

# Framing the NBN: An Analysis of Newspaper Representations

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## Abstract

The National Broadband Network (NBN), Australia's largest public infrastructure project, was initiated to deliver universal access to high-speed broadband. Since its announcement, the NBN has attracted a great deal of media coverage, coupled with at times divisive political debate around delivery models, costs and technologies. In this article we report on the results of a pilot study of print media coverage of the NBN. Quantitative and qualitative content analysis techniques were used to examine how the NBN was represented in *The Age* and *The Australian* newspapers during the period from 1 July 2008 to 1 July 2013. Our findings show that coverage was overwhelmingly negative and largely focused on the following: potential impacts on Telstra; lack of a business plan, and of cost-benefit analysis; problems with the rollout; cost to the federal budget; and implications for business stakeholders. In addition, there were comparatively few articles on potential societal benefits, applications and uses, and, socio-economic implications.

**Keywords:** National Broadband Network, media representations, *The Age*, *The Australian*, newspaper coverage, content analysis

## Introduction

The success of the National Broadband Network (NBN) in fulfilling its ambition to provide high-speed broadband to every business and household in the country, grow the digital economy, and support digital inclusion will be shaped by how it is understood, adopted, and appropriated by end-users. Since the project was announced on 7 April 2009 by the then-Labor Federal Government, the NBN has attracted a great deal of media coverage, coupled with, at times, divisive political debate around the model, costs and technology best fit for purpose. Following the Federal Coalition Government's election in 2013, a number of reviews into the original NBN plan and its delivery have been undertaken (Dept. of Communications 2013; NBN Co. 2013b; NBN Panel of Experts 2014a, 2014b; Senate Select Committee 2014). The new Coalition Government plans to install a 'Fibre to the Node' (FttN) network for the vast bulk of end-users – which utilises a mixture of technologies for the so-called 'last mile' – in place of the previous 'Fibre to the Premises' model (FttP). This new model challenged the public provision and social benefits of a universal communications infrastructure delivered via FttP, and the two different models provided binary anchor points for vigorous political debate.

The rollout of the FttN NBN is now well underway in major cities and regional areas around the country. Nevertheless, ongoing uncertainty about the technical performance of the FttN model as compared to the FttP model, its long-term costs relative to FttP, the loss of universal service provision, and the estimate of social and economic benefits that might be derived from each model are all issues that are far from resolved. Given the discourse that has contrasted FttP with FttN, a critical element influencing the adoption of the NBN under the new FttN model is how the FttP model was represented or framed and, in turn, how this framing mediates public perceptions and decision-making in relation to the newly configured FttN network. In this paper we report on a content analysis of two Australian newspapers' representations of the NBN from July 2008 to July 2013 – the early stages of NBN discussion, installation and adoption. This period corresponds to a timeframe beginning just prior to the announcement of the FttP NBN scheme through to the period just prior to the 2013 Federal election, and is the period in which FttP and FttN were positioned in contrast with one another. The media content analysis was undertaken in order to determine the extent of coverage of the NBN in Australian newspapers, the key topics being discussed in leading Australian newspapers and the content of editorials and opinion pieces on the NBN. Its larger aims are to better understand how the social and economic implications of the NBN are being publicly defined, assessed and critiqued.

## **Background and Context**

The idea for a national Australian broadband network emerged during the Howard Government era (1996-2007) through the work of the government's Broadband Advisory Group (BAG). In a 2003 report, BAG recommended the government work with industry and the states to construct a high-speed broadband network (BAG 2003). In 2005, with the rise of social networking, peer-to-peer file sharing and other bandwidth-intensive applications, Telstra, the nation's largest telecommunication provider, announced a plan to replace its copper network with a fibre optic network (Maiden, 2005). However the plan was never enacted, as Telstra could not negotiate a deal with the Australian Competition and Consumer Commission (ACCC) for the provision of access to the proposed network by other companies.

After much negotiation, the Federal Labor Government (2007-2013) announced in 2009 their intention to build a wholesale, open-access national broadband network to deliver high-speed broadband to all homes and businesses in Australia (Conroy 2009). While it had initially pledged a modest A\$4.2 billion project that would deliver a FttN broadband network to 98% of the country's population, the final policy was far more ambitious. The government decided to fund the construction of a FttP network that would deliver speeds of 100 Mbps downstream (with the capacity to be upgraded to 1 Gbps/400 Mbps) and 40 Mbps upstream to 93% of the population, at a total projected cost of A\$44.1 billion (NBN Co. 2012). For the remaining 7% of Australians who live in remote rural areas, or in towns of less than 1000 households, wireless and satellite connections would deliver speeds of at least 25/12 Mbps (NBN Co. 2013a). Together, these technologies would provide a common platform of universal and ubiquitous high-speed broadband for the country. This installation model was, then, premised upon the importance of universal broadband access, and its realisation in a national network using a combination of fibre-optic cable, wireless and satellite technologies rolled out to the front door of homes. NBN Co. Limited, a government-owned company set up by the Federal Government in 2009, was delegated the task of installing and operating the network on a wholesale basis, selling a tiered range of broadband products to retail service providers, who in turn would offer products to consumers (NBN Co. 2010). Once the project was to be completed (estimated to be June 2021), the government would then sell its stake in

NBN Co. and privatise the company. The Australian government negotiated an A\$11 billion deal with Telstra, the country's oldest telecommunications company and largest ISP, to decommission the company's extensive but ageing copper network and utilise its conduits for fibre, and to separate its retail and wholesale arms to allow it to transfer customers to the new NBN (Taylor 2013a).

