



**Australian Government**  
**Australian Communications  
and Media Authority**

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Australia's regulator for broadcasting, the internet, radiocommunications and telecommunications

[www.acma.gov.au](http://www.acma.gov.au)

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# **Communications Services Availability in Australia 2005–06**

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# Introduction

## About this report

This is a report by the Australian Communications and Media Authority (ACMA) about the availability of communications services in Australia.

This report provides an update to the *Telecommunications Services Availability in Australia Report 2004–05*, which was released in November 2005. The report highlights the changes in service availability occurring in the 2005–06 year, and provides analysis of the investment supply and consumer demand factors that influence infrastructure developments.

The examination of service availability undertaken in this report is intended to provide a high level analysis of service availability across Australia in residential and small business retail markets. When assessing the availability of services, Australia's population density and dispersion needs to be taken into consideration.

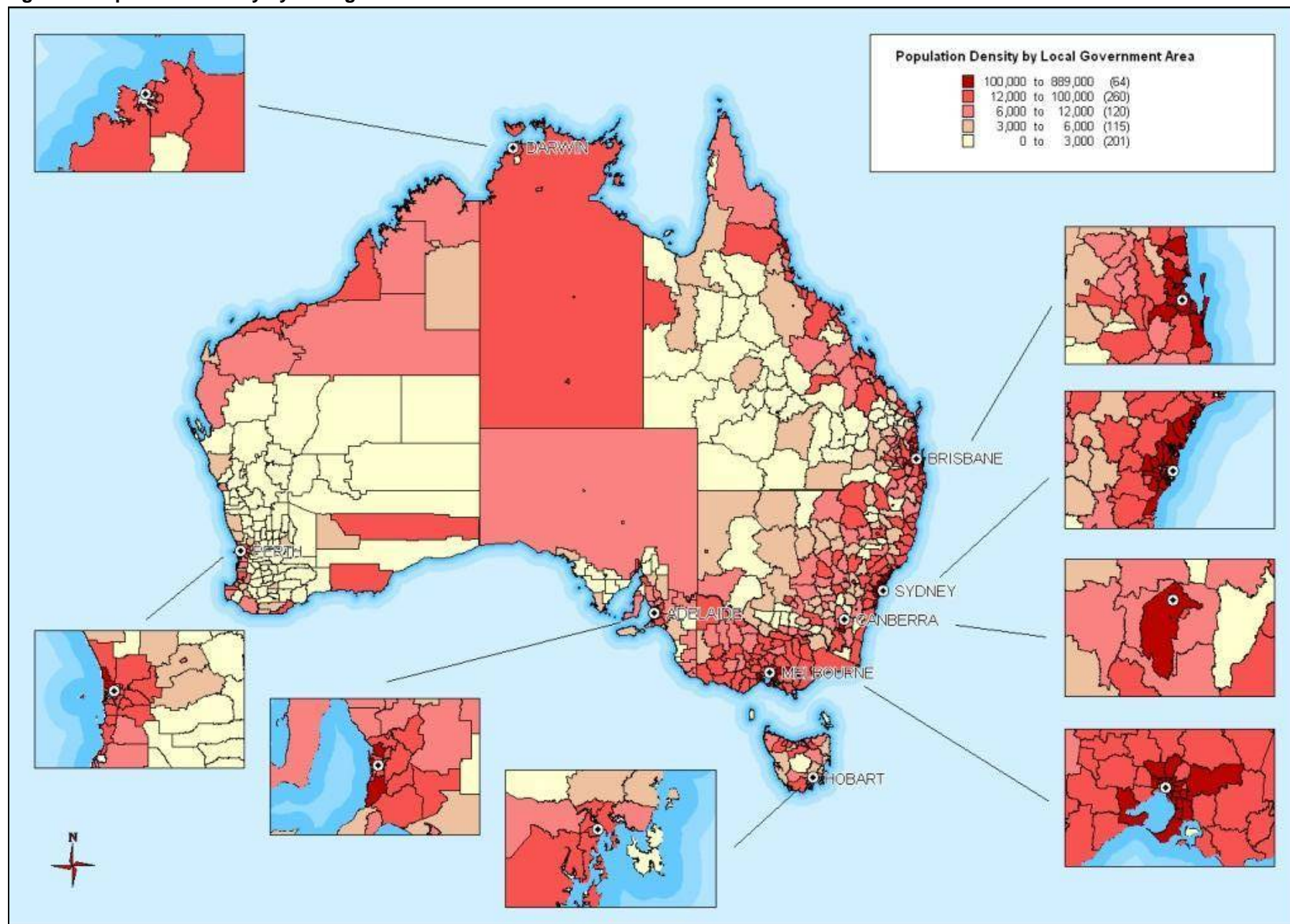
Figure 1 provides an overview of population density by local government area (LGA), and demonstrates the main concentration of Australia's population in the capital cities and along the eastern seaboard. Population densities may affect the commercial viability or attractiveness for investment, and the appropriateness of certain technologies for the deployment of services.

Throughout the report, there are grey special feature boxes that provide some context and current examples about innovative services either provided at present on a small scale, expected to be available soon, or currently available internationally.

Maps included in this report use colour to demonstrate the geographic availability of services. It is recommended that this report should be printed in full colour to enable coverage maps to be correctly interpreted. Grey scale printing may make it difficult to interpret these maps accurately. Alternatively, maps should be viewed on a computer screen to assist correct interpretation.

ACMA intends to release an update on service availability through a joint report with the Australian Competition and Consumer Commission (ACCC) in the second quarter of 2007.

Figure 1: Population density by local government area



Source: Australian Bureau of Statistics

## **INFORMATION SOURCES**

Information was obtained directly from major telecommunications carriers and carriage services providers (CSPs) on the service types and geographic areas served by them as part of an annual data request by ACMA (referred to as the 'ACMA data request' throughout the report). Those carriers and CSPs were selected to participate in the data collection arrangements on the basis that they provide networks that supply access to fixed voice, payphones, mobile, or data services.

Other primary sources of data included:

- carrier licensing and numbering allocation information available to ACMA;
- the Australian Bureau of Statistics *Internet Activity Survey*;
- publicly available information on government funding initiatives such as the Higher Bandwidth Incentive Scheme (HiBIS) and Broadband Connect;
- Roy Morgan Single Source survey data; and
- news articles and various publicly available surveys.

In addition, information on commercial initiatives and actions, network coverage and service take-up was obtained from publicly available sources such as company websites and public announcements.

## **FEEDBACK**

ACMA is interested in feedback from the public, and welcomes comment on aspects of the report including the comprehensiveness of the information provided and the report's style. In particular, ACMA is keen to hear from providers who may not have been included in the report and who are willing to provide information on network coverage and availability of services for future reports.

Comments about the report should be sent via email to [market.analysis@acma.gov.au](mailto:market.analysis@acma.gov.au) by close of business 15 January 2007.

## **DISCLAIMER**

The information in this document was obtained from sources ACMA believes to be reliable. However, ACMA does not guarantee the accuracy, completeness or adequacy of the information. To the maximum extent permitted by law, ACMA is not liable for any errors, omissions or inadequacy in the information, or for any reliance on the information.

Predications and forward-looking statements in this document are based on information existing and known at the time of publication, and are subject to risks, uncertainties and changes in circumstances beyond the control of ACMA.

Opinions and positions stated in this document are subject to change without notice.

## Executive summary

Over the 2005–06 reporting period, there has been significant investment in telecommunications infrastructure, involving the deployment of internet protocol-based networks and services in the broadband, third generation (3G) mobile and voice over internet protocol (VoIP) service markets.

ACMA has identified 19 internet service providers (ISPs) deploying their own network infrastructure (DSLAMs) in 2005–06, up from nine ISPs in 2004–05. These deployments are primarily driven by ISPs seeking to differentiate their services from the resale of Telstra Wholesale services. The scope and scale of these deployments is creating infrastructure competition, and new wholesale opportunities outside of Telstra Wholesale's provision of internet services.

Network deployments are helping to provide greater bandwidth to Australian broadband users, with many ISPs deploying ADSL2+ broadband services technically capable of delivering up to 24 megabits per second (Mbit/s) to end-users. This has led to a substantial number of consumers in metropolitan areas of capital cities being able to access bandwidth well in excess of the 1.5 Mbit/s to which they may have previously been limited.

The take-up of internet services grew from 5.4 million subscribers to 5.9 million subscribers between March 2005 and June 2006.<sup>1</sup> The number of internet users with broadband connections increased from 1.7 million to 3.1 million over the same period. The rate of growth in broadband take-up in regional areas was double that of metropolitan areas, possibly due to the low base of subscribers in regional areas and Australian Government programs such as HiBIS and Broadband Connect, which have encouraged the deployment of broadband networks in regional and rural areas.

3G mobile services were launched by Optus, Telstra and Vodafone over 2005–06, with Hutchison's established '3' network exceeding one million customers by the end of June 2006. The launch of 3G services has seen increased availability of mobile broadband services in metropolitan areas, with the four mobile carriers providing services through laptop data cards. In addition, the iBurst network provides mobile broadband services and the Unwired network provides nomadic broadband services.

Fixed voice service numbers declined over 2005–06, with fixed to mobile substitution having an affect on the willingness of some consumers to maintain both a fixed-line and mobile phone. Mobile phone subscriber numbers reached 19.7 million services, with 96 mobile services for every 100 Australians. ACMA has identified growth in the number of voice over internet protocol (VoIP) service providers, with more than 115 companies offering services in Australia.

Consumer usage of multimedia content over the internet continues to grow, with the volume of data downloaded by Australian users almost tripling in the past 15 months. Australian users are embracing instant messaging, peer-to-peer services, social networking, music and video download websites, and as such ACMA expects to observe a gradual migration of consumers to higher bandwidth services over 2006–07.

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<sup>1</sup> The Australian Bureau of Statistics *Internet Activity Survey* was conducted in March 2005, and June 2006. Therefore March 2005 data is used for comparative purposes.



# Chapter 1 – Data networks and services

Over the 2005–06 reporting period, some of the most significant developments in the communications industry have involved the broadband sector. This chapter discusses the increases in broadband take-up, rollout of new broadband infrastructure, and the factors which affect these rollouts. For the purposes of this report, broadband is used to refer to an always on internet connection providing bandwidth equal to or greater than 256 kilobits per second (kbit/s). This definition is consistent with the Organisation for Economic Cooperation and Development (OECD) and the Australian Bureau of Statistics (ABS) definition and use of the term.<sup>2</sup>

## Internet services in operation

### SUBSCRIBER NUMBERS AND SERVICE PLANS

At 30 June 2006, there were almost six million internet subscribers across Australia. This included 3.1 million broadband subscribers, an 88 per cent increase since the Australian Bureau of Statistics last reported on internet take-up in March 2005.<sup>3</sup> Over the same period, the number of dial-up subscribers has declined from 3.7 million to 2.8 million subscribers.

The decline in dial-up subscriber numbers can largely be attributed to the migration of consumers from dial-up to broadband services as Table 1 shows. A dial-up service represents a cheap entry point to internet services, allowing users to undertake basic internet activities that do not require high bandwidth. It may also give users an insight into applications and content that are more readily accessible with higher bandwidth services. As these applications, content and media gain popularity, it is expected that users will progressively migrate to faster broadband services with higher download quotas.

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<sup>2</sup> [www.oecd.org](http://www.oecd.org) and [www.abs.gov.au](http://www.abs.gov.au)

<sup>3</sup> Australian Bureau of Statistics, *Internet Activity Survey*, March 2005 and June 2006

**Table 1: Subscriber numbers by user type and access speed, March 2005 and June 2006**

Speed of internet service	Business and government (000's)			Household (000's)		
	March 2005	June 2006	% change	March 2005	June 2006	% change
Less than 256 kbit/s (dial-up and ISDN)	447	317	-29	3,746	2,492	-33
256 to < 512 kbit/s	151	207	37	508	927	82
512 to < 1.5 Mbit/s	130	195	50	398	879	121
1.5 Mbit/s or greater	117	147	26	482	781	62

Source: Australian Bureau of Statistics *Internet Activity Survey*, June 2006 quarter

\*Note that the June 2006 *Internet Activity Survey* surveyed only ISPs with more than 10,000 active subscribers. June quarter results may underestimate actual subscriber numbers. The March 2005 *Internet Activity Survey* used a census methodology which measured subscribers from all ISPs.

