



IBES
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Broadband-Enabled Society

Framing the NBN

Public perceptions and media representations



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Executive Summary

The success of the National Broadband Network (NBN) in fulfilling its ambition to connect every business and household in the country, grow the digital economy, and support digital inclusion by upgrading Australia's communication infrastructure, 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 Labor Government, the NBN has attracted a great deal of media coverage; coupled with, at times, divisive political debate around the model, costs and technology. The rollout of the NBN is now well underway in major cities and regional areas around the country. However, the future model of broadband delivery is likely to change given the outcome of the 2013 Federal election. The new Coalition Government has promised to install a Fibre to the Node (FttN) infrastructure – in place of the previous Fibre to the Premises (FttP). Nevertheless, ongoing uncertainty around the eventual configuration of the NBN, as well as its uses and benefits are far from resolved.

A critical element, then, of NBN adoption is how the NBN is represented or framed; and, in turn, how this framing mediates public perceptions and decision-making. This report samples and analyses public perception and media representation of the NBN during the early stages of its discussion, installation, and adoption.

The study used three methods of evidence gathering: a national online survey of 2180 people to identify broad trends in public attitudes towards the NBN; an analysis of mainstream press coverage and newspaper editorials to understand the topics surrounding the NBN; and 25 qualitative interviews with various household types to gain deeper insights into how the NBN is understood in the public context.

This report builds upon previous studies by the research team into the domestic adoption of broadband, including: *Broadband in the home: a longitudinal study*, and *Broadbanding Brunswick: High-speed broadband and household media ecologies*. These studies focused on the expectations, uses and impacts of the NBN for early adopters in first release sites (Apperley et al., 2011; Arnold et al., 2006; Nansen et al., 2009, 2013a, 2013b; Wilken et al., 2011).

Key Findings

Attitudes to the Internet

- Most survey respondents were satisfied with their current home internet service, regardless of their type of service.
- Most survey respondents regarded themselves as heavy users of the internet, and thought internet access was important for their daily lives.
- Most survey respondents valued internet *speed* and *cost* slightly more highly than *download* limits – but all three were highly valued.

Attitudes to the NBN

- 58% of survey respondents believed the NBN would be of personal benefit to them; and 64% had a positive attitude to the NBN.
- Positive attitude to the NBN was evident for people with all types of internet service; however those currently with higher bandwidth services were more likely to have a positive attitude to the NBN.
- There was a strong correlation between perceived personal benefits of the NBN and positive attitudes to the NBN.
- Most survey respondents agreed with positive propositions about the NBN for improving the digital economy and social equity; and disagreed with negative propositions about the NBN as too expensive or an ill-directed use of public funds.
- Survey respondents drew predominantly upon newspaper reports as sources of information about the NBN (62%).

Media representations of the NBN

- Key topics of debate within our media sample were the government and Telstra's control and influence over the network, the technical configuration of the NBN, its cost and its management.
- The media debate shifted over time from an early discussion of whether it should exist or not, to the technical configuration of the network, often divided along party-political lines, and more recently shifted to issues related to problems or delays with the rollout.
- Three key themes dominating the editorial and opinion pages of the sample were the structural separation of Telstra, scrutiny of the NBN business plan, and the high cost of Labor's NBN proposal.
- Across the media coverage of the NBN there are comparatively few articles focusing on the possible larger societal benefits of the network, the applications of the NBN, or the socio-economic implications of the NBN.

The NBN has attracted considerable media coverage over the last 5 years, and whilst the research findings do not reveal any particular agenda being pursued, they do show that the sentiment in the print media representations of the NBN was overwhelmingly negative. In contrast, the individuals surveyed and interviewed had an overwhelmingly positive attitude to the NBN. This contradiction warrants further investigation.

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1 Background and Context

The idea for an Australian national broadband network was first proposed in 2003 by the Coalition Government's (1996-2007) Broadband Advisory Group (BAG). The BAG report recommended that government work with industry and the states to construct a high-speed broadband network (BAG, 2003). The rise of social networking, peer-to-peer file sharing and other bandwidth-intensive applications, saw Telstra, the nation's largest telecommunication provider, announce in 2005 a plan to replace its copper network with a fibre optic network (Maiden, 2005). The plan was not enacted, as Telstra was unable to negotiate a deal with the Australian Competition and Consumer Commission (ACCC) allowing access to the proposed network by other telecommunications companies.

In 2009 the Labor Government (2007-2013) announced their intention to build a wholesale, open-access National Broadband Network (NBN) to deliver high-speed broadband to all homes and businesses in Australia (Conroy, 2009). It initially proposed a modest \$4.2 billion project that would deliver a fibre-to-the-node (FttN) broadband network to 98% of the country's population. The policy was subsequently expanded from the initial FttN proposal with the government deciding to construct a fibre-to-the-premises (FttP) broadband network with a total projected cost of AU\$44.1 billion. This broadband network would deliver initial capacity of 100 Mbps downstream and 40 Mbps upstream (with the capacity to be upgraded to 1 Gbps/400 Mbps) to 93% of the population (NBN Co, 2012). The remaining 7% of Australians living in remote and rural areas would be provided broadband services delivered by wireless and satellite providing capacity of at least 25/12 Mbps (NBN Co, 2013). Together, these technologies would provide a common platform of universal and ubiquitous high-speed broadband across the country.

NBN Co was established as a government business enterprise to build and operate the network on a wholesale basis. NBN Co would sell a tiered range of broadband products to Retail Service Providers (RSPs), who in turn would offer products to consumers (NBN Co, 2010). Once the project was completed, estimated to be June 2021, the government would privatise NBN Co. As part of the process the Australian government negotiated an \$11 billion deal with Telstra to decommission the company's extensive, but ageing, copper network and utilise its infrastructure, such as conduits, for fibre, and to separate its retail and wholesale arms allowing it to transfer wholesale customers to the NBN (Taylor 2013).

As Dias (2012) and others have noted, the 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 opposition party, the Liberal/National Coalition, announced their alternative policy to the Government's plan. The Coalition's plan – *Fast. Affordable. Sooner.* – aimed to deliver a National Broadband Network similar to the Labor Government's, with the key difference that it will be a mainly

FttN network retaining the existing copper network for the last mile of access. The project was projected to be completed in 2019 and to cost less, at \$29.5 billion. However, long-term costs of FttN have been argued to exceed the cost of FttP (Tucker 2013). The Coalition Government was elected to office in the 2013 federal election, and at the time of writing plans to proceed with the policy it took to the election. The Coalition claims its version of the NBN will deliver capacity 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).

Under this policy, the planned FttP component of the NBN will be scaled back to the 22% of premises in areas already being constructed by NBN Co, new housing premises, or in areas where the copper is too degraded to deliver 25Mbps speeds. Seventy-one percent of homes and business will therefore 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. 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 fibre connection (FttP) if they are willing to pay for the cost themselves (Liberal Party of Australia, 2013).

Due to the change of government Australia is in a period of broadband policy transition with ongoing uncertainty around the eventual configuration of the NBN. Issues include the mix of technologies to be used in the network, the cost and date of the network completion, the adequacy of network capacity, retail costs for broadband services, and the projected uses and benefits of faster broadband. Upon announcing the policy in 2009 the 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, and is still subject to debate (Burns and McGrail, 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 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 and Wilson, 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 how the benefits of the NBN are being publicly presented, and in turn how the wider public perceives these benefits.

2 Methods

This study utilised a mixed-method approach that included three forms of evidence gathering:

- A national online survey of 2180 people¹ to identify broad trends in public attitudes towards the NBN and its benefits
- A sampling of mainstream press coverage in two major Australian newspapers to understand the public discourse surrounding the NBN
- Twenty-five interviews (with various household types to gain deeper insights into how the NBN is understood in the contexts of public discourse.

2.1 Survey

A third-party online consumer panel was used to collect quantitative survey data on the attitudes, perceptions and understandings the public have of the NBN². The twenty-nine questions put to participants covered:

- Attitudes to the Internet in general
- Decision-making and satisfaction with Internet services
- Perceptions of the NBN
- Attitudes towards the NBN from a personal perspective
- Attitudes to the NBN from a national perspective.

The households surveyed in March 2013 represented a wide cross-section of Australian geographical regions and demographics. Very few had the NBN, and the perceptions of the vast majority who did not are therefore based on their expectations rather than their experience³. The spread of the survey was able to ascertain who was likely to connect to the NBN and who was not, and the influences that affected their decision-making processes.

The surveys gathered discrete data, which was measured on nominal, ordinal, and continuous scales. The statistical techniques to analyse the survey data included multiple regression, means difference test, and bivariate correlations..

¹ 2466 respondents completed some part of the survey, but 286 of these respondents did not complete a substantial part of it and were excluded from further analysis because of the missing data. Some of the responses cited below do not add up to 2180 because the specific question was not completed by the individual respondent. However, that respondent had completed a significant proportion of the rest of the survey and could be included.

² See Appendix A for the survey.

³ Thus, this report serves to offer an historical analysis of how the NBN – based on a publicly-funded infrastructure of fibre to the premises providing universal and ubiquitous broadband for the country – was publicly perceived, understood and represented.

2.2 Interviews

The qualitative research was based on interviews in participant homes in July-August 2013, which were semi-structured around:

- History and experience of broadband internet
- Understanding of the NBN
- Views about the NBN from a personal perspective
- Views about the NBN from a national perspective.

Open-ended questions were designed to elicit and explore in greater detail the meaning, practices and perceptions of broadband and the NBN. Interviews were conducted after the survey and were informed by the survey findings. The qualitative data was analysed using inductive thematic data analysis techniques to compare and expand on the results of the survey data analysis, and then compared and contextualised in relation to the public discourse surrounding the NBN.

2.3 Media

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.

Articles from Australian news sources were analysed in the period 1 July 2008 to 1 July 2013 using Factiva. 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*
- Articles that mentioned the NBN up to five times in the body of the text
- Articles that contained the key terms in the title.

By excluding duplicates, this process produced a sample of 1060 articles that were subjected to quantitative content analysis.

The qualitative analysis was limited to editorial or opinion pieces from *The Australian* and *The Age*, 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.

3 Public opinions and perceptions of the NBN

Public opinion and perceptions of the NBN were gauged through an online survey and through follow-up qualitative interviews, as set out in the Methods section.

Survey questions were arranged under three broad themes:

1. **Attitudes to the Internet in General** – asking questions related to opinions and perception of the internet, as opposed to the NBN
2. **Attitudes to the NBN from a personal perspective** – asking opinions of the NBN as an ‘in principle’ concept and as a perceived personal benefit
3. **Attitudes to the NBN from a National perspective** – asking questions about the perceived national benefits, if any, of the NBN.

3.1 Attitudes to the Internet in General

Questions in this section sampled respondents’ attitudes to their current internet services, in order to explore any connection between these attitudes and attitudes to the NBN. This approach is consistent with prevailing theories in Social Psychology (e.g., Ajzen, 2001), where it is assumed that pre-existing attitudes do influence future behaviour. Survey work was followed up with 25 in-depth qualitative interviews to gain additional insight into attitudes about the internet and NBN.

Important to current experience of the internet is the form of internet connection. 79% of Australian homes have an internet connection of some kind (ABS, 2011), and as of December 2012, 98% of Australian internet connections were broadband (ABS, 2013)⁴. Consistent with national averages, 97.5% of respondents to our survey had a broadband connection in their home (see Table 1).

Household internet connection	Number	Percentage
Dial-up	22	1.0%
Satellite	33	1.5%
Broadband – cable / DSL / ADSL	1546	70.9%
Broadband – mobile / wireless	559	25.6%
Broadband – NBN connected	20	0.9%
Total	2180	100%

Table 1: Forms of internet connection in the homes of respondents

These figures support the proposition that internet is important to almost all Australians. Indeed, when asked ‘*How important is the internet to you?*’ less than 5% of respondents placed themselves on the ‘unimportant’ half of the continuum, with the largest single grouping selecting the point on the scale indicating maximum importance.

⁴ Broadband is defined by the ABS as an ‘always on’ Internet connection with an access speed equal to or greater than 256 Kilobits per second (Kbps).

Respondents also considered themselves to be heavy users of the internet. The average response to 'How would you rate your household level of internet use?' was 80.0 (on a scale of 0-100, where 100 meant "extremely heavy users"), 35% rated this as 90 or higher, and only 10% responded 50 or lower (see Figure 1).

