11

Encouraging uptake and developing skills

11.1   The previous chapter discussed the need for government leadership and coordination in the development of Australia's digital economy, and noted that 'demand-side' interventions will be required to maximise the NBN's potential benefits. This chapter will look at some of the interventions that may be required in more detail.

11.2   Adult Learning Australia (ALA) provided the Committee with a useful way to characterise the measures needed to enable the transition to a digital economy:

- Connectivity;
- Content; and
- Capability.[1]

11.3   While ALA's model was put forward in relation to education, the Committee considers that the 'three Cs' apply more broadly. Without ensuring uptake of connections, encouraging digital content development, and building consumer capabilities, wholesale infrastructure alone will not achieve the NBN's potential. This chapter will look at a range of measures that could be introduced to address each of these elements.

Promoting ubiquitous connectivity

11.4   The Australian Communications Consumer Action Network (ACCAN) told the Committee that:

> Most of the potential benefits of high-speed broadband in the delivery of health, education and other government services can

---

1   ALA, *Submission 163*, p. [3].

only be achieved if the network is truly ubiquitous and connects the vast majority of premises nation-wide.[2]

11.5   National ICT Australia (NICTA) informed the Committee about Metcalfe's Law, which states that the more people that are connected to a network, the more useful that network will be.[3] Dr Terry Percival, Director of Broadband and the Digital Economy at NICTA, pointed out that having an 'isolated pocket' of connected premises will not have the same benefit as a much larger, ubiquitous network.[4]

11.6   The Committee agrees that ubiquity of high speed connectivity is essential in order lift the level of services provided over the network. As discussed in Chapter 2, the potential quality of online services provided by governments across a range of sectors is currently limited because many people, particularly in rural and regional areas, have limited or no broadband access. This problem was described by Adult Learning Australia (ALA) as a 'lowest common denominator approach'.[5]

11.7   While the government's investment in the NBN will clearly increase the availability of high speed broadband connections, the Committee heard that action needs to be taken to ensure that as many premises as possible are connected to the NBN's physical network infrastructure, as many occupants as possible elect to take up the paid retail NBN services available to them, and that to the greatest extent possible people from disadvantaged backgrounds are able to access NBN connections.

Opt-in or opt-out?

11.8   All premises within the NBN's fibre footprint are able to have fibre physically connected free of charge to the owner during the rollout. Once connected, occupants may choose whether or not they wish to pay for retail broadband services to be provided over that connection.

11.9   The view put to the Committee was almost universally that connections should be 'opt-out' during the NBN rollout.[6] This would mean that

---

2   ACCAN, *Submission 128*, p. 4.

3   NICTA, *Submission 198*, p. 32.

4   *Committee Hansard*, Sydney, 19 April 2011, p. 59.

5   ALA, *Submission 163*, p. [1].

6   For example, see ACCAN, *Submission 128*, p. 4; Eastern Regional Libraries Corporation (ERLC), *Submission* 221, p. [2]; Mrs Sue Farnell, Secretary, North East Tasmania Chamber of Commerce, *Committee Hansard*, Launceston, 10 March 2011, p. 11–12; Mr Tom Laing, Secretary, Willunga Business and Tourism Association, *Committee Hansard*, Victor Harbor, 5 April 2011, p. 55; Mr John Stanton, Chief Executive Officer, Communications Alliance, *Committee Hansard*, Sydney, 29 April 2011, p. 32.

premises are connected with an Optical Network Termination (ONT) unit by default, unless the building owners specifically ask to be excluded from the network.

11.10 In the initial NBN trial sites in Tasmania and on the mainland, an 'opt-in' approach has been taken. The Committee heard that for a number of reasons this has resulted in fewer premises being connected than would otherwise have been the case. For example, at its public hearing in Launceston, the Committee heard that the take-up rate in Scottsdale, one of the first three Tasmanian rollout sites, was just under 70 per cent.[7] Opt-out legislation has since been introduced in Tasmania by the state government.[8]

11.11 Reasons identified by inquiry participants for lower rates of connection in NBN trial areas include:

- Lack of consumer education about what was being signed up for;[9]

- Lack of consumer understanding about the benefits of connecting and concerns about damage to lawns;[10]

- Difficulty contacting absentee landlords;[11]

- Lack of interest amongst landlords of business premises;[12]

11.12 Mr Tom Laing, Secretary of the Willunga Business and Tourism Association, told the Committee that given the universality of applications, an opt-out policy would be better than opt-in. He described fibre as 'the new telecommunications vehicle' to replace ageing copper infrastructure, and argued that 'every household and business needs to be connected'.[13]

11.13 Mr Stanton of Communications Alliance also submitted that an opt-out policy 'makes more sense', particularly in regards to the speed and efficiency of the rollout. He noted that an NBN fibre connection does not

---

7   Ms Ally Mercer, Sustainable Development Manager, Dorset Council, *Committee Hansard*, Launceston, 10 March 2011, p. 2.

8   Mr Robert Wallace, Chief Executive Officer, Tasmanian Chamber of Commerce and Industry, *Committee Hansard*, 11 March 2011, p. 16.

9   Mr Wallace, *Committee Hansard*, Hobart, 11 March 2011, p. 16.

10   Mr Chris Quigley, Director, Strategic and Commercial Services, Kiama Municipal Council, *Committee Hansard*, Wollongong, 28 April 2011, p. 46.

11   Ms Natalie Burroughs, Chief Executive Officer, Regional Development Australia (RDA) Illawarra, *Committee Hansard*, Wollongong, 28 April 2011, p. 26.

12   Mrs Sue Farnell, Secretary, North East Tasmania Chamber of Commerce, *Committee Hansard*, Launceston, 10 March 2011, p. 11–12, 13–14.

13   *Committee Hansard*, Victor Harbor, 5 April 2011, p. 55.

'impose on anybody a requirement to take service', and provided the
following analogy:

> If your street was being kerbed and guttered for the first time and
> you did not happen to own a car, you would probably still want a
> dent in the kerbing that would enable you to have a driveway later
> on when you did buy a car.[14]

Engaging with consumers

11.14   In terms of the proportion of building occupants in NBN trial areas who
         had taken up a paid retail broadband service, the Committee heard that
         the take up rate in Tasmania was around 15 per cent.[15] Although the
         Committee was informed that these initial Tasmanian take-up rates were
         actually higher than was assumed in the NBN Implementation study,[16] it
         considers that the rates could have been substantially higher. The
         Committee received a wide range of evidence suggesting that increased
         consumer engagement is the key to driving increased uptake of services.

11.15   Inquiry participants expressed diverse views about how this community
         engagement should take place and who should be responsible for it. Mr
         Matthew Dunstan, General Manager of Retail at iiNet, told the Committee
         that while retail service providers (RSPs) will have a role in the future to
         promote NBN products, broader work is required now to 'build the
         brand' and educate consumers about the 'what, how and why of the
         NBN'.[17] Mr Mike Quigley told the Committee that in response to lessons
         learned in the pre-release rollout sites, NBN Co, within the limits of its
         wholesale-only mandate, is increasing its efforts in communication with
         the public.[18]

11.16   The majority of inquiry participants agreed that, as the main investor in
         the NBN, the Federal Government has a lead role to play in educating
         people about and promoting the benefits of the NBN.[19] However, many

---

14   John Stanton, Communications Alliance, *Committee Hansard*, Sydney, 29 April 2011, p. 32.

15   *Committee Hansard*, Launceston, 10 March 2011, p. 27.

16   Ms Pip Spence, First Assistant Secretary, NBN Implementation Division, DBCDE, *Committee
      Hansard*, Canberra, 27 May 2011, p. 53.

