

**Victorian Government Submission to the
2011-12 Regional Telecommunications Review
December 2011**

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Key Points

- Telecommunications users in rural, regional and remote Victoria are generally less well served than their metropolitan counterparts. There is less competition, uptake and availability is lower and access to high capacity broadband is constrained.
- The Victorian Government strongly supports the development of ubiquitous high quality broadband, improved mobile telephony and development of the digital economy to drive important productivity gains and social improvement. These benefits can be profound in regional markets.
- The Commonwealth Government has primary responsibility for the adequacy of Australian telecommunications. The development of the digital economy requires both a strategic and coordinated approach. In particular alignment and coordination with the States, Territories and local government will be important to deliver productivity and social benefits from the use of broadband in education, health and local government service delivery.
- It needs to be recognised that the National Broadband Network (NBN) plan by itself will not solve all telecommunications issues facing regional communities:
 - broadband infrastructure is necessary but will not be sufficient to realise the benefits of a digital economy. The supporting investments and changes required to drive the uptake and effective use of broadband are not trivial, particularly within complex systems such as health and education.
 - the NBN plan raises risks by establishing NBN Co as a public monopoly with constraints on competition that will potentially hold back future broadband investment, market development and innovation.
 - the NBN plan does not address all regional telecommunications problems such as mobile coverage.
- Australia's regions are diverse. They are subject to different drivers for economic growth and face different constraints on development. Population, economic and social trends in regional Victorian are complex and difficult to predict. Therefore conditions for supply and demand for telecommunications vary widely. Commonwealth policy to improve regional telecommunications needs to recognise these differences and enable appropriately tailored solutions.
- This submission makes a number of recommendations for considered action by the Regional Telecommunications Independent Review Committee (RTIRC). The Victorian Government urges RTIRC to make recommendations to the Commonwealth Government to support a more effective and coherent regional telecommunications policy, thereby creating conditions for greater market certainty and enabling more efficient government cooperation – all prerequisites for improved regional telecommunications and development of the regional digital economy.

Executive Summary

Telecommunications and broadband are enabling infrastructures for innovation, competitiveness and economic and social development.

Compared to their metropolitan counterparts, regional communities typically have poorer access to broadband services, less competition between telecommunications service providers, lower quality and less contiguous mobile telephony services, and as a consequence of market structure and infrastructure gaps, less opportunity for information and communications technologies (ICT) enhanced government service delivery.

Nearly a third of Victoria's unmet demand for broadband is in regional areas - a disproportionate share when compared with the State's population.

The widespread and urgent requests of local government and Regional Development Australia (RDA) Committees for upgraded communications infrastructure for economic and social development reflect the extent of their telecommunications problems and the acute challenges facing regional communities.

The Victorian Government emphasises that it is disappointing that the most recent National Broadband Network (NBN) infrastructure rollout announced by NBN Co has not prioritised Victorian regions with the greatest unmet demand for broadband. The Victorian Government is concerned that disparities between regional and metropolitan Victoria may persist during this next phase of broadband development, and could potentially magnify the disadvantages of regional communities as their metropolitan counterparts enjoy accelerated benefits of broadband as the NBN is rolled out.

The Victorian Government agrees with the Commonwealth that ubiquitous high quality broadband and the development of the digital economy has the potential to drive important productivity gains and innovation across the economy and also to improve health and education outcomes – a vital concern of the State.

For regional communities the opportunities for economic development and social improvements provided by this next phase of broadband development may well be enhanced through:

- relatively higher productivity growth that is possible in regional communities as they catch up to their metropolitan counterparts where high quality broadband has generally been available for sometime, and
- ICT's capacity to deliver services such as health and education to overcome distance barriers and skills shortages which are more keenly felt in regional settings.

The Victorian Government's \$85 million *Victoria's Technology Plan for the Future* has identified two key areas where the Government can play an important role by supporting Victoria's ICT sector to meet future challenges and ensuring the right conditions and capabilities are in place to support the application of ICT across the economy. In particular, the Victorian Government has established programs to support broadband infrastructure development and the uptake and effective use of high capacity broadband.

However, the Victorian Government is concerned that current Commonwealth NBN policy settings may not deliver the benefits of broadband to regional Victoria or redress broader problems with Australia's national telecommunications market. In particular:

- broadband infrastructure is necessary but not sufficient for the development of the digital economy. Governments play a critical role in promoting the effective use of broadband, as evidenced by the long history of the Victorian Government in assisting the development of both capacity and capability in regional areas
- the NBN plan poses risks to the long term development of the national broadband market. A key concern is that in some regional locations, the NBN rollout and service offerings will neither directly improve broadband outcomes nor facilitate regional development, and
- other telecommunications services that are important to regional communities' economic development and social well-being are specifically not dealt with by the NBN and are, perhaps understandably, not being given sufficient attention by the Commonwealth. The Victorian Government considers the Regional Telecommunications Review (RTR) has correctly identified the importance of mobile telephony and regional concerns about the adequacy of mobile network coverage and quality. Further, the Victorian Government is concerned about the lack of clarity of Commonwealth policy in regard to backhaul market development and long run competition.

Broadband infrastructure is necessary but not sufficient for the development of the digital economy

- In the Victorian Government's experience, the investments and changes required to drive the uptake and effective use of broadband are not trivial. These include the development of new applications for the transformation of service delivery (both for new services and substitutes), investment in software, hardware and IT platforms, human capital development and business process, behavioural and organisational change. The cost of accessing the NBN service is only one component of the total cost of designing, implementing and sustaining a new broadband application over time. This is particularly the case for the implementation of applications that require significant business change or innovation.
- The Victorian Government is concerned that the Commonwealth has a misplaced emphasis on NBN Co's early release sites for the location of digital economy initiatives. To demonstrate the benefits of broadband and understand the costs and change management that is required at a meaningful scale, the Government considers it important to work more broadly with communities of interest (such as post secondary education service providers) that necessarily traverse tight geographical boundaries.

The NBN plan

- It is problematic whether the NBN plan strikes the right balance between competing objectives – availability, speed, competition, cost, benefits and timeliness – and whether the right policy mechanisms are being set to optimise outcomes and manage trade offs to ensure longer term benefits.

- In particular, the Victorian Government is concerned that the 93% fibre to the premises (FTTP) coverage objective is being implemented without a comprehensive strategic plan for how to best address regional needs.
- It is important to note that the 93% national FTTP objective logically translates into a much lower percentage share of regional premises (closer to 80%), and that of these, some (as yet unknown proportion) will not receive FTTP infrastructure for up to another 10 years¹. The gaps in coverage and the length of the interim period before the completion of the NBN rollout are serious issues for regional Victorians and service providers.
- Further, it is the Victorian Government's view that the implementation plan prioritising the number of premises and not broader concepts such as the value of FTTP services to regional communities is not a strategic rollout of the NBN. Effectively, NBN Co is rationing its FTTP rollout to the last premise in Australia where its cost of deployment is less than the cost of a wireless deployment, with no reference to the benefits that might be derived from FTTP being deployed to a regional hospital, school or business premise with that funding. A better outcome would be derived from a more targeted rollout designed to capture economic and social benefits.
- Leaving aside the disproportionately low regional Victorian share of NBN Co activity to date, the 93% of premises coverage target in combination with what seems to be an overly narrow, engineering based approach to network design has resulted in some gaps and anomalies in NBN Co's announced FTTP rollout².
- For example, there are many regional Victorian locations where health and education providers and businesses currently access ADSL2+, BDSL or point to point fibre optic cable that provide broadband services roughly equivalent to NBN Co's announced wholesale service offerings, but are currently nominated to receive wireless (either fixed terrestrial or satellite) rather than FTTP. Therefore potentially, these locations could be stranded on the existing copper network with an uncertain infrastructure upgrade path and severely constrained service competition. Valuable service outcomes that could be realised by FTTP into these locations that host health and education providers may be lost.
- NBN Co's announced suite of wholesale product service offerings mimics current market standards. There has been no consideration of making high capacity and synchronous services immediately available to deliver productivity benefits. The NBN product roadmap process is being entirely mediated by the current retail industry and limitations of the copper infrastructure without direct attention to end user needs or thinking outside of the paradigm dictated by the legacy network.

¹ It is unclear what percentage of Victorian premises will eventually receive FTTP, but arguably cost efficiencies available in a smaller, more densely populated state like Victoria should drive a higher FTTP rollout than the national average of 93%.

² Based on publicly released NBN Co coverage maps.

- The NBN plan that requires foreclosing opportunities to utilise existing infrastructure and establishing a national wholesale infrastructure monopoly from scratch strongly suggests the NBN will be a high cost network. High costs of deployment will lower the funding available for a deeper FTTP penetration in regional Victoria and necessitate higher access charges that are also likely to reduce regional uptake. Foreclosing future infrastructure competition also establishes some of the preconditions for the development of uncompetitive market structures in the longer term.
- NBN creates specific issues for the State Government. As the NBN rollout is not fully known, Victorian Government planning is extremely difficult. State service delivery utilising NBN will preferably require a ubiquitous fibre network across all Victorian Government sites. As noted above, the current NBN Co FTTP rollout plan excludes some regional locations that currently serve as centres for Government service delivery.

The NBN Plan will not solve all regional problems

- Mobile telecommunications are a significant source of complaint in regional Victoria and fall outside the scope of the NBN. It is unclear whether NBN Co will supply backhaul capacity for mobile network improvements.
- There is uncertainty regarding the Commonwealth policy objectives for backhaul which will discourage infrastructure based competition in backhaul markets beyond those with existing competitive markets.

Recommendations

The Victorian Government urges the Regional Telecommunications Independent Review Committee (RTIRC) to recommend to the Commonwealth Government to support a more effective and coherent regional telecommunications policy, thereby creating conditions for greater market certainty and enabling more efficient government cooperation.

- *The Commonwealth develop a comprehensive, well resourced regional NBN infrastructure rollout strategy based on maximising regional benefits, rather than a premises target.* The Victorian Government is concerned that the Commonwealth is transferring its policy responsibility for ensuring the adequacy of regional telecommunications services to the engineering and design of the NBN. The Commonwealth should develop and resource a program to bring forward and extend the rollout of FTTP and wireless broadband to strategic locations where the public benefits exceed costs.
 - *The Commonwealth develop a plan for the maintenance of high capacity, NBN-like services in locations that have them today, but are currently nominated to receive wireless or satellite services from the NBN rollout.* It is uncertain how existing broadband services to important Government service agencies will be maintained and how infrastructure services to them might be upgraded over time.
 - *The Commonwealth should provide additional funding to drive the uptake and realisation of productivity benefits from broadband - taking into account issues with program design outlined below.* The Victorian Government notes that approximately
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\$400 million in funding has been allocated for response to RTR recommendations³. These funds should be primarily directed at regional areas, but must also enable communities of interest to interact with metropolitan areas where benefits exist. These programs should operate in collaboration with States and Territories and be consistent with State and Territory strategies and policies.

- *Regional broadband policy needs to be better coordinated across the Commonwealth Government, particularly between regional broadband policy makers and departments responsible for sectoral broadband service delivery, such as in health and education.* The Commonwealth should ensure that programs designed to promote sectoral broadband uptake do not duplicate investment or constrain access to infrastructure.
- *The Commonwealth establish processes for more effective and responsive engagement with State and Territory Governments on regional telecommunications.* A strong engagement policy is one where there is consultation on broad objectives and strategies and which takes into account resources and government processes.
- *Commonwealth programs to support broadband uptake need to better recognise the role of States and Territories in the delivery of the key services where productivity benefits from the NBN are expected.* Commonwealth programs will be more effective if they are better coordinated with State and Territory Government strategies, promote cooperation within a sector/community of interest and recognise the needs and capacities of communities of interest. Innovative broadband projects necessarily involve significant risk to implementers. Flexible program design, funding and governance models are likely to be required to reduce participants' risks and not create onerous costs and disincentives to innovate.
- *The Commonwealth develop a strategy and funding initiative to reduce regional mobile coverage gaps based on maximising cross-sectoral benefits.* Extending mobile telephony in thin commercial markets requires strong cooperation across agencies and sectors to leverage maximum benefits. These markets require a different approach to improving coverage, and as with broadband projects, more innovative funding and governance models to encourage a strong level of government collaboration. These models should leverage Commonwealth funded backhaul.
- *The Commonwealth should develop a coherent and collaborative approach to developing backhaul markets including working with State and Territory Governments to better leverage benefits from its significant investment in backhaul.* Commonwealth policy should provide a pathway for the development of backhaul infrastructure competition and long run development of backhaul markets, for example by enabling the future development of points of interconnect.
- *The Commonwealth Government should develop a regional telecommunications strategy with clearly defined objectives and appropriately resourced, that is periodically reviewed by RTIRC.* The Commonwealth ought to develop a comprehensive and long term

³ Department of Broadband, Communications and the Digital Economy, **Regional Telecommunications Review Government Statement of Response** (March 2009)

approach to regional telecommunications development in concert with State, Territory and local government, and leveraging the work of RDA Committees. Measurable objectives that complement NBN should be subject to periodic scrutiny and review. An effective Commonwealth strategy would invite the active participation of other levels of government.

Section 1 - Introduction

1. The Victorian Government welcomes the opportunity to make a submission to the **2011-12 Regional Telecommunications Review (RTR)**. The submission has been prepared by the Department of Business and Innovation (DBI) as the Department responsible for the development and implementation of the State's broadband policy, including the Victorian Government's interaction with the National Broadband Network (NBN) and NBN Co.
2. As part of the development of this submission DBI has consulted broadly across the Victorian Government, including with the health department and regional health alliances, education (state schools and TAFE), the emergency services sector, local government, Consumer Affairs Victoria and Aboriginal Affairs Victoria (refer **Attachment D**).
3. The Government notes that this will be the second Regional Telecommunications Independent Review Committee (RTIRC) report and it is timely to review the Commonwealth Government's response to the first RTR (Glasson). The Victorian Government also further notes that the Commonwealth deferred its response to many of Glasson's recommendations to either consideration after the outcomes of the National Broadband Network (NBN) process were fully known or consideration by other parts of Government, such as the Online and Communications Ministerial Council (OCC). While other Commonwealth responses to recommendations in regard to backhaul, mobile telephony and uptake of broadband applications are welcome, and are discussed in the submission, it is now timely for the RTR to reconsider its previous recommendations in light of NBN developments and reinvigorate its previous work. In regard to referrals to OCC, it is not clear what forum is now proposed for such discussions with the withdrawal of the OCC's remit in June 2011.
4. The Victorian Government considers the work of the RTR an important contribution to the national telecommunications debate and an important advocate for regional interests. As plans for the NBN are in a penultimate form and/or being bedded down, it is timely for the RTIRC to again make the case for better telecommunications and broadband policy from the regional perspective. Furthermore, while some uncertainty regarding the NBN plan and rollout does remain, the RTR may find itself well positioned to make recommendations consistent with different NBN scenarios.
5. In this context, it is also timely for RTIRC to make a contribution to the national debate on the adequacy of telecommunications services and on better policy design for redressing identified issues. The Victorian Government notes that publicised NBN Co service standards and infrastructure footprints have been designed from a supply-side perspective within broad parameters set by the Commonwealth. There is a risk that these plans will enshrine a regional telecommunications outcome that hinders future development and does not pay due regard to specific regional needs and opportunities. While the RTR might propose remedial measures to address gaps

left by the NBN, it would be far more efficient to ensure the NBN leaves minimal gaps as it is rolled out.

6. Getting telecommunications adequacy and equity right is also important because of the likely long term, down stream impacts on economic and social outcomes. Telecommunications networks are enabling infrastructures that are likely to become increasingly important for the delivery of a range of services important to governments such as health and education, but are also becoming integral to personal interaction and critical to effective business operation. In this way, the adequacy of telecommunications services is an increasingly important determinant of social and economic welfare.
7. Independent review and advice of the adequacy of telecommunications also has an immediate and practical relevance in the context of the publicised NBN Co service offerings, particularly in regard to:
 - the adequacy of NBN Co's base service offerings and their associated quality of service, for example, NBN Co has not announced wholesale products appropriate for government nor a process for engaging directly with government to understand future service requirements, and
 - NBN Co infrastructure rollout plans and definition of fibre to the premises (FTTP), wireless and satellite footprints.
8. The Victorian Government is also concerned about the absence of policy for extensions to NBN Co's announced infrastructure footprints⁴. It is clear that many regional families, businesses and communities will fall outside NBN Co's FTTP footprint. The Victorian Government is keen to understand policy to redress lost development opportunities for these locations. The Government notes that the 2008 RTR developed a worthy approach to establishing 'priority and criteria for further network extensions' based on the existence of social infrastructure and potential users⁵.
9. There are sound reasons for the nation to invest in improving regional telecommunications. The next phase of broadband development - ubiquitous high speed broadband - has the potential to enhance national productivity, employment and provide a platform to drive long run social development and innovation. Such benefits are potentially greater in regional Victoria than what might be initially realised in the currently better served metropolitan locations⁶.
10. In a general sense the Victorian Government therefore welcomes NBN Co's regional focus and notes that one early release site for NBN Co FTTP and wireless services is in regional Victoria; Ballarat. However the Victorian Government is concerned

⁴ Refer to Commonwealth Government, **Statement of Expectations** (p. 5). The Government notes that the Commonwealth appears to have deferred to NBN Co on this matter.

⁵ **Glasson Report**, p.274.

⁶ Note that the take up in regional Victoria of FTTP in new developments through NBN Co appears to be higher than in other States.

about the disproportionately low number of Victorian premises to be served by NBN Co's 12 month roll out schedule announced on 18 October 2011. Of considerable concern is the lack of regional locations and lack of prioritisation of regional markets with highest unmet demand for broadband.

Defining the problem

11. A snap shot of the state of play of regional telecommunications in Victoria shows clear disparities between regional Victorian telecommunications users' experiences and their metropolitan counterparts, detailed in **section 3**. In summary these are:
 - less competition in regional markets in terms of number of service providers and infrastructures in both fixed line (access and backhaul networks) and mobile telephony. The time to market of new services is also generally slower in regional markets
 - the availability and uptake of broadband is on average far lower, with a commensurate lower uptake of online services (such as Internet) in both the residential and business sectors
 - mobile telephony coverage is less contiguous and of lower quality
 - government access (particularly in the outer budget sector) to high capacity broadband services in regional markets is highly constrained, and
 - in the areas located between regional towns the only connectivity available is in the form of dial up or a patchy and costly wireless 3G service.
12. These disparities between regional and metropolitan telecommunications are largely driven by some market fundamentals such as revenue density and distance, but some are due to legacy infrastructure that is being progressively replaced by the NBN. Regional communities have expressed strong concerns about these disparities and their need for better broadband for social and economic development. For example all Victorian Regional Development Australia (RDA) Committees have identified access to ICT as a key priority for business and emergency services (**refer Attachment A**). These views are echoed by important regional community service providers, such as the library sector⁷.