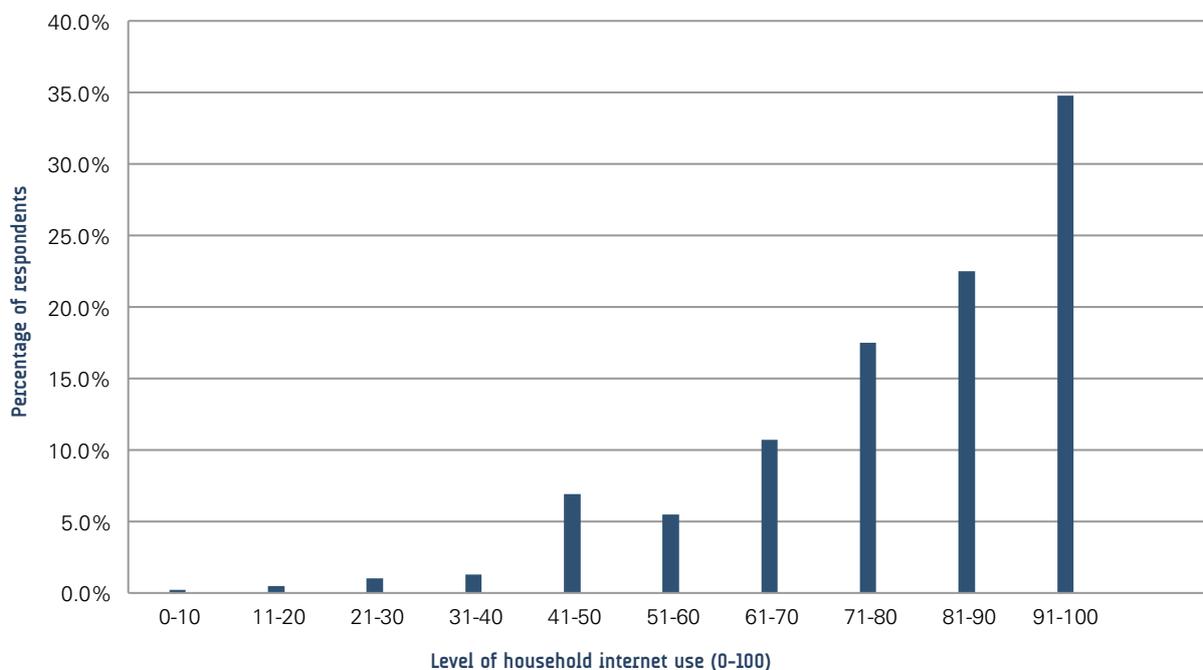


Figure 1: Perceived level of household internet use grouped as percentage of total sample

In follow-up qualitative interviews comments such as the following were typical in summing up the reasons given for high levels of importance and high levels of use:

The internet is important to our home-life as it is looked-at every day. We use it for trivial related, work related, and education related things and we use it continuously.

Respondents were asked to rate on a scale from 0-100 how satisfied they were with their current internet connection. The results show a strong skew towards the positive (average response 73), suggesting that on the whole, respondents are strongly satisfied with their existing internet service (see Figure 2).

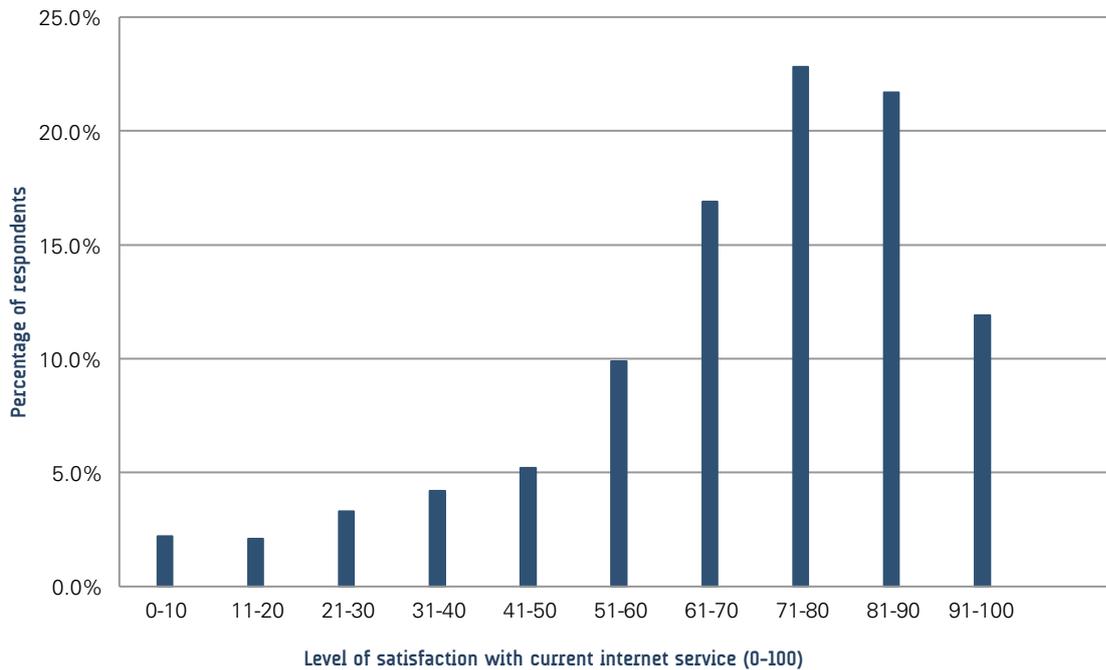


Figure 2: Level of satisfaction with current internet service grouped as percentage of total sample

Survey data was tested to see if there was any correlation between the type of service and the degree of satisfaction with the internet. Rather than finding a significantly higher level of satisfaction among ADSL than dial-up, it was found that although dial-up and satellite were associated with lower levels of satisfaction than the others, all average levels of satisfaction were between 60-75 (on a scale of 0-100) regardless of the type of internet connection. The qualitative interviews suggest that this is because the level of satisfaction with an internet service is formed in relation to the expectations of that service, not necessarily to the objective performance of that service. The average satisfaction rankings (out of 100) were dial-up: 60%, satellite: 62%, cable/DSL/ADSL: 75%, mobile/wireless: 69%, and NBN: 68%.

The finding that people remain generally satisfied with their current service, even as the alternative NBN service is rolling out, suggests that the ‘vision’ of a transformative fibre-based internet must be painted much more vividly to convince people that their current broadband is inadequate. The full-benefits of the NBN will perhaps only become apparent through arguments or experiences emanating from the *application layer* enabled by the NBN (i.e. eHealth, eLearning, gaming etc.). As a respondent remarked:

They have a lot of work to do in explaining what the NBN is for. Just saying “digital economy” or “digital revolution” isn’t tangible enough for people. In terms of promoting it, there still needs to be explained what it can be used for. Uses that we may not even know yet. But there is a big vision that isn’t being communicated well.

Opinion about the relative importance of the particular capacities of internet connections were surveyed, to ascertain the most important feature of the service – download limits, speed, or cost (see Figures 3, 4, and 5). The responses ranged from 0 (extremely unimportant) to 100 (extremely important).

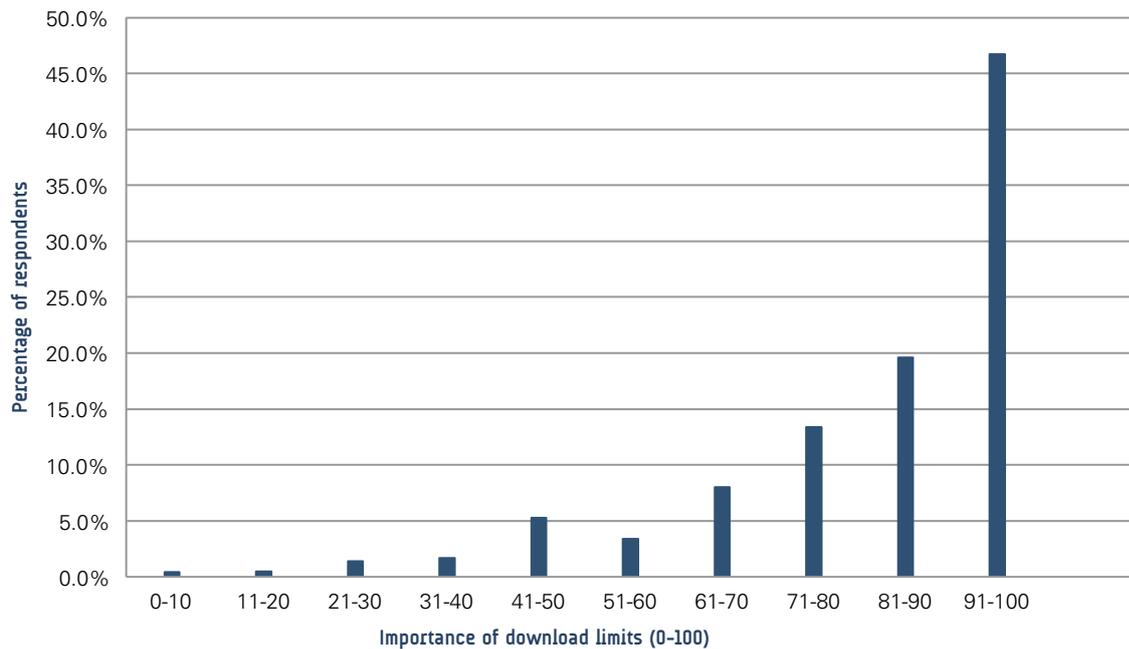


Figure 3: Perceived importance of download limits as percentage of total sample

The average response to the importance of download limits was 83 with 66% of survey respondents rating this 81 or higher, and only 9% responding below 50.

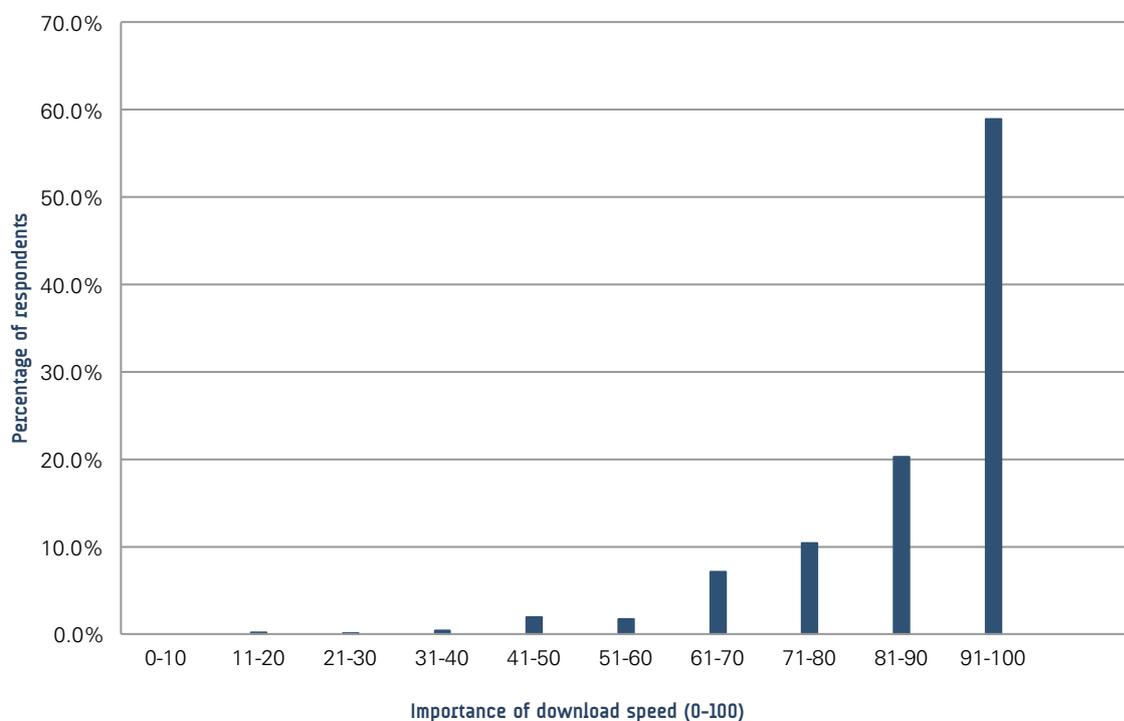


Figure 4: Perceived importance of download speed as percentage of total sample

The average response to the importance of download speed was 89 with 79% of respondents rating this as 81 or higher, and only 3% responding 50 or lower.

