government and preserves the economic viability of NBN Co.

Recommendation 42: That Government not constrain the commercial flexibility of NBN Co to design and update a price architecture, within the requirements of regulation and its obligations for affordability and take-up of services; that Government support NBN Co's adoption of price mechanisms such as price differentiation (except where it is based on geographic location) and differentiated commercial terms and charges that are consistent with equivalence

[Agree] As I covered in my responses to Recommendation 40, 39, 35 and 32; it is vital for a healthy and competitive market to evolve such that the players are permitted to actively differentiate themselves as much as possible on non-discriminatory terms in order to foster innovation. This requires flexible choice. This recommendation supports that approach with the appropriate proviso's that protect the ubiquitous affordability or social welfare aspect (regardless of geography) that the Government seeks.

Recommendation 47: That Government instruct NBN Co to extend transit fibre backhaul to existing towers and new tower sites needed by the fixed-wireless network operator to provide coverage in the designated areas (e.g. between the 94th and 97th percentiles); this transit backhaul to be offered to all operators and priced at the same rates as transit backhaul within the fibre footprint.

[Agree] The Implementation Study correctly identifies that the monopoly (or uncontested) backhaul transit links represent a key market failure requiring intervention. This intervention will provide cellular operators with access to competitive prices and infrastructure for transit and backhaul services which should promote growth and competition in that retail service market segment as well. The Government should adopt this recommendation and more importantly should seek to apply the same principles of why this is being adopted (to offer open and free choice of backhaul transit from remote local areas) to Recommendation 50, 51 and 52.3, both of which currently conflict with this recommendation and hence they should be rejected.

Recommendation 50: That NBN Co be required to offer a single POI in relation to a given premises:

1. At a fibre exchange where there are multiple alternative backhaul providers; or
2. At a fibre exchange linked to the Regional Backbone Blackspots Program; or
3. At a point accessible from the fibre exchange over an NBN Co transit backhaul link.

[Disagree] I recommend very strongly that the Government completely reject this Implementation Study recommendation on the basis that it:

1. Will unfairly discriminate against local community service providers and possible local community hubs.
2. Will create an environment where the new monopoly provider can only be replaced as the result of a cartel of operators forming.
3. Will create the risk of an inefficient, poorly regulated, monopolistic provider of backhaul services for the foreseeable future.

4. Will cause unfair, unnecessary and direct harm to the existing market backhaul provider.
5. Will place Australia in breach of prior commitments it has made to the World Trade Organisation with respect to Telecommunications Services.

On the contrary, if this recommendation is rejected and NBN Co are required to offer open and free connectivity to both the LEB or AEB POI facilities then:

1. Both the existing backhaul provider and NBN Co can offer marginal-cost backhaul services to any wholesale service seeker, thus ensuring each others price structures are market realistic,
2. Future competitive backhaul providers can choose to freely enter the market whenever and however they choose,
3. NBN Co can tender for a competitive backhaul provider to enter the market by acquiring its assets and assuring support for existing customer service contracts once the market becomes competitive (2-4 players),
4. Local community service providers and local community service hubs are able to interconnect locally to ensure most efficient service delivery,
5. New market opportunities for localised content distribution and caching service providers, local network hand-off and roaming providers and utility smart-grid hand-off are supported efficiently,

all of which will benefit the service pricing and performance available to end-users both in the short-term and long-term.

Recommendation 51: That the location of NBN Co's POIs be reviewed on a regular basis to permit new investment below the POIs and to ensure the objectives of affordability and a level playing field are met above the POIs.

[Disagree] This recommendation misapplying the concept of a level playing field and should be rejected as it is written. A more suitable version of this recommendation would be to analyse at what point it would be appropriate for NBN Co to consider divesting itself of a particular backhaul asset once the transit route is considered either fully contested or close to contested at which point NBN Co could seek to sell its asset to a new, competing entrant.

Recommendation 52: That for defining NBN Co's backhaul services:

1. NBN Co be required to offer backhaul services as single Ethernet links from the POI to the fibre exchange, with some level of protection (alternative secondary links in the case of outages on the primary link) available on all links;
2. The transit backhaul bitstream product to be specified as a separate product from the access bitstream product, allowing service providers to select their preferred combination of backhaul capacity and access services;

3. NBN Co not to offer or be required to offer connection below the POI to an NBN Co access network.

[Disagree] I recommend very strongly that the Government reject part (3) of this Implementation Study recommendation on the basis that it:

1. Will unfairly discriminate against local community service providers and possible local community hubs.
2. Will create an environment where the new monopoly provider can only be replaced as the result of a cartel of operators forming.
3. Will create the risk of an inefficient, poorly regulated, monopolistic provider of backhaul services for the foreseeable future.
4. Will cause unfair, unnecessary and direct harm to the existing market backhaul provider.
5. Will place Australia in breach of prior commitments it has made to the World Trade Organisation with respect to Telecommunications Services.

On the contrary, if this recommendation is rejected and NBN Co are required to offer open and free connectivity to both the LEB or AEB POI facilities then:

1. Both the existing backhaul provider and NBN Co can offer marginal-cost backhaul services to any wholesale service seeker, thus ensuring each others price structures are market realistic,
2. Future competitive backhaul providers can choose to freely enter the market whenever and however they choose,
3. NBN Co can tender for a competitive backhaul provider to enter the market by acquiring its assets and assuring support for existing customer service contracts once the market becomes competitive (2-4 players),
4. Local community service providers and local community service hubs are able to interconnect locally to ensure most efficient service delivery,
5. New market opportunities for localised content distribution and caching service providers, local network hand-off and roaming providers and utility smart-grid hand-off are supported efficiently,

all of which will benefit the service pricing and performance available to end-users both in the short-term and long-term.

Recommendation 63: That the Government request the ACCC to monitor and report annually on the market for Layer 3 telecommunications services.

[Agree] It is important to note that all connectivity infrastructure exists solely to allow users and systems to communicate and exchange information via application services. Many companies profit from this across all aspects and levels of the service supply chain. However, almost all of the end-user value is derived directly from these applications--be they entertainment services, commerce services, socialisation services or support services. Today the majority of these applications assume IP connectivity. Much of the vibrant market that will emerge to leverage Australia's NBN will be based around novel application services being delivered ubiquitously to end-users (this also includes automated business to business or system to system applications) over IP (or layer-3). Some of these high level application service providers will themselves be quite sophisticated and will offer multiple, often bundled, application services and may even have extensive network infrastructure of their own. Other application service providers may not be so sophisticated and they will seek to be provided with an open and efficient conduit into the market via a layer-3 wholesale service provider. Offerings that will be sought are likely to be a mix of hosted applications (applet hosting and cloud computing services for instance), hosted servers, hosted platforms and possibly extranet connectivity (non-hosted).

It is not important that these services be provided by NBN Co itself, however it is crucial that they be provided by an independent and competitive layer-3 wholesale service provider who preferably do not themselves have a internal conflict of interest through offering similar, competing applications. In order to maximise end-user benefit it will be necessary to ensure such competition evolves in the market. NBN Co are not responsible for solving this issue, however it should not be permitted to fall by the wayside and potentially be lost. Hence this evolution of a healthy and competitive layer-3 marketplace should be monitored carefully to ensure it functions to the benefit of all Australians.