Regional markets are diverse

13. Regional markets are themselves diverse - geographically and in terms of socio-economic make up. The changing patterns of population and activity are complex and no single telecommunications technology can be expected to equally serve all regional markets. Regional technology strategies need to take into account differences and trends in regional spatial and socio-economic development (**refer section 2**). Intuitively a mix of technologies is required (such as being implemented

⁷ Refer **Dollars, and Sense and Public Libraries** (http://www.slv.vic.gov.au/sites/default/files/dollars-sense-public-libraries-summary-report_1.pdf), and **Improving ICT uptake in Community Sector Organisations** (Victorian Office for the Community Sector, 2010).

by NBN Co), balanced against issues such as managing the integration of multiple technologies and complexities arising from hard and fast definition of technology footprint boundaries.

14. As noted above, an important issue for the Victorian Government and regional markets is how FTTP and wireless footprints will be extended over time to ensure telecommunications infrastructure supports long run development opportunities and does not create long term social disadvantage.

Technology and consumer trends

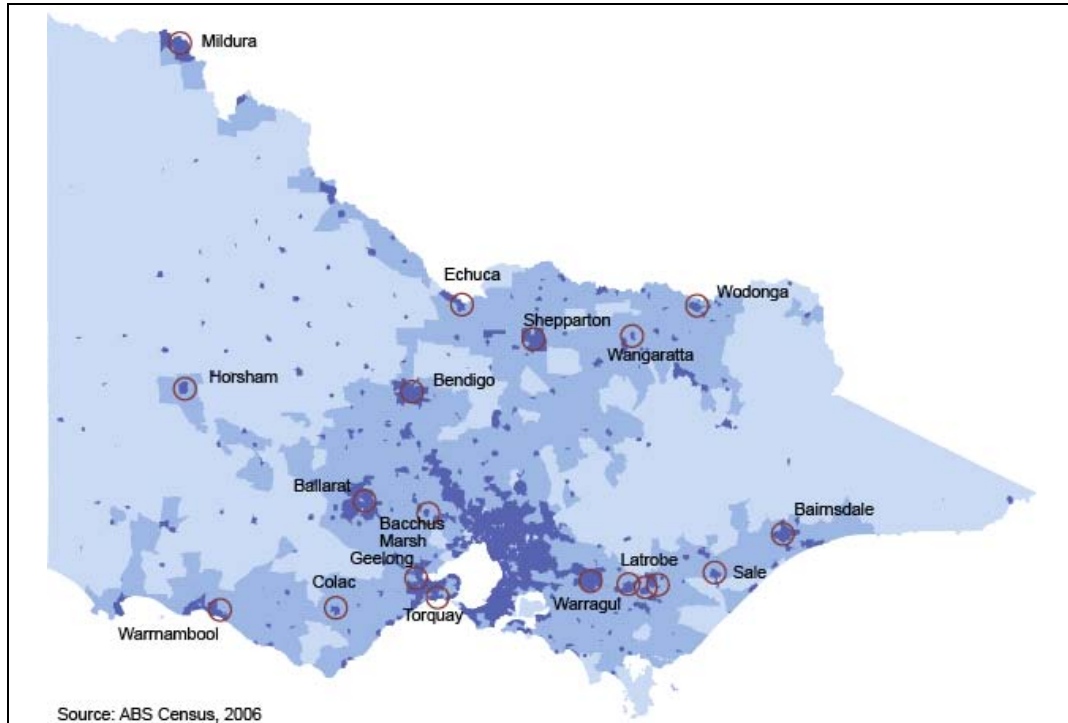
15. Further complexity for policy makers arises from major technology and consumer trends that will impact on both the supply and demand side of regional telecommunications markets. For example the RTR will need to consider:
- the capacity of telecommunications infrastructures is continually changing. For fibre optic, improvements in electronics that enable vastly improved broadband services to be delivered over deployed fibre, and effectively for the infrastructure to be shared between different users. Similarly, there are reports of vastly improved broadband data capabilities of wireless and satellite technologies, albeit within greater physical constraints and a dependency on connectivity to adequate fibre based backhaul.
 - the development of cloud computing enables efficient and cost effective access to a growing suite of essential applications. This is likely to be particularly beneficial in regional markets where sufficient broadband capacity is available and regional service providers enable entrance to the cloud.
 - on the demand side, the rapid growth in demand for mobile data services is noteworthy. Barriers to improved and contiguous mobile services in regional markets are likely to be a growing source of frustration and relative disadvantage for the regions.

Section 2 - Victoria's regions

16. Population, economic and social trends in regional Victorian are complex and difficult to predict. Therefore conditions regarding the supply of, and demand for, telecommunications vary widely. RTIRC's review of the adequacy of telecommunications and its recommendations need to take into account the differences between and within States and Territories, as well as understand the trends and drivers for change in their respective locations. RTIRC also needs to consider both economic and social factors likely to drive demand for telecommunications, how these demands are likely to impact on market development, and make recommendations that balance equity with development objectives.
17. The main characteristics and drivers of change in regional Victoria have been described in recent Victorian Government research and are summarised below⁸:
- At 30 June 2006, the population of Victoria was estimated to be 5.1 million with 3.7 million people in Melbourne and 1.4 million in regional Victoria. Between 2001 and 2006, Melbourne recorded an average annual population growth of 1.5%, compared to 0.8% in regional Victoria.
 - The settlement pattern of Victoria (**refer Figure 1**) shows the dominance of Melbourne with a ring of cities within 1 to 2 hours of Melbourne. Beyond this, another group of regional cities perform important service roles within large rural hinterlands. Rural population was approximately 330,000 in 2006.

⁸ **Regional Victoria Trends and Prospects** (March 2010)
<http://www.dpcd.vic.gov.au/home/publications-and-research/demographic>

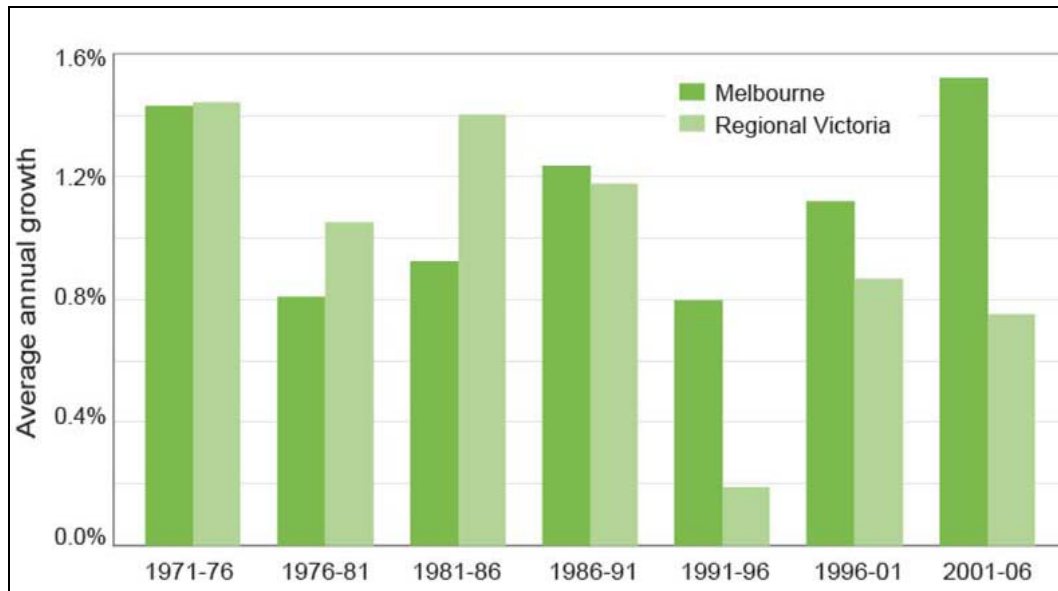
Figure 1: Population distribution in Victoria 2006



- Victoria has over 3.2 million premises (residential and business). Of these, over 2 million are located in metropolitan Melbourne; 875,000 are in regional and rural urban centres and rural areas making up the balance of approximately 274,000 premises⁹.
- Long term population trends are complex and are not one directional and therefore not easily predicted - the relative population growth between regional Victoria and Melbourne has fluctuated (**refer Figure 2**), although Melbourne has grown faster than Regional Victoria in all intercensal periods since 1986-91.

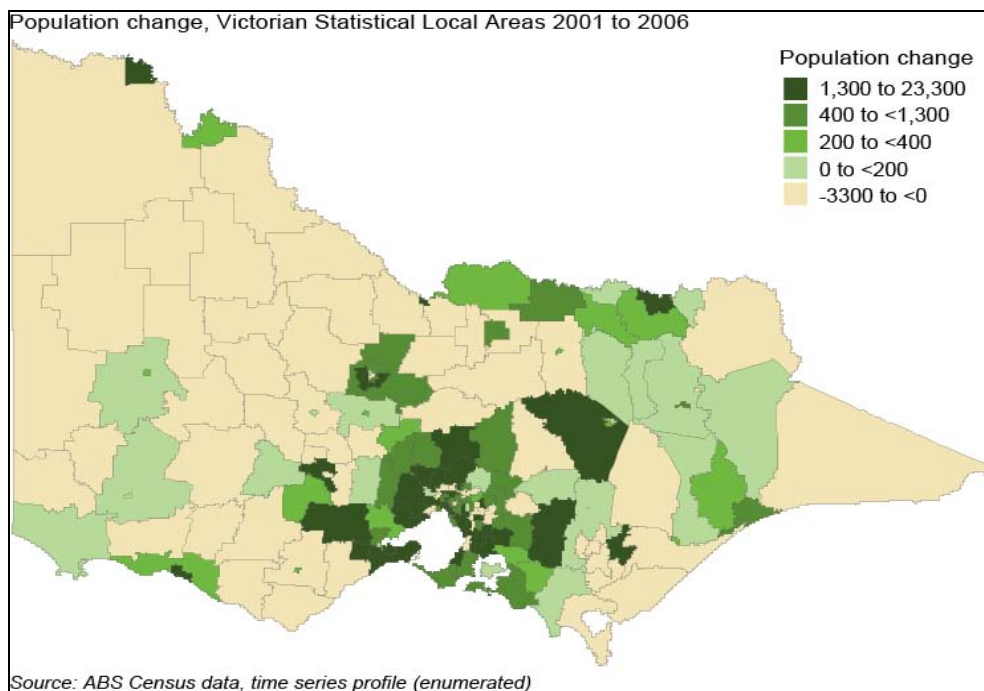
⁹ Based on advice from the Department of Sustainability and the Environment, GNAF address counts based on 2006 Census boundaries.

Figure 2: Average annual population growth, Melbourne and regional Victoria, 1971 to 2006



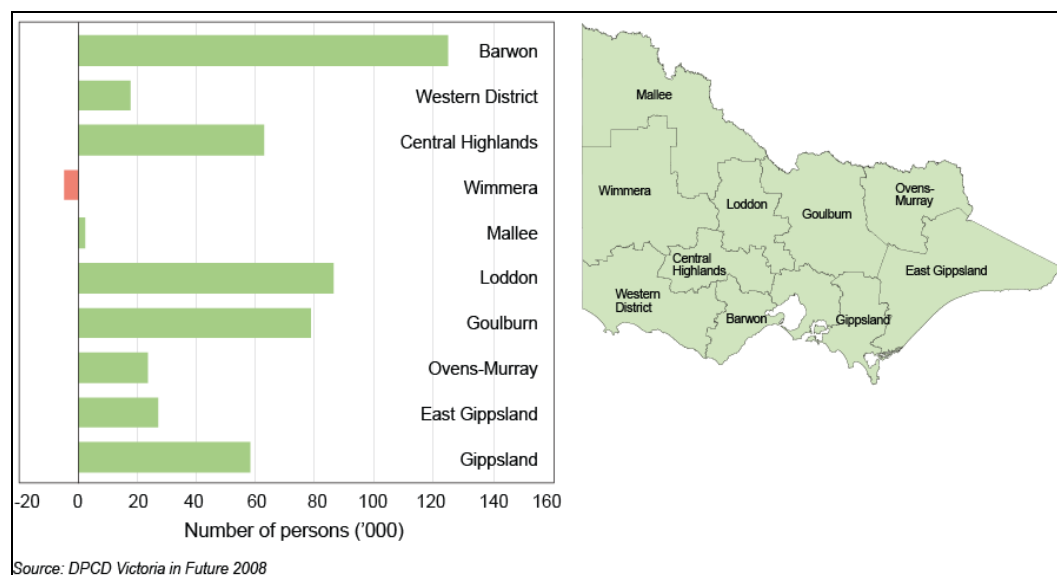
- Since 2001, the fastest growing municipalities in regional Victoria have been located in areas immediately beyond the Melbourne and Geelong metropolitan regions – Mitchell, Bass Coast, Surf Coast and Golden Plains (refer Figure 3).

Figure 3: Population change in Statistical Local Areas of Victoria 2001 to 2006



- Population decline has occurred most notably in the dryland farming areas of Victoria. The reasons for this trend include:
 - capital intensification of agriculture requiring fewer workers
 - rationalisation of services into fewer, larger centres
 - increased personal mobility allowing people to access goods and services further away, and
 - increasing economic and social attractiveness of urban lifestyles.
- Rural areas have experienced lower rates of population growth than country towns or regional cities during the past decade.
- As in the past, the distribution of future population change across regional Victoria will not be even (**refer Figure 4**). Certain places in regional Victoria have greater opportunities for population growth than others. Foremost among these are the Barwon, Loddon and Goulburn regions. Low growth areas are found in western Victoria where older age structures and lower levels of in-migration limit the growth capacity of the region over the longer term. Wimmera is the only Statistical Division projected to experience a decline in population between 2006 and 2036.

Figure 4: Projected change in population between 2006 and 2036, regional Victoria Statistical Divisions

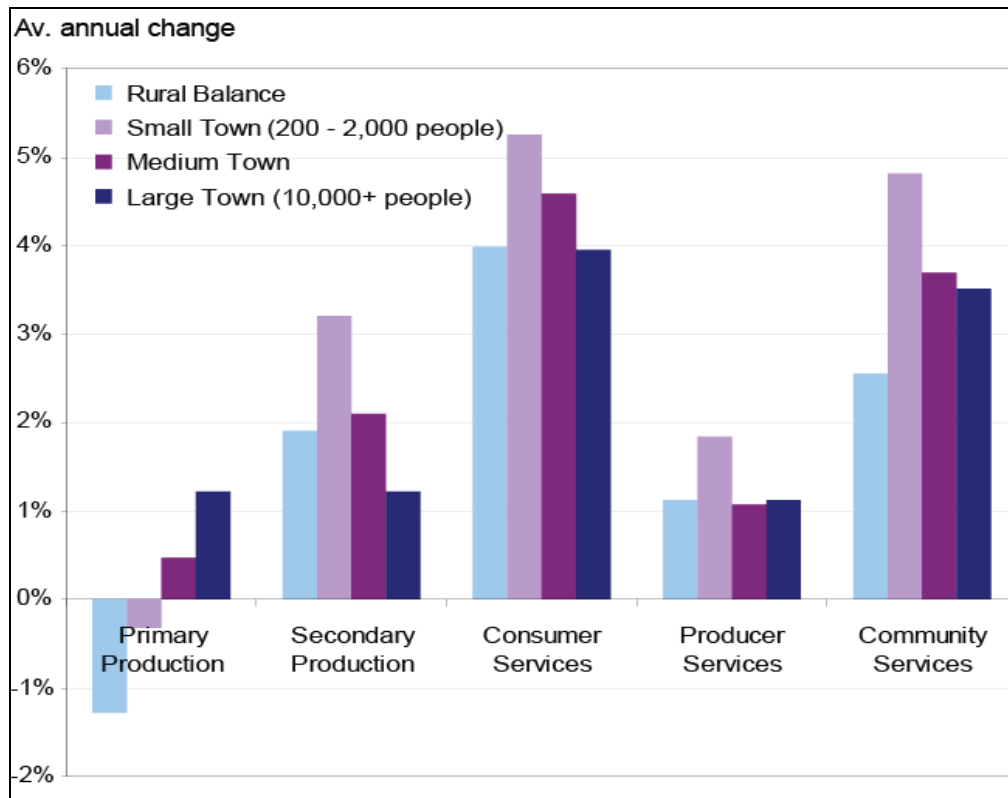


- Regional Victoria has a higher median age (37 years) than does Melbourne (35 years). Regional Victoria has a relatively low number of people aged 20 to 34 and is likely to experience a more rapid increase in the proportions of older people compared to Melbourne. Many small towns in western Victoria and along the coast already have very high proportions of people aged 75-plus.

- The trend of population ageing is likely to continue at a greater rate in regional Victoria than in Melbourne. By 2036, it is projected that 15% of regional Victoria's population will be aged 75 years or more (compared to about 10% in metropolitan Melbourne).
- The late 1980s and early 1990s witnessed major economic restructuring in many of Victoria's regions, but overall, employment in regional Victoria grew by approximately 9% between 2001 and 2006. Employment growth was concentrated in cities and large towns characterised by:
 - decline in traditional manufacturing sectors, somewhat balanced by growth in manufactured food industries
 - rationalisation and concentration of many public and private services into regional cities, including community services, wholesale and retail services, and recreational and personal services, and
 - in 2010, approximately 25% of Australian businesses were based in Victoria with just over 25% of these in rural and regional areas. Small businesses and non employing businesses were the major regional employers¹⁰.
- Rural-urban distinctions of the past may no longer hold as strongly.
 - rural areas have experienced an increase in residents working in service industries and manufacturing (**refer Figure 5**) while at the same time large towns have shown an increase in residents employed in agriculture. Some urban residents have moved to rural areas for lifestyle reasons. In some cases, these people may be living in a rural area while commuting to nearby towns or cities. At the same time, many farmers have changed their location or their employment characteristics. Off-farm income has become more important and some farmers have moved into towns where they and their families can access services and additional income sources more easily. In effect, they have become commuters – living in a town or regional city but travelling to their rural properties.
 - agricultural enterprises located in close proximity to regional centres or Melbourne face greater competition for use of the land. In such regions, the value of land for its amenity tends to be higher than the value of the land for agricultural activities. In essence, farmers are outbid by those seeking to live in a rural area for its natural beauty and lifestyle benefits rather than for farming purposes. Despite this trend, high-value agriculture enterprises such as wineries, cut flowers and boutique crops may succeed in these locations, as do tourism and recreation enterprises.