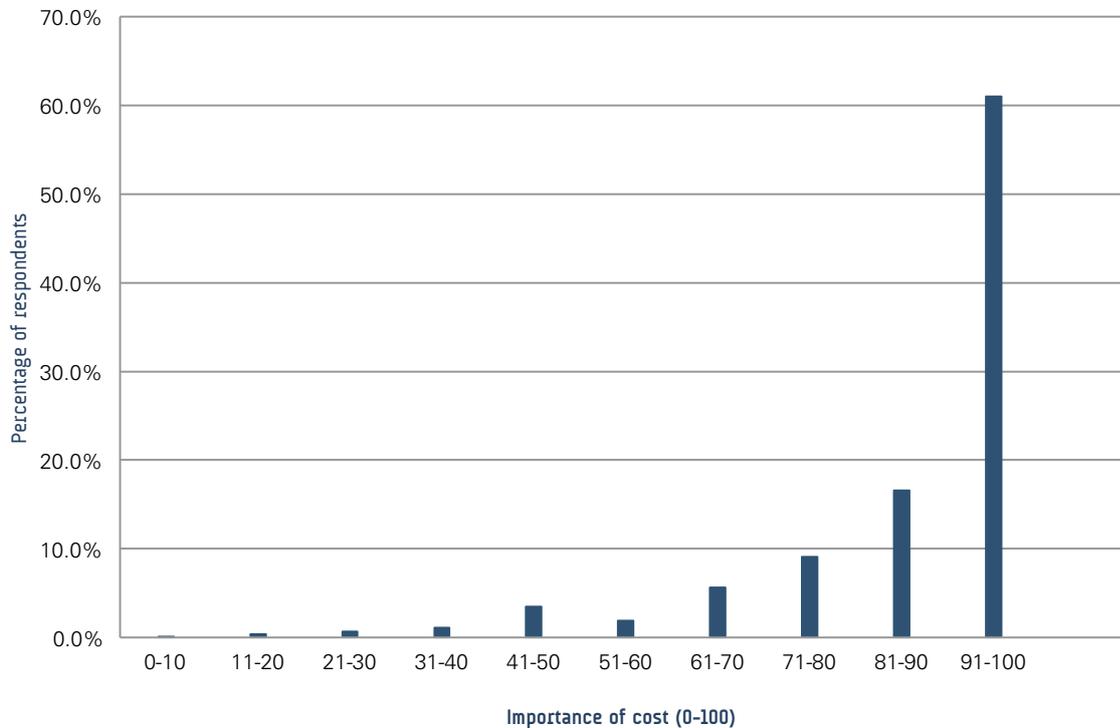


Figure 5: Perceived importance of internet cost

The average response was 88, with 78% of respondents rating cost as very important (80 or higher), while and only 6% responded below 50.

Respondents valued internet download speed and internet cost slightly more highly than download data-limits – but not surprisingly, all three were highly valued. However, in our follow-up interviews, we discovered differing views on the importance of internet speed in the household. The following comment from a high-end-user of online gaming from Brunswick in Victoria is typical of those unsatisfied with their present non-NBN service on the basis of its speed:

I am currently unhappy with my upload and download speed. My download speeds cuts out when to gets to 600kps, so I have to throttle at 400kbs. I suspect the provider is throttling me because we are such a large user of data.

Whereas this comment is typical of respondents who were more conscious of download limits:

I've only ever had TPG. Now it's a \$60 a month package, that is unlimited and it doesn't throttle down if you use too much, I've got 3 girls, 2 at uni and me and my wife are both teachers so it's pretty constant access...initially it was \$40 a month and there was a capped download but we upgraded and now there isn't. We're on ADSL2+ whatever that means. I'm not 100%, not even 50% up to date with speeds, it suits us, and it doesn't seem slow...always been with TPG, it was set-up by a friend of ours...

The perceived cost of internet service plans was of course important to the majority of people surveyed. Cost was also a feature in follow-up interviews with many respondents uncertain of connecting to the NBN if it cost more than their present service:

It's hooked up (the NBN), it's down the front cause they've used the old telecom cable, it was free to hook it up to the house, that's as far as I've got...but the plan prices, at the moment I pay nearly \$40 a month and they wanted to double that, and I don't need all that data. 400 megs was enough, believe it or not, only occasionally it would go over the limit, and we used to get charged extra \$5 or \$10 at the most.

3.1.1 Summary of respondents' experience of the internet

- Responses reflected the national pattern in regard to the type of internet connection
- Heavy users regarded the internet as important in their lives
- Respondents were generally satisfied with their current type of internet service
- Download limits, speed and cost were all important.

3.2 Attitudes to the NBN from a Personal Perspective

Questions in this section explore the extent to which people agree or disagree with propositions that the NBN is a good thing and will provide personal benefits (as opposed to benefits to the nation). Less than 1% of our respondents had the NBN already connected to their home, thus for almost all informants, the NBN was a set of expectations rather than a set of experiences. Our questions therefore solicited anticipated personal benefits of connecting to the NBN.

When asked ‘Do you have a positive or negative opinion of the National Broadband Network in general?’ our respondents expressed an overwhelmingly positive opinion. In round figures 64% were positive or very positive, 21% negative or very negative, and 15% neutral (see Table 2)⁵.

Attitude	Number of respondents	Percentage of total sample
Very negative (0-20)	182	8.3%
Negative (21-40)	275	12.6%
Neutral (41-60)	322	14.8%
Positive (61-80)	833	38.2%
Very positive (81-100)	568	26.1%

Table 2: Attitude to the NBN

The qualitative data reflected this view of the NBN, suggesting that people have heard of the NBN and considered the future ‘application layer’ enabled by the NBN to be significant:

I gather that the NBN will have a big impact on entertainment, especially visual entertainment, but also health, that is of particular importance for Australia because we are an aging nation and we have an enormous health sector.

In addition to asking about overall or general views of the NBN, we also asked survey respondents whether they thought the NBN would be of benefit to them personally. We asked ‘Do you expect that the NBN will have benefits for you?’ 58% thought the NBN would be personally beneficial (providing ‘positive’ (61-80) or ‘very positive’ (81-100) responses), whilst 26% thought it wouldn’t be (<40), and 15% were neutral (41-60) (see Table 3).

⁵ This is consistent with previous findings by other researchers (e.g. Ewing and Thomas, 2012)

Attitude	Number of respondents	Percentage of total sample
Very negative (0-20)	212	9.7%
Negative (21-40)	365	16.7%
Neutral (41-60)	323	14.8%
Positive (61-80)	806	37.0%
Very positive (81-100)	474	21.7%

Table 3: Expectations of personal benefits associated with the NBN

The following is typical of those who saw a personal benefit:

I think it's a good thing. It will help face-to-face over the internet communication. Our families live overseas and one of our teachers lives overseas. It will improve communications with them. It will help with watching movies and i-view [the ABC's television program screening service].

Interestingly, respondents were more positive about the NBN in general (64%) than in terms of personal benefit (58%). Positive attitudes to the NBN in general are therefore not entirely accounted for by perceptions of personal benefit. The qualitative work casts some light on this, as people remarked that they see the NBN as beneficial for 'the future' of the nation, though not necessarily for their immediate personal needs (this distinction is explored further in the next section):

I have seen debates about it on the television and read some newspaper articles. I know a lot about the cost of the NBN (to build), but I can't say I know that much about it. As I am not a high-end user, I don't have huge expectations about the NBN and my current internet use is being facilitated so I don't know what I would use it for. But I do think the NBN is important as I can't see people using the Internet less in the future and they will use it more.

Following questions about people's attitudes to the NBN – both in general and personally – we then sought to correlate positive and negative opinions to demographic data. The demographic variables tested were age, income, education, employment, first language, gender, and postcode.

Surprisingly there was no statistically significant variation in responses amongst the various demographics. For example, separating postcode into urban and rural was expected to produce some difference in attitude to the NBN, but there was no real variation in the respective frequency distributions on that variable, nor on all the other demographic variables.

In addition to demographic factors, a number of other factors were explored that may influence perceptions of the NBN. The analysis looked for any links between past experience of the internet and future expectations of the NBN, by comparing respondent's attitudes to the NBN against their current type of internet service (see Table 4).

Household internet connection	Average attitude to the NBN
Dial-up	64
Satellite	68
Broadband – Cable/DSL/ADSL	72
Broadband – Mobile/Wireless	72
Broadband – NBN	78

Table 4: Attitude to the NBN by type of current service

As was the case when type of service was matched with attitudes to the internet, respondents with all types of internet service had a positive attitude to the NBN (where 0 is extremely negative and 100 extremely positive). However, these figures do suggest that the better respondents' internet service type the more likely they were to have a positive attitude to the NBN. The people who were most positive about the NBN were those who were connected to an NBN service:

I just like to be up to date with the latest. The cable was quite good, sufficient, but it is quicker and the speed gives you more flexibility. Because it was there I thought we might as well jump on-board and grab it. It didn't cost us anything to get it installed, the router was free, the installation was free, connecting into the house was free, so I figure why would you say no, you know. It's my home, so why not, I'm just adding value as far as I see.

3.2.1 Attitude to the NBN by political affiliation

The analysis then considered whether political affiliation would produce any difference in attitudes to the NBN, by asking 'Which party did you vote for in the 2010 election?' Respondents who voted for the Liberal and/or National Parties at the 2010 election had a more negative opinion of the NBN than Australian Labor Party (ALP) voters, with ALP voters twice as likely as Liberal voters to hold very positive opinions on the NBN (see Figure 6).

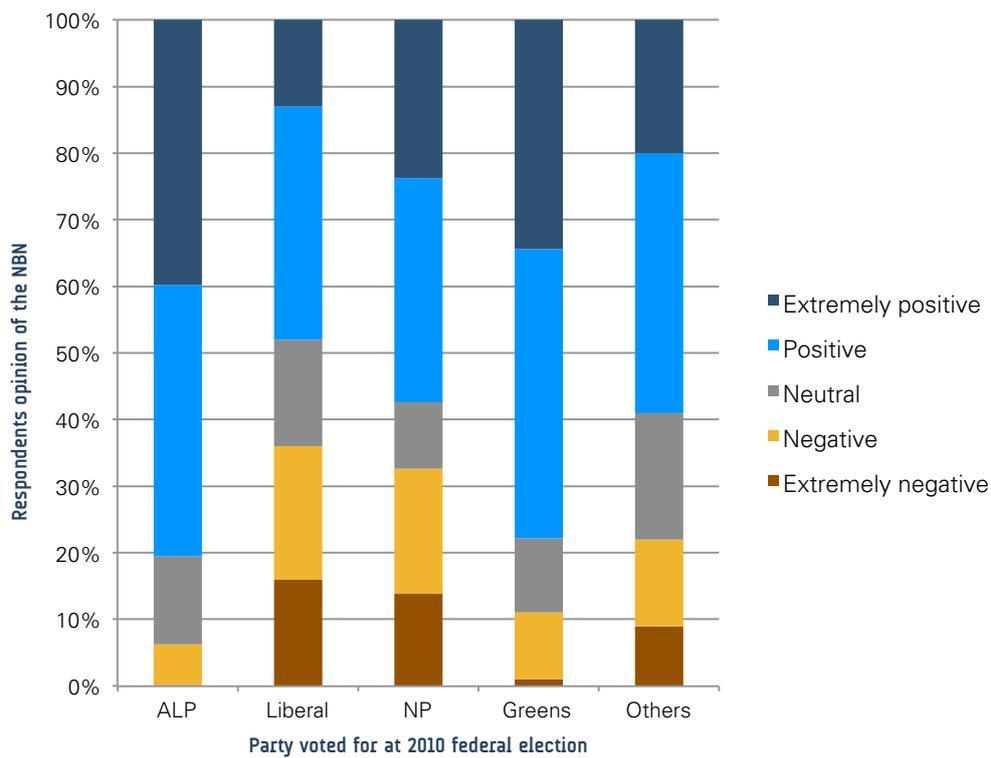


Figure 6: Opinion of the NBN by political affiliation

A response greater than 61 denotes a positive opinion of the NBN. By party the proportion of respondents who had a positive opinion of the NBN were:

- ALP – 79%
- Liberal Party – 48%
- National Party (NP) – 58%
- Greens – 77%
- Others – 59%.

A further question explored whether people’s source of information about the NBN may have had an impact on their attitude towards it. Respondents were asked ‘What have been your sources of information about the NBN?’ Respondents predominantly drew upon newspaper reports (62%) or from multiple sources (60%) (see Table 5).