17   *Committee Hansard*, Perth, 5 May 2011, p. 8.

18   *Committee Hansard*, Sydney, 29 April 2011, pp. 1–3.

19   For example, Mr John Grant, Chair, IT Industry Innovation Council (ITIIC), *Committee Hansard*,
      Brisbane, 18 April 2011, p. 34; Mr Adam Redman, Manager, Government Relations and Policy,
      Australian Computer Society (ACS), *Committee Hansard*, Brisbane, 18 April 2011, p. 79; Mr Paul
      Nicholls, Director, Strategic Projects, Office of Research and Development, Curtin University,
      Committee Hansard, Perth, 5 May 2011, p. 26.

participants also suggested that a collaborative approach is required. For example, Communications Alliance suggested a wide-ranging and well-funded information campaign, similar to the digital television switchover campaign, except one that is 'industry led rather than bureaucracy led'.[20] The Tasmanian Chamber of Commerce and Industry and the Tasmanian Farmers and Graziers Association both told the Committee they have been engaged by the state government to promote the NBN to business.[21]

11.17   Mr Mills of the South Australian Government's NBN Taskforce suggested that local councils, state governments, NBN Co and the Federal Government all have a role to play in a 'national plus neighbourhood' approach to implementing programs:

> In some senses we see that some of that should be council led more so than state led, because each community is quite different, so it is having that local approach with us in support. In a sense we see ourselves, along with NBN, in a supporting role more than a lead role. We have the Commonwealth government. It is a Commonwealth government program so we are expecting them to lead. We expect the NBN Co to get out there and start talking, and we will support them in that space. So it is a mixture of those four.[22]

11.18   Mr Bob Carmichael, Manager of Business and Economic Development at the City of Tea Tree Gully, told the Committee that a local information and engagement strategy needs to be developed to 'explain the infrastructure and the benefits of digital services' to his community.[23] He indicated that the council is looking to support an engagement strategy developed by the Federal Government rather than developing one of their own, because it is 'their network'.[24]

11.19   The Remote Area Planning and Development Board (RAPAD), a regional economic development agency and regional organisation of councils based in Central West Queensland, submitted that collaboration with local councils is crucial:

> Local Government is the first level of government service delivery in the community. For such an important national project as the

---

20   *Committee Hansard*, Sydney, 29 April 2011, p. 33; *Submission 185*, p. 19.

21   Mr Wallace, *Committee Hansard*, Hobart, 11 March 2011, pp. 19–23; Ms Melinda King, Research Officer, Tasmanian Farmers and Graziers Association, *Committee Hansard*, Launceston, 10 March 2011, p. 42.

22   *Committee Hansard*, Adelaide, 4 April 2011, pp. 56–57, 60.

23   *Committee Hansard*, Adelaide, 4 April 2011, p. 26.

24   *Committee Hansard*, Adelaide, 4 April 2011, p. 31.

NBN the Australian Government should consider greater
collaboration with remote and rural Councils.[25]

11.20   The Committee recognises that Regional Development Australia (RDA)
committees could also play an important role in facilitating local
community engagement. For example, Mr Graeme Maxwell, Manager of
the City of Victor Harbor, told the Committee that the City is approaching
the NBN implementation on a regional basis, collaborating with other
councils in the area and working under the 'driving force' of the local
RDA.[26]

11.21   The Consumer e-Health Alliance (CeHA) advised that 'how to most
effectively engage with the community' and have it involved in the
development, acceptance and implementation of policy is the 'challenge of
the times'. CeHA informed the Committee about the recent establishment
of a Ministerial Advisory Council to coordinate the Government's
investments in regional projects through RDAs, and suggests that a
similar model be used to assist with the implementation of the NBN:

> This Advisory Council is to assist in the co-operation and
> coordination of the work of 55 RDA committees established across
> all States and Territories, so that their projects can maximise the
> benefits for all. We recommend that the key role of NBN in this
> and other needs across the nation require a similar governance
> structure so that local needs can be better identified and
> appropriate NBN support can be positioned in harmony with
> them and with Health and Education systems.[27]

11.22   The Committee received a wide range of suggestions about how this type
of consumer engagement could take place. For example, Mr Carmichael
was among a number of inquiry participants who suggested that
demonstration sites should be set up to promote the benefits of the NBN.[28]

11.23   During the course of the inquiry, the Committee was shown
demonstrations of broadband applications at the Institute for a Broadband
Enabled Society (IBES), Fetch TV, NICTA, Google Australia, and the
Telstra Experience Centre. It was also shown examples of fibre
infrastructure installed at various sites around Scottsdale. The Committee
recognises the impact that being able to see and touch these type of
technologies can have in improving consumer understanding of the

---

25   RAPAD, *Submission 145*, p. 14.

26   *Committee Hansard*, Victor Harbor, 5 April 2011, p. 12.

27   CeHA, *Supplementary Submission 201.2*, p. 3.

28   *Committee Hansard*, Adelaide, 4 April 2011, p. 27.

possibilities of broadband and reducing anxiety about the infrastructure rollout.

11.24   The Committee notes the recent announcement of the Federal Government's Digital Communities program, which will establish a 'Digital Hub' in each of the first 40 communities to be connected NBN fibre. These hubs will 'enable local residents to experience NBN empowered services and technology and also access education and training to learn skills required to participate in the NBN-empowered digital economy'.[29] The Committee welcomes this initiative and suggests that, if successful, consideration be given to extending the program to other communities as the rollout proceeds.

11.25   Several contributors to the inquiry told the Committee that leaders in local communities, known as 'digital champions', could be used to promote the uptake of broadband and other digital services. For example, Mr John McGee, Director of Digital Futures at the Tasmanian Department of Economic Development, Tourism and the Arts, told the Committee about plans to use the existing social networks of local champions to promote the NBN within the business community:

> … the notion of social networking in the physical sense is really part of the strategy: identifying champions, making sure that they are as capable as they want to be and need to be and then allowing that normal social networking process to occur.[30]

11.26   Ms Pip Forrester, Chair of the McLaren Vale Grape, Wine and Tourism Association, said that it is important that information is delivered to people 'in as many ways as you can' and in a language they can understand.[31] She similarly talked about the value of using existing local networks:

> I think one of the key things is to deliver the information to where the people are. McLaren Vale is only an hour from Adelaide. To effectively get the information out, go to the core and use the people on the ground to make sure the right people are there. I guess, more formally, you need to do some really good networking.[32]

11.27   The National Farmers' Federation (NFF) suggested that given the low level of existing broadband use, regional areas may require specific

---

29   DBCDE, *National Digital Economy Strategy*, p. 22.
30   *Committee Hansard*, Hobart, 11 March 2011, p. 69.
31   *Committee Hansard*, Victor Harbor, 5 April 2011, p. 42.
32   *Committee Hansard*, Victor Harbor, 5 April 2011, p. 47.

education programs to support uptake, including for businesses. NFF submitted:

> Given the differences in people's experience and capabilities with information technology, and the variety of different uses to which broadband can be applied, a variety of communication packages will be required to properly inform people and support the roll out of the technology. Information packages, seminars, the use of mentors and local champions are all opportunities to improve awareness and support adoption of the new technology within communities.[33]

11.28   The Committee notes that the Government has recently nominated a number of national broadband champions in a range of fields.[34] While this is a positive development for improving consumer engagement, the Committee suggests that equipping champions at a more local level will have a more significant effect in raising awareness in rollout areas.

11.29   The Committee supports the view of inquiry participants that, complementing the *National Digital Economy Strategy*, a comprehensive engagement strategy is required to outline how the uptake of broadband and the utilisation of digital services can be encouraged. The engagement strategy should be developed in consultation with industry, consumer groups and other levels of government and should clearly outline the preferred roles of the different players in engaging with the public. It should encapsulate a range of engagement strategies including information campaigns, demonstration sites and support for local digital champions.