¹⁰ <http://www.dbi.vic.gov.au/research-reports/industry-atlas-of-victoria>

Figure 5: Employment by sector and settlement type in regional Victoria 1996 to 2006



- Real median incomes in regional areas are lower than metropolitan areas (approximately 76% in 2006). In some regions the gap is lower as well-to-do households move into regional areas close to Melbourne (for example, the Surf Coast), while in more isolated regional areas and those more reliant on agriculture generally have below average incomes. Reasons for lower incomes in regional areas may include the impact of a decade of drought, an older population profile and the fact that much rural wealth is held in land assets rather than income.
18. Potential impacts of climate change and the effects of policy responses such as carbon trading and the changing price of energy are the subject of much current discussion. Without historic precedent such impacts tend to be speculative¹¹. Two likely scenarios stand out for regional Victoria:
- Many regions of Victoria are wholly dependent on the electricity grid at present leaving them vulnerable to price changes. Some regional cities have alternatives such as gas and in the future there may be localised use of large scale solar generation and wind power. In general, areas with a wider range of energy source options will have a competitive advantage.
 - Another aspect of climate change is the migration of people from drier to wetter parts of Victoria. Some local government authorities in areas of higher rainfall see this as a potential by-product of drought and climate change.

¹¹ Sometimes social responses to these mega-trends and impacts on telecommunications demand are counterintuitive. For example, periods of drought do not necessarily lead to out-migration of farmers from a region.

Section 3 - Telecommunications and broadband in regional Victoria

19. Broadband is currently supplied in Victoria over a number of different infrastructure platforms in the access network, including the copper telephony network (*via* competitive Digital Subscriber Line [DSL] services), pay TV cable, Hybrid Fibre Coaxial (HFC), wireless (including mobile and fixed to premises) and satellite services. All these broadband infrastructures are supported by a core fibre optic backhaul network transporting aggregated broadband traffic across and between networks. There are multiple providers, but Telstra's copper network is ubiquitous and, by default, the dominant platform, either directly retailed by Telstra or wholesaled to others under Commonwealth regulation.
20. Over the past decade the Victorian Government has monitored broadband supply and demand in Victoria through its Spend and Demand Reports¹². These reports have documented how the broadband market has evolved through three 'waves' of investment:
- *first wave broadband* (equivalent ADSL1 services offering speeds up to 8 Mbps)
 - *second wave broadband* (equivalent ADSL2+ and HFC services offering speeds between 8Mbps and 50 Mbps), and
 - *third wave broadband* (equivalent fibre optic and upgraded DOCSIS 3.0 HFC services offering speeds greater than 50 Mbps).

Backhaul infrastructure and regional markets

21. Backhaul infrastructure is an important determinant of service outcomes in regional markets. In this regard, the Victorian Government has been a strong supporter of the Glasson findings on the significance of adequate access to competitive backhaul and of its recommendations to encourage Commonwealth/State/Territory co-operation to improve backhaul and or Commonwealth 'develop suitable policies or programs to facilitate investment in new or enhanced open access backhaul infrastructure'¹³.
22. In its response to the Glasson report, the Commonwealth agreed to the recommendations regarding backhaul, in particular recommendations 2.5.1 to 2.5.6. It is considered important that these recommendations are re-examined in light of the completion of the RBBP.
23. Benchmarking undertaken for the Victorian Government shows that where there is a sole backhaul supplier, the price can be more than 10 times that of similar services found in competitive markets (defined by the Australian Competition and Consumer Commission [ACCC] as markets with greater than three backhaul providers).¹⁴

¹² www.mmv.vic.gov.au/telecommunicationsandbroadband

¹³ p.225

¹⁴ Research available on request

24. This monopoly pricing is a constraint on the downstream market supply of competitive and innovative retail telecommunications services and consequently, a barrier to economic development in regional markets. Economic modelling undertaken for the Victorian Government in 2007 estimated increases of 0.13 to 0.41 in GSP for towns on each route where competitive backhaul fibre was deployed, as well as positive impacts on employment¹⁵.
25. For government itself, the lack of a ubiquitous competitive backhaul market limits the ability of high-end government broadband users in regional markets such as universities, TAFE institutes, hospitals, emergency services organisations and public transport to access and participate in high capacity state and national broadband networks to deliver government services.
26. Recently the regional backhaul market has been highly disturbed and subject to high policy risk. There is currently ongoing uncertainty regarding the rollout of the NBN and what use it will make of Telstra 'dark fibre' for its transit backhaul requirements obtained through the NBN Co and Telstra Definitive Agreements. However, it is becoming apparent that telecommunications carriers are looking to develop and/or gain access to fibre optic cable (FOC) infrastructure between points of interconnect (POI - see next paragraph) to both enhance their competitiveness against Telstra and to enable differentiation within the constraints of the NBN infrastructure and service/product offerings¹⁶. The significant growth in the mobile data market is likely to lead to a rapid rise in demand for regional backhaul to service that growth and underlines the need for infrastructure competition in this market.
27. The Victorian Government notes there is uncertainty regarding how the Commonwealth will treat backhaul, including the following issues:
- How the Commonwealth Government's Regional Backbone Blackspots Program (RBBP) investments in FOC backhaul are being utilised to facilitate the rollout of the NBN Co, and or improved government service delivery in important regional markets, and whether the Commonwealth has identified a need for additional investment¹⁷. The Victorian Government is pleased to note that Nextgen Networks will be providing wholesale, high capacity services over the RBBP links during an initial 5 year operations period¹⁸. However it is not clear how these assets, representing a substantial Commonwealth investment of \$250 million, will be utilised to support and improve NBN Co's rollout and used for other telecommunications improvements such as improved mobile telephony coverage and government service delivery in the longer term.

¹⁵ Research available on request.

¹⁶ Refer press reports on AAPT and Nextgen Networks.

¹⁷ For example, the CEO NBN Co made no reference to RBBP in his explanation of NBN Co's 12 month rollout schedule - see **SENATE, ENVIRONMENT AND COMMUNICATIONS LEGISLATION COMMITTEE, Estimates**, , p.115, 18 October 2011.

<http://www.aph.gov.au/hansard/senate/commttee/s380.pdf>

¹⁸ Advice from Nextgen Networks.

- The location and determinants of POIs and the Commonwealth's view of long run infrastructure competition in the backhaul market vis a vis NBN Co's transit backhaul is unclear. In May 2011, the ACCC determined the location of 121 national POIs, based on the existence of competitive backhaul fibre, that are required to be developed by NBN Co¹⁹. In the short term a lower number of POIs can potentially lower the barrier for entry of smaller retail service providers (RSPs) and potentially provides scope for RSPs to extend their services to a larger market²⁰. In the longer term however, this model is likely to erode backhaul competition. It is currently difficult to determine the Commonwealth's view of encouraging competition and investment in new backhaul markets, for example by establishing clear rules around the establishment of new POIs.
- The Victorian Government welcomes the ACCC's interim determination applying benchmark pricing to backhaul services. The ACCC's interim determination, with a final access determination now scheduled by the end of 2012, in effect establishes safety net pricing and access conditions that access seekers can fall back on while negotiating terms with an access provider. The safety net provisions improve the regional backhaul regulatory environment, but are nonetheless inferior to the dynamic outcomes that could be expected from markets where infrastructure competition is effective, and in the longer term, the relative disadvantage of important regional centres is likely to remain.

¹⁹ Including the following Victorian regional locations: Geelong, Bendigo, Ballarat, Horsham, Shepparton and Traralgon.

²⁰ Demand for broadband is however a function of the pricing of transit backhaul within NBN Co's product pricing, and we assume that prices would be higher in the short term as Australian backhaul costs are averaged across all products, and would be higher in the longer term as competition in the backhaul market is foreclosed. Note that RSPs have other sources of economies of scale and scope than just sunk costs in backhaul.

28. Victoria is comparatively well served with competitive backhaul. However the Victorian Government notes that important regional markets are still served by a single supplier and these will continue to be dependent on the efficacy of ACCC regulation.

RECOMMENDATION

The Commonwealth should develop a coherent and collaborative approach to developing backhaul markets including working with State and Territory Governments to better leverage benefits from its significant investment in backhaul

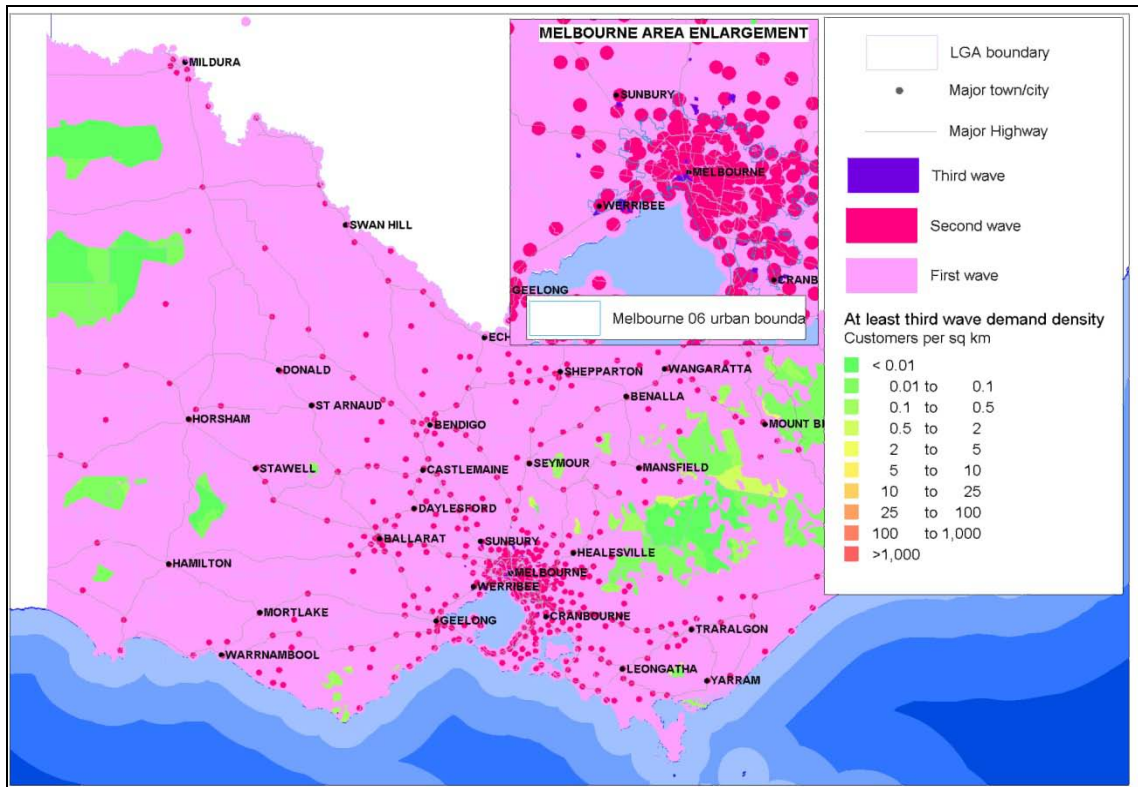
Retail telecommunications services coverage in Victoria

29. The following data outlines preliminary results of the present-day coverage, subscriptions, demand and unmet demand for telecommunications services in Victoria²¹.
30. **Figure 6** shows coverage for the three ‘waves’ of fixed broadband in Victoria in October 2011, and highlights that:
- coverage of first wave broadband is near universal
 - second wave broadband is most widely available in metropolitan Melbourne and although in regional areas coverage can be patchy, it is available in most regional towns and centres of over 200 people²², and
 - third wave broadband coverage is very low - only 1.77% of households and 3.9% of businesses in Victoria had access to third wave broadband services.

²¹ Deloitte Access Economics, **Victorian Telecommunications market update 2011**, (available on request). Note that these results are preliminary, and have not yet undergone normal quality assurance, a process that will occur before completion of the full report due January 2012.

²² In terms of exchanges enabled with ADSL 2+, the situation is now at a similar stage to what ADSL was approximately 5 years ago.

Figure 6: Broadband Supply in Victoria, October 2011²³



31. In a pattern similar to the growth of first wave broadband, investments in second wave broadband were initially being made in the most populous and customer dense areas and slowly moving into more regional locations. Third wave broadband coverage is very low with only a small percentage of Victorian households and businesses accessing these services (**refer Table 1**).

²³ Note the map does not identify customers within coverage areas that cannot access broadband services because of technical and or geographic constraints. Not all households and businesses in the shaded areas *necessarily* receive coverage in all circumstances.

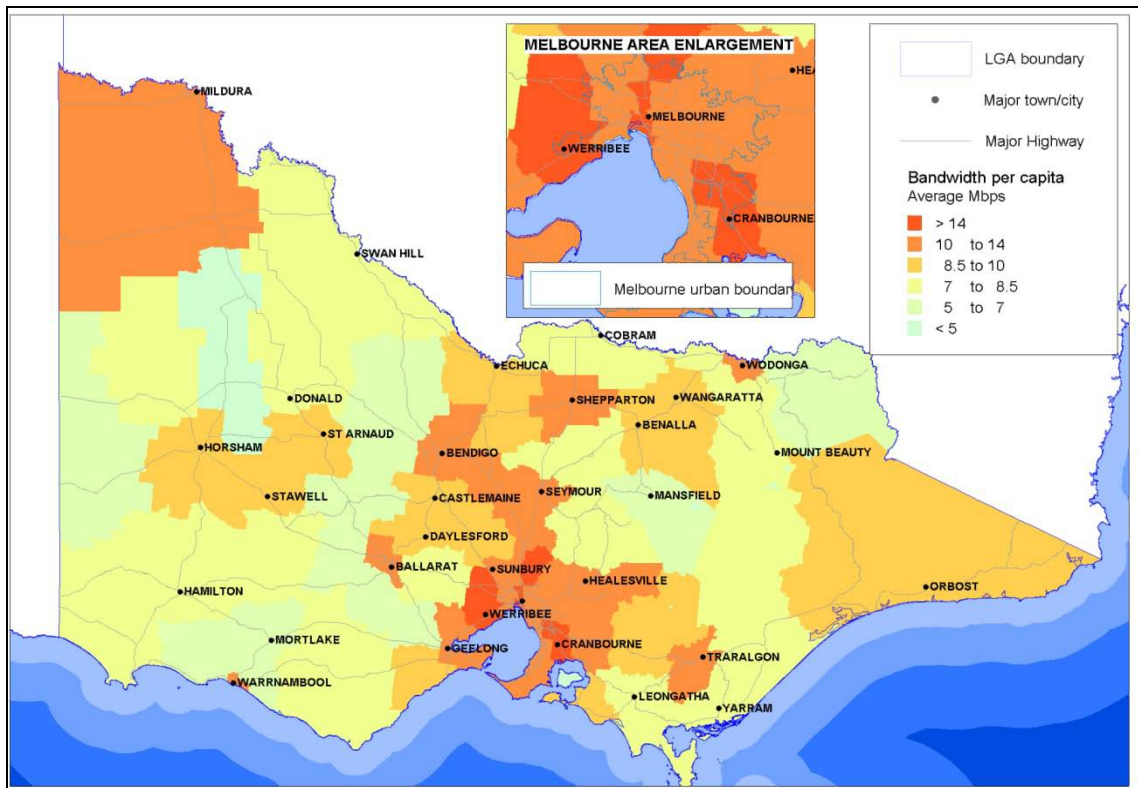
Table 1: Victorian terrestrial broadband coverage by region, October 2011

Category	Victoria	Metropolitan	Non - Metropolitan
<i>First Wave</i>			
• Households	99.9	100	99.5
• Businesses	99.8	100	99.4
<i>Second Wave</i>			
• Households	92.9	98.8	77.8
• Businesses	92.3	99.2	72.8
<i>Third wave</i>			
• Households	1.8	2.4	0.1
• Businesses	3.9	5.3	0.01

Broadband speeds in Victoria

32. Available broadband speeds vary considerably across Victoria. One all-encompassing metric to compare broadband speeds across regions is the concept of the average maximum bandwidth per capita, meaning the average for the fastest solution available for all households and businesses of a region (irrespective of whether they are taking up that faster service or not). **Figure 7** below highlights the varying bandwidth per capita across the State.
33. In Victoria, widespread fibre in the CBD ensures that central Melbourne has the fastest average. The largely ubiquitous ADSL 2+ and cable in the inner suburbs ensures that they also fare well, along with the urban fringe local government areas (LGAs), some of which also have FTTP in new greenfield estates.
34. The areas that have the slowest options are largely where ADSL 2+ services are not widespread, where the mobile and fixed wireless networks still have coverage gaps, or where the topography means that even where wireless base stations are nearby, there are likely to still be some coverage problems.

Figure 7: Average maximum bandwidth per capita, October 2011



Broadband uptake and unmet demand in Victoria

35. **Table 2** shows actual and unmet demand for second and third wave broadband. *Unmet demand* estimates the number of households or businesses that would take up a particular broadband service if it were made available to them. It is assumed that households or businesses would take up the next best service offering if they have unmet demand for a higher grade service (for example a customer may settle for a second wave broadband service and express unmet demand for third wave broadband).
36. Since the previous Spend and Demand Report²⁴, there has been a large growth in unmet demand for third wave fixed broadband services, as awareness of the technology and the capabilities of internet services at this level increases among households and businesses.
37. Unmet demand for second wave broadband has also increased slightly, however this is expected to peak in 2010-11. The expectation that this unmet demand has

²⁴ Telecommunications Spend and Demand Report in Victoria 2010, www.mmv.vic.gov.au/telecommunicationsandbroadband

peaked is based largely on expectations of future coverage, with future network upgrades likely to mean more of this demand is met over the coming years.

38. In terms of first wave fixed broadband, unmet demand has fallen to just 10,000 potential subscriptions, as it is now a widely available technology. This means that almost all individuals who demand first wave fixed broadband services are able to get them.