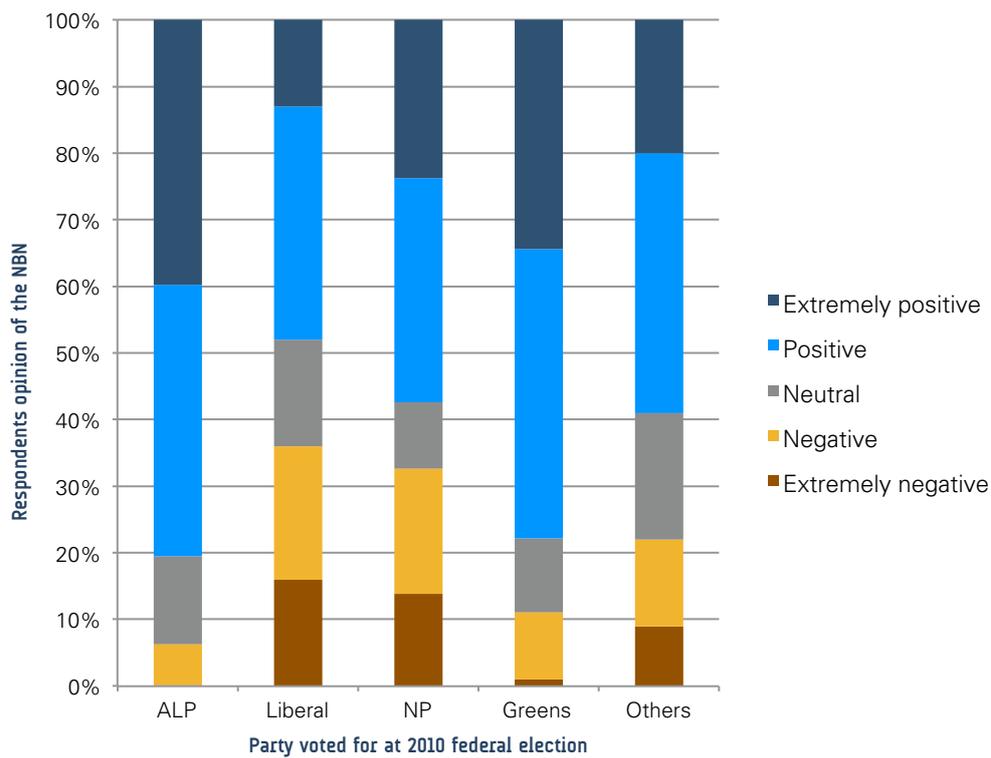


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- National Party (NP) – 58%
- Greens – 77%
- Others – 59%.

A further question explored whether people’s source of information about the NBN may have had an impact on their attitude towards it. Respondents were asked ‘What have been your sources of information about the NBN?’ Respondents predominantly drew upon newspaper reports (62%) or from multiple sources (60%) (see Table 5).

The most concrete indication of perceived personal benefit of the NBN is whether or not a person intends to connect to the NBN when it is made available. Respondents were asked 'When the NBN rollout reaches your area, what is the likelihood you will connect?' with answers captured using a sliding scale where 0 is definitely not connect, and 100 is definitely will connect.

This elicited a wide range of responses (see Figure 8). The average response was 59; 26% were in the 'neutral range' of 41-60, and 30% responded over 81, a fair indication they had already decided to connect.

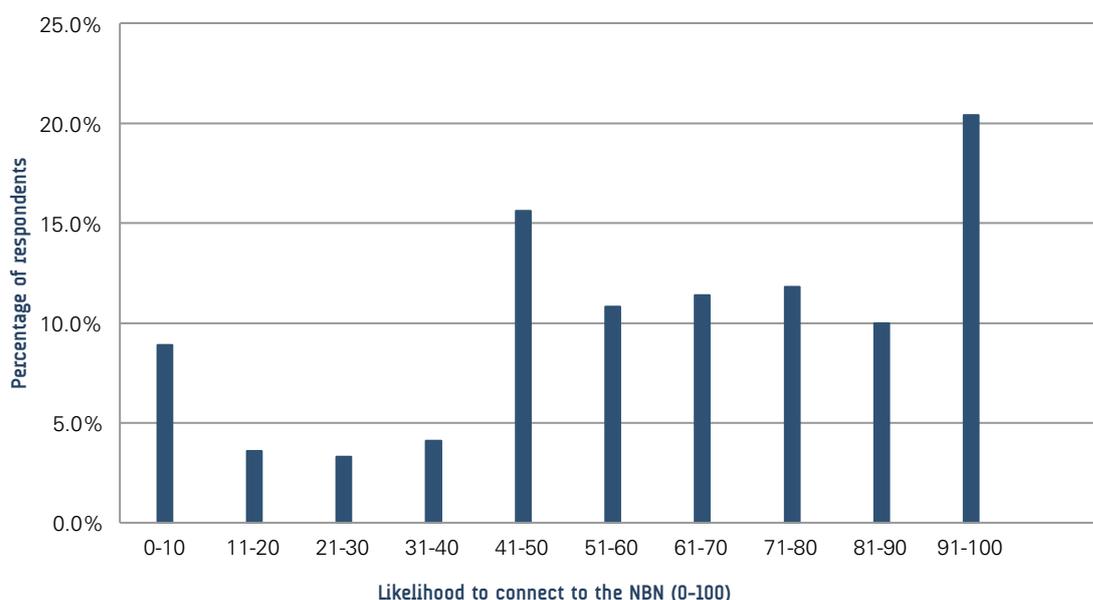


Figure 8: Likelihood to connect to the NBN

Assuming that a response of 61 or greater indicated a greater likelihood to connect than not, 54% of respondents reported that they were likely to connect. Assuming that a response less than 40 indicated a greater likelihood not to connect than to connect, 20% of respondents reported that they were unlikely to connect.

Therefore the likelihood to connect lags behind perceived personal benefit (58%) and further behind a generally positive attitude to the NBN (64%). Some who see a personal benefit may be not likely to connect because of perceived cost, or perhaps because they see a general benefit but not a personal benefit.

Those indicating that they were definitely not likely to connect (the 9% scoring 10 or less) were asked ‘why not?’ and typical responses were ‘too expensive’, ‘happy with my own provider’, and ‘will not provide any additional benefits to me’. An informant who had already signed up to the NBN pointed to the influences pulling in different directions:

I think it's a really good thing, the idea that you can connect to your work quicker and all those sort of things. We don't really know what the future uses could be, and it's just really difficult to sell it to people like that. And it was quite distressing to us when we were looking at all the plans, that if we can't utilise this what chance does the rest of our country have. It's like all the plans, I didn't really see any that were particularly cheaper or better value than ADSL, and that's the main way you are going to appeal to people. If the pricing structure isn't there people aren't going to adopt it. But we love it.

Current service type was compared with perceived intention to connect to ascertain if there was correlation (See Table 6).

Household internet connection	Averages (percent)
Dial-up	59.4
Satellite	59.1
Broadband – cable / DSL / ADSL	62.7
Broadband – mobile / wireless	58.4

Table 6: Intention to connect to the NBN by current internet connection

Likelihood to connect appears to be independent of current internet service type, and is consistent with positive levels of satisfaction across all service types (see Table 4). It appears that likelihood to connect is equally split across each internet connection type. For example, those on dialup are split between connecting (on the basis that the NBN is far superior to dial-up) and not connecting (on the basis that having dial-up indicates that the internet is of little personal benefit), and those on broadband are also split between connecting (on the basis that the NBN is superior to broadband), and not connecting (on the basis that broadband is satisfactory).

Suspecting that the costs of retail NBN service plans may weigh heavily on attitudes to the NBN six choices were offered as to whether the NBN service plans made available through Internet Service Providers represented good value for money. This is represented below.

Attitude	Number of respondents	Percentage of total sample
Strongly Agree	95	4.4%
Agree	360	16.5%
Neither Agree nor Disagree	702	32.2%
Disagree	190	8.7%
Strongly Disagree	148	6.8%
Don't Know	685	31.4%

Table 7: Perception of value for internet service plans on the NBN

The high percentage of respondents who neither agree nor disagree or don't know (64%) indicates a lack of awareness about internet service plans available on the NBN. This is to be expected given the current status of the rollout, the limited availability or marketing of NBN service plans by internet service providers, and the low number of respondents who had actually connected to the NBN.

Qualitative interviews illustrated the complicated decision making processes even for people who are familiar with plans on the NBN:

Before the NBN there were primarily 2 variables, prices and data. But now there are 3 variables, price data, and speed. The current speeds we have are slower than the NBN, but we have unlimited download. It would cost us almost twice as much to download as much as we have now, regardless of speed. So we decided not to get an NBN plan as it didn't seem as good as the one that we have now.

And from a person not yet connected to the NBN:

My initial reaction is "no". I can't imagine why I would use it; why I would need it. It is proposed to cost \$70 per month which is a lot more than I am paying at the moment; actually, this is more than twice what I am paying.

In summary of this section, respondents:

- Consider themselves to be heavy users of the internet
- Have a positive attitude to the NBN in general (64% vs. 21%)
- Have a positive attitude regardless of current internet connection type
- Perceive that the NBN will be personally beneficial (58% vs. 26%)
- And, are more likely to connect than not (54% vs. 20%), regardless of current service type.

In addition none of the demographic factors that may be associated with these findings (age, income, education, employment, first language, gender, and postcode) was found to be statistically significant. However, party vote in the 2010 Federal election was.

3.3 Attitudes to the NBN from a National Perspective

The NBN is being provided as public, government funded infrastructure reversing the trend of provide essential services and infrastructure through private enterprise, or through public-private partnerships.

Respondents overwhelmingly approved of this exception to what has become the rule. When asked, *'The NBN is nationwide public infrastructure provided by the Government, not a service provided to individuals by private enterprise. Is this a good thing?'* Approximately 60% agree or strongly agree compared to 10% who disagree or strongly disagree (see Table 8).

Attitude	Number of respondents	Percentage
Strongly Agree	472	22.2%
Agree	816	38.3%
Neither Agree nor Disagree	630	29.6%
Disagree	128	6.0%
Strongly Disagree	83	3.9%

Table 8: Perception of the NBN as publicly funded infrastructure

Typical of the views of those supporting a publically funded model for the NBN is the following comment:

It is good to have the NBN owned by the public. I do feel more comfortable with accountable government control rather than private enterprise. The Internet is quite slow in Australia, so it is well needed.

Whereas the following comment is representative of the minority view disagreeing with government building the NBN:

If it is a monopoly service which is proposed then I can imagine all sorts of problems. You need competition for cost and service and for the improvement of cost and service. When the service providers complain about the network who is going to be responsible? The monopoly? Having worked for Telstra I assure you, you cannot compare the difference in service once the monopoly situation ended.

In addition to its initial public ownership, another feature of the NBN rollout is that it is nationwide in its coverage rather than the rollout being determined by the commercial viability of different markets. Respondents were asked *'How important is it you that everyone in Australia have access to the NBN?'* Findings are presented in Figure 9 below.

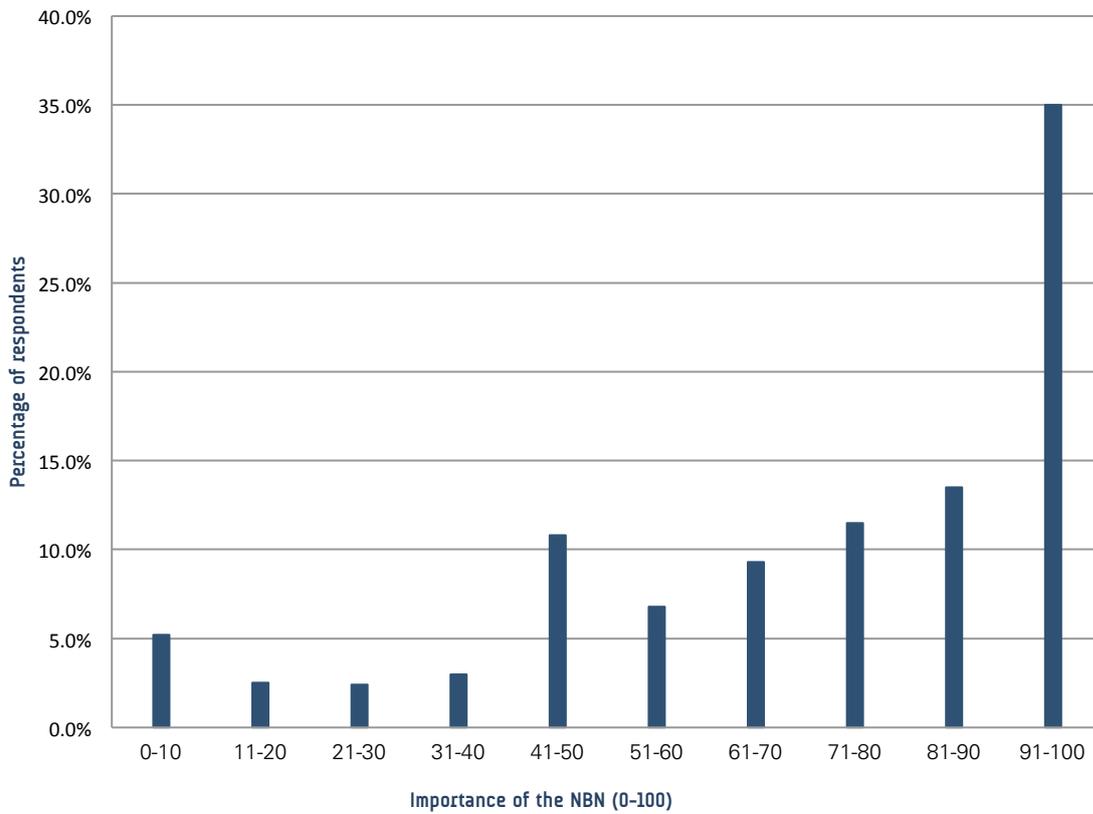


Figure 9: Perceived importance of universal access to the NBN

This question elicited a wide range of responses, though it can be seen that the results are clearly skewed towards the perception that it is important that everyone is connected. The average response was 72, with 49% rating importance above 80, while 69% rated importance at greater than 60. There were 18% of respondents in the more neutral, 41-60 zone and only 13% answered 40 or below.