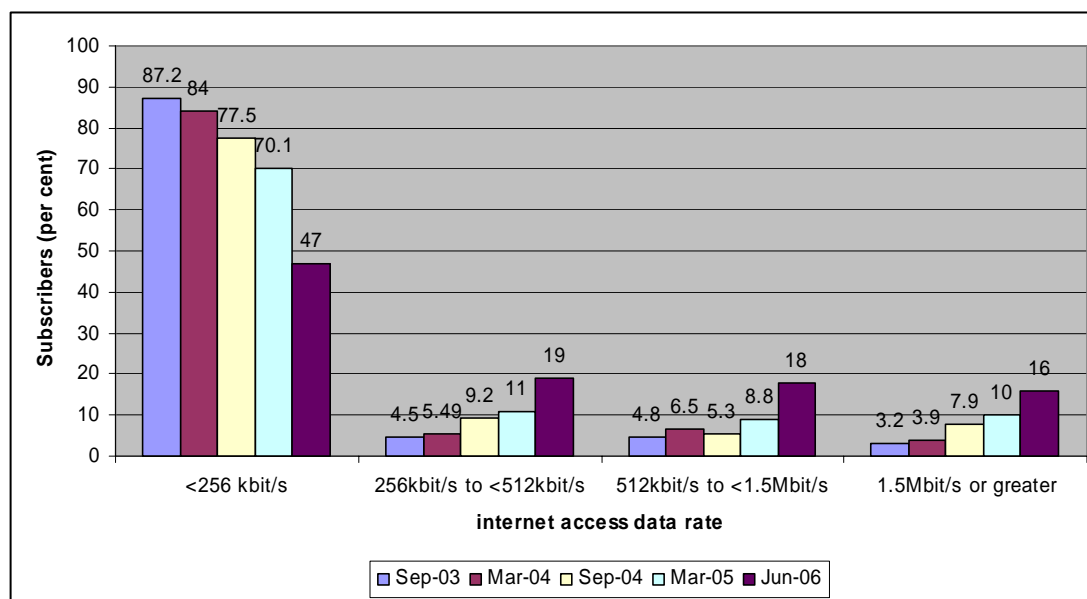
Broadband take-up data provided by the Australian Bureau of Statistics *Internet Activity Survey* (June 2006) shows that:

- 47 per cent of internet connections are below 256 kbit/s (mainly dial-up services)
- 19 per cent of internet connections are between 256 kbit/s to less than 512 kbit/s (36 per cent of broadband connections)
- 18 per cent are between 512 kbit/s to less than 1.5 kbit/s (34 per cent of broadband connections)
- 16 per cent are 1.5 Mbit/s or greater (30 per cent of broadband connections)

This data indicates that in the broadband market, most subscribers are using 'entry level' plans with 256 or 512 kbit/s of bandwidth. However, 30 per cent of broadband connections are now using bandwidth of 1.5 Mbit/s or greater, indicating that there are consumers who derive value from higher bandwidth and download quotas of these services (offering 1.5Mbit/s and above), and are willing to pay an incremental extra cost to obtain these services.

ACMA expects the availability of higher bandwidth services (1.5 Mbit/s and above) to increase over the next 12 months. Significant increases in demand for services above 1.5 Mbit/s (such as ADSL2+ services) may be derived from experienced internet users who are attracted to the internet's media-rich content (discussed later in this report) and IPTV service offerings anticipated to be launched in 2006-07.

**Figure 2: Percentage of internet subscribers by bandwidth of connections\***



Source: ABS *Internet Activity Survey*, March 2005, June 2006

\*Note that the June 2006 IAS surveyed only ISPs with more than 10,000 active subscribers.

Higher bandwidth plans also generally allow higher volumes of data to be downloaded, and these larger download quotas are expected to become increasingly attractive to users as they access large files (such as music and movies) through their broadband connection. In the June 2006 quarter, 36.2 billion megabytes were downloaded by Australian users compared with 12.3 billion in the March 2005 quarter. Most of the growth in downloads come from broadband connections. Download volumes for dial-up remain relatively constant at about 1.5 billion megabytes.<sup>4</sup>

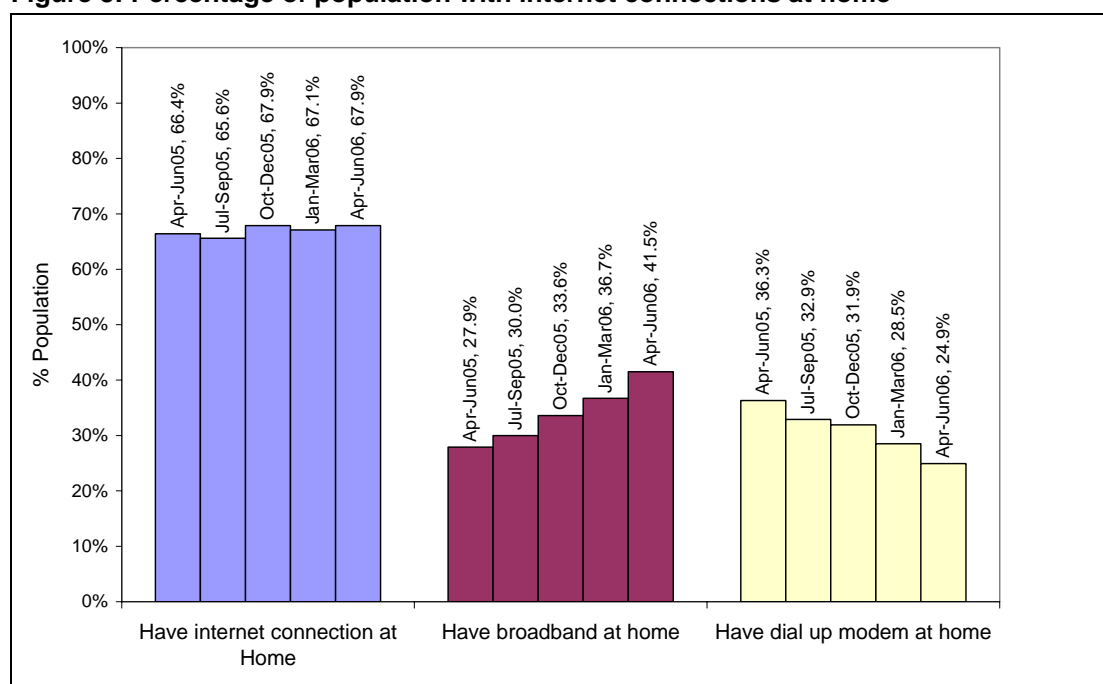
## INTERNET USE: BY POPULATION

Roy Morgan Research data shows that access to the internet from home has stabilised at approximately 67–68 per cent of Australians with home access. Of the people without home internet access in the quarter ending June 2006, 49 per cent are aged 50+ years, with the remainder being in lower than average wealth demographic categories. Almost 80 per cent responded that they were unlikely to connect in the next six months with the most prominent reasons being ‘not relevant to my lifestyle’ (37.8 per cent) and ‘too expensive’ (27.9 per cent).

In the quarter ending June 2006, 41.5 per cent of the Australian population had a broadband service at home compared with 27.9 per cent in the quarter ending June 2005. The trend shows consistent growth in broadband throughout the year and a corresponding decrease in dial-up access.

<sup>4</sup> Australian Bureau of Statistics, *Internet Activity Survey*, June 2006

**Figure 3: Percentage of population with internet connections at home**



Source: Roy Morgan Research Single Source 2005–06. Sample size n=approx. 5,500 per quarter 14yr+, internet home connection type categories included dial-up, broadband/high speed, ISDN and no answer

## INTERNET USE: METROPOLITAN VS REGIONAL

According to Roy Morgan Research data, in April–June 2006 31.9 per cent of the regional population and 47.4 per cent of metropolitan population had broadband connections, compared with 17.7 per cent and 34.1 per cent respectively at the same time in the previous year. Although regional areas have a lower overall proportion of broadband take-up, regional households have taken up broadband subscriptions at a faster rate (80 per cent growth) than metropolitan households (39 per cent growth) in the last year. Increased regional take-up rates may in part be a product of the Australian Government’s HiBIS and Broadband Connect schemes, which encourage the rollout of broadband technologies to regional areas.

## Fixed-line broadband availability

### ADSL BROADBAND INFRASTRUCTURE DEVELOPMENTS

Greater broadband use and take-up has encouraged new broadband infrastructure rollouts. ACMA has identified 19 ISPs that were deploying their own DSLAM infrastructure during the 2005–06 reporting period. This is an increase from the nine ISPs identified with infrastructure deployments in 2004–05.

ISPs have begun rolling out their own DSLAM infrastructure as they seek the independence it provides from reselling Telstra Wholesale’s broadband services, with the associated restrictions on service offerings, pricing and bandwidth delivery that may result from being a reseller of services. Some ISPs also cited the cost benefits of installing their own DSLAM infrastructure, because it allows greater control over costs and potentially higher earning margins per customer. Network deployments also provide the opportunity of additional revenue streams through provision of wholesale services to other ISPs.

Installation of DSLAM infrastructure is made possible through the Australian Competition and Consumer Commission (ACCC) declaration of the unconditioned local loop (ULL) in 1999, and of the line sharing service (LSS) in 2002. The ULL access declaration allows ISPs to provide their own telecommunications services over Telstra's fixed copper 'last mile' network, by installing their own infrastructure within local exchanges (typically to provide broadband and voice services). The LSS access declaration also allows for the installation of infrastructure. However, the ISP shares the last mile network, with Telstra continuing to provide voice services and the ISP providing broadband services simultaneously on the same copper pair.

Table 2 shows the 19 service providers with their own DSLAM infrastructure. The most extensive rollouts have emerged from Optus, iiNet, Primus, and PowerTel. Optus had installed approximately 100 DSLAMs by April 2006, and intends to extend this rollout to 340 exchanges by March 2007. By June 2006, iiNet had installed DSLAMs into 245 exchanges, and migrated approximately 100,000 of its resale customers onto its own network. iiNet has publicly stated it aims to cover 90 per cent of the Australian metropolitan population by January 2007. Primus has deployed approximately 182 DSLAMs, and PowerTel 126.

**Table 2: Internet service providers with DSLAM infrastructure, 30 June 2006**

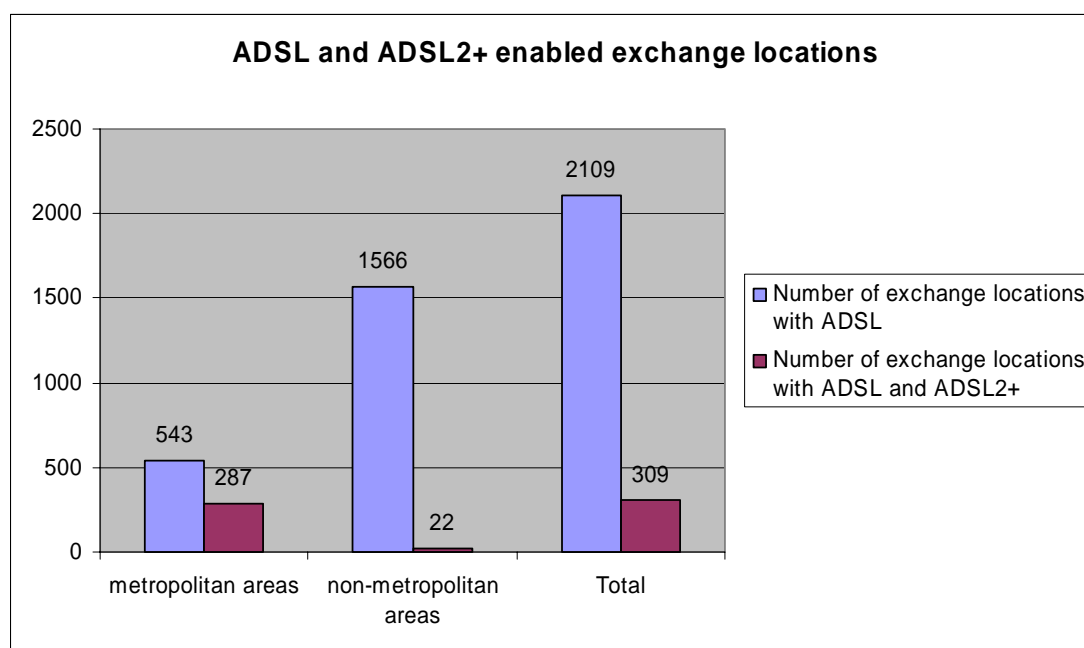
<b>Service providers with own DSLAM infrastructure</b>	<b>Number of DSL-enabled exchanges</b>
AAPT	22
Adam Internet	25
Amcom	34
iiNet	245
Internode/Agile	47
Netspace Networks	Not available
Nextep	Not available
Onthenet	8
Optus	100
People Telecom	25
PowerTel	126
Primus	182
Regional Internet Australia	6
Soul	Not available
Telstra	2109
TPG	65
TransACT	Not available
TSN Internet	27
Wideband networks	1

Source: service provider websites

ISPs that have undertaken infrastructure deployments have predominantly rolled out ADSL2+ technology. ADSL2+ offers higher bandwidth than the original ADSL technology, providing theoretical download speeds up to 24 Mbit/s. Figure 4 shows that the rollout of ADSL2+ is still in the early stages, with only 14 per cent of DSL

enabled exchange locations providing ADSL2+ services (at 30 June 2006). These services are mostly only available in metropolitan areas of Adelaide, Brisbane, Canberra, Darwin, Hobart, Melbourne, Perth and Sydney, with limited availability identified in regional areas. In metropolitan capital city areas, ACMA identified that 53 per cent of DSL enabled exchanges provided ADSL2+ services, indicating that ADSL2+ services are becoming available to the majority of metropolitan broadband consumers. With infrastructure competition mainly present in metropolitan areas of capital cities, upgrades of DSL exchanges in regional, rural and remote areas are likely to be driven by Telstra's network intentions, rather than competitive pressures from other service providers.