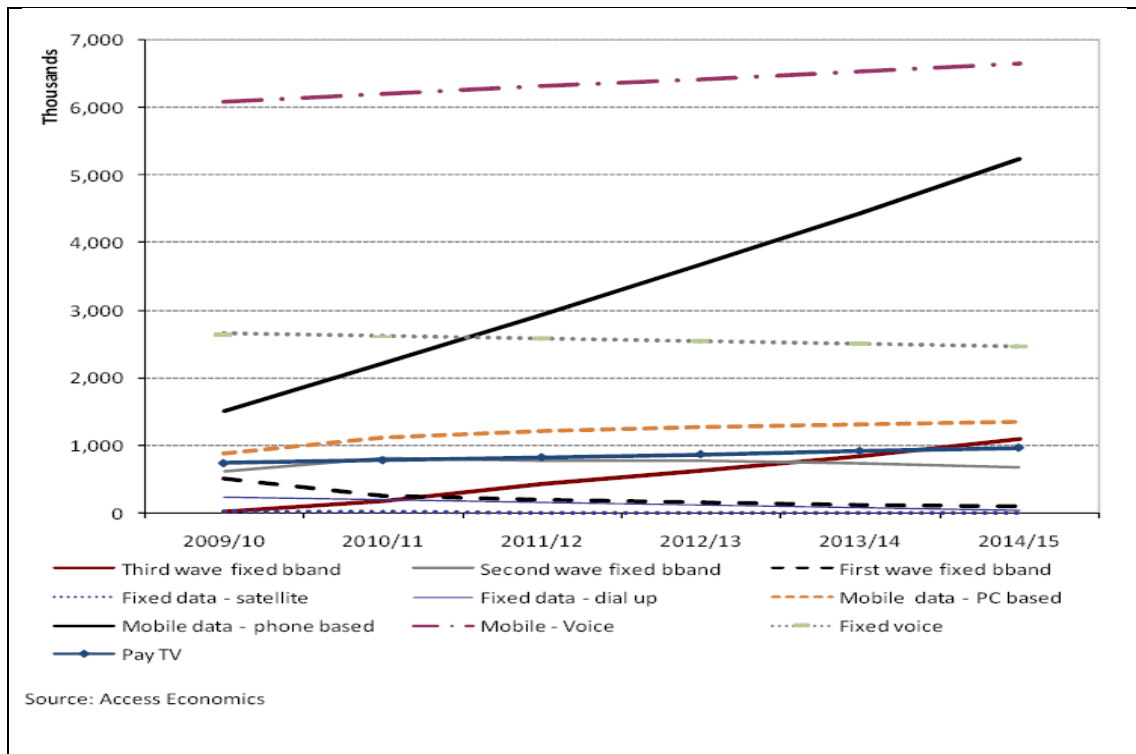
Table 2: Unmet demand for second and third wave broadband in Victoria, October 2011

Region	Third wave	Second wave
Metropolitan	484,208	189,220
Rest of State	146,368	87,802
Barwon South Western	35,801	18,383
Gippsland	34,315	15,048
Grampians	21,477	13,736
Hume	31,096	19,801
Loddon Mallee	33,679	20,834

Mobile broadband

39. Mobile telecommunications is the fastest growing and largest telecommunications expenditure item in Australia. Mobile broadband (PC-based and phone based) is expected to have the strongest subscriber growth over the next few years in Victoria – refer **Figure 9**.

Figure 9: Projected subscribers by market category, Victoria, 2009



40. While fixed (fibre based) broadband has clear advantages over wireless, it is unclear whether fixed and mobile broadband will be complimentary or substitute services, though clearly consumers highly value voice and data mobility²⁵. According to Australian Bureau of Statistics (ABS) data at the end of June 2011, mobile wireless broadband (excluding mobile handsets) connections accounted for 44% of all internet connections compared to DSL connections accounting for just 41% of connections. At the end of June 2011, there were 9.7 million mobile handset subscribers in Australia. This represents an increase of 18.1% from December 2010. Of the 9.7 million mobile handsets, 3.6 million (37%) were dedicated data subscriptions²⁶.

²⁵ Noting that the volume of data downloaded via mobile is significantly less than via fixed line broadband.

²⁶ ABS, **Internet Activity June 2011**, September 2011.

Section 4 - Victorian broadband policy

41. The Victorian Government considers that ongoing development of telecommunications infrastructure, particularly broadband infrastructure, should be a national priority. As enabling infrastructure the use of broadband services has a well documented link to productivity performance and economic growth in advanced economies²⁷. For example, a recent Deloitte Access Economics report estimated approximately \$27 billion in productivity increases due to internet use in Australia. Broadband is also critical to improving health and education outcomes and improving resource use for environmental benefits.
42. Victorian Government research has indicated that the availability and quality of existing broadband infrastructure and services in Victoria are generally inadequate for existing needs in some metropolitan and regional areas, and without sustained infrastructure investment, even areas that are currently well served will fall behind community expectations within the next ten years²⁸.
43. Further, the Victorian Government has identified substantial gaps in the infrastructure serving key Victorian telecommunications markets, such as mobile and regional fibre optic backhaul. It should be commercially viable for existing providers to invest in extending their current networks into blackspot areas during the NBN roll out period. However, the lack of public information on the NBN's long term rollout schedule makes it difficult for these investments to be effectively planned and implemented. The Victorian Government has encouraged the Commonwealth to provide better information on the NBN rollout schedule so as to improve the investment environment for alternative broadband solutions.
44. While engaging constructively with the Commonwealth Government and NBN Co in the delivery of benefits from the NBN project for Victoria, the Victorian Government - as noted above - has identified substantial policy risks associated with the NBN as it is currently planned²⁹. In particular:
 - the Victorian Government is concerned about the long term impact of the NBN on competition in the telecommunications market, the cost, timing and transparency of infrastructure rollout and the lack of focus on realising economic benefits from the productive use of broadband
 - other potential national telecommunications infrastructure investment priorities are not being given adequate national consideration, because they sit outside the focus of the NBN Co.

²⁷ Richard Hayes' summary of such studies and approaches in "Valuing Broadband Benefits: A selective report on issues and options", IBES, 7 December 2010, pp.29 – 52.

²⁸ Refer:

<http://www.mmv.vic.gov.au/Assets/2473/1/TelecommunicationsspenddemandreportJune2010.pdf>

²⁹ Refer to the Victorian Government Submission to the House of Representatives Standing Committee on Infrastructure and Communications **Inquiry into the Role and Potential of the National Broadband Network** at

<http://www.aph.gov.au/house/committee/ic/NBN/subs/Sub234.pdf>

Victorian broadband policy principles

45. The Victorian Government has developed policy principles to guide the State's approach to the NBN and Commonwealth telecommunications policy. For example the Victorian Government:
- is taking a pro Victorian position on the NBN and is seeking industry development opportunities while supporting the infrastructure upgrade of Victoria's broadband capacity. The Victorian Government is applying a balanced and practical approach to the NBN. Any requests from NBN Co and/or the Commonwealth Government for practical assistance with the rollout of the NBN are being considered on merit and in the interests of the Victorian community
 - recognises that wholesale and infrastructure competition is a key objective for Victoria's telecommunication market. Victoria, due to its population density, existing infrastructure and more options to support development of competitive broadband, has more to lose than other States/Territories from shutting out infrastructure competition by establishing the NBN as a new monopoly infrastructure provider
 - supports as an overriding objective the provision of ubiquitous access to fast, high quality and upgradable broadband, with the best available fit-for-purpose infrastructure, including lower cost alternatives to FTTP which leverage rather than duplicate existing infrastructure, as the most economically prudent means of developing a broadband future. Also recognising that in many cases today, and increasingly in the future, FTTP will make economic sense and will compete successfully as the best fit-for-purpose option – for example, in new residential estates
 - supports economic development as the key principle that should determine broadband infrastructure rollout priorities. This recognises that a strategic regional rollout of the NBN is an economic priority for Victoria as there are productivity gains to be made from fixing broadband coverage gaps and upgrading existing regional services. Well served metropolitan areas are a lesser priority until current infrastructure in regional areas is clearly adequate
 - recognises that the NBN alone is not sufficient to deliver economic and social benefits. Businesses and public sector organisations will only achieve productivity gains from broadband by making innovative use of the infrastructure and implementing complementary changes to business processes. This will require additional investments and resources, including the development of new applications to drive broad based uptake and productive use, and
 - is advocating to the Commonwealth Government to provide adequate processes for development and implementation of the NBN. For a project of this size and national significance, the Victorian Government considers it is vital that the initiative is developed and implemented in an economically prudent manner. The

NBN plan should be subject to transparent assessments, including assurance on the adequacy of project planning.

46. The Victorian Government's view is that in the short term greater scrutiny should come in the form of the Commonwealth Government imposing the same rigorous project development processes it has established for Infrastructure Australia or that exist within Productivity Commission analyses. In the long term, scrutiny will require the establishment of proper processes for NBN Co to report to the Commonwealth Parliament.
47. In addition, it is the Victorian Government's view that the NBN plan has evolved without the level of detailed consultation (within reasonable timeframes) that are required to enable States and Territories to make the best possible, considered contribution to national broadband development. Such consultation would engender greater confidence that the NBN plan is being adequately considered (and State issues understood) before it is implemented.
48. In November 2011 the Government released *Victoria's Technology Plan for the Future: ICT*, the third of three integrated technology plans to promote the transformative use of technologies to benefit industry, reinvigorate business innovation and provide solutions to some of the challenges facing the State³⁰. Relevant Victorian Government actions include:
- ICT Capability Development:
 - *Digital Futures Fund* to support collaborative projects in the ICT sector such as to develop and trial new ICT-enabled products, services and business models with significant commercial and business potential.
 - ICT enabled innovation:
 - *Victorian Fibre Strategy* to investigate how Victoria's existing telecommunications infrastructure capacity can support a range of alternative broadband networks and a vibrant statewide broadband market, including investing in new competitive backhaul fibre in the south west.
 - Supporting the early adoption of ICT such as through the *Broadband-Enabled Innovation Program (BEIP)* that will assist projects that utilise high capacity broadband to improve productivity in business, government and community sectors.

³⁰ The other technology plans are for biotechnology and small technologies - the full document available at <http://www.mmv.vic.gov.au/Assets/2554/1/VictoriasTechnologyPlanfortheFutureICTNovember2011.pdf>

Section 5 - Response to the *Terms of Reference*

5.1 Digital economy

Commonwealth policy

49. Since the opening of telecommunications to full competition in 1997 and the staged privatisation of Telstra, there has been a complex array of Commonwealth policies and programs designed to improve regional telecommunications and promote the development of the nation's digital economy. However, overall, our view is that this Commonwealth investment has had sub-optimal outcomes for a variety of reasons:
- investment has flowed in intermittently making for an unstable environment for regional co-investors and consumers
 - there has been a bias towards funding a large number of small projects across all States and Territories and this has tended to both reduce impact and make sustainability difficult to achieve
 - Sub-optimal strategic alignment with other Commonwealth objectives and programs, such as in the health and education sectors, and
 - insufficient integration with State and Territory Governments as the primary agencies for service delivery in health and education.
50. Commonwealth objectives relating to social development and equity will require a more functional alignment within the Commonwealth Government as well as more functional Commonwealth – State/Territory engagement and particularly more effective cooperation in the delivery of broadband programs.
51. Better co-operation between the Commonwealth and State and Territory Governments will be essential from two perspectives:
- it will be vital to leverage the critical mass required to make new infrastructure viable in increasingly marginal markets, and
 - State, Territory and local governments are the primary agencies for the delivery of services where the Commonwealth is looking for benefits from the investment in NBN infrastructure.
52. From the Victorian Government's perspective, a strong engagement policy would enable consultation on broad objectives and strategies and take into account government resources and processes. While the Victorian Government will continue to work with the Commonwealth and NBN Co to provide appropriate practical assistance supporting the NBN rollout in Victoria, it should be recognised that governments at all levels will make more effective contributions in an environment characterised by better information exchange and stakeholder engagement.
53. Current Commonwealth broadband programs such as those being delivered under the National Digital Economy Strategy that have focussed on demonstrating benefits from the NBN - and therefore have been limited in scope to the NBN footprint - are
-

overly narrow. The Victorian Government's experience with promoting the development of broadband applications is to work with communities of interest to help solve their specific problems, operating in an unconstrained geography and utilising any infrastructure available (**refer section 5.2**)

54. It is clear from both the first round of Victoria's BEIP and the Expressions of Interest (EOIs) received for the second round that to confine broadband use programs to a limited geographic area is a seriously flawed approach. Over one third of the successful first round BEIP projects are from regional areas with no NBN presence and 89% of the second round EOIs involve communities of interest across the State.
55. The Commonwealth should seek to avoid programs to promote sectoral broadband uptake that are limited in geographic scope to NBN Co rollout and ignore communities of interest. Additionally, it should avoid programs where uncoordinated infrastructure investments that lead to duplication and/or constraints on access, in affect, ignoring the key virtue of fibre, namely, its capacity to meet multiple users' needs.

RECOMMENDATION

Regional broadband policy needs to be better coordinated across the Commonwealth Government, between regional broadband policy makers and between departments responsible for sectoral broadband developments, such as in health and education.

RECOMMENDATION

The Commonwealth establish processes for more effective and responsive engagement with States on regional telecommunications in general and the NBN, the RBBP and the Universal Service Obligation (USO) in particular.

RECOMMENDATION

That the Commonwealth develop a new, long term comprehensive and inclusive regional telecommunications strategy in conjunction with the three levels of government.

NBN plan

56. The development of the National Broadband Network (NBN) provides an opportunity to redress the problems the Victorian Government has identified with regional broadband. However the Victorian Government has reservations about the NBN plan as it currently stands³¹:

- policy coherence - it is not clear that the NBN plan strikes the right balance between competing NBN objectives – coverage, speed, competition, cost, benefits and timeliness – and whether the right policy mechanisms are being set to optimise longer term outcomes and manage trade offs.
- Policy complexity - there are some areas of complex regulatory and or policy overhangs that create high levels of uncertainty, cost and/or policy risk. For example, it can be argued that the telecommunications USO has now been made redundant by the Commonwealth's investment in the NBN. The Victorian Government urges the Commonwealth Government to redesign and streamline remedial regional policies.
- Emerging risks - unnecessarily higher broadband costs or barriers to infrastructure based wholesale competition to the NBN will be the greatest deterrent to regional broadband development and uptake. Sub optimal market structure development is likely to be difficult if not impossible to unravel. The risk from a national perspective is that the cost of providing broadband access in areas that can be efficiently served by the existing markets will be excessively high (through both duplication and over investment) and that national benefits from broadband will potentially be diminished (notwithstanding the achievement of ubiquity) from a lower broadband uptake in both metropolitan and regional markets³². Higher broadband costs are likely to arise from:
 - creation of an NBN monopoly - the Commonwealth must be mindful of the risks associated with the establishment of NBN Co as a large public monopoly from scratch, particularly given recent Australian experience
 - long run competition - the Commonwealth appears to have put in place excessive protections from long term competition for NBN Co³³, and
 - inefficient financial arrangements - including establishment of non-transparent cross subsidies such as universal national wholesale pricing

³¹ <http://www.aph.gov.au/house/committee/ic/NBN/subs/Sub234.pdf>

³² A similar argument applies to loss of benefits when the timing of rollout of broadband in some markets is slower than what the market might otherwise have delivered.

³³ For example: pressing for the removal of the supply of broadband services over the Telstra and Optus Pay TV networks; extending the impact of NBN services through design of the NBN network into upstream markets (such as the inter-regional backhaul market), and the introduction of regulation to prevent 'cherry picking' of the NBN (preventing NBN Co's potential infrastructure competitors from entering viable segments within NBN Co's market).

(UNWP), and through public sector financing at non-commercial rates of return.

- Infrastructure duplication - it should be recognised that there has been substantial national investment in layer 1 fibre network deployment (to support both fixed and mobile data coverage), substantial investment in FTTP for government (particularly for health and education) and large corporations, and competing metropolitan HFC networks. In Victoria all State schools and hospitals and most private schools have fibre connections provisioned through contracts with Telstra³⁴. It is not transparent how Telstra's existing fibre will be utilised by NBN Co under the *Definitive Agreements*. A more cautious and incremental approach to government investment in broadband infrastructure is warranted, such as government funding of competitive backhaul³⁵ and programs that build the demand side by supporting utilisation of broadband applications (see next point).
- Infrastructure is necessary but not sufficient - the NBN by itself is not sufficient to deliver economic and social benefits from broadband - this will require additional investments and resources, including the development of new applications to drive broad based uptake and productive use.
- Oversight - the Victorian Government's view is that the NBN plan should be subject to transparent assessments, including assurance on the adequacy of project planning. In the short term, this greater scrutiny should come in the form of the Commonwealth Government imposing the same rigorous project development processes it has established for Infrastructure Australia or that exist within Productivity Commission analyses. In the long term, scrutiny will require the establishment of proper processes for NBN Co to report to the Commonwealth Parliament.
- Lack of information - the lack of information on NBN rollout hinders proper planning by the State. In particular, parts of the Victorian Government preparing for the rollout of NBN Co infrastructure are finding it difficult to plan for the migration of their service delivery.
- Wholesale products for State, Territory and local government - government requirements are currently not catered for by the NBN Co's announced wholesale services.

³⁴ From the perspective of the Victorian Government as a broadband user, it is a concern that under the NBN plan, taxpayers are likely to pay multiple times for state government agencies' fibre connections. For example, the State has supported the funding of Telstra's capital program for FTTP connections to schools and hospitals that NBN Co may duplicate, and or require an RSP to provision services across.

³⁵ For example, the **National Broadband Network Implementation Study** (p.323) identified the need for approximately 70,000km of additional competitive backhaul.

57. In the Victorian Government’s view, the sheer weight of these issues suggests that the NBN will be subject to substantial revision and is unlikely to be implemented as currently planned. For relevance the RTR recommendations ought to take into account the likelihood of such change and ensure they are viable under different NBN rollout/implementation scenarios.

Digital economy drivers

The key drivers of development of the ‘digital economy’ are well known and relate to the access and price of broadband, and the value and awareness of the cost/benefits of broadband applications. The following summary comments are provided against the identified issues specific to regional Victoria:

Digital economy drivers	Victorian regional issues and comments
Access	<ul style="list-style-type: none"> • NBN Co’s announced infrastructure plans create issues in terms of timing and extent of infrastructure footprints. • In the long run services will be delivered over multiple infrastructures in regional markets. Information from NBN Co is required to enable the Victorian Government to undertake the detailed planning required to migrate its services to multiple infrastructure platforms. • Uncertainty and planning issues are compounded where for the vast bulk of the State it is unknown when FTTP infrastructure will be rolled out. • The announced FTTP rollout in regional Victoria (as announced 18 October 2011) is <i>disproportionately</i> low - the relatively high population density of regional Victoria creates an expectation of a higher than average rollout if it is to be commercially based. • There are significant number of regional towns that currently access services equivalent to NBN Co’s proposed FTTP service offerings that <i>will get lower capacity infrastructure</i> under current NBN Co rollout plans - refer case study in BOX 1. • The process for extensions to NBN Co’s planned FTTP rollout (both in the short and long run) is unknown.
Price	<ul style="list-style-type: none"> • Given NBN is likely to be a relatively high cost network , on average lower regional incomes are likely to slow and or limit uptake of broadband in regional markets (despite UNWP). • Lower regional broadband uptake raises equity

	<p>issues where the Commonwealth Government is claiming significant health and education benefits from the rollout of the NBN.</p>
Retail service provider market	<ul style="list-style-type: none"> • Current NBN policy settings are likely to hinder the development of competition in the long run. • Lack of competition in regional markets and lack of competitive backhaul will mean higher end user prices. • Under NBN there will potentially be more RSPs but the NBN architecture will be expensive for small/niche RSPs. • There is a high degree of uncertainty from lack of information for regional providers about NBN Co plans - refer case study in BOX 2.
Valuable applications	<ul style="list-style-type: none"> • Commonwealth Government support for the development of relevant applications has been overly constrained to the announced NBN Co FTTP footprints. • The planned NBN Co three tier infrastructure requires a specific focus on how applications on wireless and satellite can provide adequate and/or equivalent services to those over FTTP, and a specific focus on how these multiple networks are integrated. • Broadband is seen as a potential substitute delivery mechanism for high value added services in regional markets. Cloud computing is likely to be particularly beneficial in regional markets where sufficient broadband capacity is available and regional service providers enable entrance to the cloud. This is of particular importance where there is an absence of ICT and/or professional services.
Costs associated with uptake	<ul style="list-style-type: none"> • The level of uncertainty and risks to long run competition from the NBN are raising the costs and risks associated with the development of new applications appropriate for regional markets. • Skills and capacity building should precede the rollout of the NBN.