As Dias (2012) and others have noted, the Federal Labor Government's plan for a national broadband network differed from the approach taken to infrastructure investment by many developed economies around the world, in that it was almost entirely funded through public finances. A second point of difference between the Australian model and others was that the material infrastructure (fibre, satellite or wireless) was not provided differentially to different markets according to capacity to pay, but as a universal communications infrastructure, available at standard wholesale costs and guaranteed minimum performance rates to every household in every street in every town.

In April 2013, the then opposition party in Australia, the Liberal/National Coalition, announced their alternative to the Federal Labor Government's plan to deliver FttP to most of the population by 2021. The Coalition's plan was advertised as 'Fast. Affordable. Sooner.' and promised to deliver a National Broadband Network similar to the Federal Labor Government's, with the key difference that it would be predominantly a FttN network, with the last mile of the network utilising the existing copper network. By utilising the copper network (where possible), the FttN project was projected to be completed in 2019, sooner than the NBN's previous projected completion date of June 2021. It was also projected to cost less, at A\$29.5 billion as compared to AU\$44.1 billion, although the long-term costs of FttN have been argued to exceed the cost of FttP (Tucker 2013). In relation to performance, it was claimed that the FttN model will deliver speeds of between 25 and 100 Mbps for all users of the network by the end of 2016 and speeds of 50 to 100 Mbps for the 90% of homes connected to the mainly FttN network by 2019 (Liberal Party of Australia 2013). Like the costs, these performance objectives are also disputed as being unachievable, and since the election the current head of the NBN has declined to repeat these undertakings (Taylor 2013b).

The Coalition Government was elected to govern in the 2013 federal election, and, at the time of writing, work on the FttN model is underway. Under this policy, the planned FttP component of the NBN will be scaled back to cover 22% of premises in areas already being constructed by NBN Co., new housing premises and in areas where the copper is too degraded to deliver 25 Mbps speeds. Of the remaining homes and businesses, 71% will be connected to FttN by upgrading the already existing copper network, while the fixed wireless and satellite components of the NBN for the last 7% of premises will remain the same as in the previous policy. Making use of existing network infrastructure, such as Hybrid Fibre Coaxial (HFC) cable, has also been suggested as part of the multi-technology mix scenario recommended in the Coalition's strategic review of the NBN (NBN Co. 2013b). In addition, homes on the FttN network that can already access speeds of at least 25Mbps on the Coalition's planned network will be able to upgrade to a complete fibre connection (or FttP) if they are willing to pay for the cost themselves (Liberal Party of Australia 2013). Thus, this model challenges the public provision and social benefits of a universal communications infrastructure.

In this period of broadband policy transition, ongoing uncertainty around the eventual configuration of the NBN, the cost and date of the network completion, as well as the speeds and eventual retail costs consumers will pay for broadband services remains a subject of debate, as do the projected uses and benefits of faster broadband. Upon announcing the policy in 2009, the then Labor government claimed that the NBN 'will help drive Australia's productivity, improve education and health service delivery and connect our big cities and

regional centres’ (Conroy 2009). Despite these claims, the NBN’s projected impact on public and private services, economic productivity and social life in Australia remains uncertain in the public mind (Burns et al. 2012; Dias 2012; Wilson et al. 2009). While there has been much rhetoric about how the NBN will transform the economic and social landscape of Australia at the ‘macro’ scale, less attention has been paid to its impact on the ‘micro’ level – that is, in relation to the individuals and families who will adopt it. It is only with the initial rollout of the NBN at various ‘test sites’ around the country from 2010 onwards that researchers have begun to map its impact for end-users (see: Gregg 2012; Gregg et al. 2011; Nansen et al. 2013; Wilken et al. 2011).

As the NBN continues to be made available for public consumption, and as decisions are made about its configuration, there is a need to understand the public discourse through which the benefits of the NBN are presented, and in turn how the wider public perceives these benefits. To further this analysis we offer an historical analysis of how the original NBN – based on a publicly funded infrastructure of FttP – was publicly perceived, understood and represented, as this constitutes an important foundation and on-going reference point by which the current FttN model is evaluated.

## Methods

Public discourse around the NBN was analysed using quantitative and qualitative media content analysis techniques so as to better understand how the NBN has been and is being publicly defined, assessed and critiqued. We conducted a Factiva search of articles from Australian news sources spanning the period 1 July 2008 to 1 July 2013, which corresponds to a timeframe of roughly five years covering the period in which the FttP NBN scheme was announced, begun to be installed and was switched to FttN. We limited our analysis to major Australian news sources only. We chose to use Factiva because it archives Australian news sources and it allows for advanced search techniques, and is an established resource used by Australian researchers. An initial broad search using the terms ‘NBN’ OR ‘National Broadband Network’ generated over 55 000 articles. These results were refined to a manageable sample by limiting the search to articles from two leading Australian newspapers, *The Australian* and *The Age*. These two particular newspapers were selected because they are the ‘flagships’ of the publishers – News Corp. and Fairfax Media – that dominate Australia’s newspaper publishing industry, and are thus important not only in their own right, but also in setting the agenda for a wide range of other media, including television, talk-back radio and online media. These media outlets are in fierce competition, and often take opposing editorial positions in relation to political debates. In examining these two outlets we therefore aimed to capture the differing ways the mass media characterised the FttP NBN, and set the background against which end-user public opinion is formed.