Responses to universal connectivity were tested against current type of Internet connection. The responses were positive, regardless of connection type. Interestingly, respondents with a satellite connection were least likely to believe Australia-wide access to the NBN to be important, perhaps because they believe that they will remain on satellite even after NBN installation. Those on dial-up are the category of current service type to be most supportive of universal service provision, by a small margin.

3.3.1 Positive opinions of the NBN

To provide a picture of why respondents thought the NBN to be beneficial from a national perspective, six positive statements commonly made in favour of the NBN were tested. Respondents were asked to rate each of the statements from 0 (totally disagree) to 100 (totally agree). Results were contextualised via follow-up qualitative interviews. The six propositions were:

1. World class broadband will improve Australia as a nation.
2. The NBN will improve Australians' lives.
3. Australians are leading increasingly digital lives and the NBN will play an important role.
4. The NBN will make Australia a fairer place by providing access to broadband enabled services for residents in both cities and regional areas.
5. The NBN will future-proof Australia and ensure we benefit from innovations in the future.
6. The NBN is a worthwhile investment.

3.3.1.1 Proposition 1: World class broadband will improve Australia as a nation

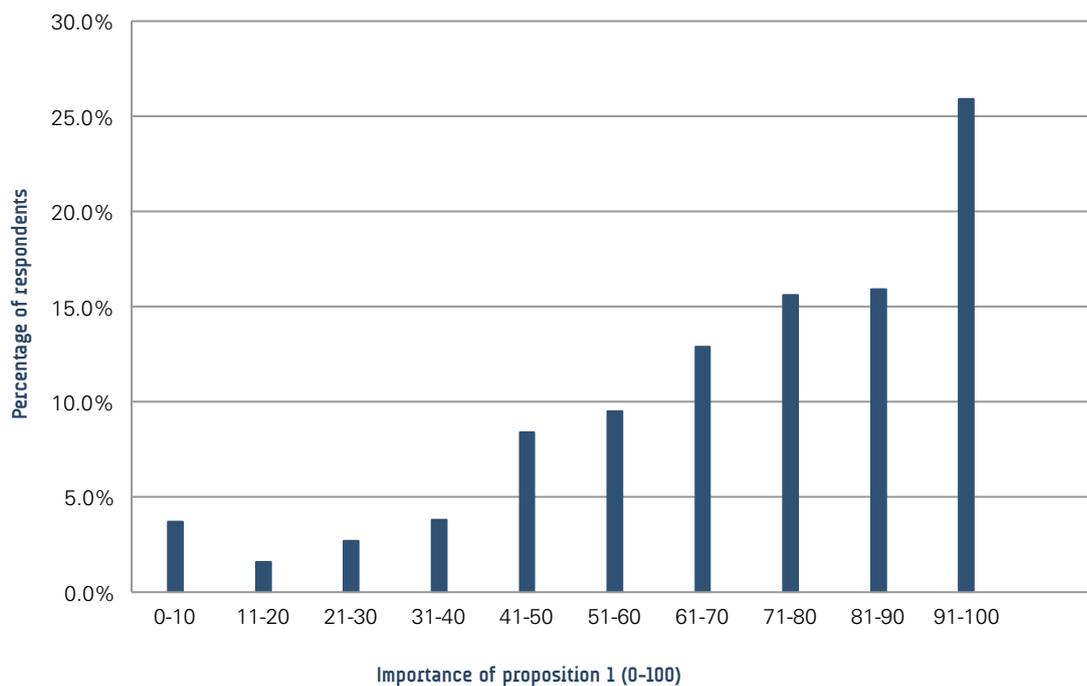


Figure 10: Importance of the proposition that world class broadband will improve Australia as a nation

The data shows a clear trend supporting the view that the National Broadband Network will deliver benefit to Australia. The average response to this proposition was 71. Two of interview respondents elaborated:

I do believe the NBN is a positive move. Collectively a faster network will build productivity as people won't have to wait for things to upload and download.

And:

I think it's a wise investment, particularly for business. We are desperately waited for it in the city for the office because there is a lot of stuff we would like to screen in the lecture theatre but it is too slow for our ADSL connection.

Qualitative interview data indicated that this question was most likely to be interpreted in economic terms.

3.3.1.2 Proposition 2: The NBN will improve Australians' lives.

Respondents agreed with the proposition that the NBN will improve Australian lives. The average response was 65.

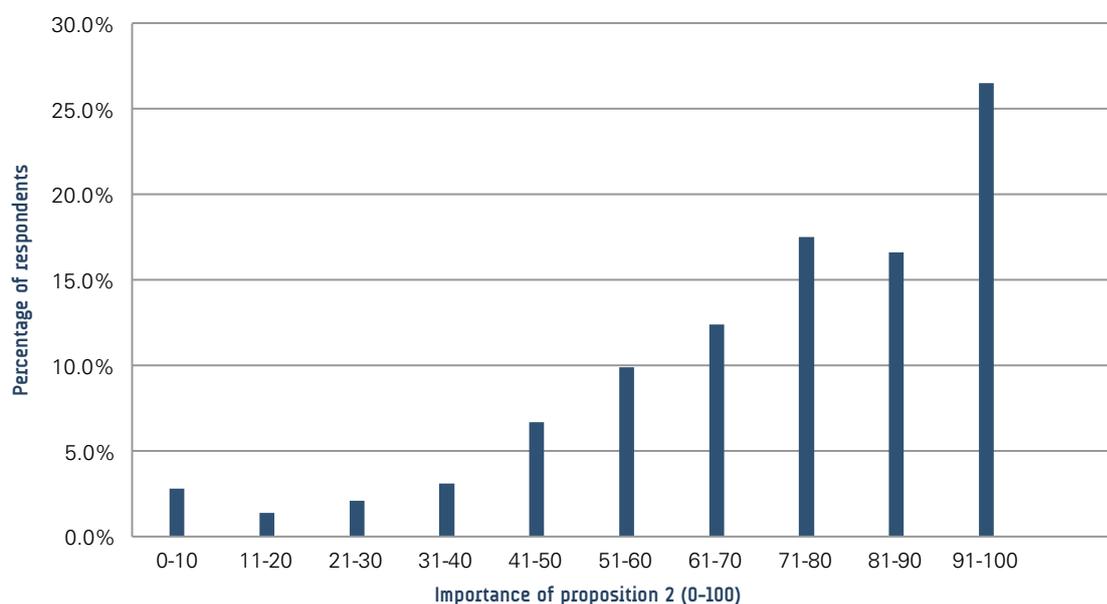


Figure 11: Importance of the proposition that the NBN will improve Australians' lives

An interview respondent elaborated in relation to new services enabled by the NBN:

There could be large cost benefits if someone doesn't have to travel for an hour for a medical consultation when then could do that at a local facility or even in the home. But I would also say that education is another area the NBN will have impact as it will allow access to libraries and other educational resources.

Survey respondents agreed that the NBN will improve Australian lives and interview data shows that this perception is tied to access to services such as health and education that the NBN is expected to provide.

3.3.1.3 Proposition 3: Australians are leading increasingly digital lives and the NBN will play an important role

Approximately 30% of respondents strongly agreed with proposition three compared to 7% who strongly disagreed. The average response to proposition three was 72.

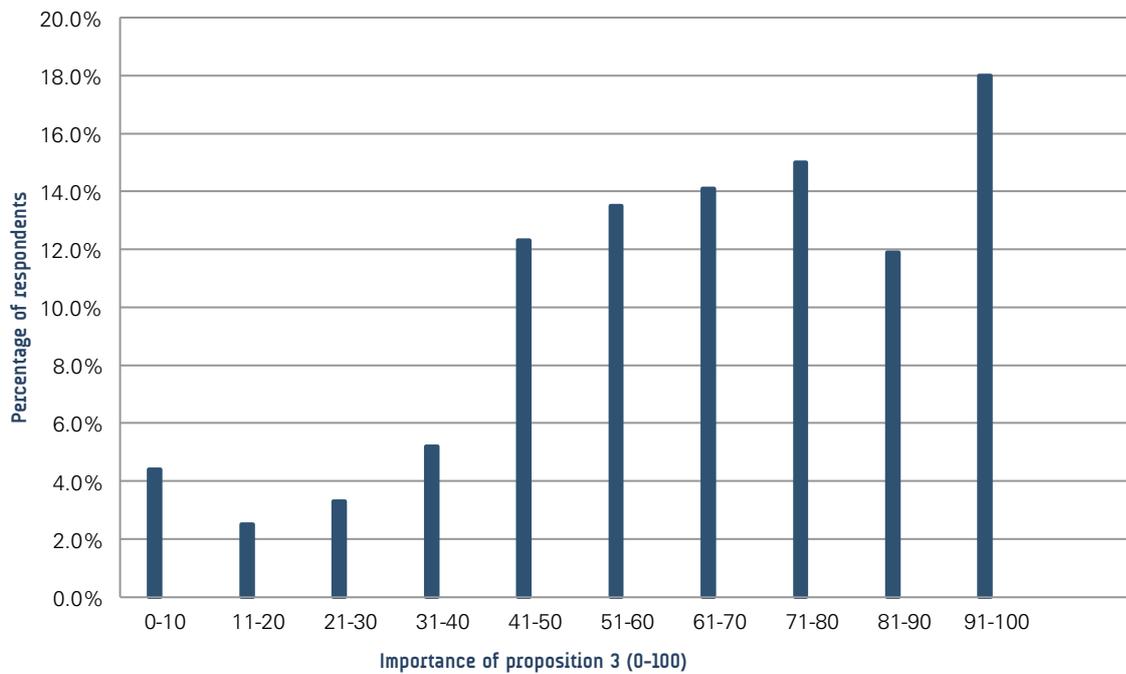


Figure 12: Importance of the proposition that Australians are leading increasingly digital lives and the NBN will play an important role

A typical interview comment about Australians’ increasingly digital lives was:

We are moving into a technological age, and we need to be ahead of the game. People do transactions using the net, and we need to be up there having a good global system. We could put the money into something else, but it doesn’t mean we trade with the world any better.

There was strong support for the view that the NBN would provide needed support for the increasing use of digital technologies that increasingly permeate daily life.

3.3.1.4 Proposition 4: The NBN will make Australia a fairer place by providing access to broadband enabled services for residents in both cities and regional areas.

Respondents agreed with proposition 4 that the NBN will make Australia a fairer place by providing access to broadband enabled services for residents of both cities and regional areas. The average response rate to this question was 72.

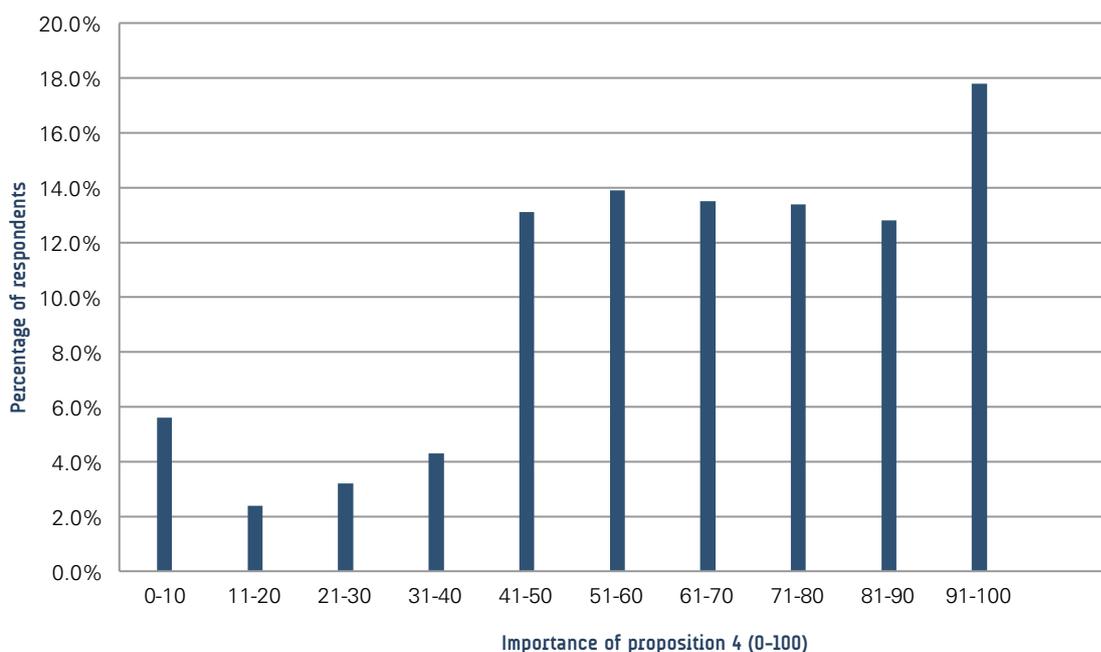


Figure 13: Importance of the proposition that the NBN will make Australia a fairer place

Follow-up interviews solicited some of the reasons for forming this view:

Yes, Australia is a very large country geographically, and it is also a county with a lot of different capacities and there is something very equalising about access to the internet, so it good for people in remote places but it is also good for people from various backgrounds economically and ethnically. I think it is important that we all have access to the NBN regardless of income etc.