Access

58. The Victorian Government has serious concerns with NBN Co's announced rollout plans. Some towns (for example Charlton in the Wimmera Mallee region) with business and government premises that currently access NBN Co equivalent services via ADSL2, BDSL, and in some instances fibre, will receive wireless or satellite according to NBN Co's announced FTTP rollout plans. The Commonwealth 'no disadvantage' policy needs to be clear in regards to locations like Charlton, being mindful of the long run incentives facing the incumbent provider of potentially redundant infrastructure.

BOX 1

A Wimmera-Mallee town of 1500 with ADSL2, BDSL and FOC – NBN Co proposes wireless?

Charlton, a town of approximately 1300 residents, sits on the Calder Highway and the Avoca River 100kms from Bendigo and around 250kms or just under 3 hours from Melbourne.

Towns like Charlton, with secondary schools (Charlton College – a P12 facility) and public health services (Charlton Campus of the East Wimmera Health Service), are central to the amenity of life of their region, and act as an important retail, recreational, health, education and professional and government service centre. This is reflected in the makeup of the working population, where managers (33%), professionals (12%) and clerical and administrative workers (8%) together comprise around 50% of the workforce.

Charlton has Telstra ADSL installed in its exchange, which is located in the centre of the town, and ADSL1 and ADSL2+ services from many providers are available today. According to published ADSL attenuation curves, ADSL2+ can deliver around 16mbit/sec over copper lengths of 2km – and most premises in Charlton are within this distance of the exchange.

Also, under the Victorian Government's \$90m VicSmart program, Telstra deployed fibre optic broadband connections to State schools across the State, including Charlton. This program raised the capability of the entire network for future fibre optic connectivity development, including fibre to the business and home.

Issue

Under the NBN, Charlton is designated as a wireless town – poised to receive next generation fixed wireless services. The NBN Co wireless service is slated to deliver speeds of 12 mbit/sec which is less than may be available today to many premises through ADSL technology.

There is also a level of uncertainty, and a lack of information, as to the future of the copper customer access network and ADSL installations in locations like Charlton. These localities need a higher level of confidence as to whether and how the copper and ADSL technology, which is deemed a legacy technology that will be decommissioned by Telstra in areas where NBNC is to deploy fibre, will be managed in the future.

RECOMMENDATION

The Commonwealth develop a plan for the maintenance of high capacity, NBN-like services in locations that have them today, but are currently nominated to receive wireless or satellite services from the NBN rollout.

59. The announced rollout plans of NBN Co are limited for regional Victoria. Given the relatively high population density of Victoria compared to other States and Territories it is a reasonable expectation that Victoria should receive a higher than proportional FTTP rollout. By population Victoria has received far less than a fair share of the announced national rollout, particularly in regional areas (**refer Table 3**). Particularly disappointing is the lack of planned construction activity for regional Victoria, with only one planned fibre optic deployment in the next year (scheduled for Ballarat Central).
60. This is contrary to the announced intention of the Commonwealth Government and NBN Co to have a regional focus, and ignores the potential for greater productivity gains to be realised by a focus on the least well-served regional markets.

Table 3 - NBN Co 12 month rollout plan - State breakdown

NBN Co 12 Month Construction Plan				
	Total No. of NBN Construction Sites	Total No. NBN Premises Constructed	Prop % of Total NBN Constructed Sites	Prop % of National Pop
ACT	1	20,800	3.7	1.6
NSW	15	150,700	26.6	32.7
NT	2	24,800	4.4	1
QLD	6	100,200	17.7	20.1
SA	10	64,800	11.4	7.4
TAS	12	61,000	10.8	2.3
VIC	7	66,700	11.8	24.8
WA	7	77,800	13.7	10.2
Totals	60	566,800	100	100

61. The Victorian Government is concerned that the 93% FTTP coverage objective is being implemented without a comprehensive strategic plan for how to best address regional needs. An implementation plan that prioritises the number of premises and not broader concepts such as the value of FTTP services to certain locations and/or regional communities will result in a non strategic rollout of the NBN and penalise those regional areas. Effectively NBN Co is rationing its FTTP rollout to the last

premise in Australia where its cost of deployment is less than the cost of a wireless deployment, with no reference to the benefits that might be derived from FTTP being deployed to a regional hospital, school or business premise with that funding. A better outcome would be to enable regional communities to benefit through a more targeted rollout designed to capture economic and social benefits.

RECOMMENDATION

The Commonwealth develop a comprehensive, well resourced regional NBN infrastructure rollout strategy based on maximising regional benefits, rather than a premises target.

Broadband pricing and services

62. NBN based services and price offerings are still largely prospective and contentious.
63. NBN Co's announced suite of wholesale product service offerings mimic current market standards. There is a lack of focus on the immediate provision of high capacity and synchronous services to deliver productivity benefits. The NBN product roadmap process appears to be mediated by the current retail industry, and in the Victorian Government's view, without proper attention to end user needs.

RSP competition

64. The health of regional telecommunications providers will be an important determinant of outcomes delivered by the NBN. However the NBN has created a high degree of uncertainty for regional providers - **refer case study in BOX 2**³⁶. The Victorian Government is concerned that NBN Co has been unable to provide greater certainty for regional providers in a market that has for too long been characterised by policy risk and an investment strike.

BOX 2

Regional telecommunications providers - *the cost of uncertainty*

The Commonwealth, through regulatory measures such as requiring the resale of ADSL services and the unbundling of the local loop, and program measures such as the higher bandwidth incentive scheme and various broadband infrastructure funds, has contributed to the establishment of many regional telecommunications providers.

These providers have been important niche players in the regional market, driving competition and innovation. Some are significant businesses in their own right, contributing to the diversity and resilience of their local economy.

Community Telco Australia (CTA) is one example. CTA and its franchisee network has developed a successful business, driven by a proven model that communities operating in

³⁶ Refer Internode claims for compensation for its installed DSLAM equipment.

concert can drive enhancements in the quality and price of communications services that can be central to the downstream success of their small to medium enterprises. Indeed, CTA can and does serve clients with business grade requirements to many locations across Australia (as it does for Bendigo and Adelaide Bank), using its own network infrastructure and that of partners and wholesalers.

Issue

These providers have a significant amount of capital invested in their business, in the technology of the physical and higher (OSI) network layers, in the intellectual property of such things as supplier agreements, service enablement and delivery 'know-how', and in acquiring and developing a strong and loyal customer base. These assets have been accumulated in a relatively short period, with the reasonable commercial expectation that they can be leveraged for many years to come.

Now, they face the almost certain requirement to re-engineer their service offering for the NBN. This may also involve the need to maintain their current service architecture and systems, while also developing and enabling integration with a new NBN service architecture (as the NBN is deployed into some of the areas where they have clients with other areas remaining 'off NBN' for many years) .

Apart from the likely cost of developing new systems and maintaining a 'to be redundant' existing system, these providers are not currently being serviced with the information they need to plan this significant change to their business.

Government and the digital economy

65. The current NBN plan provides highly qualified potential benefits for government but substantial uncertainty and risks.
66. The vast bulk of Victorian Government sites currently access fibre-based telecommunications services, largely off the back of significant Victorian Government investments in the provision of fibre to all schools, hospitals, police and justice facilities. Major exceptions to the general availability of fibre are in parts of the regional health alliances' (RHA) networks (procured through Telstra).
67. The Victorian Government notes that NBN Co has not yet announced a wholesale service/product offering suitable for government. In this regard the NBN has therefore created considerable market noise for government without any short run prospects of enhanced services. There are no published NBN Co products that would be suitable for use in the State environment and current published pricing would mean usage of the NBN would be cost prohibitive. For example, the Victorian Government currently provisions its own high bandwidth data network, IP-MPLS services at bandwidths of 1Gbps and 10 Gbps³⁷.
68. Parts of the Victorian Government that lie within NBN Co FTTP rollout sites have voiced strong concern about a lack of transparency of NBN Co plans.
69. In addition the current wide area network model utilised in most State and Territory Government networks, particularly in education and in health, would be

³⁷ Detail available on request.

disadvantaged if not inoperable in a multiple provider scenario. On current offerings the NBN does not present an advantage to State and Territory networks.

70. The major trends in Victorian Government broadband procurement are outlined in **Table 4:**

- high growth in capacity demanded in government - bandwidth utilised has nearly doubled over the past three years with connections growing by only one third.
- regional connections as a percentage of the whole have moved from 43% to 49% with the growth spread evenly over copper and fibre - the relatively low uptake of fibre based services could be attributed to lack of access and high costs of services (regional connections can cost up to 3 times the equivalent in a metropolitan area).

Table 4: Victorian Government Telecommunications Connections, 2008 to 2011

	October 2008	June 2011	% Change
Total Connections	3524	4741	+34.5
Total Bandwidth (mbps)	54,249	106,730	+97
Regional fibre	1031	1215	+17.8
Regional copper	683	817	+19.6
Individual Connection Capacity Growth 2008 to 2011			
1 gbps and above – total	27	41	+51
1 gbps and above regional	1	4	+400
20 mbps to 1 gbps total	170	1368	+804
20 mbps to 1 gbps regional	41	160	+390
10 mbps total	248	1399	+564
10 mbps regional	47	909	+1934
4 mbps total	1999	420	-79
4 mbps regional	942	142	-85

Potential productivity gains from the digital economy

71. Victorian Government research suggests that the most immediate business productivity benefits from broadband are likely to be available from the extension of broadband to regional areas enabling regional users to quickly catch up to their metropolitan counterparts³⁸.
72. It is also important to understand, as is noted above, that there is already significant deployment of fibre infrastructure connecting parts of the Victorian health and

³⁸ Government research available on request.

education sectors, and a high proportion of metropolitan based business premises, and that these will not benefit directly from a national FTTP rollout. For example, almost all State funded Victorian schools and hospitals are connected by fibre. In this context the focus of NBN enabled benefits will necessarily need to be on the innovative use of the new high speed connections to homes and small businesses.

73. Taking into account the existing coverage and quality constraints of broadband in Victoria, it is clear that there is potential for significant economic benefits to be derived from the deployment of broadband in currently under-served regional areas. The development of cloud computing enables efficient and cost effective access to a growing suite of essential applications. This is likely to be particularly beneficial in regional markets where sufficient broadband capacity is available and regional service providers enable entrance to the cloud.
74. A key concern for the Victorian Government is how NBN will enable adequate connectivity for geographically dispersed and remote businesses (**refer BOX 3**), where infrastructure gaps will remain.

BOX 3

NBN and a dispersed regional business - Luv-a-Duck³⁹

Luv-a-Duck is Australia's leading producer of duck products with export markets in the Middle East, Pacific Islands and Asia. Luv-a-Duck's growing and processing operations are based in the towns of Nhill, Bowen and Whinnem in the Wimmera region of Victoria, while their sales and distribution centres are located throughout Australia. ICT is critical to all aspects of supply chain management for this agricultural production company—that is delivering products to a global market.

Achieving effective connectivity between their metropolitan offices, warehouses, production facilities and contract growers has been challenging. The current mix of BDSL, satellite, ADSL and NextG technologies does not provide an adequate basis for their business operations and the variations in broadband speeds causes frustrations and inefficiencies.

Luv-a-Duck would like to access higher quality bandwidth to support its dispersed operations, enable more efficient interaction with customers and to utilise modern procurement systems.

Luv-a-Duck's work practices will change in the future when next generation mobile and broadband services become available. Future opportunities for ICT adoption include high quality video conferencing reducing the necessity for frequent travel between Melbourne and Nhill (a 4.5 hour drive each way). Remote monitoring equipment will also reduce the reliance on contractors and generate additional efficiencies and quality controls (for example SMS alarms to notify fan or heater equipment failures).

³⁹ Wimmera Southern Mallee ICT Audit 2011, Grampians RDA

Complementary investments are required to realise benefits

75. A ubiquitous national broadband network is a general purpose technology platform that can be leveraged to improve productivity and innovation across the economy and society. However, infrastructure is a necessary but not sufficient condition for the realisation of benefits. To deliver the potential range of benefits, the NBN plan must also be complemented by a sound strategy to support the changes that will facilitate broadband uptake and effective use. It is to be expected that these changes will be far reaching as they involve substantial innovation in service delivery, as well as changes to institutional arrangements, and government and business practices and structures.
76. In the Victorian Government's experience, the investments and changes required to drive the uptake and effective use of broadband are not trivial. These include:
- development of new applications for the transformation of service delivery (both for new services and substitutes)
 - investment in software, hardware and IT platforms
 - human capital development
 - business process, behavioural and organisational change
 - policy and regulatory reform at all levels of government, and
 - development of appropriate incentives for change and the adoption of new services and service delivery models.
77. The cost of accessing an NBN service may represent only a small percentage of the total cost of designing, implementing and sustaining a broadband application over time. As explained above, this is particularly the case for the implementation of applications that require significant business change or innovation.
78. Victorian Government experience from supporting innovative broadband projects has emphasised a number of important lessons:
- productive use of higher capacity broadband involves organisational and system level change. It is not just a matter of plugging in new technology, it requires strong commitment at all levels of the organisation
 - early adopters and broadband pioneers face great uncertainties and bear high risks. A pilot project approach can provide the opportunity to investigate the business case for broader deployment with minimal exposure of the business to risks, and to enable learning by doing
 - there are high non network costs in application development and related technologies
 - collaboration across the service/business organisation is important, including with network and related technology providers and between staff and clients, and

- a key output is rich and deep data that requires innovative approaches to share, mine, interrogate and visualise to create value⁴⁰.
79. These lessons suggest an important role for the public sector to support and accelerate this innovation process, most naturally in relation to improving government service delivery, productivity in the non traded sectors, and reducing some of the risks of change by undertaking pilot and proof of concept projects.

RECOMMENDATION

The Commonwealth should provide additional funding to drive the uptake and realisation of productivity benefits from broadband.

80. In particular, it is important to identify and work with communities of interest that are organised to promote their sector's development. In the context of regional telecommunications the important communities of interest are often within the State's and Territory's direct sphere of interest.

RECOMMENDATION

Commonwealth programs to support broadband uptake need to better recognise the role of the States and Territories in delivery of the key services where productivity benefits from the NBN are expected.

81. Innovative government service delivery has the benefit of promoting better public outcomes as well as industry spill over benefits. However it should be noted that in an NBN broadband environment where high capacity broadband is ubiquitous, the key challenge for governments is how to systematise effective use across the economy and society to realise higher potential network benefits. In particular, there are fundamental reforms and regulatory changes required, both in the telecommunications sector and application sectors, to suit the scale and pervasiveness of a ubiquitous broadband environment. A new round of reforms will be required to reduce risks and uncertainties of the system wide changes possible from ubiquitous broadband, analogous to the privacy and transaction security

⁴⁰ Case studies are detailed in the Government's **House of Representatives** submission available at <http://www.aph.gov.au/house/committee/ic/NBN/subs/Sub234.pdf>

reforms that supported development of the Internet and e-commerce required for the first wave of broadband applications.

82. A further role of government will be to establish appropriate incentives for system wide adoption of the effective use of broadband.
83. The Victorian Government has recently announced programs to support the early adoption of high capacity broadband (BEIP) with the objective to ensure that Victoria is better placed to take advantage of a ubiquitous high speed broadband network when it is delivered. As mentioned previously, this program is not constrained to narrow geographical areas, but encourages natural linkages between communities of interest across the State to gain greater benefit and productivity through the innovative use of broadband.
84. The objectives of BEIP are:
- demonstrate productivity gains through the use of high-capacity broadband applications
 - assist collaborations between Victoria's sectors including ICT, industry, government and community
 - encourage Victorians to develop and pilot applications and services ready for use on high-capacity broadband, and
 - harness high-capacity broadband networks to achieve economic, social and environmental benefits.

