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Update on Aerial Cabling and the National Broadband Network Roll-out

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Synopsis

Since the serious problems arising from aerial construction of the National Broadband Network were first raised towards the latter part of 2009, NBN Tasmania and NBN Co have shown a wilful disregard of the adverse impact on broadband service reliability and visual amenity throughout Australia. Such an approach is totally incompatible with any pretence of constituting a nation-building investment.

A truly nation-building alternative would be to underground all aerial utility construction, bundling the NBN along with undergrounded electricity distribution lines.

Previous Submission on the Matter of Aerial Cabling

The authors first identified the serious problems arising from the National Broadband Network rolling out aerial construction of optical fibre cabling in their submission number 94 dated 11 August 2009, as recorded in Hansard at http://www.aph.gov.au/Senate/committee/broadband_ctte/submissions_from_april_2009/sublist.htm .

Related issues were raised by the Cables Downunder submissions numbers 95, 95a, 95b and 95c, and by the Haberfield Association in submission number 96.

The Senate Select Committee noted these matters in Chapter 4 of its Third Report issued 26 November 2009, which concluded as follows:

> Committee view
>
> 4.42 The committee remains concerned that the perceived short term benefits of aerial deployment will over-ride sound business practices, which should dictate that major national infrastructure is built seeking long term benefits.
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> 4.43 The committee strongly cautions against expediency where it would clearly not be in the long term interest of public investment. The short term cost efficiency gains that may result in short term political benefits need to be weighed against the long term efficiencies of underground cabling. As submitted by Cables Downunder:
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> It would be foolish to embark on a nation-building exercise based on such a short term approach to construction cost and roll-out speed.

[1] Chair, Sydney Cables Downunder

> 4.44 Additionally, as can be seen in the previous photograph, the outcome is far from ideal, and is certainly not 'future-proofed'. Australia is already more than a century behind major international competitors that have buried the vast majority of their electricity and telecommunications cables.
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> 4.45 The committee highlights that the aerial deployment of the NBN merely provides a quick-fix, bandaid solution that is not worthy of an infrastructure project of this magnitude.
>
> 4.46 The committee therefore urges the government to favour underground cabling in the remainder of the 90 per cent FTTP footprint, ensuring long term, future proof benefits for the network, its investors and its consumers.

Whilst we support these conclusions of the Senate Select Committee Third Report, we are disappointed that the committee did not take the additional step in recommending that the NBN be bundled along with the retrospective undergrounding of existing aerial electricity distribution lines.

Subsequent Developments

Initial NBN Roll-out in Tasmania will deploy Aerial Cabling

The Executive Chairman of NBN Tasmania Limited, Doug Campbell has been reported as saying the company will use power lines instead of underground connections wherever possible. "It's a cheaper alternative. Throughout the country we'll be using overhead power lines not just in Tasmania," he said. "Our studies have shown that the reliability of overhead is just as good as underground because underground cables get broken quite regularly by people with backhoes and other equipment."[2]

Greens Senator Scott Ludlam who has been involved in the recent Senate inquiry into the NBN doubted Mr Campbell's claims. "I'd like to see the evidence that attests to the case that it's more reliable because if that was the case then why would we be going through the process of burying power infrastructure."

The overhead cables will be tested when the first of the Tasmanian towns, Midway Point, is hooked up in July this year - just in time for the winter storms, the news report said.

Chapter 4 of the Senate Select Committee Third Report also confirmed the planned use of aerial cabling by NBN Tasmania.

Recent NBN Co Pronouncement concerning Aerial cabling Australia-wide

NBN Co has since given an even stronger indication that it is planning for life without access to Telstra's mainland pit and pipe infrastructure Australia-wide and, instead,

[2] "Broadband cable debate powers up", ABC News, 25 March 2010 http://www.abc.net.au/news/stories/2010/03/25/2856134.htm

'may leverage utility infrastructure, as is the case with its early Tasmania rollout' according to a recent industry report. NBN GM of design and planning Peter Ferris gave no hint of plans to leverage Telstra's poles or ducts, but suggested instead that fibre deployment would be tied to existing infrastructure held by utilities.[3]

"A key point to remember.... is that if power is underground, our fibre is underground. I will not be known as the guy that actually designed putting poles back in the ground to build new aerial infrastructure," said Ferris, seeking to downplay the role that contentious aerial fibre would play in the rollout. "So if the power's underground, we're underground. If there is an aerial power distribution, we may have an aerial local fibre distribution. We will evaluate those on an individual, module-by-module basis."

NBN First Release Sites

On 2 March 2010, NBN Co Limited announced it will be rolling out its high-speed broadband fibre-to-the-premise network to five 'first release' sites on mainland Australia as part of live trials of its network design and construction methods. These first release sites were said to represent the diversity of situations NBN Co would encounter across Australia in the volume rollout, so sites were selected to facilitate the testing of different construction techniques. Work will start early in the second half of 2010 with the first two construction phases due for completion early 2011.[4]

Part of an associated 'FAQ' asked:[5]

"Will you be digging up streets and people's gardens as part of this work?"

The answer was:

"It may be necessary to dig in some circumstances. However, we will be looking at a range of less disruptive rollout options such as using existing ducts where possible, or overhead power poles."

One of the selected sites, part of the suburb of Brunswick in Melbourne, is worth studying in greater detail as to its suitability for even more aerial cabling to accompany the existing high level of aerial cabling and aerial wires.