Recommendation 6

That the Federal Government develop a comprehensive engagement strategy incorporating a range of approaches to promote the uptake of broadband and digital technologies during the NBN rollout.

---

33   NFF, *Submission 197*, pp. 4–5.
34   DBCDE, 'Broadband Champions' <http://www.nbn.gov.au/media-centre/broadband-champions/> viewed 27 July 2011.

Assisting disadvantaged groups

11.30   As discussed in Chapter 8, inquiry participants described the 'digital divide' which currently exists in Australia, where certain social groups have lower levels of access to broadband services than others.

11.31   The Committee heard that overcoming this divide would go some way to improving the welfare of people who are currently isolated and disadvantaged. The Committee considers that increasing the participation of these groups is crucial to ensure the benefits of a ubiquitous, high speed network are delivered, including for the delivery of services (relating to health and education, for example) as discussed in Part One of this report.

11.32   The Committee considers that making shared public facilities available could be a practical and cost effective way of providing more universal broadband access. The most obvious way to achieve this will be to improve access via local public libraries and community centres, where resources already exist in many regions.

11.33   The Australia Council for the Arts told the Committee that well-equipped community centres will be 'integral to all Australians benefiting from the NBN', providing broadband services to range of members of the community who may otherwise not be able to access them:

> Older people, the disabled, socioeconomically disadvantaged people, newly-arrived migrants and Indigenous people living in remote communities are among those likely to access the NBN in community centres.[35]

11.34   The Committee notes that there are over 1500 public libraries across Australia, which are attended more frequently and by more people than any other cultural or sporting venue. More than half the population are registered as users.[36] As the Australian Library and Information Association (ALIA) explained:

> Located in every local government area across the nation and at the heart of their local communities, public libraries are perfectly positioned to deliver results in Australia's digital future. Australia's public libraries continue to address the need for equitable community access to a wide range of educational, information, cultural and recreational services which are dependent on online information services … [37]

---

35   Australia Council for the Arts, *Submission 232*, p. 13.
36   ALIA, *Submission 216*, p. 2.
37   ALIA, *Submission 216*, p. 2

11.35   In terms of the NBN, ALIA noted that libraries play 'a significant role in
         the access and support for learning in our communities', by providing
         access to technology, to PCs and 'equipment that many in our society
         cannot afford', and that even for people who may 'have it all', libraries
         provide a place of 'convenience and community'.[38]

11.36   East Gippsland Shire Council noted that the download speeds and access
         able to be provided through libraries and council business centres would
         be superior to any fixed line or satellite services available in areas such as
         the East Gippsland region. The Council's submission notes that 'without
         this access these individuals and business will not be able to avail
         themselves of the higher level services promised by the NBN'.[39]
         Eurobodalla Shire Council notes that council libraries currently support
         35 000 internet bookings each year, with an increasing trend. If broadband
         is not taken up in individual residences, the capability offered by the NBN
         provides a highly valuable service to be accessed by many in
         disadvantaged local communities.[40]

11.37   The Committee considers that where possible, libraries and other public
         facilities should not only include access to broadband, but access to
         private facilities for taking part in video conferences or calls. This will
         firstly provide access to broadband-enabled services to those who cannot
         afford to get services at home, and secondly, provide access to people
         living outside the fibre footprint who otherwise may not be able to access
         quality video-conferencing services. The Committee recognises libraries
         could play a central role in achieving this goal, and recognises the diverse
         possibilities in the development of these services. Ms Vanessa Little,
         representing ALIA, described the installation of 'sound domes' in a new,
         broadband-equipped library as providing privacy to users:

>   We started out thinking: 'We will do this for these grandmas,
>   because they like to Skype. Under the sound dome, they can talk
>   away but nobody around them can hear.'

11.38   Ms Little observed that beyond this initial service, these facilities may be
         used for the benefit of other groups in the community, for example, young
         people wanting to talk to a health professional about their mental health
         issues: 'they can be sitting in my library at Gungahlin accessing that totally
         unknown. Nobody knows what they are doing.'[41] The Committee can see

---

38   ALIA, *Submission 216*, p. 3

39   East Gippsland Shire Council, *Submission 14*, pp. [2–3].

40   Eurobodalla Shire Council, *Submission 52*, p. [1].

41   *Committee Hansard*, Canberra, 27 May 2011, p. 19.

how the provision for people to easily and privately access professional health services may serve to increase the likelihood of those services being used by people most in need, and who may not otherwise be able to benefit from the assistance such services provide.

11.39   The Committee heard from many inquiry participants about current programs which provide community internet access (for example, Broadband for Seniors kiosks and Neighbourhood Houses) that already provide free access points.[42] The Committee notes that there may be possibilities for more effective integration within, or between, existing services. ALIA told the Committee:

> The Broadband for Seniors initiative, while not funded directly, has seen the program enter many public libraries in Australia, duplicating the work that public libraries were already delivered in those libraries.

> Libraries are already conducting hundreds of training programs for our community on how to use the Internet— for free—as a community service.[43]

11.40   The importance of digital literacy skills for harnessing the NBN's benefits is discussed in more detail later in this chapter. However, the Committee believes that in any discussion of community access to and awareness of broadband services, the abilities of users should be borne in mind. The Committee acknowledges the observations of many inquiry participants that not all Australians will have the skills or abilities to immediately access all services which are envisaged to be deliverable via the NBN.

11.41   The potential for training to provide a means of community engagement and thereby help to address causes of social exclusion should not be underestimated. In this way, NBN access via libraries and community centres provides benefits not only in terms of actual services, but individuals who access appropriate training in a community environment may feel less intimidated, and be more likely to seek advice and assistance. This process of skills acquisition may also contribute to social inclusion and empowerment. Ms Little, of ALIA, noted that:

> … the people who cannot afford to have the broadband to their home at the moment or who do not understand it and are quite nervous about it can come into my library and receive access and training on how to use it. If you are looking to build community

---

42   Dr Deb Foskey, *Submission 23*, p. [2]; ALA, *Submission 163*; Government of South Australia, *Submission 195*, p. 3.

43   ALIA, *Submission 216*, p. 7.

engagement and use of this technology into the future, we are the place where people come now, so, with better access to the broadband services, we will be able to be … promoting it and its various uses.[44]

11.42   ALIA has estimated that providing internet connectivity to every Australian public library would cost around $8 million per annum.[45] The Committee agrees with the suggestion of ALA and others, that even if the NBN 'went to everyone's home at a reasonable price', the need to ensure access to broadband services by disadvantaged groups in the community would still exist.[46]

11.43   The Committee considers that for appropriate services to be provided and supported in an ongoing way through libraries and community centres, additional work needs to be done by the Federal Government to ensure that public access points connected to high speed NBN services are provided as swiftly, and efficiently, as possible.

Recommendation 7

That, recognising the important roles of public libraries and community centres, the Federal Government works in an appropriate capacity to implement a network of public access points connected to high speed NBN services in as many communities as possible.

11.44   The Committee recognises that Broadband for Seniors is an example of a successful program for promoting digital inclusion, and welcomes the recent extension of program funding, as discussed in Chapter 8. The Committee considers that, if the 'digital divide' is to be successfully overcome, other targeted programs may be required to address access for other Australians who are disadvantaged, or who may be at risk of social isolation.

---

44   *Committee Hansard*, Canberra 27 May, p. 19.