And:

I think it's great infrastructure. It's like highways and hospitals, and all those kinds of things. And I think getting it out to rural and regional Australia is important. I don't think it's going to be the panacea, but I do think it will make a big difference, especially out in wherever it is where people will get reasonable speeds and can actually engage and be involved.

Equality of access for all Australians regardless of their economic, cultural or locational situation to the benefits that might be derived from the NBN was obviously an important consideration to many respondents.

3.3.1.5 Proposition 5: The NBN will future-proof Australia and ensure we benefit from innovations in the future.

Respondents overwhelmingly agreed that the NBN will future-proof Australia, with an average response of 66.

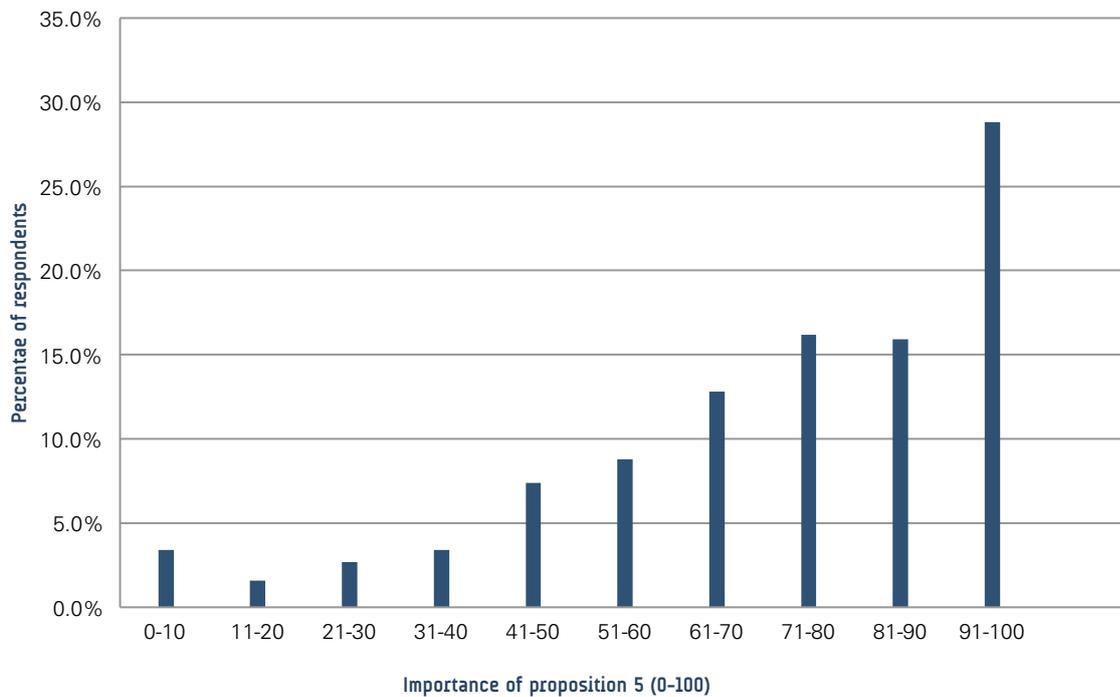


Figure 14: Importance of the proposition that the NBN will future-proof Australia

Interviewees invoked the future in these kinds of ways:

I am only basing my knowledge on technologies now but who know what will happen in the future. The benefits of having an NBN is that there is the potential to go way beyond where we are today

And:

I do think the NBN is important as I can't see people using the Internet less in the future and they will use it more).

From the above statements the NBN was regarded by respondents to be important for the future of Australia.

3.3.1.6 Proposition 6: The NBN is a worthwhile investment.

Respondents also considered the NBN to be a worthwhile investment, with an average response of 64.2.

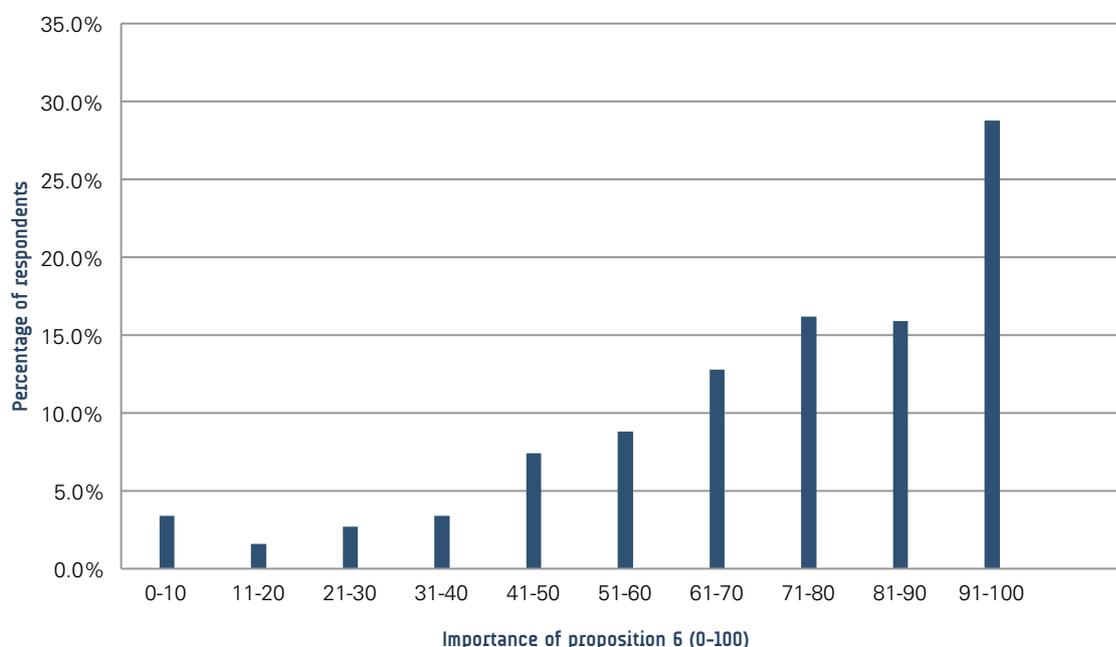


Figure 15: Importance of the perception that the NBN is a worthwhile investment

3.3.1.7 Analysis of positive attitudes

Given the extent to which the cost of the NBN rollout has been a partisan political issue, and given the extensive and largely negative media coverage devoted to these costs (see section 4 below), it is surprising that the perceptions of our sample are skewed to the positive rather than the negative. Typical comments fleshing out views on rollout costs were as follows:

I don't know of the NBN is expensive or not, it is just what it costs at this time. It is an investment and it is good that it is being built all at once, and not in smaller projects that would possible end up even more expensive.

And:

I don't know about it (NBN) to say one way or another, but what I am interested is for people who live in the country or remote areas to have access to information. Anything that makes it easier for them and the sort of life they live I am quite prepared to finance that.

Respondents agreed with all 6 of the positive propositions about the NBN, with many more respondents strongly agreeing than strongly disagreeing with each proposition. Proposition 1 (World class broadband will improve Australia as a nation) and Proposition 4 (The NBN will make Australia a fairer place) received the strongest support and while the majority of respondents agreed the NBN is a sound financial investment, this proposition received less support than others.

3.3.2 Negative attitudes towards the NBN

To capture criticisms and doubts about the NBN respondents were asked to agree or disagree with the following negative propositions that are frequently made about the NBN:

- P1.** The NBN is unnecessary as there are other ways of delivering high speed broadband.
- P2.** The NBN is too expensive, Australia cannot afford it.
- P3.** The NBN won't deliver the high speeds as promised.
- P4.** The money spent on the NBN would be better used on things like health and education.
- P5.** The NBN will be obsolete soon after it's completed.
- P6.** Services such as the NBN should be left to private enterprise.

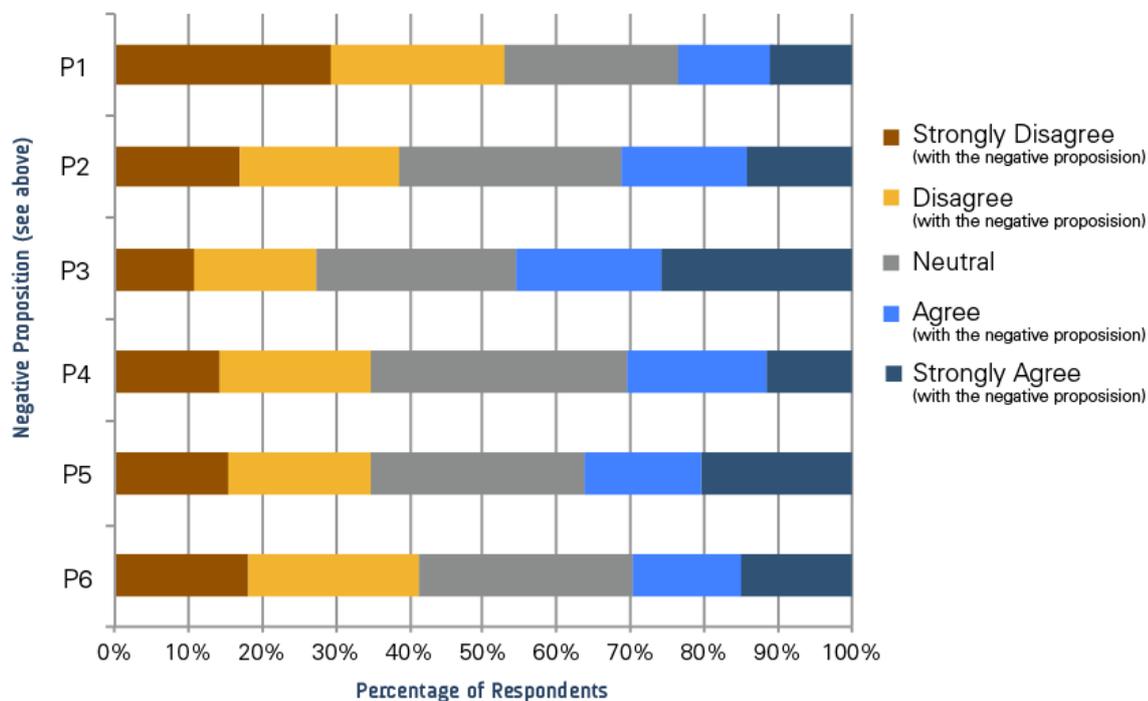


Figure 16: Responses to negative claims about the NBN

None of the 6 negative propositions about the NBN achieved more than 50% respondent agreement or strong agreement. Neutral was a more popular response to all 6 propositions than either agreement or disagreement. The negative propositions with most bite were proposition 4, *'The money spent on the NBN would be better used on things like health and education'*, with 47% agreeing and 29% disagreeing, while proposition 2, *'The NBN is too expensive, Australia cannot afford it'* had 36% agreement and 35% disagreement.

To further flesh-out these general negative and positive propositions, respondents were asked whether the following entities would be *much better off*, *better off*, *the same*, *worse off*, or *much worse off* once the NBN is operational: healthcare, school, tertiary education, small businesses, the economy, people living in regional Australia, young people, seniors and retirees, employees working from home, people running a business from home, big businesses, agricultural sector, mining, tourism, web-based

living in regional Australia, young people, seniors and retirees, employees working from home, people running a business from home, big businesses, agricultural sector, mining, tourism, web-based businesses, people from non-English speaking backgrounds, people with disabilities, full time parents, and people like yourself.