[3] "NBN Co exec provides most detailed briefing yet on planned network design", CommsDay.com, 26 March 2010 http://www.commsday.com/node/799
[4] NBN Co Media Release, 2 March 2010 http://www.nbnco.com.au/firstreleasesites/NBNCoFirstReleaseSitesPressRelease.pdf
[5] NBN Co First Release Sites FAQ: http://www.nbnco.com.au/firstreleasesites/faq.aspx

Case Study: Brunswick Streets with even more Aerial Cabling and Wires

The NBN web site states that Brunswick is an inner-city suburb of Melbourne. Approximately 2600 premises are to be passed by the proposed NBN fibre-to-the premises network in an area bounded by Stewart Street, Lygon Street, Glenlyon Road and Sydney Road. A high-resolution map of this area is given by http://www.nbnco.com.au/firstreleasesites/downloads/BrunswickFSAM.jpg In the centre of this image the reader will find Victoria Street running east-west; just off the centre to the north there are Nash and Brett Streets and immediately south of these two is the unnamed Elizabeth Street.

It is instructive to then access Google maps for No. 204 Victoria Street, Brunswick at http://maps.google.com.au/maps?hl=en&q=victoria%20st%20brunswick&um=1&ie=UTF-8&sa=N&tab=wl and increase the magnification to the maximum allowable extent. This image clearly shows an electricity pole at the corner of Victoria and Elizabeth Streets and the next pole to the east opposite the corner of Victoria and Nash Streets. The poles can be easily recognised by their shadows and even some of the attached wires can also be seen. A quick scan elsewhere shows that this portion of Brunswick is quite typical of the whole suburb.

What stands out in this section of Victoria Street between Elizabeth and Nash Streets is that on the southern side, the side of the electricity pole route, there are six properties. Reference to the scale bar at the bottom left-hand corner of the Google map shows that five have a frontage of only about six metres each and that the poles are about 42 metres apart. A recent on-site inspection confirmed these figures.

Figure 1 graphically illustrates the problem in providing electricity and pay television services to such narrow frontage properties.[6] All of the service lead-ins to properties not immediately adjacent to a pole have had to be run mid-span. Not only does this mode of construction permanently degrade service reliability arising from damage caused by storms or removal vans for example, but it markedly adds to the visual pollution of the streetscapes.

Figure 2 graphically illustrates the existing mess of 20th century aerial infrastructure already abundant in Brunswick, Victoria. Unless governments adopt a deliberate strategy of nation building through retrospective undergrounding of such aerial infrastructure, this mess is destined to be perpetuated throughout the 21st century and beyond. But if the National Broadband Network is to be installed aerially in Brunswick, as now seems likely particularly if no access agreement is reached with Telstra, the magnitude of this mess will be even greater! Correspondingly, the increased cost of subsequent retrospective undergrounding seals the fate of ever cleaning up this mess – all due to policy shortsightedness and a lack of leadership.

[6] By way of clarification, the wires and cables in this figure are as follows, from top to bottom: 415 volt three phase electricity wires and street light lines, an electricity company control cable, then the Optus and Telstra/Foxtel pay television cables. Note that the Telstra telephone services are all installed underground!

Stop Press! or is it Spin Press?

The following news was read on page 4 of The Australian newspaper, dated 30 March 2010. Due to the apparent absence of an online reference, the text is quoted in full:

> **Lines may move underground**
>
> Cable trenches for the national broadband network could be used to put unsightly powerlines and other overhead services underground.
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> A spokeswoman for the Communications Minister Stephen Conroy confirmed NBN Co was "consulting with utility companies to explore the potential for co-operation on the NBN rollout, including the use of facilities to assist underground rollout".
>
> "NBN Co will also be exploring a range of engineering solutions in its first release sites, which may include other techniques for underground deployment," she said.
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> "This is also an issue the government is considering in its response to the NBN Implementation Study."
>
> The move would not only improve streetscapes across Australia and help utilities share the cost of such expensive works, but potentially safeguard power and phone services from damage, especially in cyclone and storm-prone states such as Queensland.
>
> Queensland Energy Minister Stephen Robertson said he would work with the commonwealth on "any options that would be of mutual benefit, stack up commercially and be in the community's best interests."
>
> Sean Parnell

On first reading, we could almost choke with excitement! However on reflection our hopes will most likely be sorely dashed since:

- The only way underground deployment could be executed in Brunswick is via directional boring, but in such an old area this approach runs the high risk of damaging existing buried water and gas pipes that were installed many decades ago and are now fragile if disturbed; and
- Given the very tight timetable for rolling out fibre throughout the first release sites, there is simply no time available to retrospectively underground all existing aerial services at the same time.

The article does allude to the possibility of retrospective undergrounding, presumably in areas subsequent to the first release sites. Whilst this prospect is to be applauded, the magnitude of the task is huge and to date we have seen nothing from the Federal Government, NBN Co or industry suggesting that planning for such works is being entertained.

Conclusion

Our conclusion in submission number 94 dated 11 August 2009 stands unchanged:

"Aerial construction of the access network component of the National Broadband Network will seriously degrade service reliability. Australians should be very worried about 'investing in nation-building infrastructure needed for tomorrow' that is held up by rotting electricity poles. Such an outcome outstandingly fails the basic premise of creating 21st century broadband as a building block of Australia's future digital economy.

It cannot be in the public interest for the Telecommunications (Low-impact facilities) Determination 1997 to be amended as defining NBN cabling of 'low impact'. This issue requires community-wide consultation, not deals behind closed doors with captive stakeholders.

A truly nation-building alternative would be to underground all aerial utility construction – with the most notable impact being on electricity distribution lines. There are grounds to believe that this could be achieved for a broadly similar financial outlay if appropriate economies of scale and novel approaches are exploited."

Figure 1: Existing mid-span lead-ins providing electricity and pay television services in Brunswick, Victoria to narrow frontage properties.

Figure 2: Existing mess of 20th century aerial infrastructure in Brunswick, Victoria destined to be perpetuated throughout the 21st century and beyond.

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