45   Ms Sue Hutley, Executive Director, ALIA, *Committee Hansard*, Canberra 27 May, p. 22.

46   Ms Sally Thompson, Chief Executive Officer, ALA, *Committee Hansard*, Canberra, 4 March 2011, p. 52.

Recommendation 8

> **That the Federal Government, with other organisations as appropriate, develop targeted programs for those currently disadvantaged by the digital divide to improve awareness of publicly available high-speed internet facilities, to improve access, and to promote the development of relevant skills.**

Outside the fibre footprint

11.45   As discussed in Chapter 9, evidence indicates that fibre connections to premises provide the best long term broadband solution due to their high capacity, symmetrical speeds, low latency and future scalability. Chapter 9 also noted that as it is economically impractical to deliver fibre connections to all premises in Australia, good quality fixed wireless and satellite services can provide a viable broadband alternative to premises in rural and remote areas where FTTP is not available.

11.46   As described at Appendix A, under the NBN project 93 per cent of Australian premises will be provided with fibre connections, including all communities with more than 1000 premises and all communities with more than 500 premises that are passed by fibre transit routes. Another 4 per cent of premises will be provided with LTE fixed wireless, and the remaining 3 per cent with next generation satellite services.

NBN Network extensions

11.47   The Committee received a number of submissions from representatives of smaller communities that are expected to fall outside the NBN's fibre deployment areas.[47] For example, McKinlay Shire Council in North West Queensland told the Committee that although the town of Julia Creek (population 500) is on a fibre backhaul route and sits astride major rail and road links, it is not expecting to be provided with fibre connections under the NBN. The town has 'a GP, Hospital, State School and a full complement of Emergency Services' and McKinlay Shire Council submitted that towns like this would 'benefit enormously' from connection to the fibre network.[48]

---

47   McKinlay Shire Council, *Submission 31*; Gloucester Shire Council, *Submission 6*; Wheatbelt East Regional Organisation of Councils, *Submission 40*; Get Connected, *Submission 43*; RDA Yorke and Mid-North, *Submission 121*, pp. 13–14; NFF, *Submission 197*; RDA Townsville and North West Queensland, *Submission 202*; NT Government, *Submission 209*.

48   McKinlay Shire Council, *Supplementary Submission 31.1*, p. [1].

11.48   While fibre is clearly the most preferred option, several submissions noted that where fibre is not possible, fixed wireless would be much more suitable than satellite for these types of small communities. As discussed in Chapter 9, while the NBN satellites will offer considerably better services than what is currently available, high latency caused by the vast distances involved in satellite communications is unavoidable and means that certain interactive broadband applications will still not be possible. For example, RAPAD told the Committee that while satellite broadband may be the only economically realistic option for individual remote homesteads, 4G fixed wireless broadband would be a much preferred option to service communities:

> In terms of sustainability and value RAPAD has argued, in previous papers submitted to government, that 4G (LTE) or similar wireless technology should be deployed to communities targeted as satellite/wireless regions. 4G deployed as a fixed wireless platform (as opposed to a mobile platform) will give rural and remote communities far greater broadband performance (bandwidth and latency) than satellite.[49]

11.49   The Indigenous Remote Communications Association (IRCA) strongly recommended in its submission that either fibre optic or microwave (wireless) be used to deliver broadband to remote communities rather than satellite in order to 'reduce ongoing costs and latency, improve reliability and provide future capacity'.[50] It further submitted:

> While planning for remote area delivery of the NBN is still unclear (beyond the satellite or wireless solutions), it appears that a satellite backhaul solution is being proposed for most remote communities. While we understand the economic logic, IRCA urges thorough consultation and long-term cost analysis prior to selection of technology.[51]

11.50   Although acknowledging that it is economically impractical in the short term, the Committee considers that FTTP connections to all communities should be the Government's long term goal, particularly given the limited life span of copper lines. The Committee welcomes the announcement that NBN Co is currently trialling a 'network extension program' in Tasmania to provide an option for communities outside the fibre footprint to pay the incremental funds needed for additional premises to be connected while

49   RAPAD, *Submission 145*, p. 4.

50   IRCA, *Submission 82*, p. 7.

51   IRCA, *Submission 82*, p. 5.

NBN is rolling out fibre in their region. Mr Mike Quigley of NBN Co made the following comments on the program at the Committee's public hearing in Sydney:

> An individual or a group of people might say, 'We are not inside the fibre footprint, but we would like to get the fibre anyway. What is the process for doing that?' We have had approaches from some councils who have said, 'We are prepared to fund the difference between what that 93rd percentile would be, if we were in the 96th, for example.' But I should also say if you see a graph of costs per connection per percentile, from the first percentile through it is relatively flat and then there is a knee. It goes up very rapidly after the 93rd percentile, which means that from 95 to 97 it is very expensive per subscriber to provide a fibre connection.[52]

11.51   At the time of writing, NBN Co had not publicly released more detailed information about how the network extension program will work; however, the NBN Implementation Study discusses the possibilities in some detail. It notes that premises connected to fibre should be considered as additional to NBN Co's 93 per cent fibre coverage goal, and care should be taken to ensure that the program does not 'disrupt the broader rollout plans' for the network. It suggests that financial contributions towards the network extension could be received from 'businesses, not-for-profit organisations, state and local governments' or from the Federal Government, 'independently of its equity investment in NBN Co'.[53]

Backhaul extensions to remote communities

11.52   Another issue raised by inquiry participants representing rural and remote areas was that while they recognise the potential benefits of broadband, many areas still do not have adequate mobile telephone services. For example, Ms Mel King from the Tasmanian Farmers and Graziers Association, told the Committee:

> The chair of our council cannot find a mobile phone that will work on his property. We wait for him to come in during the night or ring his wife to try to get hold of him. It is not a good way to operate. This is the sort of system that these guys operate under every day. Farmers are becoming more mobile. They are up at dawn and out till dusk and are driving constantly and are not

---

52   *Committee Hansard,* Sydney, 29 April 2011, p. 4.

53   McKinsey–KPMG, *National Broadband Network Implementation Study*, 2010, pp. 75–77.

there to answer the phone, yet they need access to those sorts of
things for marketing.[54]

11.53   IRCA submitted that 'mobile telephony should be seen as a primary
telephony service for remote Australia', and that 'selection of backhaul
technology should support telephony as well as broadband access'.[55] It
suggested that access to adequate mobile services is 'a higher priority than
broadband' in many communities, adding:

> Despite numerous reviews and programs, this continues to be a
> major issue. With shared housing, low income and mobile
> populations, the ideal telephony solution for remote communities
> is mobile telephony, with call rates capped and pre-paid services
> included under a revised Universal Service Obligation (USO).[56]

11.54   The Committee heard that the NBN fibre network may, with time,
contribute to better mobile services in remote areas by lowering the cost of
connecting mobile base stations. Mr Maha Krishnapillai, Director of
Government and Corporate Affairs at Optus, told the Committee that with
fibre links being deployed to many more parts of the country under the
NBN, backhaul fibre for mobile base stations will be accessible in more
areas. He explained:

> There are a number of issues in terms of higher speed mobile
> broadband that we need to work through, one of which is availability
> of spectrum. The other one is simple location of base stations. The
> third one is clearly the fibre capacity we have to link those base
> stations. We see that as a big opportunity for regional Australia
> because at least one of those three will be not necessarily eliminated,
> but minimised, in terms of our capacity to offer high-speed
> broadband via mobile in regional Australia.[57]

11.55   As outlined at Appendix A, the Federal Government's Regional Backbone
Blackspots Program (RBBP) is being used to fill gaps in Australia's fibre
backhaul networks in regional areas. This is enabling DSL broadband
services to be provided to towns and cities along the RBBP links that were
not able to be provided before. For example, Mr David Buckingham of
iiNet told the Committee that the backhaul link to Geraldton is enabling it
to offer competitive ADSL2+ services to 2000 households in that

---

54   *Committee Hansard*, Launceston, 10 March 2011, p. 42.