The NBN has been one of Australia’s most reported news items over the past five years, yielding 7710 individual articles (see Table 1).

Table 1: Number of articles in *The Australian* and *The Age* in five-year period mentioning NBN

	Number of articles that mention ‘NBN’ Or ‘National Broadband Network’ (01-07-2008 – 01-07-2013)
<i>The Australian</i> (News Limited)	6123
<i>The Age</i> (Fairfax Media)	1587

We then compared the extent to which the NBN formed a key news story vis-à-vis other national issues, such as the carbon tax (see Table 2). This revealed that the NBN has been a significant story over the last 5 years in the mainstream media.

Table 2: Comparison of NBN to other media stories.

	Carbon Tax	Climate Change	Refugees	NBN	Public transport
<i>The Australian</i> (News Limited)	7170	12510	4304	6123	1946
<i>The Age</i> (Fairfax Media)	2345	6004	2614	1587	4118

This ‘discovery and sampling’ approach is useful for this study in ascertaining the number of articles generated on the NBN, the type of topics being discussed and by whom, and the views represented in their content. Through an exploratory sampling of this data set we discovered that many of the articles mentioning either keyword only did so in passing – for instance, as part of a list of political achievements by a politician or focusing upon aspects of the network that were outside the scope of our analysis. We therefore further refined the media sample by limiting it to articles that mentioned the NBN at least five times in the body of the text, and articles that contained the key terms in the title. This ensured that the set of articles for analysis specifically addressed the topic of the NBN and engaged with the issue in a more sustained or in-depth manner, rather than simply offering a cursory mention. Duplicate articles were also excluded.

The final sample from this search and filtering process was 1060 articles. Not surprisingly, within this sample the most often cited companies were NBN Co. (527) and Telstra (453), with the CEO of each company the most cited executive – David Thodey (97) and Michael Quigley (37). Further testing of this sample revealed that the articles retrieved were all focused on the NBN, thus producing a reliable data set from the five-year period for content analysis, which is detailed below.

For the purposes of qualitative analysis we limited our search to editorial or opinion pieces from *The Australian* and *The Age* that contained the labels ‘NBN’ or ‘National Broadband Network’ in the title. This produced a sample of 30 articles, and this final set was subjected to a close reading and qualitative content analysis.

## **Findings: Media representations of the NBN**

### ***Thematic Analysis of News Article Contents***

After exhausting the machine-reading, automatic features of the media aggregation tool Factiva, we embarked on a mixed-method content analysis of the sample of 1060 articles to explore media discussion and representations of the NBN. These were then read and grouped to reveal the major themes.

These 1060 articles were analysed using quantitative and qualitative methods to determine the topics addressed in the article headlines and lead paragraphs. We coded the sample individually into thematic categories using ‘an iterative method of category creation using constant comparison’ (de Souza e Silva et al. 2010, p. 509). Following this, we did “‘check coding’” to refine the categories’ (Ibid.). It is acknowledged that articles in the sample are, on occasion, likely to cross categories. For example, the same article could address the structural separation of Telstra and a critique of the NBN business case. However, as we only assigned one category per article, we made the determination as to the appropriate category based on the opening paragraph (the ‘summary lead’) for the reason that ‘the summary lead is the most recognized element of journalistic writing’ and establishes ‘the angle or central point’ (Lynch 2008, p. 83). The categories generated from this analysis that contained more than 28 articles were then tabled, and sorted from smallest to largest numbers of articles in each category (see Figure 1 and Table 3).

Figure 1: Major themes in newspaper coverage of NBN (above 28 articles)