5.2 Health and education outcomes

Health Sector

85. The Victorian Government is committed to the delivery of high quality health care services as close to home as possible for all Victorians, and will continue to establish a range of high quality services across regional Victoria.
86. Delivering a broader range of quality health services across regional Victoria is more complex due to a combination of factors including the need for costly infrastructure for specific services, shortages in the clinical workforce in rural and regional health services and limitations in training the upcoming workforce due to lack of sophisticated technologies to provide medical training and supervision in regional areas.
87. The *Victorian Health Priorities Framework 2012-2022 Metropolitan Health Plan*⁴¹ has made a commitment to the development of telehealth and communications technologies to improve knowledge management within and across the health care systems and to ensure timely and appropriate access to essential health information for providers, patients and the community. The Victorian Department of Health (DH) has endorsed the National E-Health Strategy as the framework for the implementation of telehealth.
88. Specific areas of health care which are suited to the development of telehealth applications include:
- primary care - better self-management, early intervention and care coordination by improving access to GPs and medical specialists and remote monitoring of some patients. There is particular benefit for patients who only require specialist advice intermittently e.g. antenatal care, chronic disease, etc
 - cancer care - consultation, collaboration and information sharing between a range of highly specialised, geographically dispersed service providers can be facilitated electronically
 - emergency care - remote consultation, diagnosis and treatment of acute stroke, cardiac and other emergency patients could be enhanced by providing rural practitioners with direct access to specialist services. Links between Emergency Departments (EDs) and after hours medical clinics could also support extended hours of service and reduce numbers of avoidable ED presentations or patient transport
 - intensive care - improve clinical outcomes and reduce transfers by introducing telehealth models such as unit to unit 'ward rounds' or eICU after-hours services to support regional intensive care units who are unable to attract appropriately skilled medical staff

⁴¹ A rural Plan is due for completion in 2012

- retrieval services - specialists can provide advice, clinical support and pre-transfer management to remote sites via telehealth for critical and on-critical patients
 - outpatient care/specialist clinics - provide specialist advice to GPs and other health professionals to improve referral, assessment and management practices via telehealth enabled consultation and service delivery models
 - mental health and drugs services - improve access to specialist assessment, treatment and review. Access to psychiatrists, addiction medicine specialists and pharmacotherapy services can be difficult in some parts of rural Victoria, which can also influence the willingness of some GPs to be involved in the care of such patients, and
 - aged care - enable place-based assessment and management without transferring the older person between care settings and reducing their need to travel in the community. Enable staff located between local councils, residential settings and health services to work effectively together to develop care plans for older people. In areas where geriatrician expertise is currently unavailable, telehealth has the capacity to allow remote consultation. Mobile Video Conferencing solutions allow rural and remote nursing and allied health practitioners more timely access to clinical consultations with trained geriatricians and rehabilitation specialists through their regional health networks.
89. In addition to the direct service provision, high speed broadband also offers improved opportunities for workforce training in regional areas. Health Workforce Australia (HWA) are currently working with Universities to increase the training of clinical staff across regional areas of Australia and have funded a number of projects to support the connectivity and relationships between health services and the university sector. These projects are designed to increase the provision of clinical placements in rural and regional Australia but they are finding that the lack of network connectivity and disconnects between networks is impacting on the ability to use technology to support the communication pathways.
90. The Grampians Region in Victoria has two HWA projects underway, one involving all regional public health services, the Australian Catholic University and the University of Ballarat to provide additional nursing training in the regional health services. The second project is with Deakin University and Ballarat Health Services to increase medical training and supervision in the region. Both projects are looking to utilise Rural Health Alliance networks and telehealth facilities to deliver the programs.
91. In Victoria, the development of regional ICT networks has been driven through the introduction of ICT Rural Health Alliances (RHAs). The RHAs are joint ventures between all health services in a region. All have developed high capacity telecommunications networks for the delivery of shared applications, IP Telephony and video conferencing and have been very successful in driving the take up and effective use of technology in their regions through innovative programs. However,
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while all have been strongly supported by both Commonwealth and State funds, they still face considerable long term issues such as:

- lack of competition in the market means that they face high recurrent costs
- difficulty in obtaining funds to refresh and upgrade their networks, and
- lack of effective connectivity with each other and metropolitan networks

92. The development of high speed broadband will provide a significant opportunity to expand the delivery of high quality health services for patients in regional and rural settings and will include delivering health services in both clinical settings and in the home for some patients.

93. DH has a number of concerns with the Commonwealth's approach to promoting telehealth:

- a number of current telehealth applications are funded directly by the Commonwealth, through grant programs such as Clever Networks and Digital Regions Initiative (DRI) programs, with little regard to state policy priorities or strategic directions. DH would recommend funding for future telehealth initiatives be rolled out in consultation with state government agencies to align with individual jurisdiction strategic priorities to assist leveraging benefits and better enable the systematisation of beneficial projects
- current grant funding models potentially establish a competitive approach between the Victorian Rural Health Alliances (RHA's) rather than fostering a cooperative approach to infrastructure development and facilitating cross-regional collaboration in applications development, and
- the lack of standards in network infrastructure has resulted in a range of technologies and standards that inhibits interconnectivity between networks. This has reduced uptake by clinicians and this is now considered a significant barrier to the uptake of telehealth in Victoria and nationally.

94. There is a concern in more remote areas of Victoria that as the NBN is rolled out health services may be forced to transfer from their current high-speed broadband to wireless services. This represents a threat that the capability of services to utilise telehealth options will be reduced. This will significantly impact on the delivery of telehealth in health services, and will bear a significant risk to patients.

95. A further barrier to promoting telehealth is the development of appropriate funding models to support its introduction. The Victorian Government supports the introduction of MBS item numbers for specialist consultations via telehealth applications for rural and remote patients.

96. The Victorian Government understands that national activity based funding (ABF) models currently under development will support outpatient services delivered via ICT, and recommends that this funding approach needs to be replicated across all healthcare settings.

97. There are a range of projects currently operating across Victoria that are utilising advanced ICTs to deliver clinical and broader health services (**refer Attachment B**). While the telecommunications platforms are a key success factor in the delivery of telehealth services, the successful implementation of telehealth services involves integrating the technical aspects of telehealth within traditional health care settings.
98. DH is in the process of identifying mechanisms to improve the adoption and implementation of telehealth applications in health care settings across Victoria.

State Primary and Secondary Education

99. The Department of Education and Early Childhood Development's (DEECD) notes that the twenty-first century curriculum and teaching and learning requires a balance between digital-based strategies and personalised learning. Rural schools clearly identify the need for multiple modes of provision, including blended learning which includes the full range of ICT applications. A secure online learning environment, web conferencing and one to one devices such as tablet, laptop and netbook computers, should be seen as a toolbox from which teachers can choose appropriate applications in concert with other non-ICT options. On this basis, teachers can act as skilled mediators, creating personalised learning environments for each student. High speed broadband however, is critical to the effective delivery of such learning.
100. Access to curriculum and other educational opportunities is one of the major barriers to improving outcomes for regional students, including increased school retention and transition to higher education and training. Research by the Victorian Government indicates that for regional, and especially rural families, access to broadband and desktop or personal electronic devices is critical if the notion of 24/7 'anywhere-anytime' learning is to be spread equitably across the school population. Wherever students have connection to the internet they have the capacity to access teachers, peers and curriculum anywhere, anytime, even when physical access to their school isn't possible.
101. Twenty-first century curriculum and teaching and learning requires a balance between digital based strategies and personalised learning. Rural and regional schools have clearly identified the need for multiple modes of provision, including blended learning which includes the full range of ICT applications.
102. Several recent examples demonstrate the Victorian Government's approach in regards to use of ICT to deliver high quality educational outcomes in regional and rural communities (**refer Attachment C**):
- DEECD currently provides an intuitive, student-centred electronic learning space that supports high-quality learning and teaching. It establishes a school environment for the future that will improve the educational outcomes of all Victorian students, connecting students, teachers and parents, and enabling efficient knowledge transfer
 - videoconferencing initiative

- Virtual Conference Centre (VCC)
 - Grampians Virtual Learning Network
 - Cybersafety, and
 - online curriculum.
103. Generally speaking, the benefits of these programs would be extended through ubiquitous access to high speed broadband. In particular the Victorian Government is mindful of the fact that in some instances, current capacity is greater than what is proposed under the NBN.
104. There is also a strong need for Commonwealth programs to enhance current Victorian Government practice and work collaboratively with the State to achieve broader objectives.

Higher Education - TAFE Broadband

105. The Victorian Skills Statement, *Securing Jobs For Your Future, Skills for Victoria* (September 2008), announced a number of far reaching reforms to the vocational education and training sector in Victoria. In particular, the “21st Century Networking” initiative established the TAFE Broadband project with funding of \$20 million over three years to address connectivity, collaboration and common platforms for all Victorian TAFEs.
106. Since inception, the TAFE Broadband project has substantially achieved all objectives, having established:
- high speed connectivity to the head campuses of all TAFEs using State-owned fibre⁴²
 - long term contracts to secure access and pricing certainty, which can be upgraded as required
 - low unit cost commodity internet access from a single supplier, and
 - standardised architecture for the delivery of a shared services program
107. The TAFE Broadband project has been delivered during a period where the Australian telecommunications industry has been in state of uncertainty resulting from the evolving telecommunications policies of the Commonwealth government, which have resulted in the current form of the NBN.
108. Without the TAFE Broadband project, Victorian TAFEs would have remained significantly disadvantaged in their ability to deliver satisfactory internet services for staff and students or to establish a shared services program.

⁴² Connections to TAFEs located in Warrnambool (South West TAFE) and Mildura (Sunraysia TAFE) are currently served using Telstra services at lower speeds. Additionally, four dual sector TAFEs are currently serviced by high speed connectivity provided by AARNet to their parent Universities.

109. An unexpected consequence of the NBN is that Commonwealth Department of Education, Employment and Workplace Relations (DEEWR) has been influenced to specify the eligibility criteria for funding a number of information communications and technology-related projects exclusively on NBN sites in order to showcase the benefits of broadband. This discriminates against states such as Victoria where NBN releases are either negligible or are yet to be defined. Further, this approach excludes funding from States and Territories already having NBN like network infrastructure available and a desire to undertake worthwhile educational programs, without geographic constraints.
110. The long lead time for the construction of the NBN, the disincentives for retail carriers to invest capital in competing networks and the inappropriateness of published NBN services for TAFE use means that the Victorian Government considers that the TAFE Broadband network will continue to represent value for money for the foreseeable future. Indeed, it is considered economically viable for many TAFEs to extend State owned optical fibre networks to new and underserved campuses to support business as usual activity.
111. Importantly, TAFEs are focussing planning not on how the NBN will provide connections to TAFE campuses, but on how TAFEs can fund the programs and infrastructure to deliver next generation vocational education for students in homes and workplaces.

Vocational Education Broadband Network

112. In April 2009, the then Deputy Prime Minister Gillard announced the Commonwealth's intention to commit \$81.9 million over 3 years to fund a "Vocational Education Broadband Network", originally proposed during the Rudd Government's "2020 Summit". The Vocational Education Broadband Network (VEN) aimed to provide the infrastructure to support a high speed national "backbone" for the vocational training sector which would connect the networks operated within each Australian state and territory jurisdiction. The benefits of the investment were considered similar to the Australian Academic Research Network (AARNet) network operated by Universities and CSIRO for higher education and research purposes.
113. In addition to the construction of the national backbone, funds remaining were to be made available to States and Territories to improve connections to the backbone. With the Implementation Strategy approved by the National Senior Officials Committee and the relevant Federal Ministers, the Commonwealth intended to establish and fund the network for an initial 3 year period, after which the funding and operation of the network would be transitioned to jurisdictions. Financial sustainability was to have been achieved by making savings available to States and Territories through aggregated internet purchasing of "peerable" content. (i.e. providing jurisdictions with low cost, high speed access to popular educational and collaboration content such as YouTube, Google, iTunesU, Live@Edu, etc) in a similar fashion to AARNet who publicly quote reductions of 40-60% in internet traffic.

114. In the May 2011 Budget announcements, the Commonwealth announced the withdrawal of funding for the VEN project and the project has been subsequently abandoned by DEEWR.
115. The cost to Victoria resulting from the abandonment of the VEN project includes:
- lost efficiency and capability arising from integration of vocational training providers delivery nationally (eg access to shared systems, educational content repositories, collaboration tools, AARNet and peered educational content),
 - duplication of network connections for Victorian dual sector TAFEs' to provide access to both the AARNet network and the TAFE Broadband networks, at a cost of approx \$1.6 million over 3 years, and
 - withdrawal of Commonwealth funding for improved connections to the VEN backbone.
116. The VEN project illustrates a key concern of the Victorian Government about the lack of coordination within the Commonwealth Government on broadband development and effective use, and policy risks this creates for State agencies (**refer Box 4**). Additionally it reinforces the perception of misalignments between to the policies of two Commonwealth departments.

BOX 4

University and TAFE Broadband Networks – a Lack of Coordination

In 2002, the Commonwealth's Higher Education Bandwidth Advisory Committee (HEBAC) proposed a major and coordinated upgrade of the nation's university broadband infrastructure – to deal with the cost of university owned and largely outdated microwave networks and the multiplicity of commercial services, and to enable the collaboration, innovation and advancement that would come with the development of a high quality fibre optic broadband network for the sector.

This led to a major investment in the Australian Research and Education Network (AREN) by the Commonwealth Government (approximately \$80m, a significant component of which went to upgrading AARNet's national backbone), State Governments, and the Universities (all three investing in the various State regional networks). The overall initial investment is difficult to estimate, but it would be of the order of \$200m (in cash and in-kind) nationally.

In the 2009-2010 Budget, the Commonwealth announced \$37m to extend and upgrade the AREN to meet growing research needs. It also announced a separate investment of \$81.9m to fund the Vocational Education Broadband Network (VEN) proposed at the 2020 Summit. Separately, and 2 years earlier, the Victorian Government had committed to invest \$20m in connecting the Victorian TAFE sector to a high bandwidth fibre network.

Issue

There are three integrated issues.

First, in regional settings, TAFE and university facilities are often co-located (such as a campus of a dual sector university like the University of Ballarat, or La Trobe University Mildura which is co-located with Sunraysia TAFE), or otherwise in close proximity (for example the South West TAFE and Deakin University in Warrnambool).

Second, a large component of the cost of connecting 'long run' regional sites is the initial lay or procurement of fibre optic cable, and the cost of electronics to enable the connection. Once this basic infrastructure is deployed, from a technical standpoint multiple connections can be enabled at very low marginal cost.

Third, from a policy perspective, there is merit in enabling connectivity between TAFE and universities as a cost effective platform for greater cross-sector collaboration.

However, many of the synergies that might have been realised from the Commonwealth programs were not explored and or exploited due to structural issues. These included a lack of coordination and collaboration between different agencies of government, different programs of government and different levels of government, and an unwillingness of funding agencies to address the disincentives and barriers to government established/resourced communications service providers to collaborate with other like entities operating in the jurisdiction to the benefit of end users.

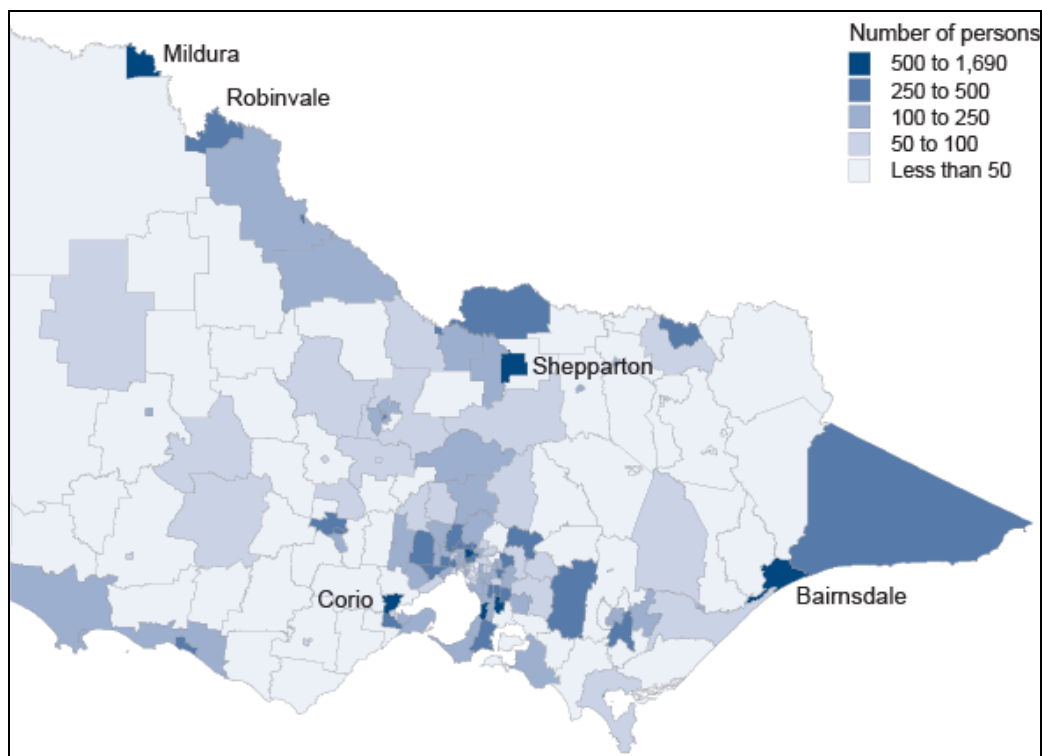
In effect, this has led to a degree of over-investment, and a more costly recurrent cost structure for connectivity services than might have been otherwise.

The lessons from these failures in coordination and collaboration should not be repeated in respect of the Regional Backbone Blackspots Program (RBBP) or the NBN.

5.3 Communications needs of Indigenous people and communities

117. Victoria's Indigenous communities are dispersed across the State and generally closely linked to outer regional centres such as Mildura, Bairnsdale and Shepparton. While Victoria does not have a large number of remote indigenous communities as is the case in other States and Territories (refer **Figure 9**), in a Victorian context, they are relatively distant from key service infrastructure. Broadband represents an important opportunity for these communities to broaden the scope of services delivered into their locale, and enable the development of outward looking economic activities.
118. A key concern of the Victorian Government is the extent to which indigenous communities fall into non-FOTP zones under current NBN Co infrastructure rollout plans, and the long run down stream disadvantage in terms of service delivery this will cause.

Figure 9: Number of Indigenous persons by Statistical Local Area, 2006



119. Indigenous communities have indicated strong demand to be able to utilise broadband for a wide range of activities and service provision. Currently many communities are unable to effectively access broadband infrastructure with consequent diminished opportunities to participate in the digital economy.
120. A specific concern that highlights inadequate telecommunications in indigenous communities relates to their responsibility for assessing Cultural Heritage
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Management Plans (CHMP) for their area that are submitted as part of an application regarding land use. In most instances these are submitted electronically and are very large documents (100+ pages). Most of these applications originate from metropolitan based consultants and, in some instances (wind farms, mining), originate overseas and expectations are that the receivers have adequate broadband capacity.

121. This raises issues for community organisations as they are often in areas without adequate broadband for business activities (such as locations between towns or in small rural communities). As there is a 30 day turnaround requirement for the local community organisation to comment on these documents which are difficult to download and/or efficiently access, it makes it difficult for the community to meet the statutory deadline.

5.4 Development of terrestrial and satellite mobile phone sector

122. At the end of June 2011, mobile wireless broadband (excluding mobile handsets) connections accounted for 44% of all internet connections while DSL connections accounted for a lesser proportion of 41% of all connections⁴³. While the coverage of mobile telephony services has improved dramatically over the past decade, arguably the adequacy of services has not kept pace with demand as the widespread demand for data rich mobile applications has grown rapidly. This is particularly significant given predictions that the number of wireless only households will continue to grow, with some analysts suggesting up to 27.5% of households will be mobile wireless only by 2024⁴⁴.
123. Noting these trends, the Victorian Government regards mobile telecommunications as essential infrastructure for economic and social well being, and in particular has the potential to play a greater role during emergencies.
124. Mobile blackspots inhibit the effectiveness of communications, including the delivery of warnings to the public, and diminish community resilience when the need for mobile communications is heightened.
125. Issues with mobile coverage in Victoria include:
- blackspots continue to limit the ability of residents and visitors to those areas to utilise both mobile broadband and voice. Significant safety concerns are also expressed to the Victorian Government in both fire prone areas and secondary highways that tend to lack effective coverage.
 - infrastructure capacity both in individual towers and backhaul can limit useability for users in regional areas. Contention rates employed by carriers can reduce broadband speeds and limited tower capacity can mean call drop outs when moving from one cell to the next.