**Figure 4: Number of ADSL and ADSL2+ enabled exchanges, 30 June 2006**



Source: service provider websites

In November 2006 Telstra announced plans to offer ADSL2+ services in exchanges where competitors are also offering ADSL2+ services. Telstra also announced it would commence retailing and wholesaling ADSL plans at speeds of up to 8 Mbit/s where ADSL2+ services are not available. Prior to these announcements Telstra 'throttled' the speed of its ADSL services to a maximum of 1.5 Mbit/s to provide 'bandwidth consistency' to its customers. These restrictions also applied to ISPs reselling Telstra Wholesale services.

## NEW ADSL WHOLESALEERS

In 2006, iiNet, PowerTel, Optus, Nextep, and Agile were in the process of actively wholesaling or establishing commercial arrangements for wholesaling their ADSL2+ networks to other internet service providers. This is one of the first significant steps towards wholesale infrastructure competition in the broadband market. It is likely that by offering wholesale services, each carrier will be better able to recover the costs of network rollouts and more service providers will offer ADSL2+ services to Australian consumers. This is likely to have the effect of reducing prices and increasing the take-up of faster internet services.

## GEOGRAPHIC COVERAGE OF ADSL

At 30 June 2006, ADSL was being provided by at least one service provider in 2,109 of the 5,058 Telstra local exchanges around Australia, compared with 1,760 at 30 June 2005. Telstra states that its ADSL coverage is available to 88 per cent of Australians.<sup>5</sup>

Figure 5 shows ADSL-enabled exchanges around Australia, and the number of competing infrastructure providers at each exchange. Infrastructure competition is predominantly based in the capital cities of Adelaide, Brisbane, Melbourne, Perth and Sydney, with many consumers having access to two or more infrastructure providers. By ACMA's estimates, the majority of locations are serviced by one infrastructure provider, with 309 exchanges serviced by more than one infrastructure provider. Figure 6 shows the location of exchanges around Australia with capacity to provide ADSL2+.

**Table 3: Number of infrastructure providers by number of ADSL-enabled exchanges, 30 June 2006**

Number of infrastructure providers	Number of exchanges
1 infrastructure provider	1,800
2 infrastructure providers	115
3 infrastructure providers	61
4 infrastructure providers	67
5 or more infrastructure providers	66

Source: service provider websites

### ADSL coverage limitations

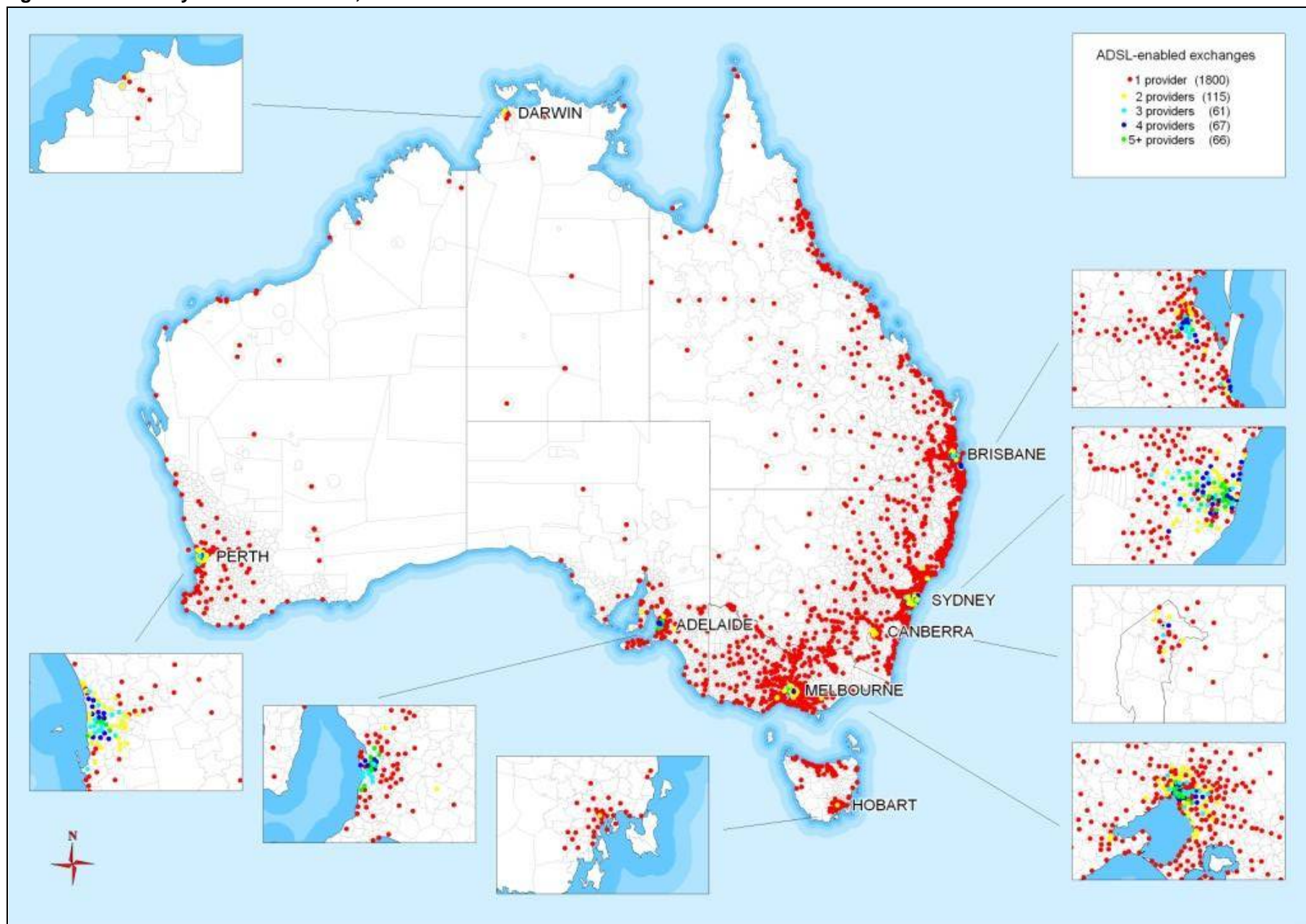
Within the service areas of ADSL-enabled exchanges, there may be customers who are unable to access an ADSL broadband service because they are located beyond the technical limits for ADSL transmission (typically four to five kilometres from the exchange). The transmission distance limitations of ADSL may be affected by the quality of the copper network infrastructure or, in certain circumstances, customers connected by a pair gain system may not be able to access ADSL at all.

Telstra has announced that, over 2005–06, traditional distance constraints of ADSL services were reduced, particularly in regional and remote areas where Telstra claims it is currently providing ADSL almost eight kilometres from the exchange.<sup>6</sup> ADSL services in some regional and remote areas can support ADSL transmission over these distances, due to thicker gauge copper that was originally installed to help support voice services over longer distances. In 2005, Telstra conducted a trial of ADSL up to 15 kilometres from an exchange, and ACMA understands that Telstra is continuing its work to further extend the reach of services.

<sup>5</sup> Telstra Media Release, *Million Milestone for BigPond ADSL*, 26 April 2006

<sup>6</sup> *Communications Day*, 18 July 2006

Figure 5: Availability of ADSL services, 30 June 2006



Source: service provider websites



Figure 6: Availability of ADSL2+ services, 30 June 2006



Source: service provider websites

## **CABLE COVERAGE**

Hybrid fibre coaxial (HFC) networks, also known as cable, involve the use of optical fibre and coaxial cable to carry data at high rates capable of delivering broadband access, subscription TV and voice services. The optical fibre connection forms the 'backbone', with coaxial cable running from fibre nodes to the customers' premises.

There are two major HFC networks in Australia, which are operated by Optus and Telstra. The Optus network passes 1.4 million homes in Brisbane, Melbourne and Sydney, while the Telstra network passes 2.5 million homes in Adelaide, Brisbane, Gold Coast, Melbourne, Perth and Sydney. There is a considerable degree of coverage overlap between these networks, resulting in combined coverage to 2.6 million homes. These cable networks are alternative broadband networks to the DSL networks discussed in sections above.

No significant extensions of the coverage provided by these networks can be reported for the 2005–06 period. However, in February 2006 Telstra upgraded the technical capabilities of its network, increasing the bandwidth available and launching its Cable Extreme broadband product, which offers speeds up to 17 Mbit/s on its HFC network (starting from \$39.95 per month with a 200 megabyte download limit).

Neighborhood Cable uses its HFC networks to provide broadband, pay TV and voice telephony services in the regional Victorian cities of Ballarat, Mildura and Geelong.

### **BROADBAND OVER POWER LINES**

Broadband over power lines (BPL) is a technology that utilises existing electricity power lines for the transmission of broadband data. BPL is also known as power line telecommunications (PLT) or power line communications (PLC). BPL can be used by a carrier:

- to supply broadband services to end-users (known as access BPL);
- as a technology for piping of broadband within a house without additional wiring (in-house BPL);
- or by electricity companies as a mechanism to manage and control the operation of an electricity distribution network.

Some trial deployments have been conducted in Australia, where BPL is used as part of the link to the end-user. A number of these trials are still under way. Carriers and electricity utilities deploying BPL technology are examining the commercial viability of BPL as a broadband access technology and are working with community stakeholders to address technical issues such as radiocommunications interference.

Several organisations have recently completed trials of BPL as an access technology. Aurora conducted trials of BPL services to approximately 500 homes in Tasmania from late 2005. Aurora has since entered into partnership with AAPT and the cooperative venture TasTel has obtained a carrier licence. Energy Australia and the Woomera Consortium have also conducted trials in New South Wales.

If BPL becomes commercially viable and the issues surrounding the potential interference can be resolved, it is likely to provide a competitive alternative distribution network and increase service availability and diversity.

## Wireless broadband availability

### WIRELESS BROADBAND IN METROPOLITAN AREAS

While wireline broadband access (ADSL and cable) dominate the access market in metropolitan areas, Personal Broadband Australia (PBA) and Unwired are two of the larger wireless ISPs that are competing with wireline services in these areas. PBA's iBurst service has a presence in Brisbane, Canberra, the Gold Coast, Melbourne and Sydney, and plans to provide new coverage in Adelaide and Perth. When complete, the iBurst network should provide coverage to 75 per cent of the population and 90 per cent of businesses.<sup>7</sup> Unwired offers services in Sydney and in April 2006 extended its services to the inner metropolitan areas of Melbourne, with coverage expected to expand.

A benefit of wireless services is that they do not require a fixed telephone line to provide the service, which removes the line rental costs that a consumer may incur as part of a wireline broadband solution (such as ADSL). This provides opportunities for fixed-mobile substitution, where consumers no longer commit to a fixed-line service, instead using their mobile phone for voice calls, and wireless broadband for internet access. Wireless broadband technologies also have the potential to service areas where there is no wireline broadband access. EVDO and 3G technologies are other types of wireless broadband technologies but are discussed in the mobile broadband section of this report.

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<sup>7</sup> [www.iburst.com.au](http://www.iburst.com.au)

## **WiMAX**

WiMAX is a wireless technology that can provide broadband connections over long distances. It can theoretically provide connection speeds of up to 70 Mbit/s and a typical base station would provide coverage to a radius of between five and 10 kilometres.

The WiMAX Forum was formed in April 2001 to help to promote and certify the compatibility and interoperability of broadband wireless access equipment. It backs the development of wireless metropolitan area network (MAN) products based on the Institute of Electrical and Electronics Engineers (IEEE)—802.16 and European Telecommunications Standards Institute (ETSI)—HIPERMAN (High Performance Radio Metropolitan Area Network) standards.

A primary aim of the WiMAX Forum was to create a single interoperable standard from the IEEE and ETSI standards. IEEE 802.16a was developed with the intention of allowing multiple vendors to produce interoperable equipment. It allows vendors to implement different modulation schemes and customise their equipment. This means that most of the existing 802.16 products are different depending on the vendor.

To create a single interoperable standard, the WiMAX Forum chose a modulation scheme (256 FFT OFDM) that is common between 802.16a and HIPERMAN. It also developed system profiles covering the popular ‘free’ (class-licensed) bands at 2.4 GHz and 5 GHz, and other licensed bands at 2.3 GHz, 2.5 GHz and 3.5 GHz.