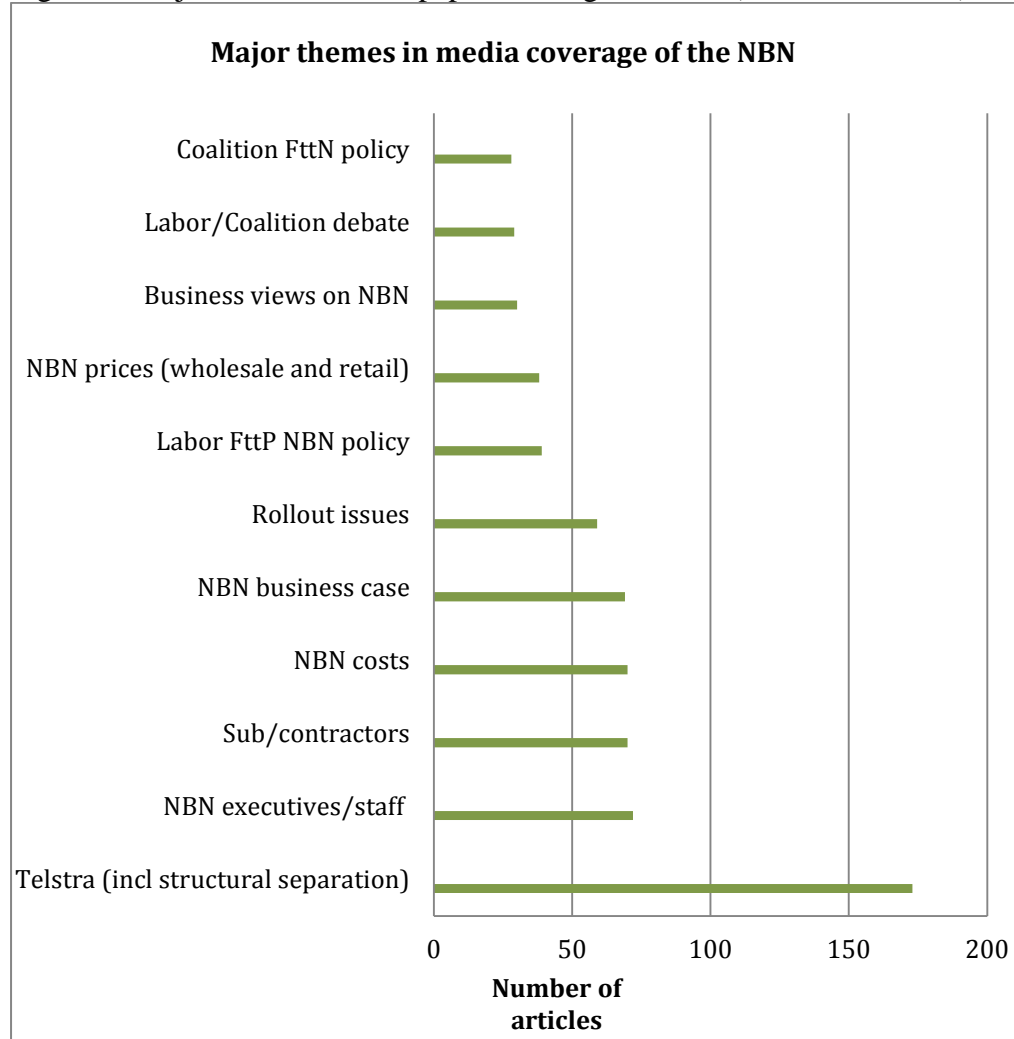


Table 3: Major themes in newspaper coverage of NBN (above 28 articles)

Major Theme	No. of Articles	% of total articles
Coalition HSB policy	28	2.63%
Labor/Coalition debate on & Coalition critique of NBN	29	2.72%
Business views on and uses of NBN	30	2.82%
NBN prices (wholesale and retail)	38	3.57%
Labor NBN policy & bill & election	39	3.66%
Rollout issues	59	5.54%
NBN business case	69	6.48%
sub/contractors	70	6.57%
NBN build costs	70	6.57%
NBN executives/staff	72	6.76%
Telstra (inc structural separation)	173	16.24%
<b>Total number of articles covering major themes</b>	<b>677</b>	<b>63.87%</b>

Unsurprisingly, the major institutional actors figure prominently. We found that the government is mentioned (but not always the major theme) in approximately 40% of all articles, and Telstra is mentioned an equivalent number of times. It can be seen in the tables that there is also significant level of discussion of the NBN's construction costs and whether this constitutes money well spent.

Rural and regional areas are not mentioned often in our sample, but this may be due to the urban focus of the two newspapers we sampled. Disturbingly, the national or societal benefits of the NBN (or lack thereof) are covered with far less frequency, though when addressed are most often discussed in terms of perceived benefits around issues such as health, education, video and, to a lesser degree, telework.

Regarding the shifting nature of the debate, in the first two years of our sample the NBN was predominantly discussed in terms of whether it should exist or not. Debates then shifted to the technical configuration of the network, often divided along party/political lines (this had a peak in April 2013 when the Liberal party released an alternative NBN policy including an alternative technical configuration) (Liberal Party of Australia 2013). More recent debates have focused on rollout, rollout successes and delays (5%), issues with NBN contractors (7%) and issues about asbestos uncovered in rollout work. Across the coverage of the NBN in *The Australian* and *The Age* newspapers, there are comparatively few articles focusing on the positive aspects and possible larger societal benefits of the network (10 articles or 0.94% of coverage), or on the applications that may be supported by the NBN (including health, arts, education) (12 articles, or 1.13%).

Given the transformative potential of high-speed broadband for so many aspects of Australian life, it is remarkable that, across the coverage of the NBN in *The Australian* and *The Age* newspapers, there are so few articles focusing on the likely applications of the NBN, the implications of these applications for various economic sectors and social groups, and so little debate and discussion of possible economic, societal and cultural benefits of the network (see Table 4 below).

Table 4: Newspaper coverage of NBN applications and socio-economic implications

Theme	Number of Articles	% of total articles
Rural & regional Australia	17	1.60%
NBN applications (inc. health, arts, education)	12	1.13%
NBN and societal benefits	10	0.94%
TV	8	0.75%
NBN and Remote Australia (inc. indigenous communities)	6	0.56%
NBN and Newspapers / press	3	0.28%
NBN and Music industry	1	0.09%
Total number of articles discussing possible benefits	57	5.35%

### ***Content Analysis of News Editorials and Opinion Pieces***

Finally, in addition to the above thematic or category analysis, we extracted editorial or opinion pieces from *The Australian* and *The Age* that which contained the labels 'NBN' or

‘National Broadband Network’ in the title. This produced a sample of 30 articles, and this final set was subjected to a close reading and qualitative content analysis.

