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Ms Alison Kelly
Secretary
Select Committee on the National Broadband Network
SF61.1 Parliament House
Canberra ACT 2600

Dear Ms Kelly

Open Access and NBN Pricing

You will recall that during the Hearings on 1st October, Senator Kate Lundy extended an open invitation to me to provide further insights into issues that lie ahead of the NBN implementation.

I have prepared a further brief submission (attached) on the subject of Open Access and NBN wholesale pricing approaches. Naturally I will be happy to follow this up with an appearance before the Committee at a future date if the subject is of interest to Committee Members.

Yours sincerely
Eckermann & Associates

Robin Eckermann
Principal

A Perspective on Open Access

Facilities-based competition – no policy panacea!

De-regulation of Australia's telecommunications industry has worked well in some areas and failed dismally in others. The most notable failure has been in attracting infrastructure investment into the "last mile" of residential access networks. It simply makes no commercial sense to duplicate expensive network infrastructure in the hope of capturing a share of comparatively low levels of consumer spending.

To use a parallel often cited in the earliest discussions on TransACT's establishment in the mid-1990s, Australia has introduced competition into the electricity supply industry – but no one in their right mind would suggest putting up a second set of wires to give customers choice as to how their electrons are delivered.

There have been some efforts to build alternative residential access networks in Australia – notably the Optus Pay TV deployment in the mid-1990s and TransACT's VDSL deployment in the early 2000s. However these networks have struggled to capture a sufficient market share from a strong incumbent to deliver a return on the capital invested, and investors have written off most or all of their capital.

It must be acknowledged that facilities-based competition (policy-speak for network duplication) has worked in some areas of the market. For example, there are typically multiple carriers competing in the central business districts of Australia's largest cities. Here the commercial equation works due to the concentration of high-value customers in a small geographic area that can be reached with a comparatively small infrastructure investment.

It is easy to demonstrate why network duplication has not and will not work in the residential access market. In the "easiest" of circumstances (where cables can be strung aerially), the cost of passing homes is still high – typically in excess of \$1,000 per home. Setting aside the cost of connecting homes (which is typically also high for advanced technology solutions involving powered network termination equipment and high-performance wiring into the home), if say one in five homes were to connect, the one connected home must support the capital burden of its four neighbours who did not connect. The costs are simply not sustainable on today's consumer spending levels.

Regulation – an approach to dealing with natural monopolies

The result of failed policies that were intended to attract facilities-based competition is that Telstra has retained its natural monopoly in last-mile residential cabled access across most of Australia – despite 17 years of deregulation.

Unable to justify the investment in building rival networks, service providers have sought access to local access services from Telstra. As a result, Australia (along with many other countries in similar positions) has developed a regulatory regime that requires Telstra to make available key access services (such as the unbundled local loop or ULL) over which it has a *de facto* monopoly grip. Competition at the service layer has flourished in the wake of this, but it is fair to say that a significant level of tension surrounds access arrangements.

This tension is evident in the long history of disputes within the industry – and in the perennial debates that surround the regulation of access prices. At the heart of this tension lies the concern that a vertically integrated business will struggle to give competing retailers the same treatment that it gives to its own retail business.

How is a Board meant to react when the manager of wholesale services proudly announces the sale of 1,000 wholesale lines at a value of \$x per line and the manager of retail services confesses the loss of those same 1,000 lines with a loss of \$x+\$y per line?

It is understandably difficult for a vertically integrated business to be unreservedly enthusiastic about selling wholesale services.

Structural separation – the new wisdom

The answer to which many are turning is structural separation – that is, breaking up vertically integrated businesses so that wholesale operations are not distracted by any vested and conflicting retail interests. The Government is putting Telstra under pressure to separate its wholesale and retail interests more clearly right at the moment.

The desire for structural separation is also evident in the announcements that the NBN will be operated as a “wholesale only” business. Whilst many details have yet to be determined, the broad intent is that the NBN sells access to third party service providers who will bundle that access with their own services and content and retail it to end-customers. This is an understandable strategy for avoiding the sort of problems that have afflicted Australia’s telecommunications progress in recent years.

In reality, the wholesale-retail market split that is intended with the NBN implementation is an artificial alignment with the more fundamental split between local access (where a natural monopoly may be inevitable) and services (where competition can flourish).

A messy complication

For most users today, broadband is delivered via a connection (usually a copper circuit) of modest capacity, with access to a world of destinations all accomplished through a single Internet Service Provider (ISP). With few exceptions, these connections do not have the capacity to support high quality streaming video services (like broadcast television).