To ensure the interoperability of the broadband wireless access (BWA) equipment, WiMAX launched a certification program to ensure the compliance of products against its specification. A ‘WiMAX Certified’ label is granted once testing has been completed successfully.

WiMAX deployment was planned to occur in three phases: fixed wireless connections through outdoor antennas; indoor installation with smaller antennas; and integrated into mobile computers to support roaming between WiMAX service areas.

There are currently no WiMAX-certified networks in Australia. A number of service providers are claiming to have WiMAX networks and generally these networks are being deployed using equipment that meets the generic IEEE 802.16 standard, which has not yet passed through the WiMAX Forum certification process.

WiMAX is intended to provide DSL-like services at DSL prices, but with portability. It is designed to operate over distances of up to 50 kilometres and to handle many users spread out over these distances. It supports mesh network topology, is optimised for outdoor non line-of-sight performance and supports ‘smart’ antennas.

## **WI-FI SERVICES**

Wi-Fi services are a type of wireless local area network (WLAN)—a generic term used for equipment that can form data networks with other equipment over short distances (usually less than 500 metres) without the use of connecting wires.

Wi-Fi equipment meets the 802.11 family of standards developed by the IEEE. Wi-Fi equipment could generally be characterised as low cost, partly due to its large scale popularity of use and the fact that it operates on class-licensed radiofrequency spectrum. Class licences do not have to be applied for and no licence fees are payable.

They are ‘open, standing authorities’ allowing anyone to operate specific equipment, provided that operation is within the conditions of the licence.

There are many operators offering public Wi-Fi access, also known as ‘hotspots’. Some of the larger operators in this market are shown in Table 4.

**Table 4: Wi-Fi hotspot service providers, July 2006**

Company	Number of Australian hotspots	Service provider	Carrier
iPass	1,216	Yes	No <sup>8</sup>
Telstra	965 <sup>9</sup>	Yes	Yes
Azure	457	No <sup>10</sup>	Yes
Boingo	375	Yes	Yes
NTT DoCoMo	357	Yes	Yes
SkyNetGlobal	152	Yes	Yes
Optus	120	Yes	Yes

Source: service provider websites

Generally, these hotspots are located in major metropolitan cities, most commonly in hotels, restaurants, cafes, shopping centres, airports, schools, universities, convention centres and libraries. Providers such as Telstra have ‘wireless hotspot’ partnerships with companies such as McDonalds, Rydges Hotels, Starbucks Coffee and Qantas. Optus hotspot partners include Gloria Jean’s Coffees, Hudsons Coffee and Stamford Hotels.

## SATELLITE BROADBAND

Satellite broadband services are available across Australia. At the end of 2005–06, there were at least 13 satellite service providers offering broadband services to both residential and business customers. These services provide 100 per cent coverage of Australia’s land mass, except where access is limited by a customer’s particular building type and location. Satellite services are generally only used as a last resort in rural and remote areas where alternative infrastructure is unavailable. This is because they typically require physically large infrastructure (satellite dish), have limited bandwidth and (without government-funded subsidies) are more expensive compared with other broadband options. In addition, depending on the type of satellite, the delay introduced can be unacceptable when accessing real-time services, such as VoIP, streaming and video calling.

In 2005–06, Australian Private Networks established a new broadband satellite service under the ‘ACTIV8me’ brand. The service provides broadband using the new IPStar satellite, which provides services across the Asian region. Utilising the Australian Government’s Broadband Connect funding initiative, the Active8me service aims to provide metropolitan equivalent broadband service to regional, rural and remote users. An entry level product offers a 256 kbit/s service for \$29.95 per month (over 36 months), providing 500 megabytes of download (with no up-front installation costs).

<sup>8</sup> These hotspots are operated by other carriers, such as Telstra and Azure.

<sup>9</sup> At 18 April 2006

<sup>10</sup> Access to these hotspots is via partnership with other service providers.

## 3G MOBILE NETWORKS

3G mobile networks are designed to provide both voice and data services to end-users, and are discussed in this section in relation to their data transmission and internet access capabilities (see Chapter 3 for discussion of mobile voice services).

3G networks can provide access to data and the internet through:

- a mobile handset which provides access to internet sites or content provided by the network carrier, commonly referred to as a ‘walled garden’;
- a mobile handset functioning as a modem for a laptop or personal computer (plugged into the laptop or PC);
- a data card that is inserted into a laptop or PC.

In April 2003, Hutchison was the first Australian company to launch 3G services, with its ‘3’ service providing coverage across Adelaide, Brisbane, Canberra, the Gold Coast, Melbourne, Perth and Sydney.

In late August 2004, Telstra and ‘3’ entered into an infrastructure-sharing agreement to jointly own and operate ‘3’s existing 3G network and fund future network development. The agreement provided Telstra with a low-cost entry to the 3G market, and helped reduce network deployment costs for ‘3’. The agreement enabled Telstra to access the ‘3’ network from 1 July 2005. Telstra offered its own 3G services in September 2005 in areas of Adelaide, Brisbane, Canberra, Gold Coast, Melbourne, Perth and Sydney. In 2005–06, ‘3’ expanded coverage to include the Geelong and Werribee areas in Victoria, and Campbelltown in New South Wales.

On 6 October 2006, Telstra launched its own 3G network. The network (promoted as the ‘Next G’ network) will replace coverage of its CDMA mobile network. Telstra has committed to closure of its CDMA network in 2008, when its 3G coverage is as good as or better than currently available with CDMA technology. The 3G network provides coverage to 98 per cent of the Australian population, and may provide a new broadband access option to regional internet users (see Figure 7).

In November 2004, Optus and Vodafone entered into an agreement to build and operate a joint national 3G network. Vodafone launched its 3G service in Canberra, Melbourne and Sydney on 31 October 2005—the service was also available at airports in Adelaide, Brisbane, Canberra, Melbourne, Perth and Sydney. Optus launched its 3G service in Brisbane CBD, Canberra, Melbourne and Sydney, and in Adelaide, Brisbane and Perth airports on 14 November 2005.

By March 2006, joint Vodafone/Optus coverage had been extended to include the Gold Coast, utilising around 1,200 base stations and covering 50 per cent of the Australian population. There are plans to roll out a further 2,000 base stations by March 2007 to cover approximately 60 per cent of the population.

ACMA estimates that 3G services are available to 98 per cent of the Australian population. Consumers in capital cities have a choice between ‘3’, Vodafone, Optus, or Telstra services. Telstra’s 3G network is the only 3G service available in regional and rural areas of Australia (at October 2006).

### 3G service take-up

The take-up of 3G services grew moderately over 2005–06, from three per cent of mobile subscribers at the end of June 2005, to approximately eight per cent at the end

of June 2006. From information provided by mobile carriers, ACMA estimates there to be approximately 1.5 million active 3G services in operation.

In the current environment of declining voice revenues for mobile carriers, 3G services provide an opportunity for carriers to maintain or increase average revenue per user (ARPU) by generating new revenue streams from the sale of content.

## **MOBILE BROADBAND**

Mobile broadband services enable Australian consumers to access the internet while on the move. Services are generally marketed to business and corporate customers who are able to gain work efficiencies through access to information away from their office environment. While these services are promoted in a limited manner to residential consumers, the cost and download limitations of these services generally do not make them attractive to residential consumers as a primary form of internet access.

Mobile broadband services are supplied by the four mobile phone carriers and the Unwired and iBurst networks (Unwired services are nomadic/portable as opposed to fully mobile). The services are provided utilising a combination of 2.5G and 3G carrier networks, and in the case of Unwired and iBurst, via proprietary networks.

Mobile broadband costs range from \$29 per month with 100 megabytes of download, to \$109.95 providing two gigabytes of download. Unwired services offer the most generous download limits, offering up to six gigabytes of download on its \$89.95 per month plan (750/256 kbit/s data speeds).

Current market offers favour up-front payments for the required data card, with costs ranging between \$274 and \$599 ('3' offers free data cards on its 18-month plans). During 2005–06, competition in the form of price reductions and download limit increases are making mobile broadband a more viable option for business and residential consumers. Telstra has also hinted that internet access provided over its 3G network could be used as an alternative internet access technology where consumers are unable to access a fixed broadband solution (such as ADSL).

Mobile broadband is provided by '3' across its 3G broadband zones. Optus provides mobile broadband utilising a combination of its 3G, GSM (2G) and Wi-Fi networks. Optus offers consumers the choice of a data card that provides coverage across its 3G and GSM network for \$399 up-front, or a card that includes Wi-Fi coverage for \$599.

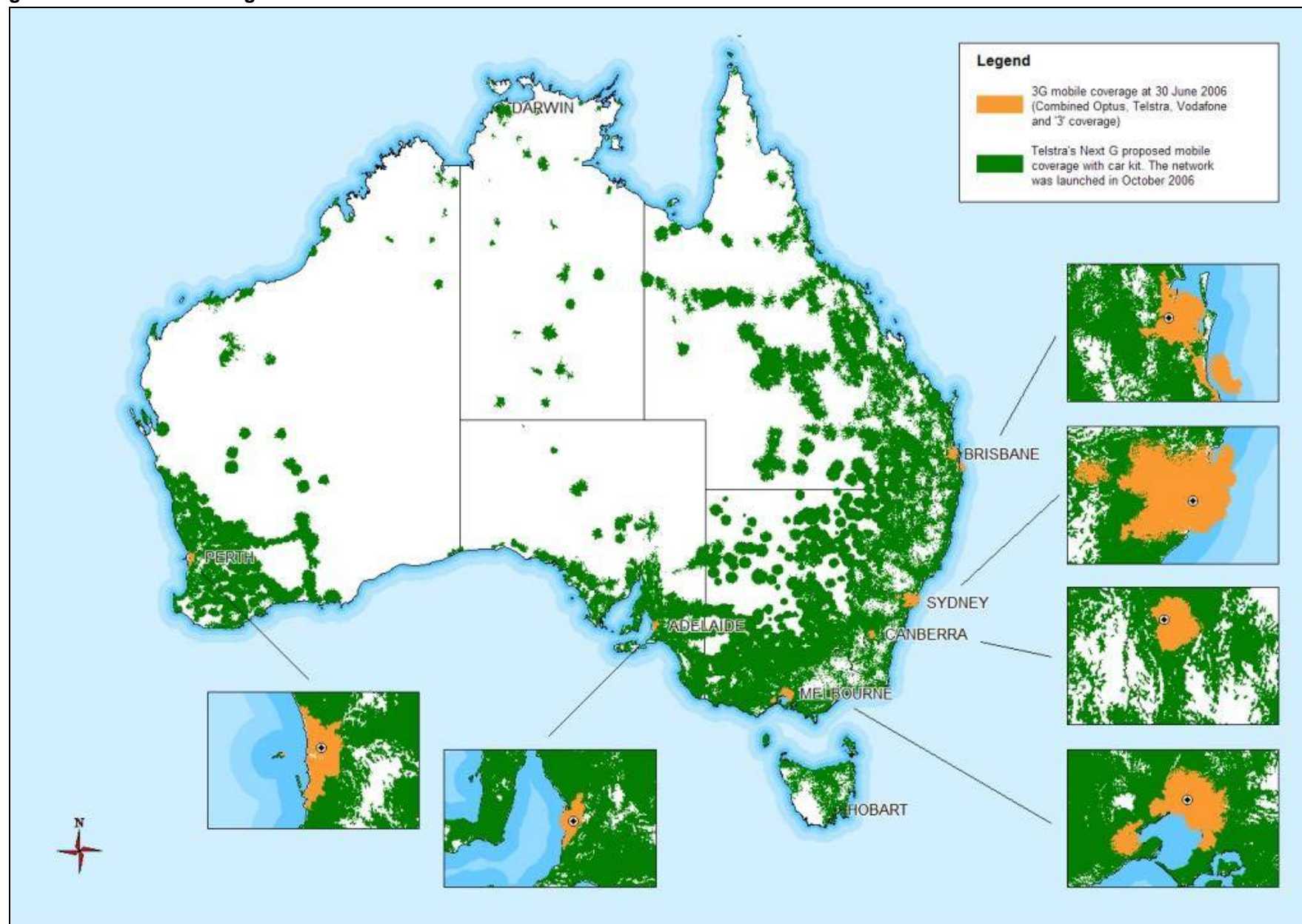
Vodafone offers mobile broadband coverage across its 3G network at speeds of up to 384 kbit/s, and on its GPRS network when customers are outside 3G coverage. Vodafone upgraded its network in Sydney and Melbourne to provide speeds up to 1.4 Mbit/s in October 2006.

Telstra provides mobile broadband over its CDMA network (in EVDO enabled areas), its 3G network shared with '3', and through its other 3G network (promoted as the Next G network). Unwired provides coverage across its networks in the Sydney and inner Melbourne suburban areas. iBurst provides coverage in Brisbane, Canberra, the Gold Coast, Melbourne and Sydney.