It may surprise many readers to know that in general terms it is difficult to attribute any particular leaning (either ‘for’ or ‘against’ the NBN) across the range of either newspaper’s opinion columns. Of the 30 editorials and opinion columns collected over the period 2008-2013, three key themes dominate:

1. the structural separation of Telstra;
2. scrutiny of the NBN business plan;
3. the high cost of Labor’s NBN proposal.

The sample included 20 articles in *The Age* newspaper and 10 articles in *The Australian*. While there is significant overlap across articles in terms of the issues covered, for the purposes of clarity we will group editorials into the abovementioned three themes (plus those that fall outside all three).

The first dominant key theme in the editorials we examined pertained to the structural separation of Telstra and related issues. Early editorials addressed the possible economic impact for Telstra and its shareholders should the company agree to sell its prized infrastructure assets to NBN Co. well below market value (Duffy 2009), how Telstra’s position vis-à-vis the NBN shifted significantly once the Government decided to take fibre beyond the node (Maiden 2009), and a union perspective on how Telstra’s negotiations with the Government and its shareholders over the structural separation issue failed to include any discussion of the likely impact for its workers (Husic 2009). Prior to the Government’s Telstra structural separation bill being tabled in October 2010, there was also much speculation as to the bill’s likely contents (Speedy 2010); concern for Telstra’s position given, as one editorialist argues, that ‘it is yet to prove it can survive without its historic advantages’ (Knight 2010b); and suggestions that any possible deal between the Government and Telstra is a long way from settled (Morgan 2010; Maiden 2010a).

The Coalition’s then opposition spokesperson for broadband, communications, and the digital economy, Senator Nick Minchin, wrote an editorial pointing out the difficulties the Government will face in trying to push through the breakup of Telstra, while also pointing out that, at the same time, the NBN ‘will be a monumental white elephant without Telstra’s customers’ (2009). One writer, analyst Kevin Morgan, also contributed a scathing editorial condemning Conroy’s ‘Machiavellian scheme to dismember Telstra’, arguing that the NBN was ‘preposterous’ and suggesting that Senator Conroy had been influenced by Optus in driving the structural separation issue (2009a). It was also suggested that, with respect to coverage, ‘Australia’s 70 per cent [fibre to the home] target simply cannot be met without Telstra’ (Maiden 2010b).

We counted only two editorials on the structural separation issue published subsequent to the bill’s tabling. The first explores how structural separation might potentially be softened for Telstra by it being well placed to play a key role in the construction of the NBN (Verrender 2011a). The second describes the structural separation of Telstra as a ‘misnomer’ and a ‘faux separation’ as NBN Co. relies on Telstra and they, in turn, do very well out the arrangement (Lynch 2012).

The second dominant key theme in the editorials we gathered and examined concerned the NBN business case, and the likely wider implications of this. The articles grouped under this thematic heading are wide-ranging in terms of their content and the issues they raise. These can be characterised as follows:



1. concern over Government reluctance to submit the scheme to Productivity Commission scrutiny (Gittins 2010);
2. calls for the Government to ‘shift all of Australia’s free-to-air and pay-TV networks on to the NBN to create a level playing field for all broadcasters’ (Canning 2009);
3. suggestions of potential problems with the NBN Co.’s ‘do not compete agreements’ (Martin 2011);
4. claims that the NBN business case is not compelling enough to convince Telstra’s major shareholder, the Future Fund, to give the deal the green light (Knight 2010a);
5. the argument that the NBN does not have ‘the remotest chance of commercial success’ (Morgan 2009b), and the competing fear expressed by one writer that it will be a success and will be privatised, thus repeating what he sees as the error of the original Telstra sale (Ormonde 2010); and,
6. predictions that the NBN will lead to the ‘total demise of fixed-line calls’ due to VOIP technology and the rise in use of mobiles and smartphones (Griffith et al. 2011).

This last issue in fact points to a recurrent concern raised in a number of the editorial analyses of the NBN business case: the complications that are seen to be posed by wireless technologies (Lynch 2012; Maiden 2011; Griffith 2011).

The third major theme addressed the issue of the high costs of Labor’s NBN proposal. An early editorial in *The Age* suggests that the Federal Government is ‘spending like a drunken sailor’ and that ‘a sanity check is desperately needed’ to curb this spending (Morgan 2009). Two further short pieces include comments from two foreign businesspeople – Mexican telecommunications company owner and vice-chairman of the UN Broadband Commission for Digital Development, Carlos Slim Helu (Davidson 2010), in the first instance, and ‘one of Japan’s richest men, who is proposing to connect the country to fast broadband using private funds’, in the second instance (*The Australian*, 2010) – in support of the claim that the NBN project is too costly.

Coverage of these three main themes makes up 23 of the 30 editorials. In this analysis, the largest infrastructure project in Australia’s history is all about the impact on Telstra, the business implications for telecom stakeholders (as opposed to wider economic implications) and a return to the tried and true newspaper editorial theme of ‘government spending’ and the need to curb it. With the exception of a reference to the business implications of the end of copper telephony, there is no reference to the end-user applications that the infrastructure is built to service.