Contrast this with the world Australia is moving into as the NBN looms. With optical fibre connections, capacity limitations essentially disappear – and the broadband “pipe” becomes one that can simultaneously support many services and many service providers. More than ever before, there is no technical need for more than a single network connection. Furthermore, a key pillar of NBN viability lies in the infrastructure being used widely for all sorts of purposes. It is entirely conceivable that a household of the future may need connection with any or all of the following service providers:

- an ISP for general Internet access;
- a subscription television service provider;
- a telephony services provider;

- possibly a secondary ISP for additional capacity and continuity of service on occasions when the primary ISP is experiencing difficulties;
- if there are students, academics or researchers in the household, possibly an research/education service provider that provides high-speed connectivity to educational and research institutions, and that operates on a volume-independent charging basis to facilitate applications like video-conferencing and the like;
- if there is an aged person in the household, possibly a health care provider;
- possibly a security service;
- possibly an energy management service provider that contracts to manage household energy consumption;
- and so on.

In a simple wholesale-retail model, each of the above service providers would buy an access service from NBNco, bundle it with their content and services and retail it to the end-customer.

But herein lies a problem! The bulk of NBN capital costs are those associated with the physical network infrastructure and the single connection to the home. If the NBN is ever to be commercially viable, it needs to set its wholesale charges at a level designed to deliver a return on this capital cost. How does it achieve this when it does not know whether a household is going to want connection with one retail service provider (only) or with many?

If NBNco charges a wholesale price designed to recover the fair cost of the pipe on a single service, anyone taking multiple services will end up paying many times the cost that needs to be recovered – and the trans-sectoral potential of the NBN is likely to be seriously compromised.

Possible Solutions

If NBNco charges a reduced wholesale price based on the expectation of an average number of services per household, those taking *more* than the average number of services will end up cross-subsidising those who take *less* than the average number of services. The disincentive to realise the full multi-service potential of the NBN remains, albeit dampened somewhat.

In theory, NBNco could adjust its wholesale price dynamically on a connection by connection basis, depending on how many services were being taken. However, this would be impossibly difficult to administer in practice.

NBNco could also operate on a model which is biased towards a single primary service provider through which all other services are channeled. However, artificially forcing all traffic through a particular service provider will have performance and (potentially) cost penalties.

As one of the world's pioneers in open access, TransACT first confronted this problem in the late 1990's. TransACT's solution was to *retail* the raw connection to the end-customer so that its cost was effectively taken out of the retail prices charged by service providers. This overcomes the problem, but it is fair to say that the philosophical basis of this approach is not widely understood, and many customers dislike having separate bills from their local access provider and their ISP.

In reality, TransACT's approach is not especially novel. In fact, it parallels what happened in the days of dial-up Internet access. The customer paid Telstra directly for line rental and call charges to make connection to the service provider(s) of their choice, and they paid the ISP for the services it provided.

An alternative approach could be based on a variation of a model that can be found in Australia's tax system. A person may work for multiple employers – but they are only permitted to lodge one tax declaration and claim the tax-free threshold with one of those employers.

Loosely parallel with this, a user of a service based on access provided by the NBN could be required to nominate a "primary" service provider who would then assume responsibility for billing the customer for the wholesale connection cost and remitting that fee to NBNco. (Obviously a small handling margin would need to be allowed for providing this service). Additional providers delivering service over the same physical infrastructure would then not need to recover the cost associated with the network connection.

There may well be other approaches. However if this issue is ignored and the NBN charging model is based on simplistic wholesaling of bit-stream access services at prices designed to cover the cost of connection, much of the trans-sectoral potential of the NBN could be lost.

Summary

There is widespread support for the NBN operating under the principles of structural separation, and a wholesale-retail model goes a long way towards addressing past problems. However, the issue of appropriate charging for the infrastructure is important to the viability of the NBN, and also in terms of realising the opportunities that the NBN can deliver to Australians socially, economically and environmentally.

The key to perfecting the model of structural separation lies in structurally separating not only the access and content/services businesses, but also in some form of structural separation of the costs associated with each of those layers in the end-to-end solution.

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About Robin Eckermann (the author of this submission)

Robin Eckermann is an independent consultant specialising in advanced broadband infrastructure. He is widely known for his role in leading the establishment of TransACT and serving as its Chief Architect during the rollout of an advanced fibre-to-the-kerb architecture passing some 65,000 homes and businesses in Canberra. This network required the deployment of an entirely new cabling regime in established areas, and accordingly TransACT could be seen as a "micro" version of the NBN, having had to confront many of the issues that are now on the NBN agenda.

Since progressively withdrawing from TransACT as it transitioned into an operational company, Robin has been advising clients on advanced broadband infrastructure projects throughout Australia and overseas. He has been the lead advisor in pioneering the model for fibre-to-the-premises in locations such as Whittlesea and in some 30 other residential and commercial greenfield projects. More recent work includes developing technical and commercial models for providing wireless broadband in some of the most challenging terrain in Australia – addressing the needs of rural Australians who are not destined to benefit from the NBN FTTP deployment – and advancing the cause of Smart Grids in Australia

Robin has been an Adjunct Professor (Network/Communications Technologies, Business Models and Project Management) at the University of Canberra since 2005.