Figure 7 shows the mobile broadband coverage provided by the 3G networks of Optus, Telstra, Vodafone and '3'. A list of mobile broadband service plan prices, bandwidth and download options is at Appendix 2.



Figure 7: 3G Mobile coverage 30 June 2006 and 30 October 2006



Source: ACMA data request

Note: Note: For latest coverage see [www.telstra.com.au](http://www.telstra.com.au).



## Other broadband developments

### GOVERNMENT PROGRAMS TO ENHANCE BROADBAND AVAILABILITY IN REGIONAL, RURAL AND REMOTE AREAS

The Australian Government has implemented several initiatives to improve the availability of telecommunications services in rural, regional and remote Australia. HiBIS was a \$157.8 million scheme providing registered ISPs with incentive payments to supply higher bandwidth services in regional, rural and remote areas at prices comparable to those available in metropolitan areas. HiBIS was part of the government contribution to the National Broadband Strategy and was developed in response to recommendation 6.3 of the report of the Regional Telecommunications Inquiry. The HiBIS program ceased on 31 December 2005, and was replaced with the Broadband Connect program from 1 January 2006. Figure 8 shows areas where the HiBIS and Broadband Connect programs have contributed towards wireless broadband coverage.

Of the registered Broadband Connect providers, 41 are using wireless technologies to deliver their services. Of these providers 13 are providing services in New South Wales, 12 in Victoria, 18 in Queensland, six in South Australia, five in Western Australia, two in Tasmania, and one in the Australian Capital Territory. Eight of the companies are providing services in more than one state or territory.

Figure 9 shows exchanges that were ADSL-enabled through private investment, and those enabled with assistance from the HiBIS and Broadband Connect programs. Approximately 970 exchanges have been enabled with ADSL through the HiBIS and Broadband Connect programs.

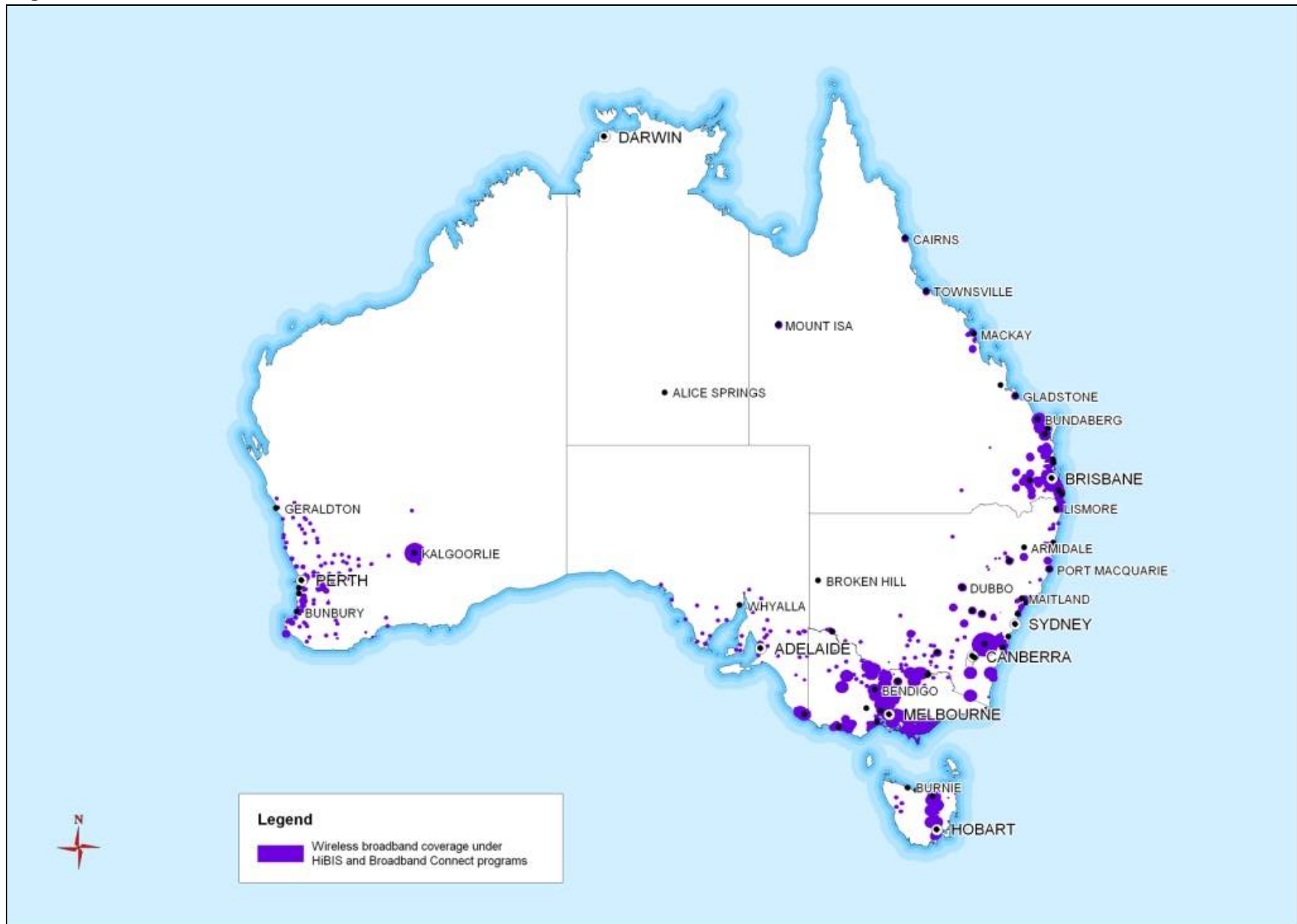
The Broadband Connect Program forms part of the Australian Government's Connect Australia initiative, which aims to improve regional access to telecommunications. The Connect Australia package includes a \$1.1 billion commitment toward the following programs:

- The \$878 million Broadband Connect program supports equitable access to high quality, sustainable broadband services across regional and rural Australia.
- The \$113 million Clever Networks program will fund broadband applications and leverage broadband infrastructure to foster innovative service delivery for communities in regional, rural and remote areas. Broadband development activities will complement the delivery of these services by assisting communities to enhance their understanding and use of broadband.
- The \$50 million Metropolitan Broadband Connect program is a three-year initiative to improve access to broadband services in metropolitan Australia. It targets those unable to access generally available broadband services in metropolitan areas, and offers subsidised infrastructure funds and incentive payments to companies to provide broadband services at prices similar to the majority of metropolitan customers.
- Backing Indigenous Ability provides \$90 million in funding and contains a telecommunications component to deliver telephones, internet and videoconferencing, encouragement and aggregation of demand, online content and training, and a broadcasting component to replace ageing and unreliable radio

infrastructure and strengthen access to the cultural benefits of Indigenous television.

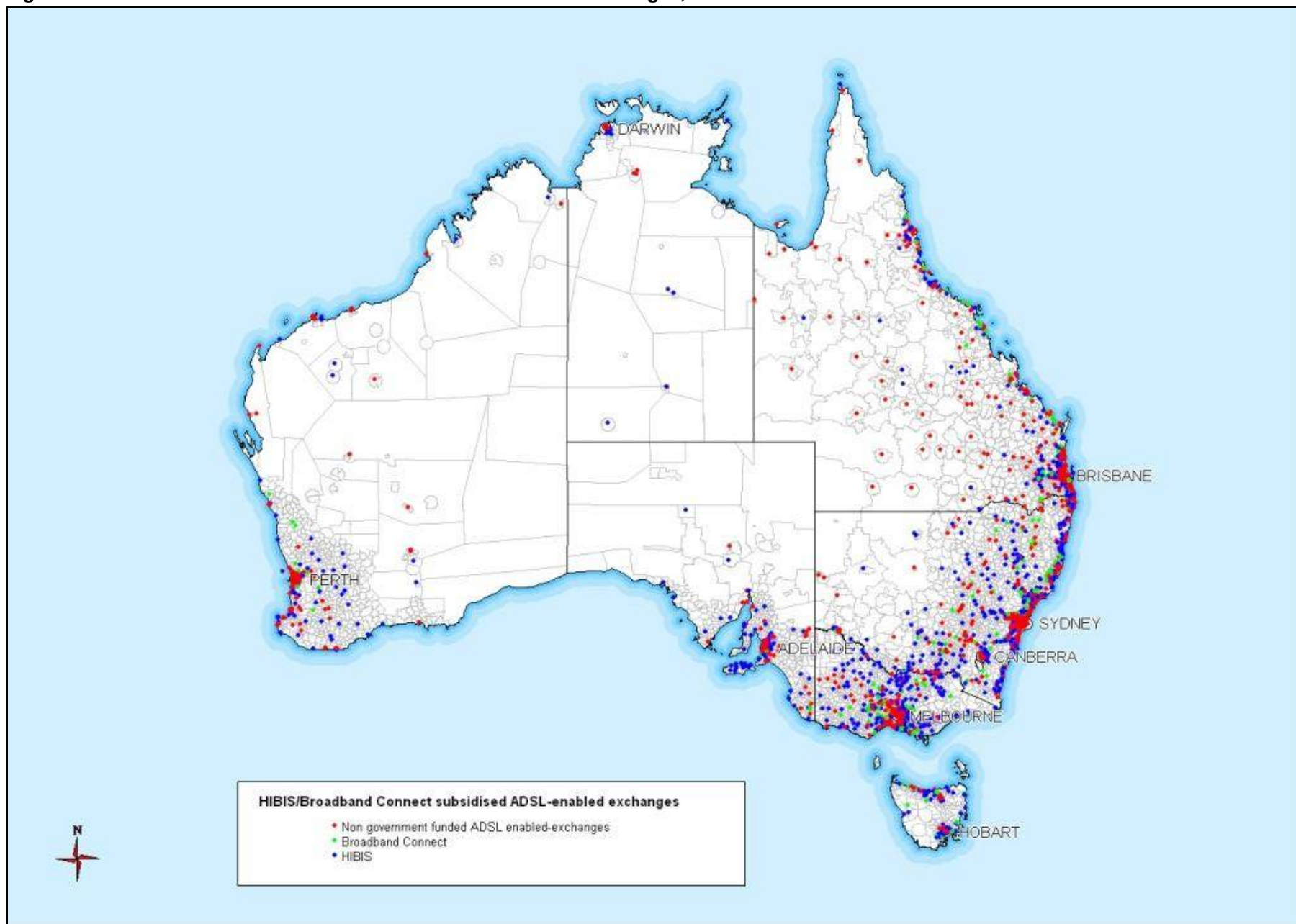
- The \$30 million Mobile Connect program is continuing the existing Satellite Phone Subsidy Scheme for people living and working in regional areas without terrestrial mobile phone coverage. This program provides a subsidy directly to customers to partially offset the cost of purchasing a satellite mobile handset. The second element of Mobile Connect focuses on improving terrestrial mobile phone coverage in regional Australia where a case for strategic location or economic importance can be established and where services will have ongoing commercial viability.

**Figure 8: HiBIS/Broadband Connect-subsidised wireless broadband services, June 2006**



Source: DCITA HiBIS and Broadband Connect data. Please note coverage is indicative only and is not universally available in all locations identified.

Figure 9: HiBIS/Broadband Connect-subsidised ADSL-enabled exchanges, June 2006



Source: [www.telstrawholesale.com](http://www.telstrawholesale.com)

## **SMALL-SCALE BROADBAND INFRASTRUCTURE DEVELOPMENTS**

Other innovative approaches are being taken to deliver communications services to new residential and business developments.

In Western Australia, E-wire (owned by Broadcast Engineering Services), is providing HFC infrastructure to more than 40 new residential communities. E-wire provides high-speed internet access across the network, and also reticulates free-to-air TV coverage.

At the Coomera Waters Estate in Queensland, Pivit is providing a fibre-based network to meet the community's telecommunications needs. The network currently provides residents with voice, broadband internet and free-to-air TV (including digital TV services).

In Tasmania, the eBurnie Connect Integrated Community Network Project is an infrastructure pilot undertaken by Burnie City Council to test the feasibility of a last mile fibre-to-the-kerb deployment. The project is providing access to 1,000 households during the trial period.

# Chapter 2 – Voice services

This chapter discusses the availability of voice services in Australia and the changes that this market is experiencing. The number of fixed voice services is declining, with consumers increasingly using other communications options such as VoIP and mobile phones.

## Fixed-line voice services

Fixed-line voice services have traditionally referred to the supply of access (a line) and usage (call services), including local, national long distance and international calls, and calls to mobile phones where the communication is initiated or received at the subscriber's premises.

The standard telephone service (STS) is a carriage service for the purpose of voice telephony and is the basis for the supply and regulation of telephone services in Australia. As the universal service provider, Telstra is required to supply an STS to any person on request, on an equitable basis wherever the person resides in Australia. While in most cases these are fixed-line voice services, an STS may be provided by other means, such as a mobile, satellite voice or wireless local loop service in some circumstances.

Beyond these minimum safeguards of the universal service obligation (USO), there is competitive provision of fixed voice services by various service providers in most geographic markets.