The remaining editorial and opinion columns each raise the following discrete, miscellaneous issues:

1. the suggestion that ‘about 10 per cent of the population will not be covered by the planned national broadband network and it cannot be considered complete until their needs are met’ (Coutts 2010)
2. astonishment at the overall poor handling of the asbestos issues dogging rollout of the NBN (*The Age* 2013)
3. condemnation of proposed plans to shut down Optus’ network (‘Only a vandal would destroy such an asset. Only a seriously confused regulator would allow it to happen’), and suggestions that it is fear of competition by NBN Co., not inefficiency, that motivates such a move (Martin 2012)
4. uniquely, a critique of the Coalition’s broadband proposal, and a suggestion that upgrade and maintenance costs will likely bring their proposal much closer in overall cost terms to Labor’s (Moses 2013)

5. attention is drawn to a US corruption case involving Alcatel Lucent, NBN Co. CEO Mike Quigley's and NBN Co. second-in-command Jean-Pascal Beaufret's former employer, and criticism of the pair's 'lack of disclosure' as NBN Co. executives since news of the scandal broke (Verrender 2011b)
6. an argument to think 'strategically about issues such as usability, applications, social and cultural concerns, geographic constraints, and the digital divide', especially in relation to the NBN's rollout in the far north of Australia (Wong 2010)
7. one editorial of the 30 that openly endorses the Government's NBN proposal, arguing that 'too little attention is paid to the big picture' and acknowledging the overall benefits to Australians of high-speed broadband (Day 2010)
8. a whimsical piece on internet-obsessed older Australians ('big screens and big pipes is where it is at') and how the NBN promises to be a boon for them (Anstey 2011)

## Conclusions

Readers of *The Australian* and *The Age* have a right to feel let down by the representations of the NBN presented in the publications' articles, opinion columns and editorials during the early stages of the NBN rollout. Collectively, thousands of articles on the NBN were printed, and the NBN attracted considerable coverage of its impact on Telstra, the absence of a business plan and a cost-benefit analysis, various problems with the rollout, its cost to the Federal budget and its implications for business stakeholders. The findings of the research do not reveal that the newspapers we sampled were running an editorial line arguing in favour or against the NBN or the FttP model as such. Nevertheless, analysis of the sample indicates that media sentiment about the NBN was almost always negative about the particulars of the abovementioned themes. The coverage in either newspaper rarely holds a positive view of the network, its success stories or its uses.

The media coverage shifted over time from an early discussion of whether it should exist or not to the technical configuration of the network and the implications of this for Telstra, Optus and other stakeholders. These discussions were most often presented as controversies bifurcated along party/political lines, and then progressed to issues related to problems or delays with the rollout. Across the extensive media coverage of the NBN there are comparatively few articles focusing on the possible larger societal benefits of the network, or the applications or the socio-economic implications of the NBN. The NBN is arguably transformative infrastructure with important implications for daily life – for interpersonal and business communications, for media production and consumption, for the shape and use of cities, for the provision of health and educational services, and so on – and yet the 'application layer' of high-speed broadband and its implications for daily life are not discussed in any detail in our sample. This is clearly a case where media silence is as significant for the body-politic as advocacy.

Nevertheless, it is interesting to note that despite negative media coverage of a wide range of details related to the implementation of the NBN, and despite relative silence on the applications of the NBN, public perceptions of the NBN have remained consistently positive (Ewing et al. 2012). Clearly, further research is required to investigate this discrepancy between negative mainstream media coverage and persistent public support for an NBN. In particular, further research is needed to explore whether public opinion is shaped by other sources of information. These other sources of information may be word of mouth, NBN advertising and, of course, social media and other online sources.