55   IRCA, *Submission 82*, p. 7.

56   IRCA, *Submission 82*, p. 5.

57   *Committee Hansard*, Sydney, 29 April 2011, p. 24.

community for the first time.[58] NEC Australia recently announced that it is rolling out 62 new DSLAMs in centres along the five RBBP links.[59]

11.56   However, Mr Mark Needham, member of the outgoing Regional Telecommunications Independent Review Committee (RTIRC), told the Committee there is still much of Australia beyond the RBBP program and outside the NBN fibre footprint that would benefit from additional backhaul links. Mr Needham suggested that unallocated interest from the previous Government's Regional Telecommunications Fund could be used to pay for fibre backhaul links to more communities where FTTP is not economically practical.[60] This would enable significant improvements to services in those communities:

> There is a difference between providing fibre to the town and fibre to the premises. I think many people would like to have fibre to their community, at least as a start, rather than even considering fibre to the premises—because … reticulation of services at the end of fibre can still achieve a very acceptable outcome …[61]

Applications and content

11.57   Many inquiry participants pointed out to the Committee that while the NBN will provide important enabling infrastructure, the realisation of its potential benefits will depend on the online services and applications that are developed to utilise it. For example, Contract IT submitted:

> Let's be perfectly clear, the NBN is a facilitating technology, how we engage and interact with that technology will determine if Australia experiences social benefits or not. The technology itself is neutral. We can do more good and we can do more bad.[62]

11.58   Similarly, Mr Stanton of Communications Alliance told the Committee:

---

58 *Committee Hansard*, Perth, 5 May 2011, p. 1.

59 NEC Australia, 'NEC upgrades regional networks to better connect nationwide broadband delivery', *Media Release*, 28 July 2011 <http://www.nec.com.au/media/docs/110728-NEC-Nextep-Network-Upgrade-press-release-FINAL-2-7c97f0f9-aad1-4aae-8799-eff9262ad948-0.pdf> viewed 29 July 2011.

60 *Committee Hansard*, Brisbane, 18 April 2011, p. 18. For information about the Regional Telecommunications Fund, refer to Peter Costello, Treasurer, 'Budget Treatment: Regional Communications Fund', *Media Release No.081*, 13 September 2005 <http://www.treasurer.gov.au/DisplayDocs.aspx?pageID=&doc=pressreleases/2005/081.htm&min=phc> viewed 29 July 2011.

61 *Committee Hansard*, Brisbane, 18 April 2011, p. 18.

62 Contract IT, *Submission 225*, p. [2].

> … the network in itself will not achieve everything that we are
> looking for in terms of digital economy development, because
> unless there is a reason to connect and to use it at high speed
> people will not. They will need applications and they will need the
> opportunity to take advantage of what the network can provide,
> but at the end of the day it is a layer 2 network. The magic is above
> layer 2. They are the sorts of things that will drive economic
> benefit and substantial take-up.[63]

11.59   Throughout the inquiry, the Committee heard that there are a wide range
         of existing broadband applications and services that have low bandwidth
         requirements and are commonly available now, but are restricted in their
         utilisation due to a lack of ubiquitous broadband connectivity. For
         example, Chapter 2 noted that many government agencies are constrained
         in their ability to offer services online as they need to be able to provide
         equal services to people with poor connections (the 'lowest common
         denominator' approach); Chapter 3 noted that successful e-health
         implementation requires uniform capability across the health system; and
         Chapter 5 noted that smart grids need a ubiquitous and reliable network
         to be effective.

11.60   The Committee also heard that there are a wide range of applications and
         services that are currently limited in their adoption due to high bandwidth
         requirements. Examples include augmented reality and 3D simulations for
         learning, as noted in Chapter 4; high quality two-way video-conferencing,
         as noted in Chapter 6, and ultra high definition television, as noted in
         Chapter 9.

11.61   Beyond these existing applications, the Committee heard that the NBN
         will enable new applications and services to be developed, many of which
         are not even envisaged as yet. These applications will only be enabled as
         broadband improves in both its bandwidth capacity and its ubiquity, as
         discussed in Chapter 9. Mr Bret Treasure, member of the Australian Web
         Industry Association (AWIA), told the Committee that:

> … there are clearly applications which have not been developed
> yet and there are developments of applications which already exist
> but do not have enough bandwidth to be successful. It is clearly
> difficult for us to blue sky about the applications that have not yet
> been developed, but I do not think that we should ignore that that
> is going to happen.[64]

---

63   *Committee Hansard,* Sydney, 29 April 2011, p. 34.
64   *Committee Hansard*, Perth, 5 May 2011, p. 38.

11.62   The Committee notes the vast changes to the way people work and interact that have been enabled by improved connectivity over the last 20 years. Since the early 1990s, ICT applications that have become commonplace in the average household include desktop and notebook personal computers, cordless phones, mobile phones, digital cameras, satellite navigation, the World Wide Web, email, search engines, social networking sites, online maps, YouTube, Skype, and iTunes. The Committee considers that there is good reason to expect that the NBN will enable at least as many new applications to be developed over the next 20 years.

11.63   Some inquiry participants attempted to predict what some of the future applications enabled by improved broadband might be. For example:

- Dr Dean Economou, Technology Strategist at NICTA, told the Committee that holographic technology, which is in the early stages of development now, may become mainstream in 20 to 30 years.[65]

- Mr Darren Merritt, a qualified computer scientist, told the Committee that by enabling more accurate GPS systems, the NBN could help facilitate an 'entirely new field of technology' with applications that could include driverless cars, planes, street sweepers, road repairs and lawn-mowers.[66]

- Mr Treasure of the AWIA told the Committee about an emerging technology in which animated avatars from the 'virtual world' are overlaid into the real world through projections onto the inside of a pair of glasses. The technology could have significant applications in marketing and other areas.[67]

11.64   The Committee recognises that the NBN will provide Australia with an opportunity lift its R&D performance and to lead the world in the development of new applications using high speed broadband. As discussed in Chapter 7, the NBN will enable new forms of R&D to take place, improve the capacity for research collaboration and attract foreign investment in Australia's ICT R&D sector. However, continued government support is required to ensure these opportunities are maximised. In particular, continued investment in research, innovation and commercialisation of broadband applications is required. Effort is also

---

65   Dr Dean Economou, Technology Strategist, NICTA, *Committee Hansard*, Sydney, 29 April 2011, p. 58.

66   Mr Darren Merritt, *Submission 18*, p. [1].

67   *Committee Hansard*, Perth, 5 May 2011, p. 38.

required to ensure appropriate regulatory frameworks are in place to
promote R&D in the private sector.

Recommendation 9

**That the Government provide continued support for organisations
involved in the development of high speed broadband applications.**

Recommendation 10

**That the Government maintains regulatory support to encourage
increased levels of research and innovation in the private sector and
recognises the NBN's importance to the realisation of its innovation
agenda.**

11.65   Chapter 8 of this report discussed evidence from a number of
         organisations about the need for government support to digitise the
         content of libraries and museums.[68] The Committee recognises the
         substantial benefits that would result from the digitisation of cultural and
         historical collections for access online by the public, and supports a role
         for government in enabling this.

Recommendation 11

**That the Government develop a strategy for the digitisation of
Australia's culturally and historically significant content.**

11.66   Chapter 8 also discussed evidence that the availability of quality
         Australian online content could be put at risk if measures are not taken to
         address copyright theft online.[69] The Committee recognises that there is a

---

68   National and State Libraries Australasia (NSLA), *Submission 53*; National Library of Australia
      (NLA), *Submission 106*; Museums Australia, *Submission 162*; Council of Australasian Museum
      Directors, *Submission 168*; Australian Library and Information Association (ALIA),
      Submission 216.