The supply side of the geographic market for fixed voice services typically consists of:

- infrastructure owners that own part or all of the network used to deliver services to the customer; and
- non-infrastructure owners that purchase end-to-end wholesale telecommunications services and resell to retail customers.

While the extent to which each model is used is largely dependent on the geographic location of particular network-based infrastructure used to provide services, these traditional models are starting to be challenged by small new market entrants including ISPs and VoIP service providers.

## DECLINING FIXED VOICE SERVICES

Based on information provided by telecommunications carriers, ACMA estimates that there were approximately 11.26 million fixed voice (standard telephone) services at

30 June 2006, compared with 11.46 million at 30 June 2005. This represents a decrease of 1.8 per cent.

Telstra, Australia's largest provider of fixed-line voice services, has experienced a decline in its fixed voice customer numbers and revenues. Telstra's fixed-line or public switched telephone network (PSTN) revenues declined 7.6 per cent in the first half of 2005–06.<sup>11</sup> Telstra experienced a 12 per cent reduction of calls made from fixed lines in the six month period, as well as a reduction of 180,000 residential fixed telephone lines. In the second half of 2005–06, Telstra's fixed-line revenues continued to decline, albeit at a slower rate of 5.8 per cent. Telstra is trying to retain customers with the release of new fixed-line residential plans in June 2006, including an all-you-can-talk plan for \$89.90 per month. The success of capped plans in the mobile market suggests that an all-you-can-talk plan in the fixed voice market could also prove attractive to many consumers.

The decrease in the number of fixed-line services in Australia is largely driven by changing consumer behaviour, where consumers are substituting fixed lines with mobile phones. Reasons for this may include mobile cap plans, increasing fixed-line rental charges, and the cancellation of phone lines that were previously used solely for dial-up internet access by consumers migrating to broadband.

The trend to fixed–mobile substitution is demonstrated by a Newspoll survey in early 2006, which found that 40 per cent of people used mobile phones as their main point of contact.<sup>12</sup> The survey also found that one in five users plan to discontinue their fixed-line telephone when they next move house and only use a mobile.

## **FIXED VOICE COMPETITION – VOIP**

Traditionally, competition in the fixed voice market has been reflected in increased numbers of service providers supplying voice services. However, in 2005–06 there was a significant increase in the level of competition coming from VoIP providers, where voice services are carried over broadband access infrastructure.

ACMA estimates that there were 118 providers offering residential VoIP services in 2005–06, compared with just 14 providers in 2004–05. This represents an eight-fold increase in the number of VoIP service providers in a year. The rapid growth in the number of VoIP providers is contrasted with a stable number of carriers providing residential fixed voice services (11 carriers in 2005–06 compared with nine in 2004–05).

One of VoIP's biggest selling features is cheap call rates. VoIP calls are carried over internet infrastructure rather than the traditional PSTN. VoIP is more efficient than circuit-switched telephony because carriage of data (including voice data) over the internet is packetised, enabling the carriage infrastructure to be used for multiple purposes rather than dedicated and mutually exclusive purposes. For this reason, call rates for VoIP are often cheaper than call rates for PSTN-delivered calls.

VoIP services are typically available wherever suitable broadband services are available, so availability of VoIP is limited by broadband supply-side factors in some areas of Australia. According to ACMA's analysis of Roy Morgan data (at June 2006), 4.7 per cent of Australian households use a VoIP service for cheap phone calls,

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<sup>11</sup> Telstra, *Annual Report 2005–06*

<sup>12</sup> *Sydney Morning Herald*, 23/02/06

more than doubling the number of VoIP users in Australia since July 2005 (1.7 per cent). These consumers would best be described as ‘early adopters’ representing only a small portion of the wider market.

An additional 16.3 per cent of households indicated they are likely or very likely to use a VoIP service within the 12 months from March 2006, which indicates a potential for significant growth in the VoIP market.

Established telecommunications companies have responded to the new competitive pressure coming from the VoIP market. Primus was the first of the fixed-line carriers to enter the residential VoIP market, unveiling its ‘Talk Broadband’ service in March 2006.<sup>13</sup> Telstra is offering an all-you-can-talk fixed voice service to compete against VoIP services currently offered by its competitors.

### **Innovative voice services**

In the United Kingdom, the Fusion service of British Telecom (BT) is a voice service that provides mobile phone users with fixed-line calling rates when they are at home. The service is provided through a ‘home hub’, a combined modem router connected to a BT-fixed broadband service.

The home hub detects when the mobile handset is within range through Bluetooth technology, and also provides a Wi-Fi service for home internet use. Handsets can be paired with multiple hubs, so that a user can benefit from fixed-lines rates at home and their office, or someone else’s home.

In another UK development, VoIP provider Vonage has formed a partnership with The Cloud to enable Vonage subscribers to access their service at no cost when in range of The Cloud’s 7,000 Wi-Fi hotspots. The service requires Vonage customers to use a Wi-Fi enabled handset (which retails for £90/\$A227) to access the service, and to subscribe to a Vonage residential plan (typically £7.99/\$A20) per month for unlimited calls within the UK and Ireland). Vonage users can also use the handset through their home or office Wi-Fi connection.

### **ISP voice infrastructure competition**

The 19 ISPs that are currently installing their own DSLAM infrastructure into telephone exchanges (discussed in Chapter 1) are also providing competition for fixed voice services. In addition to the ADSL services that DSLAM infrastructure supports, ISPs can offer voice calls over their DSLAM networks, bypassing Telstra’s wholesale voice services, which allows greater pricing flexibility and product differentiation. Optus is currently migrating many of its fixed voice resale customers onto its ‘On-net’ DSLAM network. iiNet is also providing voice to its customers over its DSLAM network, and it is expected that other ISPs will embrace this approach in the coming year.

### **FIXED VOICE SERVICES IN REMOTE AUSTRALIA**

The extended zones agreement is a \$150 million contract between the Australian Government and Telstra for the provision of improved telecommunications services to customers living in Telstra extended call charging zones, which are located in the more remote parts of Australia. Under the agreement, Telstra is required to provide:

<sup>13</sup> ZDNet, ‘Primus joins internet telephony battle’, 6 March 2006.



- untimed calls at the local call rate in the extended zones;
- enhanced services including the offer of an always-on internet access service, improved dial-up access speeds and improved timeframes for the connection of new services in the extended zones; and
- an upgrade of the telephone network in the extended zones.

As part of Telstra's upgrade of the telephone network, CDMA wireless local loop (WLL), used to provide customers with wireless access to the telephone network, was one of three technologies Telstra deployed to upgrade the telecommunications network in the extended zones. CDMA WLL services will be replaced by Telstra's 3G network deployment, and ACMA will monitor the replacement of these services as part of its monitoring of the CDMA to 3G network transition.

## Mobile voice services

### NETWORK DEVELOPMENTS

At 30 June 2006, there were four mobile carriers operating seven mobile networks (see Table 5). GSM networks are operated nationally by Optus, Telstra, and Vodafone (see Figure 10). In August 2006, '3' closed its '3' CDMA network (previously known as the 'Orange' CDMA network), and migrated customers to its 3G network. In October 2006, Telstra launched its new 3G network (promoted as its 'Next G' network), which will replace coverage of its CDMA network. Telstra's CDMA network is expected to be shut down in 2008, when CDMA-equivalent coverage is provided on the 3G network (see Figure 11). Table 5 shows the mobile networks in operation at 31 October 2006.

**Table 5: Mobile networks, 31 October 2006**

	Telstra	'3'	Optus	Vodafone
<b>GSM</b>	✓		✓	✓
<b>CDMA</b>	✓			
<b>3G</b>	✓*	✓	✓ (shared network)	

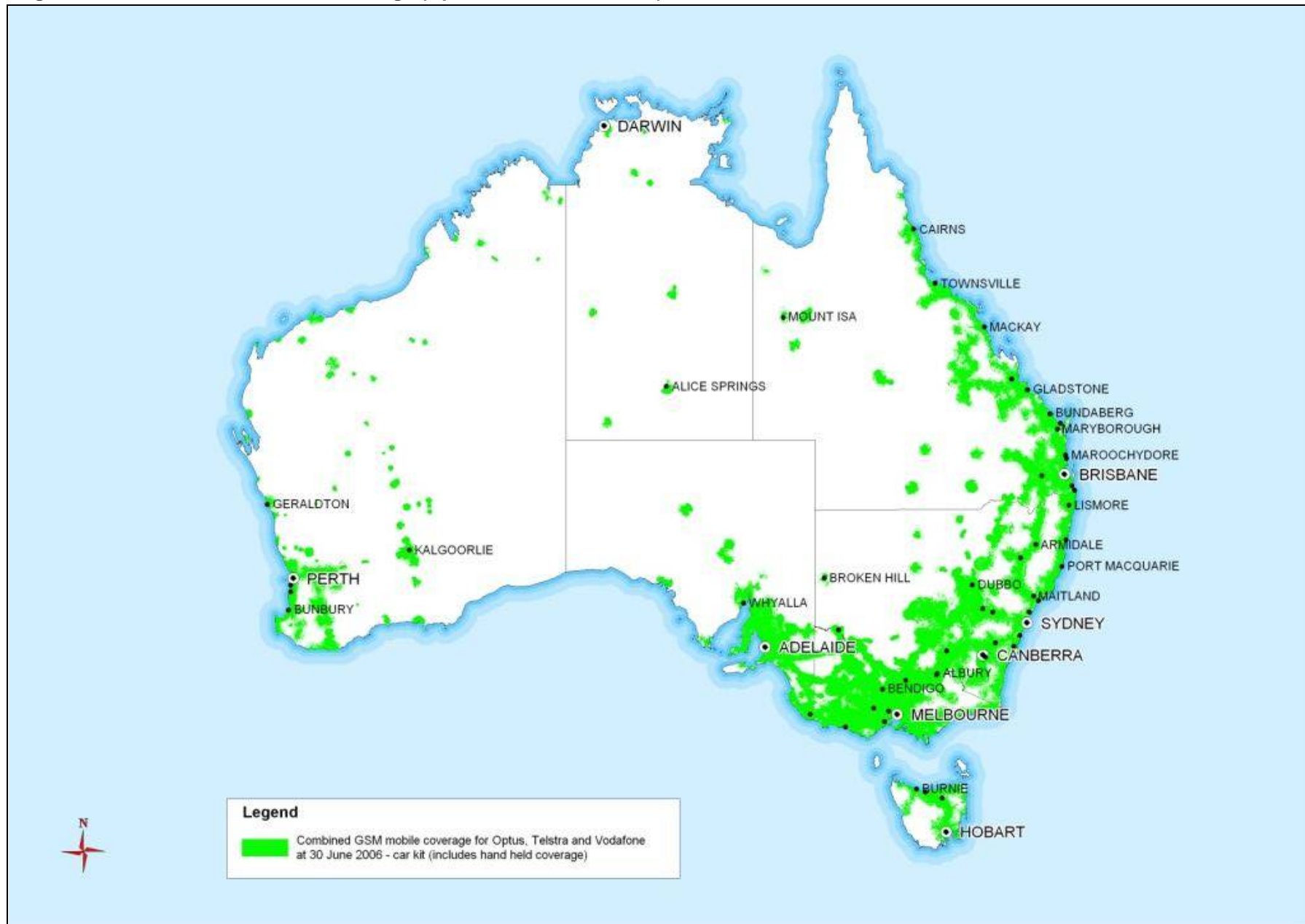
\*Note Telstra continues to share '3's 3G network through its joint venture with '3' and also operates its own 3G network (commonly referred to as its 'Next G' network) independent of the joint venture.

### POPULATION COVERAGE AND TAKE-UP

Mobile voice services are available to 96 per cent of the population through GSM (Figure 10) and 98 per cent of the population through CDMA (Figure 11). This is consistent with the population coverage reported by carriers in 2004–05.