## References

- ABS. (2013). Australian Bureau of Statistics – 8153.0 – Internet Activity, Australia, December 2012. Retrieved from <http://www.abs.gov.au/ausstats/abs@.nsf/Products/E7D355D02F36C5D1CA257B4700137746?opendocument>
- ABS. (2011). Australian Bureau of Statistics – 8146.0 – Household Use of Information Technology, Australia, 2010-11. Retrieved from <http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/192B7AFC26FF3538CA25796600152BDF?opendocument>.
- The Age* (2013, June 5, 2013). No excuse on NBN asbestos. *The Age*, p. 22.
- Ajzen, I., (2001), “Nature and Operation of Attitudes”, *Annual Review of Psychology*, Vol. 52, pp. 27-58.
- Anstey, S. (2011, February 25, 2011). Why the NBN is good for offline oldies. *The Australian*, p. 20.
- Apperley, T., Nansen, B., Arnold, M. and Wilken, R., (2011), “Broadband in the Burbs: NBN infrastructure, spectrum politics and the digital home”, *M/C: A Journal of Media and Culture*, Vol. 14 No. 4.
- Arnold, M., Shepherd, C., Gibbs, M., and Mecoles, K., (2006), “Domestic Information and Communication Technologies and Subject-Object Relations: Gender, Identity and Family Life”, *Journal of Family Studies*, Vol. 12, pp. 95-112.
- Australian Communications Consumer Action Network (ACCAN). (2011). *National Broadband Network: A Guide for Consumers*. Sydney: ACCAN.
- Australian Communications and Media Authority (ACMA). (2009). *Australia in the Digital Economy. Report 2: Online Participation*. Canberra: ACMA.
- Broadband Advisory Group (BAG). (2003). Australia’s broadband connectivity: The Broadband Advisory Group’s report to government. Retrieved from <http://www.noie.gov.au/publications/NOIE/BAG/report/>
- Burns, A. and McGrail, S., (2012), “Australia’s Potential Internet Futures: Incasting Alternatives Using a New Technology Images Framework”, *Journal of Futures Studies*, Vol. 16 No. 4, pp. 33-50.
- Canning, S. (2009, October 12, 2009). Call to focus TV on NBN. *The Australian*, p. 29.
- Conroy, S. (2009). *New National Broadband Network*. Canberra: Australian Government. Retrieved from [http://www.minister.dbcde.gov.au/media/media\\_releases/2009/022](http://www.minister.dbcde.gov.au/media/media_releases/2009/022)
- Coutts, R. (2010, January 18, 2010). NBN neglects those left in broadband wilderness. *The Age*, p. 5.
- Davidson, K. (2010, October 5, 2010). When billionaires and Keynesians agree the NBN is a train wreck, it looks like consensus. *The Australian*, p. 13.
- Day, M. (2010, October 18, 2010). Let’s focus on the NBN’s big picture. *The Australian*, p. 27.
- Department of Broadband, Communications and the Digital Economy (DBCDE) (2011). *Submission to the House Standing Committee on Infrastructure and Communications: The Role and Potential of the National Broadband Network*. Canberra: DBCDE.
- Department of Communications (2013). *Broadband Availability and Quality Report*. Canberra: Department of Communications. Retrieved from [http://www.communications.gov.au/\\_\\_data/assets/pdf\\_file/0018/212535/Broadband\\_Availability\\_and\\_Quality\\_Report.pdf](http://www.communications.gov.au/__data/assets/pdf_file/0018/212535/Broadband_Availability_and_Quality_Report.pdf)
- de Souza e Silva, A., and Frith, J., (2010), “Locational Privacy in Public Spaces: Media Discourses on Location-aware Mobile Technologies”, *Communication, Culture & Critique*, Vol. 3 No. 4, pp. 503-525.

- Dias, M., (2012), “Australia’s Project for Universal Broadband Access: From Policy to Social Potential”, *First Monday* Vol. 17 No. 9. Retrieved from <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/4114/3299>.
- Duffy, M. (2009, August 14, 2009). Selling to NBN could rebound. *The Age*, p. 6.
- Ewing, S., and Thomas, J. (2012). *CCi Digital Futures 2012: The Internet in Australia*. Melbourne: ARC Centre of Excellence for Creative Industries and Innovation, Swinburne University of Technology.
- Gittins, R. (2010, November 22, 2010). NBN secrecy creates the impression the government has something to hide. *The Age*, p. 8.
- Gregg, M., (2012), “History in the Making: The NBN Rollout in Willunga, South Australia”, *Media International Australia*, Vol. 143, pp. 146-158.
- Gregg, M. and Wilson, J. (2011). *Willunga Connects: A Baseline Study of pre-NBN Willunga*. Adelaide: Department of Further Education, Employment, Science and Technology, Government of South Australia.
- Griffith, C., and Bingemann, M. (2011, February 5, 2011). NBN will kill off fixed-line telephony. *The Australian*, p. 5.
- Husic, E. (2009, October 2, 2009). Who will get the NBN job done? *The Age*, p. 8.
- Knight, E. (2010b, July 28, 2010). Telstra starts dragging itself into an NBN world. *The Age*, p. 13.
- Knight, E. (2010a, November 26, 2010). NBN deal’s devil may or may not be in the detail. *The Age*, p. 9.
- Liberal Party of Australia (2013). *The Coalition’s Plan for Faster Broadband and an Affordable NBN*. Retrieved from <http://lpa.webcontent.s3.amazonaws.com/NBN/The%20Coalition%E2%80%99s%20Plan%20for%20Fast%20Broadband%20and%20an%20Affordable%20NBN%20Summary.pdf>
- Lynch, G. (2012, February 29, 2012). NBN may soon be as obsolete as canals in age of rail. *The Australian*, p. 12.
- Lynch, L. (2008). *Exploring Journalism and the Media*. Mason, OH: South-Western Cengage Learning.
- Maiden, M. (2005, November 16, 2005). Telstra dives as \$10bn plans unveiled. *The Age*.
- Maiden, M. (2009, September 15, 2009). Telstra’s day of reckoning in NBN legislation. *The Age*, p. 6.
- Maiden, M. (2010a, May 29, 2010). Deal between Telstra and NBN Co looks some time away. *The Age*, p. 2.
- Maiden, M. (2010b, December 21, 2010). Telstra has the call on NBN. *The Age*, p. 19.
- Maiden, M. (2011, February 4, 2011). Wireless may yet be the hair in the NBN soup. *The Age*, p. 2.
- Martin, P. (2011, June 29, 2011). NBN’s assumptions just don’t stack up. *The Age*, p. 12.
- Martin, P. (2012, May 30, 2012). NBN paying Optus to destroy infrastructure. *The Age*, p. 10.
- Minchin, N. (2009, November 4, 2009). Without Telstra, Rudd’s \$43bn NBN likely to be a huge white elephant. *The Australian*, p. 44.
- Morgan, K. (2009a, November 25, 2009). ‘Minister for Optus’ is unlikely to score on NBN. *The Age*, p. 14.
- Morgan, K. (2009b, July 21, 2009). Sanity check needed for NBN. *The Age*, p. 6.
- Morgan, K. (2010, June 1, 2010). Larger carrot, fewer sticks needed to entice Telstra to plug into the NBN. *The Age*, p. 8.
- Moses, A. (2013, April 13, 2013). Lightbulb moments scarce in NBN saga. *The Age*, p. 20.