69   Copyright Agency Limited, *Submission 92*; The Australian Content Industry Group, *Submission
      108*; Australian Recording Industry Association, *Submission 112*; Australian Publishers
      Association, *Submission 136*.

need for a robust framework for the protection of intellectual property to encourage innovation and investment in quality local content.

Recommendation 12

That the Government facilitate discussions between representatives of key content industries and internet service providers to work towards an agreed framework for minimising online copyright theft.

Skills development

11.67   The Committee received evidence that in order to achieve the widespread uptake and utilisation of services enabled by the NBN, ongoing investments will need to be made in skills development. This section will consider two aspects of skills development: digital literacy for the general community, and professional ICT skills.

Digital Literacy

11.68   The Committee was informed about the need for increased digital literacy training to help manage social and generational differences in the general public's level of confidence with digital technologies. For example, the Australia Council for the Arts noted in its submission that access is not just about having the technology but also the knowledge of how to use it and of what to do when things do not go smoothly. The Committee agrees with the Council's view that 'as the potential of the NBN for delivery of educational and health services becomes a reality, it is important to ensure that existing inequities are not exacerbated'.[70]

11.69   Ms Rosemary Sinclair of the Australian Telecommunications Users Group (ATUG) told the Committee that the development of digital literacy skills for workplaces is a 'really important piece of work':

> It is really marvellous that all our teenagers understand how to use Twitter and Facebook and the like. It is very important that our workplaces and all our employees become skilled at the use of these communications tools as well.[71]

---

70   Australia Council for the Arts, *Submission 232*, p. 13.
71   *Committee Hansard*, Sydney, 29 April 2011, p. 36.

Building capability amongst consumers

11.70   Several participants referred to these generational differences in terms of 'digital natives' and 'digital immigrants'.[72] A 2009 Government report defined digital natives as 'those who do not know life without a computer, the internet and MP3s' and notes that digital natives 'first log-on earlier in their lives than previous generations and rarely log-off'. This contrasts with digital immigrants, who 'learn and adopt the internet and related technologies later in life'.[73]

11.71   Illustrating these differing needs, the recently released outcomes of a 2009 OECD survey found that Australian students (digital natives) ranked equal second in the world in their digital literacy skills.[74] In comparison, as discussed in Chapter 8 on the community and social impacts of the NBN, older people, as well as many people from disadvantaged backgrounds, are having to learn how to use digital technologies later in life (digital immigrants) and may not have the basic skills needed to take advantage of the NBN's potential. ABS statistics show that nearly 70 per cent of Australians aged over 65 did not access the internet at all in 2008–09.[75]

11.72   In its submission, ALA provided the Committee with a copy of an email from one of its member organisations in regional NSW which highlighted the 'importance of investing in training for older users of the NBN':

> We have become aware of the fact that many of our members have been 'given' or had an old computer 'passed over' to them from children or grandchildren. But without any assistance/training or help … and lack of checking whether the training terminology was being understood.

> Our members have email addresses, usually kindly organised by the 'donors'. So they inform us of this. We sent messages and our newsletter to them. They are not informed as we find out that they have no idea how to respond to our emails or download and/or print out our newsletter.[76]

11.73   The letter argued that the a 'concerted effort' is required in order to provide information explaining 'what the NBN is all about' to people

72   RAPAD, *Submission 145*, p. 13; The Alannah and Madeline Foundation, *Submission 206*, pp. 4–5; JCU, *Submission 85*, p. [2]; Council of Australasian Museum Directors, *Submission 168*, p. 8.

73   DBCDE, *Australia's Digital Economy: Future Directions*, 2009, p. 40.

74   OECD, *PISA 2009 Results: Students On Line: Digital Technologies and Performance (Volume VI)*, p. 78.

75   ABS, *Household Use of Information Technology Australia 2008–09*, 16 December 2009, p. 35.

76   ALA, *Submission 163*, pp. [3–4].

without technical knowledge, and training them in 'how they can use the technology for their own benefit'. ALA suggested that these issues would be similar for other disadvantaged groups on the 'wrong side of the digital divide'.[77]

11.74   Ms Sinclair of ATUG told the Committee that ongoing support will need to be available for people at the time that the network and its associated technologies are rolled out, because 'that is when people learn; when they have the question they go looking for the answer'.[78] She said that the Internet Assistance Program had been helpful for providing support in the past, and suggested that a similar program should be developed to provide support for older users:

> [The Internet Assistance Program] provided a service where people could ring and get information about how to ensure that their service was running at the maximum. I think that sort of infrastructure needs to be put in place. I know in my own community older people are interested in using the internet and broadband but unless there is some family member available they get stuck.[79]

11.75   Dr Tim Williams, independent consultant for Huawei, told the Committee that in the UK, community based organisations have played a key role in engaging socially excluded groups by teaching them about broadband technology:

> One thing that is interesting in Britain is the role of third sector voluntary organisations, social enterprise organisations and housing associations, where they meet people on a regular basis and they have very good cultural links to help them explore in a rather incremental way what they can do with this technology. It is particularly important with older people.[80]

11.76   Ms Sinclair agreed that not-for-profit organisations could have a key role in digital skills development 'because they are engaging with more disadvantaged members of the community'. She also suggested that community libraries could play a central role, noting that people are 'not frightened to come to the library' and librarians are 'very valued members of the community'.[81]

---

77   ALA, *Submission 163*, pp. [3–4].
78   *Committee Hansard*, Sydney, 29 April 2011, p. 37.
79   *Committee Hansard*, Sydney, 29 April 2011, p. 37.
80   *Committee Hansard*, Sydney, 29 April 2011, p. 15.
81   *Committee Hansard*, Sydney, 29 April 2011, p. 37.

11.77   As noted earlier in this chapter, in addition to providing free public access,
         there is an opportunity for digital literacy training programs to be
         delivered in libraries. Ms Sue Hutley from ALIA told the Committee that
         the community expectations for internet assistance are growing 'at an
         exponential rate' as more activity takes place online, and libraries are
         already playing a role in providing this assistance:

> There is a demand for assistance from public library staff in using
> electronic services, not only for government information but also
> for everyday living skills, including e-banking, setting up mobile
> phone accounts, online shopping and setting up email accounts. A
> large part of this demand comes from people at low socioeconomic
> levels, the unemployed and the elderly. Government agencies are
> still sending people to their local public library for government
> information and to access social assistance forms and income tax
> forms, renew their licence and fill out driver testing forms.[82]

11.78   The submission from ALIA called for an appropriate program to be
         developed to support user education and training in basic internet skills
         for 'all Australians'. It warned that without this training, 'many
         Australians will continue to be disadvantaged and will miss out on
         benefiting from access to digital services'. It also argued that to ensure the
         adequacy and sustainability of outcomes, funding would be required 'on
         an ongoing basis' and 'should be conducted by organisations such as
         libraries which are part of the long term community infrastructure'.[83] The
         submission notes:

> It is the unemployed, pensioners, the homeless, single-parents,
> people with a terminal illness and families already struggling
> financially who use public libraries. These are the people that
> should and could benefit from access to the Internet but more
> importantly they need ongoing training and skills development to
> ensure that they are not left behind as a digital citizen.[84]

11.79   The Committee accepts the view that programs will need to be developed
         to equip 'digital immigrants' with the skills and knowledge they need to
         take advantage of broadband and other digital technologies. The
         Committee notes that the recently extended Broadband for Seniors
         program targets skills development amongst older Australians, and that
         the Digital Communities initiative will provide sites in the first 40 NBN

---

82   *Committee Hansard*, Canberra, 27 May 2011, p. 17.