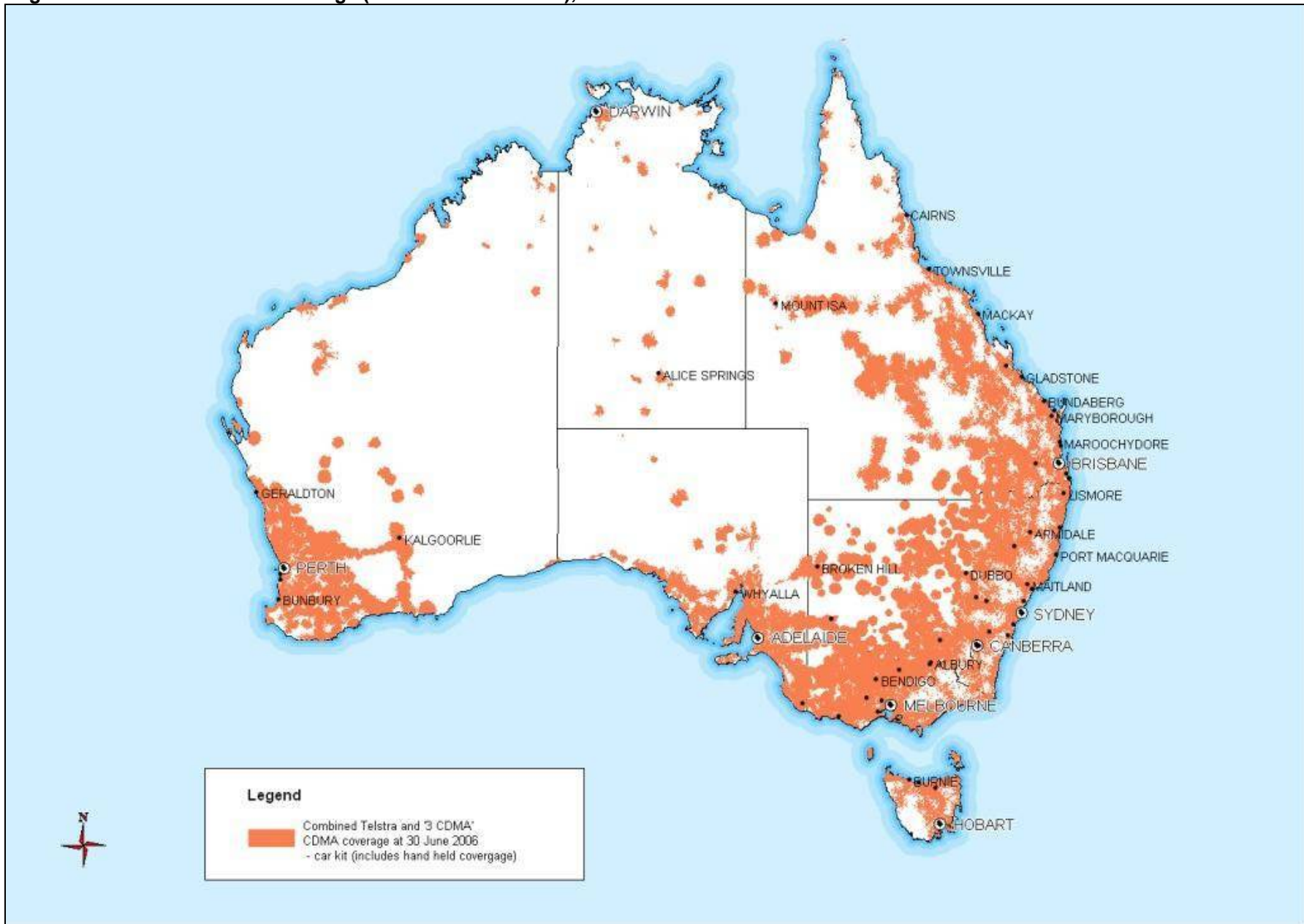
There were 19.7 million mobile phone services in Australia at 30 June 2006, with the proportion of mobiles services in operation as a proportion of the Australian population reaching 96 per cent.

Figure 10: combined GSM mobile coverage (Optus, Telstra, Vodafone), 30 June 2006



Source: ACMA data request

Figure 11: combined CDMA coverage ('3 CDMA' and Telstra), 30 June 2006



Source: ACMA data request

## DECLINING MOBILE VOICE REVENUES

High levels of price competition in 2005–06 have led to declining voice revenues for mobile carriers, while at the same time increasing the total calling minutes on carrier networks. Capped plans allow consumers to pay a fixed monthly charge, which allows them to obtain a service value higher than their monthly charge. For example, a user on a \$29 capped plan may be able to access up to \$129 worth of calls and services each month. Capped plans have been marketed heavily and proved popular with many consumers. Table 6 summarises some of these capped plans.

**Table 6: Mobile voice cap plans, May 2006**

Carrier	Capped price	Value of calls
'3'	\$29	\$120
	\$49	\$230
	\$69	\$400
	\$99	\$600
	\$129	\$800
	\$149	\$1,300
Vodafone	\$49	\$230
	\$79	\$500
	\$149	\$1,200
Optus	\$49	\$230
	\$59	\$280
	\$79	\$500
	\$89	\$560
Telstra	\$49	\$200 (plus \$50 national calls to Telstra mobiles)
	\$79	\$450 (plus \$100 national calls to Telstra mobiles)
	\$99	\$550 (plus \$150 national calls to Telstra mobiles)
	\$129	\$700 (plus \$200 for national call to Telstra mobiles)

Source: carrier websites – prices current at 2 May 2006

## Satellite voice services

Due to the size of Australia's landmass, it is not economically feasible or practical to provide terrestrial mobile coverage across 100 per cent of Australia's land mass. For consumers who live outside the coverage areas of terrestrial mobile networks, satellite services provided by Iridium, Globalstar, MobileSat, and InmarSat offer 100 per cent coverage of Australia.

For consumers who regularly travel beyond mobile coverage areas, dual-mode handsets operate as mobile phones where GSM or CDMA mobile coverage is available, and as satellite phones where there is no mobile coverage.

The Australian Government's Satellite Phone Subsidy Scheme will continue until 2009, as part of the \$30 million Mobile Connect program. The scheme provides a subsidy for the purchase of a satellite phone to individuals that live outside terrestrial

mobile GSM or CDMA coverage. The subsidy does not apply to ongoing billing costs that may be incurred through use of the phone.

## Payphones

At 30 June 2006, there were 58,230 payphones in operation, comprising 30,091 Telstra-operated payphones, 27,191 ‘other’ payphones (payphones provided by hotels, clubs and other private operators), and 948 TriTel payphones.

**Table 7: Number of payphones by service provider and type of location, June 2006**

Service provider	Total	Urban	Rural	Remote
TriTel	948	871	77	0
Telstra	30,091	20,708	8,091	1,292
Other	27,191	20,685	5,949	557
Total	58,230	42,264	14,117	1,849

Source: ACMA Data Request

In February 2006, Telstra announced it was considering the removal of up to 5,000 public payphones that are loss-making and not required to fulfil the USO. On 8 June 2006, in response to community concern, the Minister for Communications, Information Technology and the Arts, Senator Helen Coonan, announced initiatives to ensure more consultation and better information about any Telstra plans to remove payphones from a community. As part of these measures, ACMA is taking a more active role in monitoring Telstra’s compliance with its payphone obligations and increased its awareness-raising activities.

# Chapter 3 – Broadcast services

Commercial television and radio services continue to have a pivotal role in the delivery of entertainment and news services to Australian consumers. This chapter provides an overview of the broadcast services available to Australian consumers.

## Television

### COMMERCIAL TELEVISION SERVICES

There are 28 distinct commercial television licence areas across Australia. Broadcast planning provides for three commercial television licence operators in Adelaide, Brisbane, Melbourne, Perth and Sydney. The Seven, Nine and Ten networks operate in each of these cities. There are three licensees operating in Canberra and Hobart, and two in Darwin. In regional areas, the majority of broadcasting is provided by the WIN, Prime, Southern Cross Broadcasting, Seven Queensland, and NBN networks.

Figure 12 illustrates Australia's commercial television licence areas, and the number of licensees operating in each area. Higher levels of availability tend to be concentrated in the major capital cities, and along the eastern seaboard.

### NATIONAL TELEVISION SERVICES

National television broadcasting services funded by the Australian Government are provided by the Australian Broadcasting Commission (ABC) and Special Broadcasting Service (SBS). The ABC provides the following television services:

- a national free-to-air analog service available to over 98 per cent of the Australian population;
- three digital free-to-air channels available to over 96 per cent of the Australian population, comprising high definition and standard definition simulcasts of ABC analog and ABC 2, which features new and time-shifted ABC programming; and
- ABC Asia-Pacific—free-to-air satellite television.

SBS provides multilingual and multicultural television services that reach 95 per cent of the Australian population through its analog service, and 80 per cent through its digital service.

### COMMUNITY TELEVISION SERVICES

Permanent community television services were established in Brisbane, Melbourne, Perth and Sydney in 2004, after trials of community services had been operating since 1993. There are also 79 community television services, now known as Remote Indigenous Media Services, operating in remote Indigenous communities.

## **SUBSCRIPTION (PAY) TELEVISION SERVICES**

At 30 June 2006 there were approximately 1.73 million pay TV subscribers compared with 1.67 million subscribers at 30 June 2005.<sup>14</sup> Most of Australia's pay TV services are supplied by Telstra and Optus' metropolitan HFC networks. Australia's other major supplier, Austar, offers pay TV to selected regional and rural areas via satellite.

Foxtel is the largest pay TV provider controlling the bulk of programming through ownership or distribution agreements and has the largest number of subscribers and the most extensive reach on its combined cable and satellite networks (with Telstra). Foxtel Digital was launched in March 2004, with new services including near video-on-demand channels, 'enhanced' programming and some interactive services.

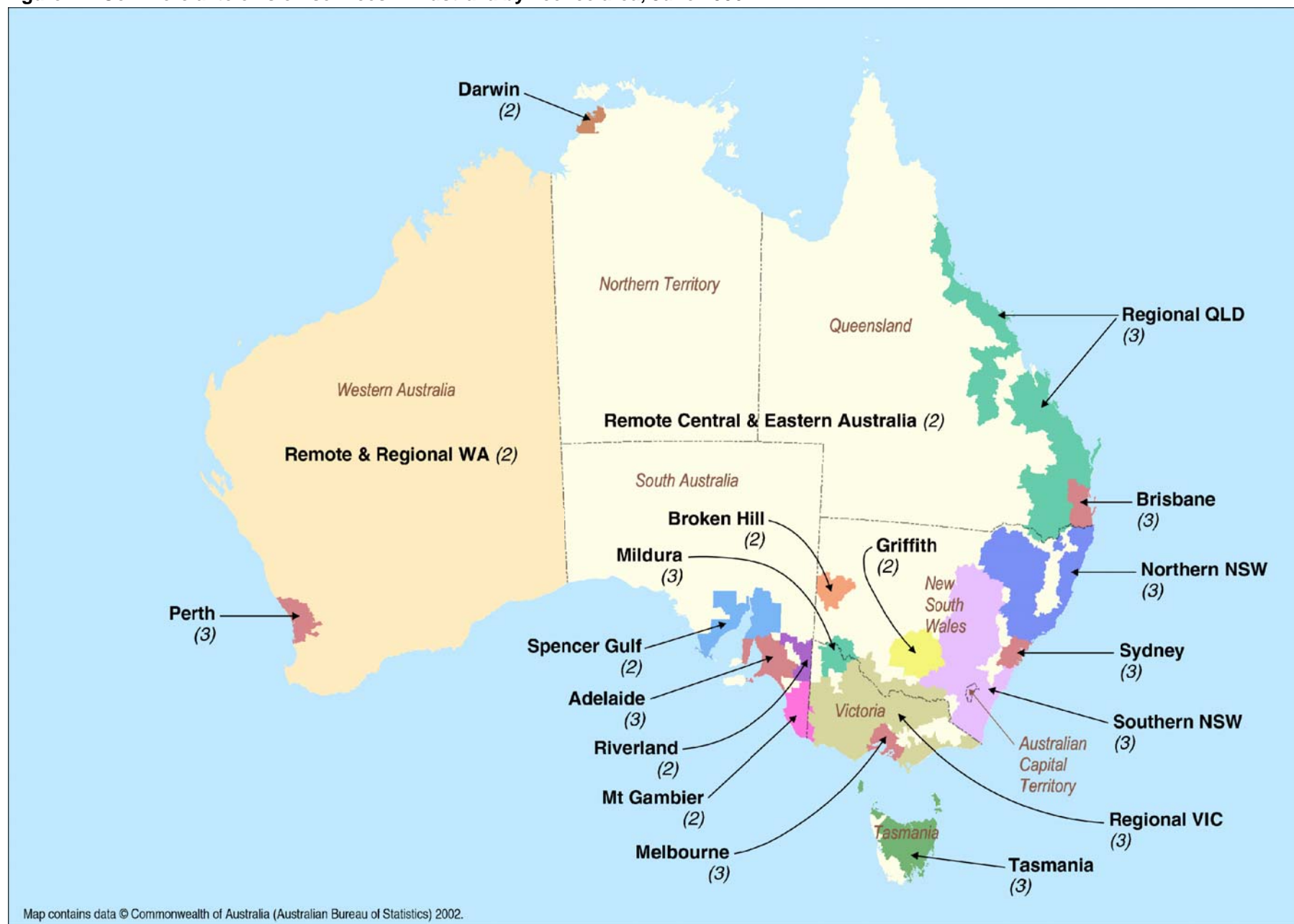
Optus sells pay TV packages to its customers on its high-speed cable network operating in Sydney, Melbourne and Brisbane. As well as reselling the Foxtel channels, it still provides two channels of its own, MTV Australia and Ovation.