⁴³ ABS, September 2011.

⁴⁴ **Independent Expert Report for Telstra Shareholders**, Grant Samuel, 2010, p 8, www.telstra.com.au

- there is limited roaming capability between proprietary networks in Australia and can be expensive, significantly limiting regional users service provider choice.
126. The Victorian Government recognises that the commercial business case for a single carrier to improve mobile telephony coverage and service quality in regional areas is marginal. A more coordinated approach is required where governments can take a lead to develop project governance frameworks whereby costs can be shared, funding leveraged and benefits shared (**refer Box 5**). States and Territories can play a role in being a catalyst for collaboration to improve commercial viability of any given location, while the Commonwealth has an interest in assisting where there are demonstrated benefits from improved coverage.

BOX 5

Mobile Coverage in Fire Vulnerable Zones

The Victorian Government is currently developing a project to improve mobile coverage in fire prone areas of the State. The project is developing a cost/benefit model to define potential mobile tower sites that, with mobile coverage, will deliver a range of economic, social and emergency services benefits. This approach appropriately values a broad range of potential anchor tenants (including the public good) to ensure project viability.

The project will:

- determine appropriate criteria for benefits measurement and prioritisation of coverage areas
- engage in discussions with communities through local government and RDA Committees to test those criteria and priorities and gain broadly based acceptance of those
- develop clear and transparent processes to enable the selection of a mobile telecommunications carrier as a partner to the proposal
- work collaboratively with the Commonwealth Department of Regional Australia, Regional Development and Local Government and the Department of Broadband, Communications and the Digital Economy
- develop a fully costed business case for funding
- effectively work with a carrier partner and other potential tenants (such as NBN Co), and
- establish a governance model for implementation and ongoing maintenance.

On initial work undertaken in areas that were affected by the 2009 Victorian Bushfires some 73 potential sites were identified. A commercial business case was established for 22 of these sites with the remaining 51 requiring innovative business models and government support to make them a reality. This project is exploring collaborative opportunities and clearly defining criteria for site establishment.

2009 Victorian Bushfires Royal Commission

127. The 2009 Victorian Bushfires Royal Commission (the Royal Commission) made a number of recommendations including regarding the provision of public warnings. Recommendation one suggested that the Victorian Government revise its bushfire safety policy. While adopting the national *Prepare. Act. Survive.* framework in Victoria, the policy should enhance the role of warnings—including providing for timely and informative advice about the predicted passage of a fire and the actions to be taken by people in areas potentially in its path.
128. Emergency Alert, the national telephony warning system, was introduced on 1 December 2009. This system is capable of sending voice messages to landline phones in a geographic area and SMS messages to mobile phones based on the address information of the subscriber. It has been positively received by the Victorian public and Victorian Emergency Service Organisations and has been used nationally on 284 occasions issuing in excess of 6.8 million messages.
129. In response to the final report of the Royal Commission, the Commonwealth Government announced in September 2010 funding to establish the capability of sending warnings to mobile phones based on the location of the handset (LBS). This project to develop location based solution (led by the Victorian Office of the Emergency Services Commissioner) involves:
- the design of technical, legal and commercial requirements by Victoria in consultation with all jurisdictions
 - development and implementation of the LBS capability by the carriers, and
 - the integration of the LBS capability into Emergency Alert.
130. Establishment of the LBS will enable alerts to be sent to all mobile phones in a defined risk area regardless of the service address. However this facility is dependent on adequate mobile coverage in the areas concerned.

Social media and emergencies

131. As a result of the Royal Commission, the Victorian Government indicated that it would enhance the use of social media technology to distribute fire warnings and information. The Victorian Government notes that communities are increasingly using a broader range of information services, and individuals are increasingly drawing information from social media (e.g. Facebook, twitter, personal blogs, privately managed websites). Social media may even report valuable information before it is available through official channels⁴⁵.

⁴⁵ For example during the 2011 floods in north west Victoria social media reports informed local communities of imminent levee breaks in advance of official information. Victorian Submission to the **Inquiry into the Capacity of Communications Networks and Emergency Warning Systems to deal with Emergencies and Natural Disasters**, May 2011, p 13

132. A recent example of a community owned and run emergency warnings website is Bushfire Connect⁴⁶, an online bushfire crisis service presenting real time information submitted by local community members and emergency agencies. The site aims to provide 'reliable', 'dynamic' and 'timely' information by empowering tens of thousands of people to contribute content including text, images and video. The 'crowd-sourced incident data' is layered with information from official sources.

Emergency services use of communications infrastructure

133. Forecasts by the emergency services sector indicate that their demand for broadband mobile data services will increase rapidly due to the need for business critical applications such as mission dispatch, status and location information, full motion video, high resolution imaging, mapping data and responder (and patient) biometrics information. Currently, the copper network bears the brunt of emergency communications capability with very limited fibre capacity. Any consideration of emergency communications networks needs to factor in the growing importance of mobile telephony and broadband in regional areas.
134. Current communications networks are not able to withstand weather and environmental extremes (e.g. fire, flood, etc). Consideration should be given to the resilience of emergency services communications and business continuity arrangements for core communications infrastructure, such as:
- functioning of vital communications infrastructure in the absence of mains power
 - 'hardening' to provide greater protection to network components in flood or fire prone areas, and
 - prioritising telecommunications capacity for use in emergency services such as within backhaul infrastructure, partitioning or priority traffic arrangements and prioritisation of cell capacity.

Commonwealth role

135. The Victorian Government notes that in July 2008, the Commonwealth Government announced an additional \$8 million funding for the Mobile Connect program, with 16 priority locations based on advice from the Glasson Report, and that no applications were received from carriers for this subsidy.
136. A more coordinated approach is required where costs can be shared more broadly, and broader benefits identified (eg. including public good benefits such as community resilience during disasters). As noted above, States and Territories can play a role in being a catalyst for collaboration to improve the commercial viability of such projects, while the Commonwealth has an interest in assisting where there are demonstrated broadly defined community benefits.

⁴⁶ <http://bushfireconnect.org/>

RECOMMENDATION

The Commonwealth develop a strategy and funding initiative to reduce regional mobile coverage gaps based on maximising cross-sectoral benefits.

137. The Commonwealth may also consider issues relating to network reliance and business continuity arrangements for core communications infrastructure. Greater consideration could be given to requirements (e.g. minimum standards) for communications networks infrastructure according to the operating environment and degree of flood or fire risk. There is scope for better education of communities regarding the use of communications equipment and the likelihood of extended blackouts. The Victorian Government suggests consideration by the Commonwealth of the possible need to expand its education campaign regarding such issues as:
- the need for those in areas vulnerable to blackouts have sufficient battery capacity (including the ability to power multiple devices)
 - the limitation of mobile telephony coverage, and
 - other tools and devices to receive information (e.g. battery powered radio).

5.5 Consumer issues

138. Consumer Affairs Victoria (CAV) receives many comments regarding telecommunications which have focus on reception mobile telephony reception and coverage issues⁴⁷. Consumer issues relate to assurances and promises from telecommunications carriers that overstate coverage that can be provided. For example:

I personally had to take a matter about mobile broadband to the ombudsman last year. The tower capacity was not sufficient to the point where it wouldn't work at all from around 4pm to 11pm weekdays. I was informed that they were aware of the issue and that there were plans for a new tower. Despite this, I still had to escalate the matter four times before they would consider a partial refund.

139. This coverage issue is likely to become even more pressing in the future as consumers move away from landlines and only use mobile phones or mobile broadband. Projections of the percentage of mobile only households vary with some predicting up to 27.5% of households being mobile only by 2024⁴⁸.
140. The Victorian Government supports a fresh look at the 2008 RTR recommendations in regard to consumer issues relating to mobile telephony, viz:
- the mismatch between impressions given by industry of coverage vs the experiences of consumers
 - the relatively poor performance of satellite mobile phones compared to expectations
 - the ACCC inquiring into the merits of mandated terrestrial inter-carrier roaming
 - the development of the Communications Service Standard including a standard for hand held mobile phones coverage, and
 - the effectiveness of both the satellite phone subsidy and consumer education campaign regarding the limitations of mobile coverage.

⁴⁷ Other consumer issues commonly heard include difficulty accessing and engaging with dispute resolution and complaints handling mechanisms and difficulty understanding contract terms and conditions. While these complaints are not specific to regional areas, dispute resolution and remedies might require particular attention for regional users.

⁴⁸ Grant Samuel and Associates - Independent opinion of the Definitive Agreements between Telstra, NBN Co and the Commonwealth Government, September 2011, www.telstra.com.au.

Attachment A

Victorian Regional Development Australia Committee Strategic Plans 2010

Access to competitive and effective broadband is in all the RDA Committee regional plans with each placing a different emphasis on what it means for the region. It is often tied in with mobile coverage, transport or electricity. Importantly, it is recognised in all plans as an enabler for other priorities (eg. “broadband infrastructure to strengthen and diversify our economy”).

Unsurprisingly, broadband is generally given more space in the plans of the regions/sub regions that do not involve a major regional centre. For example, broadband figures strongly in the Gippsland plan. Central Highlands (Ballarat) is the exception where there is a discussion on the existing strengths and comparative advantage in ICT.

Key themes regarding broadband

- utilise to enhance access to/delivery of services for health, education, arts and community services
- address labour/skills shortages
- build on existing comparative advantage
- improve industry efficiency
- promote innovation
- key building block – more productive, liveable and sustainable regions
- enhance user appreciation and use of ICT
- increase competition amongst service providers
- concern over small communities not receiving FTTP, and
- receiving the NBN at the earliest opportunity (noting that there are some misconceptions about what the NBN will actually deliver).

The following are excerpts from each regional/sub regional plan that mention, or are relevant to, telecommunications.

Northern Loddon Mallee

Strategic Direction Three – Strengthen and diversify our economy

Key Initiative 3.13

Develop and implement projects to use broadband connectivity to enhance access to services and/or address labour shortages or skill gaps. Encourage greater take up of broadband by business and promote innovative applications.

Timeframe - More than 5 years

Strategic Direction Four – Improve our Infrastructure

Mobile phone and broadband coverage

Mobile phone coverage and broadband connectivity support business operation, assist with social connection and improve access to services ranging from banking to education to counselling. Mobile phone coverage is adequate in the main population centres, but is inconsistent in some rural areas, particularly those set back from the main road transport routes.

The Regional Backbone Blackspots Program will be rolled out from Shepparton through Mildura to Broken Hill and will go some way towards addressing this issue. The area of focus includes Morkalla North, Robinvale, Swan Hill, Mystic Park, Kerang, Cohuna, Torrumbarry, Echuca, Kyabram and Mooroopna. Access to metropolitan equivalent broadband services was available to about three quarters of businesses and dwellings in the region (in 2006), which at that time was the second lowest regional coverage in Victoria. Access to high speed broadband is particularly critical in the Northern Loddon Mallee, due to our distance and isolation issues. Broadband will allow the innovative delivery of curriculum to schools in rural areas that would otherwise be limited in the choices provided due to their size or difficulty in attracting specialist teachers. It will provide opportunities for the delivery of training, arts, health and community services that are increasingly challenging to provide by conventional means and creates opportunities for innovation in production, marketing and service delivery.

Key Initiative 4.12

Advocate to the proposed National Broadband Network to broaden regional broadband connections along the Calder, Loddon and Murray Valley Highway corridors to support connectivity and promote economic opportunities for small towns.

Timeframe - Within 5 years

Southern Lodden Mallee

Strategic Direction Two – Strengthen our Communities

Key Initiative 2.15

Develop and implement projects that use broadband connectivity to enhance access to health care services and provide improved professional development opportunities, particularly for towns outside of Bendigo.

Timeframe - Within 5 years

Strategic Direction Four – Improve our Infrastructure

Telecommunications

The Victorian Competition and Efficiency Commission has concluded that the primary factor detracting from liveability in many regional areas is poor access to services and infrastructure particularly health, education, transport and information communication technology. The National Broadband Network will bring improved fixed line broadband coverage and increased broadband speed to major towns within our region but is not proposed to increase speed or improve coverage to small towns and rural areas remote from the Calder Highway except schools, TAFE and some medical facilities, which have or are developing their own links. Broadband and mobile phone access is critical for the effective delivery of business, health care, education and training services, particularly for small towns of under 1000.

In 2006 access to metropolitan equivalent broadband services was available to about three quarters of businesses and dwellings in our region, representing the second lowest regional coverage in Victoria. Access to broadband services was lowest in rural municipalities and areas set back from the main road transport routes. Mobile phone services are widespread, although the service is limited in rural areas in particular and is further impacted by limits in competition due to topography and lack of infrastructure. Mobile phone coverage and broadband connectivity support business operation, assist with social connection and improve access to services ranging from banking to education to counselling.

Key Initiative 4.11

Improve mobile coverage in the region, including the provision of mobile phone and wireless broadband services on Bendigo-Melbourne train services.

Key Initiative 4.12

Use broadband connectivity to enhance access to services and address labour shortages/skill gaps with a focus on the health and education sectors.

Key Initiative 4.13

Advocate to the National Broadband Network to broaden regional connections across the region, including the Calder and Lodden Valley Highway corridors, particularly to support towns with populations of under 1000.

Timeframe – Within 5 years

Central Highlands

Major Attributes (10)

Regional Victoria's strongest concentration of IT and computing services and capacity

Key Characteristics

The region's concentration of IT and computing facilities, together with a highly trained workforce and advanced education network, mean that the Central Highlands is better equipped than other region to take on innovative programs. Such programs can demonstrate how services can be delivered by IT into rural areas and act as pilot programs for the whole state.

3. Comparative Advantages, Drivers, Issues and Challenges

3.2 Major Comparative Advantages

The region is well served by this concentration and expertise to take advantage of the roll out of the national broadband network. Existing models for the delivery of education, and potentially health and other services using IT, can be relatively easily replicated across much of the region, and the region can be used as a case study with pilots for the whole of regional Victoria. This regional advantage is supported by Ballarat's economy and by Victoria's major regional employment cluster in IT and computing through the University of Ballarat, the Ballarat Technology Park and the substantial presence of firms such as IBM. The Central Highlands region is not only positioned to deliver at a regional scale but can make a substantial contribution to the state's comparative strengths.

3.3.4 Use of IT and Broadband to Deliver Services

The region is exceptionally well placed with its existing strengths and capacity in IT and computing capacity compared to the rest of regional Victoria. The region can more readily roll out new models for an array of service provision than any other region. That service provision can extend across education, training, health services, information provision, skills upgrading and their integration and effective delivery at the regional and local level and to urban and rural areas.

The accelerated roll out of broadband in this region is needed to deliver those services at the earliest possible date. This region can better provide the trained workforce and network services to demonstrate how services can be provided effectively to meet a network of urban centres and rural settlements.

4. Vision

Expand the level of access to key services accessible and available to persons in smaller cities and towns and rural areas particularly through increased and integrated transport services and the use of IT and greater broadband capacity.

Build on the region's leading role in the provision of education, training and IT to deliver better services in new and innovative models including in the provision of health services.

5. Strategic Directions and Actions

5.7 Expanded and Better Health Services, IT Development, Broadband Provision and Access and Services

The Central Highlands region has the capacity to roll out a model of co-located and integrated primary health care facilities across the region's cities and towns. Such a model will integrate such services with general practitioners and the provision of increased community services utilizing the region's strengths and capacities in IT and computing and the future national broadband network provision. These will provide for services such as patient monitoring in home. The state should conduct a trial of the service in the Central Highlands region in suitable local communities. Avoca has been suggested as one such place that would be suitable for a state-wide pilot.

Geelong (G21)

Policy 3.4 - Improve access to services, infrastructure, education and housing Information Communication Technology

Information Communication Technology (ICT) is an increasingly important avenue of access and communication for business and personal pursuits. According to the G21 Telecommunications Needs Assessment (2006), the majority of the region has access to a range of ICT infrastructure. However, the study revealed a lack of knowledge regarding the availability and most effective use of the services currently on offer and a comparative lack of competition in service provision.

The report recommends initiatives to both enhance user appreciation and use of ICT in the region and increase competition amongst service providers. Lack of access to ICT in the home is a well researched and recognised indicator of disadvantage and is linked to educational attainment and retention outcomes. Making ICT available to all households through innovative enterprises and partnerships (for example: with agencies such as Infoxchange and Green PC) is a first horizon regional priority.

Regional Objective 3.4.5

Increase community and business use and access to high speed telecommunications data and ensure state of the art ICT infrastructure is provided to all communities.

Timeframe – 5 to 20 years

Policy 4.2 - Improve industry efficiency, innovation and commercialisation Information Communication Technology

There is a need to improve the Information Communication Technology (ICT) capability, education and ability of businesses across the region. The G21 Telecommunication Needs Assessment (2006) includes initiatives to market and promote ICT use and systems within both the business and community sectors of the G21 region. Efficient freight and people movement is fundamental to the efficiency of industry and is discussed in Direction 2 – Create Sustainable Settlements.

To enhance current and proposed plans by government and industry sectors in improving industry productivity and efficiency, a collaborative program of focused economic development projects should be undertaken to improve efficiency, stimulate innovation and enhance marketing effort in all areas of comparative advantage. These programs must be distributed across new, emerging and mature industries to ensure a holistic direction.

If additional rapid growth cannot be achieved in areas of comparative advantage to compensate for loss of output and employment in declining industries, economic activity in the region is likely to slow, with limited net gain in output and employment over the medium to long term.

Policy 4.3 - Reduce skills gaps and shortages

Skills and technological knowledge, including ICT capability and use, are a core element of economic productivity. There is also a strong link between skills, employment and community well-being. The region must undertake initiatives to close the gap between skills shortages and the requirements of businesses to maintain competitiveness and encourage economic growth.

Regional Objective 4.3.4

Meet the challenges of an economy in transition and increasingly driven by knowledge and innovation through improved skills, technological knowledge and ICT capability.

Timeframe – 5 to 20 years

Gippsland

Regional Priorities

(9) Broadband Connectivity

High quality and affordable broadband infrastructure is now recognised as a key building block for regions and communities seeking to become more productive, liveable and sustainable. The importance of this infrastructure to regional and rural areas, and the particular challenges faced in ensuring equitable and affordable access in these areas are well documented. It has been consistently demonstrated that a significant discrepancy exists between urban and regional areas, in the availability of high quality, affordable broadband infrastructure and services.

Recommendation

Gippsland to be given the highest priority for the simultaneous rollout of high speed broadband and “non-fibre to the home” solutions that will benefit small communities, given this region has one of the highest dispersed populations with over 100,000 residents (40% of the regional population) being located in towns of less than 1000 people.