- Nansen, B., Arnold, M., Gibbs, M. and Davis, H. (2009), "Domestic Orchestration: Rhythms in the Mediated Home", *Time & Society* Vol. 18 No. 2, pp. 181-207.
- Nansen, B., Arnold, M., Wilken, R. and Gibbs, M. (2013a). *Broadbanding Brunswick: High-speed Broadband and Household Media Ecologies: A Report on Household Take-up and Adoption of the National Broadband Network in a First Release Site*. Sydney: Australian Communications Consumer Action Network.
- Nansen, B., Wilken, R., Arnold, M. and Gibbs, M. (2013), "Digital Literacies and the National Broadband Network: Competency, Legibility, Context", *Media International Australia*, Vol. 147, pp. 18-28.
- NBN Co. Limited (2010). *Product and pricing Overview for Access Seekers*. Sydney: NBN Co.
- NBN Co. Limited (2012). *Corporate Plan 2012-2015*. Sydney: NBN Co.
- NBN Co. Limited (2013a). *Faster Internet for the Bush*. Media release, 6 February. Sydney: NBN Co.
- NBN Co. Limited (2013b). *Strategic Review Report*. Retrieved from <http://www2.nbnco.com.au/content/dam/nbnco/documents/NBN-Co-Strategic-Review-Report.pdf>
- NBN Panel of Experts (2014a). *Cost-Benefit Analysis and Review of Regulatory Arrangements for the National Broadband Network: Telecommunications Regulatory Arrangements*, Consultation paper. Canberra: Department of Communications. Retrieved from [http://www.communications.gov.au/\\_\\_data/assets/pdf\\_file/0018/218520/Section\\_152E\\_OA\\_Consultation\\_Paper\\_Final.pdf](http://www.communications.gov.au/__data/assets/pdf_file/0018/218520/Section_152E_OA_Consultation_Paper_Final.pdf)
- NBN Panel of Experts (2014b). *Regulatory Issues Framing Paper*. Canberra: Department of Communications. Retrieved from [http://www.communications.gov.au/\\_\\_data/assets/pdf\\_file/0011/211016/Regulatory\\_Issues\\_Framing\\_Paper.pdf](http://www.communications.gov.au/__data/assets/pdf_file/0011/211016/Regulatory_Issues_Framing_Paper.pdf)
- Ormonde, T. (2010, December 24, 2010). Telstra sell-off was a mess. Let's hope we've learnt for the NBN. *The Age*, p. 13.
- Senate Select Committee on the National Broadband Network (2014). *Interim Report*. Canberra: Parliament House. Retrieved from [http://www.aph.gov.au/Parliamentary\\_Business/Committees/Senate/National\\_Broadband\\_Network/NBN/Interim\\_Report/index](http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/National_Broadband_Network/NBN/Interim_Report/index)
- Speedy, B. (2010, May 5, 2010). Conroy confident of NBN deal. *The Australian*, p. 28.
- Taylor, J. (2013a, March 24, 2013). NBN: Fibre to the World. *ZDNet*. Retrieved from <http://www.zdnet.com/nbn-fibre-to-the-world-7000012385/>
- Taylor, J. (2013b, December 17, 2013). No guarantees on NBN download speeds: Switkowski. *ZDNet*. Retrieved from <http://www.zdnet.com/au/no-guarantees-on-nbn-download-speeds-switkowski-7000024364/>
- The Australian* (2010, October 30, 2010). NBN 'a waste of taxpayer money'. *The Australian*, p. 1.
- Tucker, R. (2013, August 28, 2013). Can Australia afford the Coalition's NBN? *The Conversation*. Retrieved from <http://theconversation.com/can-australia-afford-the-coalitions-nbn-17494>, last accessed 8-10-2013
- Verrender, I. (2011a, April 5, 2011). Telstra handed extra leverage for sale to NBN Co. *The Age*, p. 7.
- Verrender, I. (2011b, June 21, 2011). Furore over NBN secrets. *The Age*, p. 8.
- Wilken, R., Arnold, M. and Nansen, B. (2011), "Broadband in the Home Pilot Study: Suburban Hobart", *Telecommunications Journal of Australia*, Vol. 61 No. 1, pp. 5.1-5.16.

Wilson, P., Marshall, P., Young, J. and McCann, J. (2009). “Evaluating the Economic and Social Impact of the National Broadband Network”, *Proceedings of the 20th Australasian Conference on Information Systems*. Melbourne.

Wong, A. (2010, October 19, 2010). NBN requires strategic thinking. *The Australian*, p. 34.

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