- Less than 50% of respondents believe that the economy, seniors, mining, non-English speakers, and fulltime parents will be *better off* or *much better off* when the NBN is operational.
- More than 50% indicated that healthcare, schooling, tertiary education, small business, regional Australia, young people, home workers, home businesses, big businesses, agriculture, tourism, web businesses and the disabled will be *'better off'* or *'much better off'* when the NBN is operational.

Interestingly, only 49% thought *'people like me'* would be better off, consistent with responses to perceived personal benefit. The respondents believed *'regional Australia'* would benefit the most. The entities respondents believed would least likely benefit from the NBN was *'the economy'* with 13% thinking it would be *'worse off'* or *'much worse off'*, while 42% thought it would be *'better off'* or *'much better off'*; perhaps because of perceived potential for damage to Australian business by online commerce. Similarly, 12% of respondents felt that *'seniors'* would be to be *'worse off'* or *'much worse off'*, while 40% thought they would be *'better off'* or *'much better off'*; perhaps because of perceived problems the elderly may have accessing online services.

Respondents were then asked, *'Do you imagine the NBN will make a difference in your life with regards to...'* 2104 of the 2180 respondents completed this question group and averaged responses to all questions except two were below the midpoint.

Question	Average	Neutral (41-60)	Disagree (0-40)	Agree (61-100)
The way you watch TV?	43.8	27%	42%	32%
The games you play over the Internet?	41.0	26%	45%	29%
The way you watch movies?	45.7	25%	40%	35%
Working from home over the Internet?	52.5	22%	31%	46%
Using video conferencing for family and friends?	48.7	25%	36%	39%
Shopping online?	50.1	28%	32%	40%
The way you use health services?	45.1	30%	38%	31%
The way you use educational services?	46.7	27%	37%	36%
The way you use local government services?	45.9	31%	37%	32%
Keeping up with the news?	49.7	29%	32%	39%
Keeping up with your friends?	47.5	28%	35%	37%
Keeping up with your family?	48.2	29%	34%	37%

Table 9: Average responses to activities imagined the NBN will make a difference to

An average response in the neutral range indicates that our respondents do not strongly identify with suggestions of personal benefits of the NBN, and a comparison of those with a strong opinion that the NBN will make a difference in life, shows more strong disagreement (0-21) than strong agreement (81-100) with each field of life.

Question	Strongly Disagree	Strongly Agree
The way you watch TV?	31%	16%
The games you play over the Internet?	37%	15%
The way you watch movies?	30%	18%
Working from home over the Internet?	26%	25%
Using video conferencing for family and friends?	27%	20%
Shopping online?	25%	20%
The way you use health services?	28%	13%
The way you use educational services?	29%	17%
The way you use local government services?	27%	14%
Keeping up with the news?	24%	17%
Keeping up with your friends?	27%	16%
Keeping up with your family?	26%	18%

Table 10: Strong opinion on changes to aspects of life

However, of the 12 propositions about the NBN making a difference to life, 6 received more agreement than disagreement – ‘*working from home over the Internet*’, ‘*Using video conferencing for family and friends*’, ‘*Shopping online*’, ‘*Keeping up with the news*’, ‘*Keeping up with friends*’ and ‘*keeping up with family*’ – though none received more agreement than neutral and disagreement combined.

This result is hard to reconcile with responses reported in Table 3 where 58% anticipated personal benefits of an unspecified nature, and only 26% anticipated no personal benefits. We speculate that respondents have little confidence in specific anticipated personal benefits, though they do anticipate some unspecified personal benefits in the future. Based on these results it can be speculated that the bar was set far higher in this question as compared to the earlier question, with reference in the question to benefits that ‘*make a difference in your life*’.

3.3.3 Summary

Summarising attitudes to the NBN from a national perspective, respondents are more likely to:

- Approve of the public ownership of the NBN rollout
- Approve of its national coverage
- Agree with positive propositions commonly made about the NBN
- To be neutral about criticisms commonly made of the NBN.

Additionally, respondents were able to identify six sectors that will be worse off under the NBN and 13 that will be better off, but did not identify specific personal benefits that will make a difference in their lives.

4 Media representations of the NBN

The NBN has been one of Australia's most reported news stories over the past five years, receiving similar coverage to issues such as refugees and the carbon tax (see Table 12). This media analysis combined quantitative and qualitative content analysis techniques in order to better understand how the NBN has been and is being publicly defined, assessed and critiqued.

The media content analysis was undertaken in order to determine the following:

- The extent of coverage of the NBN in Australian newspapers
- The key topics being discussed in leading Australian newspapers
- The content of editorials and opinion pieces on the NBN.

To begin the analysis, a meta-search of all Australian newspapers was conducted using the print-media aggregation and discovery tool, Factiva. Analysis was limited to major Australian news sources only. Factiva is an established resource widely used by Australian researchers and which archives Australian news sources and allows for advanced search techniques. The search spanned the period 1 July 2008 to 1 July 2013, which corresponds to a timeframe beginning just prior to the announcement of the NBN scheme, through to the period just prior to the 2013 Federal election. This is an extensive and rich period of media coverage about the NBN and includes the important phase in which it began to be rolled-out to customers. 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.

Factiva yielded 55,000 Australian newspaper articles that mentioned the exact search terms NBN OR National Broadband Network at least once somewhere in the body or title of the article. This is across all Australian newspapers articles, regardless of distribution, region, impact or particular news categories. The terms NBN and National Broadband Network are stable terms and the network has not been known by any other name over this period.

To further refine the sample and reduce this corpus to a manageable sample for thematic analysis, the search was limited to two leading Australian newspapers, *The Australian* and *The Age*. The Australian newspaper landscape is dominated by News Corp (formerly News Limited) and its chief commercial rival is Fairfax. The *Australian* and *The Age* are the respective flagships of these two companies, and often take different editorial lines in relation to important national issues, and are important barometers to measure national debates in Australia. This search yielded 7710 individual articles.

Number of articles that mention 'NBN' Or 'National Broadband Network'	
<i>The Australian</i> (News Limited)	6123
<i>The Age</i> (Fairfax Media)	1587

Table 11: Number of articles in *The Australian* and *The Age* in the survey period mentioning the NBN

Comparing the extent to which the NBN formed a key news story vis-à-vis other national issues, such as the carbon tax revealed that the NBN has been a significant story over the last 5 years in the mainstream media.

	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

Table 12: Comparison of the NBN to other media stories

Through an exploratory sampling of this data set it was 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. Therefore the media sample was further refined by limiting it to articles that mentioned the NBN up to 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 a cursory mention. Duplicate articles were also excluded.

The final sample from this search and filtering process was 1060 articles (see Appendix B). 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 dataset from the five-year period for content analysis, which is detailed below.

4.1 Thematic Analysis of News Article Contents

After exhausting the machine-reading, automatic features of the media aggregation tool Factiva, we embarked on a mixed-methods content analysis of the 1060 articles to explore media discussion and representations of the NBN. These were then read and grouped to reveal the major themes (See Table 13; for full list see Appendix C).

These 1060 articles were analysed using quantitative and qualitative methods to determine the topics addressed in the article headlines and lead paragraphs. The sample was coded individually into thematic categories using ‘an iterative method of category creation using constant comparison’ (de Souza e Silva & Frith, 2010: 509). Following this, ‘*check coding*’ was performed to refine the categories’ (de Souza e Silva & Frith, 2010: 509). 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, only one category was assigned per article, with the determination as to the most 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: 83). The categories generated from this analysis were then tabled, and sorted from largest to smallest numbers of articles in each category.

Major Theme	Number of Articles	Percentage of total articles
Telstra (inc structural separation)	173	16.24%
NBN executives/staff	72	6.76%
sub/contractors	70	6.57%
NBN build costs	70	6.57%
NBN business case	69	6.48%
Rollout issues	59	5.54%
Labor NBN policy & bill & election	39	3.66%
NBN prices (wholesale and retail)	38	3.57%
Business views on and uses of NBN	30	2.82%
Labor/Coalition debate on & Coalition critique of NBN	29	2.72%
Coalition HSB policy	28	2.63%
Total	677	63.87%

Table 13: Major themes in newspaper coverage of the NBN (above 28 articles)

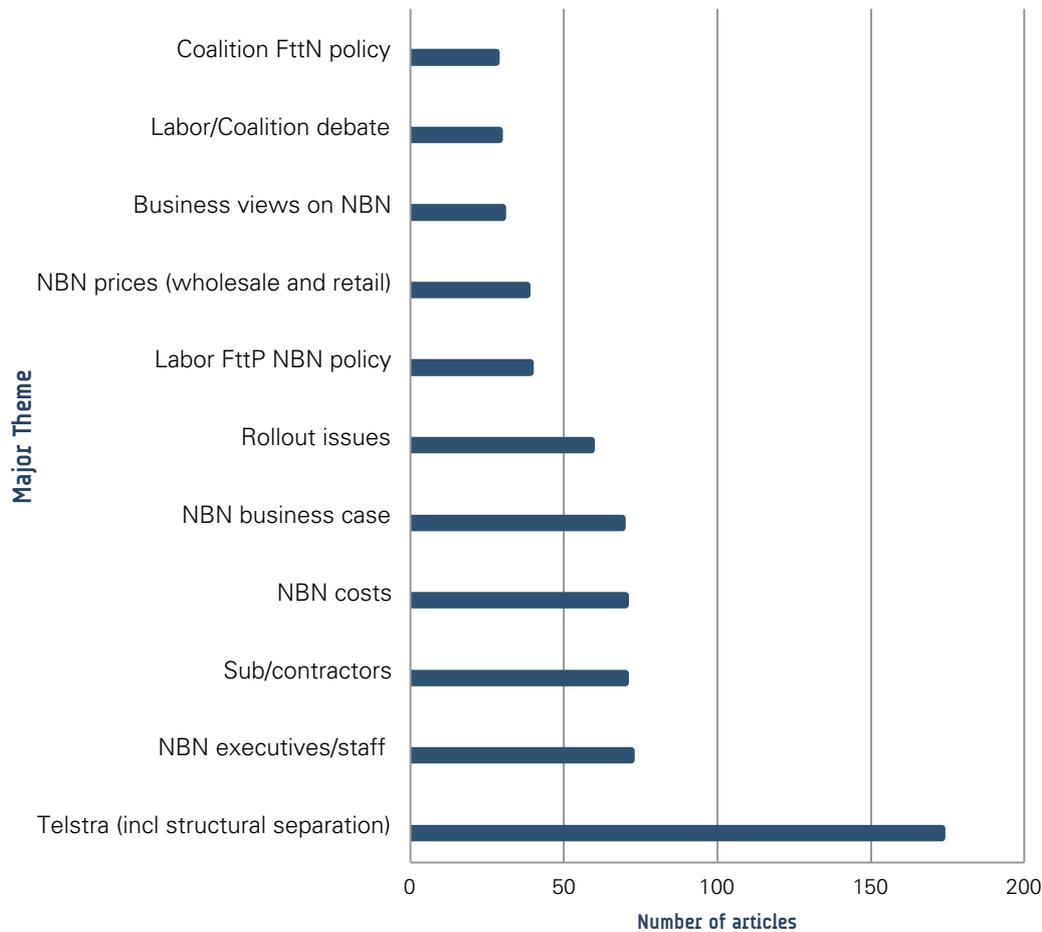


Figure 17: Major themes in newspaper coverage of the NBN (above 28 articles)

Following this process, it was discovered that *government* is mentioned (but not always the major theme) in approximately 40% of all articles, and *Telstra* is mentioned an equivalent number of times. 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 the sample, but this may be due to the urban focus of the two newspapers sampled. The national or societal benefit of the NBN are not often covered, though when addressed are most often discussed in terms of health, education, video and to a lesser degree, telework (see Appendix B & C).

In terms of the shifting nature of the debate, in the first two years of the 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 upon 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 below).

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

Table 14: Newspaper coverage of NBN applications and socio-economic implications

4.2 Content Analysis of News Editorials and Opinion Pieces

In addition to the above thematic or category analysis, Factiva's search tools were used to analyse editorial or opinion pieces from *The Australian* and *The Age*, 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.

Of the 30 editorials collected over the period 2008-2013, three key themes dominate:

1. The structural separation of Telstra
2. Scrutiny of the NBN business case
3. The cost of Labor's NBN

The sample included 20 articles in *The Age* and 10 articles in *The Australian*. It is difficult to attribute any particular leaning (either for or against the NBN) in either newspaper's opinion columns and while there was significant overlap across articles in terms of the issues covered. For the purposes of clarity, editorials were grouped into the above mentioned three themes (plus those that fall outside all three).

4.2.1 *The structural separation of Telstra*

The first dominant key theme in the editorials 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).