Policy Support Action

1. Require all major agencies to identify how they will utilise broadband to improve service delivery and access
2. Establish programs that foster the uptake of broadband related opportunities by the regional business community

Gippsland’s settlement pattern has a very high proportion of communities in towns of less than 1000 people that are dispersed throughout the region’s coastal and rural areas. These communities account for some 40% of the regional population or around 100,000 people. Unlike many other regions the vast majority of Gippsland’s small towns and villages are not declining in population and will remain as a distinct element of the region’s population dynamic.

Under the present guidelines for coverage of the National Broadband Network (NBN) these communities will not have direct access to high speed broadband and therefore the opportunities associated with this enabling infrastructure. There is a need for a focus on the advocacy for service provision to these dispersed communities that includes the bundling of “non-fibre to the home” technologies that will provide a level of access to ensure that such communities are not significantly disadvantaged. Recent information indicates that, in comparison to many other regions, that there is a relatively low level of utilisation of the current broadband network by regional businesses. It will be necessary to effectively promote the opportunities made available through access to high speed broadband to the regional business community. Service providers – both government and non-government organisations (NGO’s) – will need to be encouraged to identify how high speed broadband can be used to enable improved access to services and/or the development of new services.

Regional Strategies

26. Broadband Connectivity

The Strategy will involve:

- Advocating for a “whole of region” solution to improved broadband connectivity that :-
 - Caters for the 40% of the community that fall outside of current National Broadband Network guidelines
 - Enables concurrent access to improved broadband connectivity for large and small population centres
- Advocating for Gippsland to receive early implementation of a “whole of region” solution on the basis of the high number of people in the regional community, compared to most other regions, who would benefit from improved access
- Encouraging the maximum leverage of high speed broadband by businesses and service agencies.

Great South Coast

Power & Telecommunications

Economic competitiveness and social cohesion.

The Victorian Competition and Efficiency Commission has concluded that the primary factor detracting from liveability in many regional areas is poor access to services and infrastructure particularly health, education, transport and information communication technology.

Internet Access

Our region is not adequately serviced by next generation high speed broadband. Even though overall levels of unmet demand in the Barwon South Western VGDR are lower than the average for non metropolitan Victoria, there is some spatial variation in the level of unmet demand throughout the region. Significant unmet demand still exists in the LGA s of Colac-Otway, Corangamite, Moyne and Southern Grampians. Quality Next Generation Broadband is important in providing health and education services to regional communities and also in increasing their economic productivity. Modelling work shows that the significantly increased cost of providing Next Generation Broadband to regional areas of lower population density may be offset by productivity gains.

Implications for Communities

The potential for increased social disadvantage, particularly in rural communities with declining populations, has been identified as a critical issue. Upgrades in broadband services will reduce inequality by providing improved access to community services.

The main issues:

- The region's power transmission system is operating at 25% capacity whereas the distribution system is operating at 90% capacity.
- Limited capacity and availability of broadband.
- Blackspots in our mobile phone network.

Things To Do

Identify and address the local and regional barriers to high speed broadband internet roll out.

Hume

Economic Theme

"A thriving and dynamic economy"

GOAL

Capitalise on the region's competitive advantages, opportunities and strengths, in order to continue to deliver prosperity and vitality. New infrastructure and enhancements to existing infrastructure will support the future competitive potential of commerce and industry. Improving access to key transport corridors will expand opportunities for manufacturing, agriculture and tourism business development. Supporting development of a skilled workforce will augment and stimulate industry growth. Settlements across the Hume Region will have access to advanced Information and Communications Technology (ICT).

KEY DIRECTIONS – SUMMARY

9. Strengthening a capable workforce
10. Adapting and diversifying agriculture in an environment of change
11. Facilitating research and innovation in tourism, manufacturing and industry to encourage new and evolving business
12. Developing ICT and energy infrastructure that builds on existing competitive advantages

KEY DIRECTION 12

Developing ICT and Energy infrastructure that builds on existing competitive advantages

Developing the region's infrastructure means building on existing competitive advantages. The areas that offer key competitive advantages are:

- ICT

Opportunities for developing new businesses and strengthening existing ones in the region will be achieved by capitalising on the proximity of important networked settlements and upgrades to critical infrastructure in the principal transport corridors. There is also a need to investigate the latent capacity of existing commercial and industrial areas and to identify and plan for new commercial, industrial and residential capacity. This approach will realise opportunities to build on the region's strengths in freight, logistics and distribution.

World class ICT requires investment in 'new generation' technology and Hume Region needs to position itself to be the first region in Victoria to take advantage of the Commonwealth Government's 'National Broadband Network' (NBN). ICT is a core part of the way people and business work in a globally competitive environment. A high quality ICT service is no longer an 'add on' but an absolute 'must have' for business to achieve maximum productivity and prosperity. Access to high-speed telecommunications services for delivery of curriculum and student contact is vital to support schools and other education providers, especially those outside major regional cities. Parents, carers, teachers and students of the future will be linked by sophisticated information technology systems, which will also provide school-to-school communications. Ensuring service access and quality is essential to maintain the region's competitiveness. Fibre optic cables are an under-utilised asset that run through the region and should be universally accessed.

PRIORITY STRATEGIES

- 12.1 Securing world class ICT infrastructure and services for the Hume Region
- 12.2 Establishing the future of the Hume Region as a centre of excellence for renewable energy technology and infrastructure

Wimmera Southern Mallee

4 Regional Goals

A Competitive and Innovative Economy

- providing essential infrastructure (including telecommunications) to support new and existing businesses (1 of 8)

STRATEGIC DIRECTION 5:

Broadband and mobile phone coverage standards enable the whole region to be competitive and liveable

Telecommunications, especially mobile and broadband services, are critical to improve the productivity of business and the future competitiveness of regions. Access to modern communication networks can reduce the disadvantage of remoteness faced by businesses and communities in rural areas of the Wimmera Southern Mallee.

Given its dispersed and ageing population, the Wimmera Southern Mallee is particularly dependent upon information and communications technology to improve services and liveability. The current level of broadband and mobile service provided to the Wimmera Southern Mallee is poor, disadvantaging existing residents by increasing social isolation and limiting services, and reducing the attractiveness and liveability of the region for new or potential residents.

Telecommunications improvements can play a significant role to improve emergency response. This will be particularly important in the future given climate change will bring an increase in natural disaster such as bushfire. With an ageing population, the people of the Wimmera Southern Mallee will be particularly vulnerable to events such as these, being less able to cope with and contribute to emergency management efforts. Older residents are less physically active, less able to leave their homes, and more reliant upon others to assist them. Mobile and broadband technology will enable isolated people to remain up to date with events and help them to respond, as well as assisting the emergency services to undertake prevention and response.

The Commonwealth government will invest heavily in the National Broadband Network over the next eight years, aiming to deliver fibre to every town over a thousand households (only eight towns in Wimmera Southern Mallee >1000 people), with remaining coverage through wireless and satellite technology. In the Wimmera Southern Mallee, towns likely to receive fibre optic from a line linking Melbourne to Adelaide would include Horsham and Stawell. Being 50km from the line, St Arnaud may receive fibre optic, however Warracknabeal, for example, is likely to be deemed too far away to obtain the service.

INTENDED OUTCOMES

This strategy will overcome the current disadvantage faced by industries and communities from sub-standard broadband and mobile phone coverage.

Areas for Action Suggested

- Develop a regionally supported approach to drive improvement in broadband and mobile phone coverage in the Wimmera Southern Mallee for towns with populations less than 1,000.
- Wimmera Southern Mallee ICT Plan development and implementation
- Develop innovative local ICT solutions through community planning initiatives.

Attachment B

Examples of telehealth in Victoria

Virtual Trauma and Critical Care Unit (ViTCCU)

Established in 2008, the Virtual Trauma and Critical Care Unit (ViTCCU) trial brought together 8 Victorian hospitals representing metropolitan, regional, and rural sites, to participate in a trial to provide virtual trauma and critical care expertise to health services in the Loddon Mallee Region.

The participating Metropolitan Hospitals provide specialist consultant advice to regional and rural hospitals predominantly utilising high definition video conferencing facilities with associated links to radiology, and telemetry information provided via a robust ultrabroadband structure.

City specialists assist in assessing and stabilising the patient, and then determine if patient transfer is required. The technology allows patients to be remotely managed by specialists working from major trauma centres and virtual centres such as Adult Retrieval Victoria (ARV). Clinicians can decide when it is in the best interests of the patient to be transferred to a metropolitan trauma centre and can support the staff on site throughout the process. All X-ray images, patient bedside telemetry and clinical EMR details (if implemented) are available to the remote specialist.

ARV is the first point of contact for any retrieval services in Victoria – a key strength of the ViTCCU model is its use of this platform to coordinate the provision of on-line consultations as part of its broader retrieval services thus ensuring a timely, integrated response.

The system has reduced hospital transfers by 10% and improved the quality and access to specialist care for remote and regional patients.

CANNET

The CANNET project links health services in the Hume region with health services in northern metropolitan Melbourne via videoconferencing combined with desktop document sharing. Its focus is on enabling multidisciplinary teams to meet online to review pathology and radiology results and coordinate care for rural and remote cancer patients.

This has resulted in reductions in patient waiting times due to all specialities being present in the meeting, reduced travel time and reduced cost of service provision.

Victorian Stroke Telemedicine

The Victorian Stroke Telemedicine (VST) project has integrated with the established Virtual Trauma and Critical Care Unit (ViTCCU) system at Bendigo Hospital to provide telemedicine support for regional doctors.

Stroke is one of the most common causes of death and the greatest cause of adult disability. Over 14,000 Victorians suffer strokes each year, with over 5,000 of these occurring in rural and regional areas. Based at Bendigo Hospital, an audiovisual telemedicine service for patients arriving at hospital with stroke has been established with funding from the Victorian Science Agenda Investment Fund.

The program uses the same technology as the Virtual Trauma and Critical Care Unit project and assists with clinical decision-making in treating acute stroke patients within the first four hours of stroke. This project will create new clinical practice models in the treatment of stroke where early intervention is critical.

Specialist neurologists at metropolitan hospitals are connected to the ViTCCU network by telemedicine units installed in their offices and homes. The specialists are able to discuss the patient's condition with the local medical staff, have access to patient vital data in real-time, interview the patient and/or relatives/carers on the scene, and give treatment instructions to onsite staff.

The initiative aims to reduce the severity of stroke, improve the quality of life of patients with stroke, and reduce the burden of care in regional communities by decreasing the incidence of severely disabled stroke sufferers.

The project commenced in March 2010, is led by the Florey Neuroscience Institute and is being delivered in partnership with the Victorian Stroke Clinical Network (Department of Health), Bendigo Health, Loddon Mallee Rural Health Alliance, Ambulance Victoria, and National Stroke Foundation.

If successful, this technology and model of care has the potential to be rolled out to hospitals across regional Victoria and used as a template for telemedicine use for other medical conditions.

Attachment C

State Education

Equity and access to curriculum and other educational opportunities is one of the major barriers to improving outcomes for rural and regional students, including increased school retention and transition to higher education and training. Research indicates that for rural, and especially remote families, access to broadband and desktop or personal electronic devices is critical if the notion of 24/7 'anywhere-anytime' learning is to be spread equitably across the school population. Wherever students have connection to the internet they have the capacity to access teachers, peers and curriculum anywhere, anytime, even when physical access to their school isn't possible.

Twenty-first century curriculum and teaching and learning requires a balance between digital-based strategies and personalised learning. Rural schools clearly identify the need for multiple modes of provision, including blended learning which includes the full range of ICT applications. A secure online learning environment, web conferencing and one to one devices such as iPads and Netbooks, should be seen as a toolbox from which teachers can choose appropriate applications in concert with other non-ICT options. On this basis, teachers can act as skilled mediators, creating personalised learning environments for each student. High speed broadband however, is critical to the effective delivery of such learning.

Secure Online Environment

- An online environment for all Victorian government schools, it provides an intuitive, student-centred electronic learning space that supports high-quality learning and teaching. It establishes a school environment for the future that will improve the educational outcomes of all Victorian students, connecting students, teachers and parents, and enabling efficient knowledge transfer.
- It provides the capacity to address a number of specific issues faced by rural schools and students. For schools currently experiencing the effects of isolation due to their small size and remote location, it has a range of powerful benefits, including:
 - providing 24/7, anywhere, anytime online access for students, parents and teachers
 - providing access to digital curriculum used, created and enhanced by nearly 42,000 teachers across the state
 - capturing a complete record of student learning progress over time
 - providing teachers with a rich, readily accessible source of information about each learner, to inform personalised curriculum planning and delivery
 - driving leading practice in collaborative curriculum planning, delivery and assessment, both within and across schools
 - using Web 2.0 technologies to support a range of ICT applications, including video-conferencing
 - creating virtual networks to connect remote schools (and teachers and students).
- A major aim of the secure environment is to support education in rural Victoria. As a knowledge management system and collaborative tool designed to transform the way schools interact with students, parents and each other, it will enable quality online curriculum planning and delivery, enhance access to high-quality learning materials, promote communication and collaboration, and improve professional learning and teacher effectiveness.
- Rural students needing to access curriculum not available at their school are now able to participate

in classes at other schools, extending their subject options and the number and quality of teaching staff available to support their learning. The environment will support greater engagement in learning, providing access to curriculum that caters to their interests, strengths and future career directions. Using this environment students are able to connect with peers across the state, enhancing both learning experiences and personal wellbeing.

- For rural teachers, it offers a new ability to connect and collaborate with teachers across the system. It supports them to engage in peer support, share resources and team-teach, greatly reducing any sense of isolation. Connecting principals and teachers across local, regional or statewide networks will enable the building of leadership, collegiality, professional learning and support for rural schools.
- For rural families, it supports the development of an active and informed partnership with their child's school and teachers. It provides access to their child's curriculum and feedback on their progress, as well as facilitating opportunities for greater participation in the life of the school.

Videoconferencing Initiative

- Just as conferencing has allowed secondary schools to improve access to curriculum areas, primary schools can make the most of ICT tools to gain access to virtual tours of places their students may never physically visit, such as Melbourne based museums and art galleries. Kindergartens too can benefit, where groups of children from more isolated campuses can participate in web link-ups for story time or other interactive activities. There is clear support for expanding video-conferencing approaches to provision, using cluster, Network, and extended models. Some regions have already invested heavily in video conferencing, and there is a consensus that a strong state-wide interoperable system would be desirable. In support of this over 500 high definition units have been provided to regional and rural schools. This was in addition to 153 units allocated for regional and rural schools through the BER / ICT packages. Without high quality fast broadband the technology will be inefficient and subsequently underutilised. The emphasis of this implementation is to support:
 - increased curriculum access, specifically for secondary and disengaged students
 - use of the Ultranet as part of a broad virtual schooling model
 - the specific needs of special needs students, including students who have hearing difficulties
 - access to programs which support language skill development
 - teacher professional development

Virtual Conference Centre (VCC)

- The VCC, delivered via software as a service (SAAS), contributes significantly to optimising learning opportunities for students and the workforce whilst addressing disadvantage, particularly in rural and remote regions. As of Q2 2011, the VCC has had a total of **3,457** web conference sessions with **37,344** participants. This represents a **23% increase** in the number of web conference sessions and a **16% increase** in participants as compared to Q2 2010. There is demonstrated and sustained growth in the wide scale use of the VCC for staff professional learning and online teaching and learning activities. Future growth in participation, accessibility and usage; along with integration with school based technologies such as Polycom HD conferencing devices, interactive whiteboards and DEECD systems such as Ultranet and FUSE that provide high quality digital learning and teaching resources, is actively being assessed on the basis of leveraging ubiquitous reliable high-speed broadband.

- In particular the VCC stands to benefit through increased methods of access such as high speed satellite services and 4G mobile coverage in regional and remote areas to ensure anywhere, anytime access to learning resources. Improved access technologies will allow students and teachers alike to access content, interact on-line and collaborate in real-time without being disadvantaged by unreliable or inadequate communications links and poor end user experience. Access to high speed broadband is expected to significantly boost participation in the digital economy amongst regional users of the VCC currently limited by the telecommunications infrastructure, whilst enabling new users to access virtual conference services via mobile and portable devices. One recent example of the VCC providing open access is the 2011 eBiology program. This program focuses on the development and provision of learning for students in a number of rural secondary colleges who are undertaking VCE Biology at Year 12. The VCC is used to connect teachers and students who are studying subjects at a school with few students or schools that are not able to offer the course.

Grampians Virtual Learning Network

- The Grampians Virtual Learning Network has developed over the past four years through cooperation between rural schools in the Wimmera utilising high definition video conferencing, online tools and other communication means to provide VCE subjects not available in the local school. Students are linked to classes via these tools receiving instruction and support from their 'remote' teacher through a blended learning approach. Falling enrolments and limited access to specialist teachers has seen the model grow from seven classes in 2009 to 25 classes in 2011, with the network currently involving 200 students and 26 schools across the Grampians Region and its boundaries. Both large and small schools are experiencing benefits in having access to a larger range of curriculum options for students. Students are now able to choose subjects according to their preferred pathway, rather than what would otherwise be directly available in their school.

Cybersafety

- SuperClubsPLUS Australia is an age verified, actively secure, moderated online social learning network for 6-12 year olds and their teachers. SuperClubsPLUS is an important element within the Department's cybersafety campaign, providing free access to the network for all Victorian students in Years 3-4 during 2011-12. As of Q2 2011 there are almost 10,000 individual sessions on SuperClubsPLUS each day (8am-9pm), of which over 7,000 are by Victorian Year 3-4 students. On average, 750 students use this resource every hour spending up to 1hr online per session. High speed broadband, coupled with increased options around mobility is seen to present new opportunities for interaction within this environment.

Online curriculum

- Online learning has a clear capacity to create an integrated, 'anywhere, anytime' approach to education. A number of integrated models are already in place overseas, delivering curriculum and enhancing student and teacher use of ICT in education. Victoria is currently exploring opportunities to further increase the options for delivery and reach of educational outcomes to rural students. High speed broad band is an integral component for success of any such venture.

Attachment D - Consultations

- Regional Development Victoria and through them Regional Development Australia Committees
- Department of Justice regarding Emergency Services needs
- Department of Planning and Community Development
- Department of Treasury and Finance
- Consumer Affairs Victoria
- Aboriginal Affairs Victoria
- Department of Health
- Department of Education and Early Childhood Development
- Rural Health Alliances
- Skills Victoria
- Office for the Community Sector
- Municipal Association of Victoria
- A sample of individual rural councils
- Wimmera Development Association
- Martang P/L – Managers of the Martang area