83   ALIA, *Submission 216*, pp. 8–9.

84   ALIA, *Submission 216*, p. 3.

fibre rollout areas in which these types of programs will be delivered.[85] However, the Committee considers that there will be further scope for digital literacy training programs targeting broader demographics as the NBN rollout continues. The Committee accepts that libraries are well placed to deliver these types of programs.

Recommendation 13

That the Government provide further support for digital literacy programs, based on the Broadband for Seniors kiosk model, making use of existing resources such as libraries and not-for-profit groups where possible.

Building capability in small and medium enterprises

11.80   In addition to digital literacy training for the general public, the Committee was advised that support is required to assist small and medium enterprises (SMEs) with the transition to a digital economy. For examples, the Department of Innovation, Industry, Science and Research (DIISR) told the Committee:

> Many SME owners and managers are focussed on the day to day running of their businesses. This creates considerable room for improvement in the way they use existing information technologies. As a result, they will not automatically understand or know how to use the potential benefits of new technologies such as the NBN.[86]

11.81   The Committee heard about a number of local and national level programs for assisting and supporting businesses with using broadband-enabled technologies.

11.82   The Southern Adelaide Economic Development Board, which was established by the municipalities of Marion and Onkaparinga, told the Committee about the 'Fostering Online Entrepreneurship Program' which it ran in 2008. Under the program, which had a relatively small budget, 30 businesses (selected from a pool of over 100 who had expressed interest) were led through 'a structured process over three months to establish their

---

85   DBCDE, *National Digital Economy Strategy*, May 2011, p. 22.

86   DIISR, *Submission 219*, p. 27.

own online presence and marketing strategies'. Of these businesses, 15 had made online sales by the end of the program and eight others were expecting to make sales within a few months.[87] Mr Brian Hales, Economic Development Advisor at the City of Onkaparinga, told the Committee that due to the success of the program and the 'huge' level of demand from businesses, the organisation has put forward a funding proposal for a greatly expanded program to be delivered in the future. He noted that amongst businesses 'there is a desire [to improve digital literacy] but a lack of capacity to know how to execute that desire'.[88]

11.83   Mr Steven Harrison, Director of Business and Economic Development at the City of Prospect in Adelaide, told the Committee that around 140 local small businesses had participated in its two and a half day online entrepreneurship program. Mr Harrison said that while the organisers initially had some difficulties getting businesses to participate due to a lack of understanding about the aims of the program, feedback afterwards was overwhelmingly positive: '… all 140 who did the training program have boasted to us that it was the best thing they have ever done and it has changed their thinking. It has grown their businesses—in some instances, quite considerably.' A particularly successful example mentioned by Mr Harrison is that of a local hairdresser who completed the program:

> He is telling us that he is getting between 10 and 15 new clients every week, just off the internet. So he has tapped into that market of people like you who come to Adelaide and, if you are talking at a conference or an event, want to get your hair done … Five or 10 new clients a week at $250 a pop is a lot of economic benefit, and he comes and spends that money locally in our shops and cafes and in using local services.[89]

11.84   At its public hearing in Ballarat, Victoria, the Committee was told about a program in which the University of Ballarat has partnered with Lateral Plains Pty Ltd, a local ICT company, to assist businesses and local governments in the region to integrate technology into their work practices. Mr George Fong, Executive Director of Lateral Plains, told the Committee that examples of the technological solutions his company helps clients with include email filtering, online buying services and cloud services for clients with multiple offices across regional areas. When communicating with clients, Mr Fong said his business tries to 'take away the issues of technology process' and focus on outcomes instead:

---

87   Southern Adelaide Economic Development Board, *Submission 104*, p. 8.

88   *Committee Hansard*, Victor Harbor, 5 April 2011, pp. 28, 34.

89   *Committee Hansard*, Adelaide, 4 April 2011, p. 70.

> Many of them come to us somewhat intimidated by technology. It does not matter where you are, whether you are in a city or metropolitan area, small businesses tend to be intimidated by technology. Our job is to refine some of the outcomes for those businesses and, if there is a technical logical solution which we think is efficient, we try to fit that solution to the businesses which come to us.[90]

11.85   The Committee notes that in addition to these locally initiated programs, there are existing Federal Government programs that aim to educate and assist SMEs with utilising digital technologies. DIISR told the Committee about its Enterprise Connect program, under which it holds workshops to educate SMEs about possibilities for improving their business practices, then connects participants with business advisors who assist them with how those possibilities can be applied to their individual circumstances.[91]

11.86   DIISR also told the Committee about its Small Business Online Program, which was 'designed to assist small businesses to go online prior to the NBN rollout' and has assisted around 25 000 small businesses to date, including many home-based businesses.[92]

11.87   The Committee heard that the Department of Broadband, Communications and the Digital Economy (DBCDE) has launched a program called 'Digital Enterprise' which is specifically targeted on the initial NBN rollout sites.[93] Digital Enterprise aims to 'provide advice to businesses on how to use the NBN to diversify their operations'. It will also assist not-for-profit organisations to use the NBN to 'extend their reach into the community, expand their donor pool and achieve administrative efficiencies'.[94] Additionally, DBCDE's recently launched digitalbusiness.gov.au website provides 'information and advice to assist small and medium businesses and not-for-profit organisations to establish or enhance their online presence and to get the most out of online communications and productivity tools'.[95]

11.88   The Committee agrees with the view that there is a role for government in educating SMEs and supporting them in how to make full use of the opportunities provided by the NBN's rollout. It supports the continuation

---

90   *Committee Hansard*, Ballarat, 17 March 2011, pp. 37–38.
91   *Committee Hansard*, Canberra, 6 July 2011, p. 8.
92   *Committee Hansard*, Canberra, 6 July 2011, p. 8.
93   *Committee Hansard*, Canberra, 6 July 2011, p. 8.
94   DBCDE, *National Digital Economy Strategy*, May 2011, p. 28.
95   DBCDE, *Submission 215*, p. 68.

and ongoing expansion of programs that have been initiated both at local and national levels to provide this assistance.

Recommendation 14

That the Government continue to support programs that equip small and medium enterprises with the knowledge and support they need to compete in the digital economy.

Professional ICT skills development

11.89   Beyond the need for training business users and the general public in readiness for the NBN, the Committee heard that the ICT sector is facing a skills shortage that, if not addressed, could reduce the capacity for the NBN's potential to be realised.

The ICT skills shortage

11.90   Mr Adam Redman, Manager of Government Relations at the Australian Computer Society (ACS), told the Committee that there is a current shortfall of around 2000 places per quarter in terms of ICT skills to positions, and noted variations across Australia in the particular skills that there are shortages of in particular locations. He warned that 'we are very quickly approaching a situation where we just will not have enough people to operate the NBN and maximise its potential'.[96]

11.91   The ACS noted in its submission that the NBN's performance is 'highly dependent on a skilled workforce with appropriate capability and capacity', and suggested the viability of the NBN could be severely impacted 'unless current policy settings and paradigms regarding education and skilled immigration change'. The ACS identified barriers to skills development in the ICT sector as including 'a lack of clear articulation for ICT careers' as well as ageism and gender imbalances in the workforce.[97]

11.92   The Committee heard that there are differing levels of skill requirements across the ICT sector depending on the work involved. Mr Gary Ballantyne, Huawei's NBN Account Director, told the Committee that as

---

96   *Committee Hansard*, Brisbane, 18 April 2011, p. 75.
97   ACS, *Submission 146*, p. 3.