Senator Nick Minchin, the Coalition's opposition spokesman for broadband, communications and the digital economy, 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'* (Minchin 2009). One writer, analyst Kevin Morgan (2009a), 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.

Only two editorials were published on the structural separation issue 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).

4.2.2 Scrutiny of the NBN business case

The second dominant key theme in the editorials 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.

- There is the suggestion that, with respect to coverage, *'Australia's 70 per cent [fibre to the home] target simply cannot be met without Telstra'* (Maiden, 2010b), and the further 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)
- Concern over Government reluctance to submit the scheme to Productivity Commission scrutiny (Gittins, 2010)
- 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); suggestions of potential problems with the NBN Co's *'do not compete agreements'* (Martin, 2011)
- 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)
- 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)
- Predictions that the NBN will lead to the *'total demise of fixed-line calls'* due to VOIP and the rise in use of mobiles and smartphones (Griffith & Bingemann, 2011).

This last point refers to a recurrent issue raised in a number of the editorial analyses of the NBN business case: the complications that may be posed by wireless technologies (Lynch, 2012; Maiden, 2011; Griffith, 2011).

4.2.3 The costs of Labor's NBN

The third major theme addressed the issue of the high-costs of Labor's NBN proposal. An early editorial in *The Age* (Morgan, 2009) suggests that the Federal Government is *'spending like a drunken sailor'* and that *'a sanity check is desperately needed'* to curb this spending. Two further short pieces include comments from two foreign businessmen – 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'* (NBN *'a waste of taxpayer money'*, 2010) in the second instance – 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. The remaining seven each raise separate, additional issues:

- The first expresses astonishment at the overall poor handling of the asbestos issues dogging roll-out of the NBN (No excuse 2013).
- The second condemns 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 suggests that it is fear of competition by NBN Co not inefficiency that motivates such a move (Martin, 2012).
- The third critiques the Coalition's broadband proposal, and suggests that upgrade and maintenance costs will likely bring their proposal much closer in overall cost terms to Labor's (Moses, 2013).
- The fourth drew attention 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 criticises the pair's *'lack of disclosure'* as NBN Co. executives since news of the scandal broke (Verrender, 2011b).
- The fifth argues for the importance, when debating the NBN, of thinking *'strategically about issues such as usability, applications, social and cultural concerns, geographic constraints, and the digital divide'*, especially in relation to the NBN's roll-out in the far north of Australia (Wong, 2010).
- The sixth, and the only editorial of the 30 that openly endorses the Government's NBN proposal, argues that *'too little attention is paid to the big picture'* and acknowledging the overall benefits to Australians of high-speed broadband (Day, 2010).
- The seventh and final editorial is 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).

4.3 Media content analysis summary

- Key topics of media debate about the NBN have centred on government and Telstra control of the network, the technical configuration of the NBN, its cost, and its management.
- Three key themes dominated the editorial and opinion pages: the structural separation of Telstra, scrutiny of the NBN business plan, and the high cost of Labor's NBN proposal.
- Across the coverage of the NBN in *The Australian* and *The Age* newspapers, there were comparatively few articles focusing on the possible, larger societal benefits of the network or the applications that may be supported by the NBN.

5 Conclusions and future implications

This research has attempted to trace public perceptions of the NBN and its representation in the print media during the early stages of the NBN rollout. This was achieved by surveying 2180 Australian residents, with 25 follow-up interviews, and by sampling two Australian newspapers over a five year period.

The NBN has attracted considerable media coverage concerning its cost, technical makeup, economic benefit, and rollout and has been subject to heated political debate. The findings of the research do not reveal that the newspapers that we sampled—*The Australian* or *The Age*—are pursuing a particular agenda about the NBN, however the coverage in either newspaper rarely supports a positive view of the network, its success stories, nor its uses. The analysis of the sample indicates that media sentiment about the NBN is almost always negative with this negativity focusing upon the technical configuration of the NBN, its cost and its management.

In contrast, the individuals surveyed had an overwhelmingly positive attitude to the NBN. Regardless of their current internet connection, geographic location, age, gender or other demographic variables, respondents had a positive attitude to the NBN. Interestingly, positive views about the NBN were more closely associated with expected national benefits rather than any particular or anticipated personal benefits.

Most respondents regarded themselves as heavy users of the internet, thought that the internet was important, and were satisfied with their current service. It would appear that levels of satisfaction with their service are in relation to expectation of that service, not necessarily to the objective performance of that service: people pay less for a slower services, expect less of it, and are satisfied with their choice.

Most of the respondents (58%) thought the NBN would be of personal benefit compared to 26% who believed this not to be the case. However, they found it difficult to identify what actual difference the NBN would make to their lives. None of the propositions about the NBN changing aspects of their lives (shopping from home, access to education, access to health care, and so on) attracted great support. It is speculated that respondents find it difficult to imagine exactly how their lives will change, though they do anticipate (unspecified) personal benefits for themselves (and for unspecified others).

Likelihood to connect to the NBN when it reached their area was a 49% which lagging behind perceived personal benefit at 58%. Both of these were less than those, 64%, with a positive attitude to the NBN. The qualitative work suggests that this apparent inconsistency between general benefits, personal benefits and likelihood to connect may be accounted for by perceptions of cost or the relevancy of increased bandwidth.

Nevertheless, respondents did support the national benefits associated with the NBN. All six positive propositions made about the national benefits of the NBN were supported. Survey respondents also welcomed the NBN rollout as a public investment rather than as private (or public-private partnership) investment.

5.1 Some pending issues

- Public attitudes, whether related to personal or national benefits, appear to be resistant to the influence of parts of the mainstream press media, and instead shaped by other sources of information. These other sources of information may be word-of-mouth, NBN advertising, or other online sources such as social media, each of which requires further investigation.
- The 'application layer' that includes the numerous services that may be enabled by high-speed broadband and the NBN are not being discussed in any detail within the mainstream media. Many of our respondents have difficulty envisioning particular uses for high-speed broadband. This requires further investigation.

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Appendices

Appendix A: Survey Questionnaire

Section One - Attitudes to the Internet in General

Q1 What is the main type of internet connection you currently have in your house? (select one only)

- Dial-up
- Satellite
- Broadband – cable / DSL / ADSL
- Broadband – mobile / wireless
- Broadband – National Broadband Network (NBN) connected
- Don't know
- No Internet

Q2 How satisfied are you with your home Internet service?

	Dissatisfied	Neutral	Satisfied
Degree of Satisfaction	0	10 20 30 40 50 60 70 80 90	100
			50

Q3 Who in the household was chiefly responsible for the decision to have your current type of Internet connection?

- An adult male
- An adult female
- A teenager
- A shared decision
- A non-householder (e.g. landlord)
- Unsure

Q4 How important is the Internet to you?

	Not important	neutral	Very important
Degree of importance	0	10 20 30 40 50 60 70 80 90	100
			50

Q5 How would you rate your household level of internet use?

	Very low	moderate	Very high
Household Internet use	0	10 20 30 40 50 60 70 80 90	100
			50

Q8 Regarding your internet service, how important are these factors...

	Not important	Very important
Generous download limits	0	10 20 30 40 50 60 70 80 90 100
		50
Fast speed		
		50
Low cost		
		50

Section Two - Attitudes to the NBN from a personal perspective

The National Broadband Network is an initiative by the government to install fast internet (faster than we have now) across Australia. In this survey we use 'NBN' to mean the National Broadband Network. Please answer all questions.

Q8 Regarding your Internet service, how important are these factors...

	Not important	Very important
	0	100
Generous download limits		50
Fast speed		50
Low cost		50

TWO **Section Two – attitudes to the NBN from a personal perspective**

The National Broadband Network is an initiative by the government to install fast Internet (faster than we have now) across Australia. In this survey we use 'NBN' to mean the National Broadband Network. Please answer all questions.

Q12 Have you heard of the government's plan to build a National Broadband Network?

Yes

Maybe

No

After Screenshot

Q13 Do you have a positive or negative opinion of the National Broadband Network in general?



Q15 Do you expect that the NBN will have benefits for you?



Q14 How much do you feel you know about the NBN?

	Not much	A great deal
	0	100
How much I know about the NBN		

Q49

Do you imagine the NBN will make a difference in your life with regards to...

	No Difference										A Great Difference														
	0	10	20	30	40	50	60	70	80	90	100	0	10	20	30	40	50	60	70	80		90	100		
The way you watch TV?																								50	
The games that you play over the Internet?																									50
The way you watch movies?																									50
Working from home over the Internet?																									50
Using video conferencing for family and friends?																									50
Shopping online?																									50
The way you use health services?																									50
The way you use educational services?																									50
The way you use local government services?																									50
Keeping up with the news?																									50
Keeping up with your friends?																									50
Keeping up with your family?																									50

Section Four – Demographic Information

These questions are not compulsory, but are very valuable to us, and your answers are entirely confidential.

Q51

What is your gender?

- Male
- Female

Q40

What is your age bracket?

- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65 and over

Q41

What is your income bracket?

- Less than \$20,000 pa
- \$20,000 – \$50,000
- \$50,000 - \$75,000
- \$75,000 - \$100,000
- \$100,000 - \$150,000
- More than \$150,000
- Prefer not to say

Q42

What is your highest educational qualification?

- Secondary School Certificate
- Trade qualification
- Advanced Diploma or Certificate
- University Degree
- Higher Degree
- Prefer not to say

Q43

Which of these best describes your area of employment?

- Accommodation and Food Services
- Administrative and Support Services
- Agriculture, Forestry and Fishing
- Arts and Recreation Services
- Construction
- Cultural and Recreational Services
- Education and Training
- Electricity, Gas, Water and Waste Services
- Financial and Insurance Services
- Health and Community Services
- Information Media and Telecommunications
- Manufacturing
- Mining
- Not in employment
- Other Services
- Professional, Scientific and Technical Services
- Public Administration and Safety
- Rental, Hiring and Real Estate Services
- Retail Trade
- Student
- Transport, Postal and Warehousing
- Wholesale Trade

Q52

What is your Postcode?

Q44

Which is your first language?

Q45

For which party did you vote in the last Federal election?

- Australian Labour Party
- Liberal Party
- National Party
- Greens
- Other

Appendix B: Articles used in media analysis

- The list of articles used in the media analysis are available here: http://www.craigbellamy.net/images/NBN_article.pdf (list of sample articles from *The Australian* and *The Age* Newspapers)
- List of Opinion pieces are available here: http://www.craigbellamy.net/images/NBN_opinion.htm

Appendix C: Thematic count of articles in media analysis above one article

Major Theme	Number of articles	Percentage of total articles
Telstra (including structural separation)	173	16.24%
NBN executives/staff (including Alcatel corruption controversy & hiring of consultants)	72	6.76%
Sub/contractors (including tenders, delays, price gouging, union action)	70	6.57%
NBN costs	70	6.57%
NBN business case (including economic benefit, general viability, cost benefit analysis calls)	69	6.48%
Rollout issues	59	5.54%
Labor NBN policy & bill & election	39	3.66%
NBN prices (wholesale and retail)	38	3.57%
Business views on and uses of NBN	30	2.82%
Labor/Coalition debate on & Coalition critique of NBN	29	2.72%
Coalition HSB policy	28	2.63%
Optus	27	2.54%
Telecommunications industry	27	2.54%
NBN monopoly and/vs competition (including anti-cherry picking)	25	2.35%
ACCC	21	1.97%
Asbestos & asbestos-related liability	20	1.88%
NBN rollout areas & issues (including pork barrelling)	20	1.88%
Take up of NBN	18	1.69%
ICT and general labour shortage (including 457 visas & construction issues & ICT training)	17	1.60%
Rural & regional Australia	17	1.60%
NBN promotion & "spruiking"	16	1.50%
Wireless	16	1.50%
Premises connection issues and laws (including opt-in & opt-out)	14	1.31%
NBN technologies	13	1.22%
Tasmania	12	1.13%
NBN applications (including health, arts, education)	12	1.13%

Major Theme	Number of articles	Percentage of total articles
Huawei	11	1.03%
Business investment in NBN	10	0.94%
NBN and societal benefits	10	0.94%
ISPs	9	0.85%
TV	8	0.75%
Productivity Commission	8	0.75%
NBN testing technologies and test bed sites (including CSIRO Ngara)	8	0.75%
Fixed-line telephony	8	0.75%
Remote Australia (including indigenous communities)	6	0.56%
Data security & risks	6	0.56%
Service Stream	4	0.38%
The Greens & the NBN	4	0.38%
iiNet	3	0.28%
Newspapers / press	3	0.28%
Digital divide	3	0.28%
Emergency services & government security agency access	3	0.28%
Total	1060	100%

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