an equipment vendor, Huawei needs highly-skilled university graduates, but noted that the training requirements for cable installers and other parts of the industry are more suited to the TAFE level.[98] Mr Jeremy Mitchell, Huawei's Director of Corporate and Public Affairs, pointed out that Huawei has partnered with RMIT to provide 2000 training places to generate more local skills in working with next generation technologies.[99]

11.93   Ms Valerie Maxville, a Perth-based industry professional, told the Committee that the skills shortage is partially explained by the low levels of new ICT student enrolments in recent years:

> It has been a tough time for computing in terms of student enrolments in general. Since 2000 it has plateaued, but it is the bottom of the plateau. There has been a five per cent reduction in student enrolments each year since 2000.[100]

11.94   The Communications, Plumbing and Electrical Union (CEPU) suggested the skills shortage has been exacerbated by the winding back of Telstra's internal training programs, which have been previously been relied upon by other companies in the industry as a source of trained staff. It advised that the shortage has been compounded by the retirement of older Telstra staff and a 'reluctance' in the industry to train employees for fear of them being 'poached' by competitors. Additionally, CEPU noted that the increased use of outsourcing by telecommunications companies in recent times has increased the number of sub-contractors, for whom investing in training 'may not be a realistic option'.[101]

Structural change in the postal sector

11.95   The Committee is aware that as much as the development of the digital economy is opening up commercial and employment opportunities, other industries will confront transitional and transformational issues themselves as a result of wider access to broadband. Notably, the Committee took evidence that flagged the impact of such change on Australia's postal sector.

11.96   The CEPU told the Committee that the spread of the internet, off a platform of access to superfast broadband, is impacting on postal operations world-wide, including in Australia. Businesses, especially those who have traditionally been large users of postal services, are

---

98   *Committee Hansard*, Sydney, 29 April 2011, p. 18.
99   *Committee Hansard*, Sydney, 29 April 2011, p. 18.
100   *Committee Hansard,* Perth, 5 May 2011, p. 33.
101   CEPU, *Submission 187*, p. [2].

actively substituting physical forms of communication for electronic ones. The submission from CEPU explained:

> Substitution from physical to electronic forms of communication and the resulting decline in mail volumes is presenting a major challenge to the business model of traditional postal operators. These changes are occurring at a time when many of the historic protections offered to the postal service in order to ensure its viability are being progressively dismantled.[102]

11.97   The Committee heard that Australia Post has embarked on a process of organisational restructuring, which will also see it commit $20 million over three years to prepare its 40 000 employees for repositioning and new areas of business. However, the CEPU argued that the demands of retraining a workforce faced with this level of industry transformation will require further structural assistance and engagement by Government.[103] The Committee notes that that there has been a significant decrease in regular mail volumes as a result of internet services, but that this had been offset to some extent by a significant increase in parcel post stimulated by the increase in online purchasing.[104]

11.98   The CEPU advised that it has urged the Government to actively examine what measures can be developed to help Australia's postal service reposition itself in the face of this technological change, similar to the way other industries in the manufacturing, forestry and telecommunication sectors have been helped to manage large scale industrial restructure.[105]

Improving data and analysis

11.99   CEPU submitted that a lack of accurate and reliable data has been a 'fundamental obstacle' to the development of evidence-based policy concerning the ICT sector. It told the Committee that unreliable data has 'been a source of frustration to the union and other industry members involved in labour market policy issues for many years', and noted that 'data from the Australian Bureau of Statistics (ABS) is based on industry and occupational definitions which do not always match the actual jobs performed in the workplace or the current terminology used to describe them'.[106]

---

102   CEPU, *Submission 187*, p. [9].

103   CEPU, *Submission 187*, p. [11].

104   Mr Jim Metcher, Secretary, NSW Postal and Telecommunications Branch, Communications Division, CEPU, *Committee Hansard*, Melbourne, 18 March 2011, p. 49.

105   CEPU, *Submission 187*, p. [14].

106   CEPU, *Submission 187*, p. [5].

11.100 CEPU acknowledged that this is partially a reflection of the 'dynamic nature of the ICT sector' and the 'growing pervasiveness of ICT', but suggested it also indicates a lack of appropriate resourcing for the ABS. The submission noted that the ABS intends to conduct its ICT industry surveys only once every six years, making the data 'virtually useless for policy purposes'.

11.101 The ACS also told the Committee that the way the ICT sector is measured could be improved. It proposed a review of the ANZSCO/ANZSIC framework to 'more accurately measure the ICT sector, its growth and impact', and a move to measure the digital economy using an 'input/output' framework.[107] Mr Redman explained that ANZSCO and ANZSIC coding 'ultimately forms the basis of all government statistical data', and expressed confidence that 'if we can get that reviewed, we will be on the right track'.[108]

11.102 The Committee accepts that, given the rapidly changing nature of the sector, there is room for improvement in the timing and methodology used to measure the status and outcomes of the ICT industry. It suggests the Government continue to work with stakeholders to find more appropriate solutions for the industry, within the available resources.

Addressing the skills shortage

11.103 CEPU observed that the NBN project has created both opportunities and needs for 'a more systematic approach to skill formation in the telecommunications sector than has existed in the industry in recent years.'[109] Mr Burt Blackburne, Assistance Secretary of CEPU's Communications Division, explained the need for a national strategy for the development of a 'digital workforce', including:

> … not only those directly involved in the construction and operation of the NBN but also those who will develop and manage the applications and services which it, and any other broadband platforms, will carry.[110]

11.104 CEPU advised the Committee that coordination between state and federal governments, industry representatives and the education sector is

---

107 ACS, *Submission 146*, p. 2.

108 *Committee Hansard*, Brisbane, 18 April 2011, p. 78.

109 CEPU, *Submission 187*, p. [2].

110 Mr Burt Blackburne, Divisional Assistant Secretary, Communications Division, CEPU, *Committee Hansard*, Melbourne, 18 March 2011, pp. 44–45.

required in order to address the issue of ICT skills across the economy.[111] It recommended a national digital workforce plan be developed, encompassing measures to improve data collection on ICT skills and employment, prioritise the development of ICT skills, institute a whole-of-government approach to 'e-skills' development, and co-ordinate existing programs to maximise NBN-related training opportunities.[112]

11.105   The ACS similarly called for national leadership in addressing this issue, and suggested that more attention should be paid to improving ICT career pathways. It suggested the Government take a lead role in facilitating the adoption of nationally consistent Work Integrated Learning (WIL) programs in the education sector.[113] Mr Redman compared the ICT sector to other professions:

> In most medical professions, you have got to do a period of supervised work. It is the same in law and various other professions. In ICT, you do not get that. You go to university, and the universities are not really into vocational training; they are into knowledge transfer and fulfilling their charter, producing graduates who are not work ready—they do not know about business culture; they do not know how to hit the ground running.[114]

11.106   The Committee recognises that the current shortage of professional ICT skills is a serious concern that will potentially become worse as Australia's digital economy develops if action is not taken to address the issue. The Committee agrees with inquiry participants that the Government has a leadership role to play in addressing skills shortages. It suggests a strategy be developed in consultation with state governments, industry representatives and education providers to find ways of increasing the level of skills development and retention across the ICT sector.

Recommendation 15

That the Government develop strategies for the collection and provision of data on workforce needs in the ICT sector into the future.

---

111   CEPU, *Submission 187*, pp. 4–5.
112   CEPU, *Submission 187*, pp. 5–8.
113   ACS, *Submission 146*, p. 3.
114   *Committee Hansard*, Brisbane, 18 April 2011, p. 76.

Recommendation 16

> **That the Government develop a long term strategy to up-skill and/or retrain the existing workforce and develop new training programs to address emerging skills gaps.**

Sharon Bird MP
Chair
August 2011