Austar provides mainly satellite services to subscribers in rural and regional centres largely across Eastern Australia, as well as Hobart and Darwin. Austar Digital was launched on 14 March 2004.

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<sup>14</sup> OzTAM Establishment Survey, Quarter 2, 2006

Figure 12: Commercial television services in Australia by licence area, June 2006



Source: ACMA



# Radio

## COMMERCIAL RADIO SERVICES

There are 274 commercial radio broadcasting licences in Australia, including 150 FM services, 106 AM services, and 13 non-broadcasting services band (BSB) services. The largest concentrations of commercial radio services are in the major capital cities, as demonstrated in Table 8. Most regional centres are served by two licensees, typically with one AM service and one FM service. There are four commercial radio licensees permitted to provide services on an Australia-wide basis on non-BSB frequencies.

**Table 8: Number of commercial radio services by city**

City	Number of commercial services
Sydney	11
Melbourne	11
Brisbane	7
Adelaide	6
Perth	6
Canberra	4
Hobart	3
Darwin	2

Source: ACMA licensing information

Figure 13 illustrates Australia's commercial radio licence areas, and the number of licensees operating in each area. Higher levels of availability tend to be concentrated in the major capital cities, and along the eastern seaboard.

## NATIONAL RADIO SERVICES

The ABC provides national radio services including:

- local radio—provided on 60 stations throughout Australia;
- Radio National—national talk network;
- News Radio—national rolling news network and (when in session) broadcasts of Parliament;
- Classic FM—national classical music network;
- Triple J—national youth network; and
- Radio Australia—Asia-Pacific network broadcast via shortwave, satellite, and online.

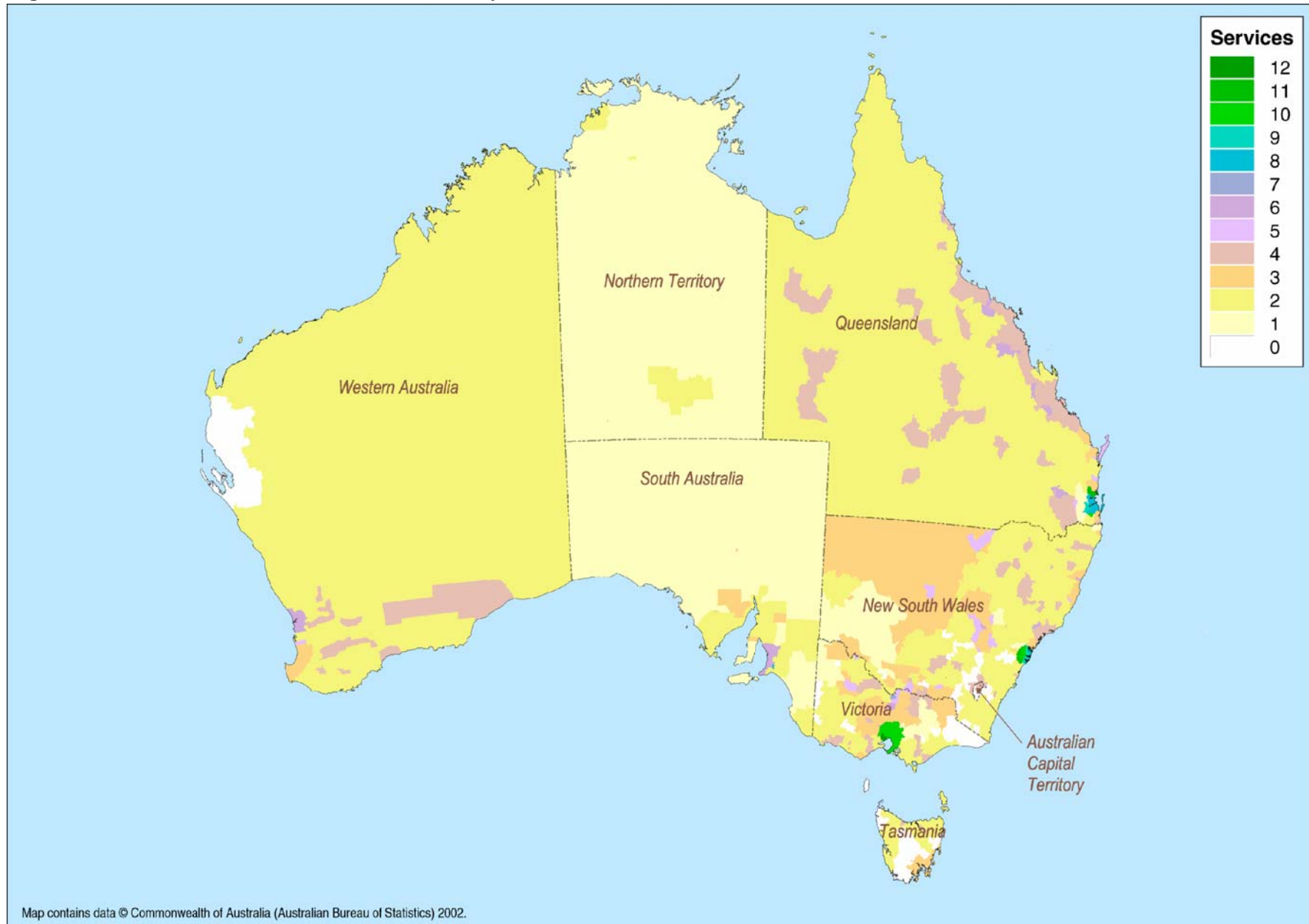
SBS radio broadcasts in 68 languages to all capital cities and key regional centres on a mix of FM and AM frequencies. SBS radio provides Australian and international news, homeland news, a mixture of current affairs, interviews, community information, sport and music.

## COMMUNITY RADIO SERVICES

Community radio services are non-profit radio services that generally provide broadcast services to specific geographic communities or special interest groups. There are 361 community radio broadcast licences issued in Australia, with few

geographical communities in Australia that do not have at least one community radio service

Figure 13: Commercial radio services in Australia by licence area, June 2006



Source: ACMA

## Narrowcasting

An open narrowcasting service is a free-to-air broadcasting service where the reception is limited in one of the following ways:

- by being targeted to a special interest group;
- by being intended only for limited locations, for example, arenas or business premises; or
- by being provided during a limited period or to cover a special event; or
- because it provides programs of limited appeal; or
- for some other reason.

Since 1992, 243 licences to provide high-power open narrowcasting radio services have been allocated using a price-based (auction style) system. Five licences to provide open narrowcasting television services have also been issued. The most common formats provided by open narrowcasting radio services include racing information and tourist information, and non-English language, specialised music (such as dance, jazz and country music) and religious programming.

By August 2006, 1205 licences had been issued to provide low-power open narrowcasting services. Of these licenses

- 823 are currently issued;
- 132 had been surrendered;
- 37 cancelled; and
- 213 expired.

## Datacasting

In planning digital television spectrum ACMA has allotted two spectrum channels (of 7MHz each) at each broadcast site which have been left unassigned. ACMA released a discussion paper in March 2006 entitled *Future Use of Unassigned Television Channels*, to gain stakeholders' views on the potential allocation of unassigned television channels.

On 12 September 2006, the minister announced plans for the auction of these channels for an expanded range of services. The first channel will allow new free-to-air in-home digital services and the second channel could be used for a wider range of services, including mobile television services. New technical standards may enable in the vicinity of 30 mobile TV channels to be provided in a single 7 MHz channel.

As datacasting is considered to be any transmission that is not a broadcast service, broadcasters currently hold datacast licences to cover the transmission of non-broadcast services such as electronic program guides (EPGs).

# Chapter 4 – Content and applications

Consumer demand for internet content has grown over the reporting period. Consumers are using the internet in ever-increasing numbers to access photos, music, movies, and other video content. A significant increase in the number of broadband subscribers across Australia has given more consumers the ability to access and utilise the content and applications that are driving the growth of the internet as a new means of communication, entertainment, commerce and information provision. Consumer demand for content can be seen through increased data downloads, with the estimated volume of data downloaded by Australian users increasing from 12.3 billion megabytes in March 2005 to 36.2 billion megabytes by June 2006.<sup>15</sup>

Consumers want broadband for its higher download speeds, which allow a wider range of online content to be accessed faster than with dial-up services. Whirlpool's *Australian Broadband Survey 2005* revealed that 89 per cent of respondents have broadband for 'fast downloads' and 87 per cent for 'fast web surfing'.<sup>16</sup>

It is likely that consumer demand for content, high-speed downloading capabilities and high download quotas will result in the migration of consumers from entry-level broadband plans, to higher bandwidth capabilities. Higher bandwidth services typically provide greater download quotas which consumers require to make full use of the content and applications available on the internet today.

## Current internet uses

### COMMON USES

In April–June 2006, according to Roy Morgan Single Source data, email was the most common use of the internet, with 66.2 per cent of all respondents reporting using the internet to send and receive emails. Use of the internet for sourcing general information was second to email, at 62.9 per cent. Use of the internet is highest in the 25–34 year old age bracket, decreasing in use as age increases. People in the 65+ age group are significantly less likely to have used the internet for email than other age groups—31.7 per cent of people aged 65+ used the internet for email (April–June 2006).

For the April–June 2006 quarter, Australians' most common other uses of the internet included:

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<sup>15</sup> ABS *Internet Activity Survey*, March 2005 and June 2006

<sup>16</sup> Whirlpool users are generally considered to be experienced broadband users and results to their survey may be skewed because of the nature of the users.

- paying bills—30.3 per cent, with the 25–49 age group most likely to pay bills by internet;
- performing banking transactions—34.4 per cent, with only 8.7 per cent of teenagers and 8.9 per cent of people aged 65+;
- playing games—18.9 per cent, but more than double that for 14–17 year olds at 51.9 per cent;
- searching for entertainment—19.2 per cent;
- downloading software—18.0 per cent;
- job-hunting—18.0 per cent;
- downloading music—19.1 per cent, but more than double that rate for 14–17 year olds; and
- instant messaging—14.4 per cent, but again higher for 14 to 24 year olds (38.1 per cent).

## GROWTH IN USER-GENERATED CONTENT

User-generated content on the internet has grown significantly over the reporting period. With the falling cost and subsequent popularity of digital cameras and videos, everyday users who upload their own photos and videos to ‘content aggregator’ sites are generating millions of hours of publicly accessible video content. Where an individual may previously have shown footage from their skiing holiday or family barbecue to a limited circle of family and friends, it is now becoming commonplace for users to upload such footage to content aggregator sites for anyone to view. Sites such as YouTube.com, blinkx.com, iFilm, and Undergroundfilm.org are bringing this content into the homes of internet users. The major internet portals provided by Yahoo, Google, Microsoft MSN and AOL are also fuelling the growth of online video.

Founded in February 2005, youtube.com is a website that allows users to upload, view and share video clips, which can also be fed into blogs or other websites. YouTube has become the leading online video provider, with the company claiming viewers are watching more than 100 million videos per day on its site, with users averaging session times around 13 minutes. The service is run by a staff of just 50 employees, and according to Nielsen/NetRatings has almost 20 million unique visitors to the site a month.<sup>17</sup> According to internet measurement firm HitWise, YouTube accounts for 60 per cent of all videos watched online, MySpace 19 per cent, with Yahoo, Microsoft MSN, Google and AOL each accounting for between three and five per cent of the market.<sup>18</sup>

Technorati.com, a blog-monitoring and live-searching service, claims that the ‘blogsphere’ has been doubling in size every five months for the past 20 months (representing a 16-fold increase in less than two years).<sup>19</sup> Pew Internet (an American internet research, analysis and reporting company) estimates that approximately 50 million, or 11 per cent, of internet users are regular blog readers.<sup>20</sup>

<sup>17</sup> *The Age*, 17 July 2006, ‘YouTube serves up 100 million videos a day’

<sup>18</sup> Ibid.

<sup>19</sup> [www.technorati.com](http://www.technorati.com)

<sup>20</sup> [www.pewinternet.org](http://www.pewinternet.org)

## **YOUTH TRENDS – SOCIALISING ONLINE**

According to Roy Morgan Single Source data, for the quarter April–June 2006, socialising was the most common use of the internet among 14–17 year olds (at 77.4 per cent) and this age group is significantly more likely than the whole population (at 48 per cent for all age groups) to use the internet for socialising. Online socialising tools include use of chat rooms, developing social contacts, gaming, instant messaging and downloading music. Within this category, use of the internet for instant messaging and downloading music was very popular (48.6 per cent and 44.8 per cent respectively of 14–17 year olds reported using the internet for these purposes).

An example of a social networking site is MySpace, which provides interactive ways for individuals to communicate with one another, through instant messaging, emailing, sharing photos, videos, and journals and blogs detailing their lives. Hitwise Research Group (a private organisation providing analysis of online trends) reported that MySpace eclipsed Yahoo as the most popular US website in week ending 8 July 2006, attracting 4.46 per cent of the total US internet traffic (although Yahoo has challenged the basis of this analysis).<sup>21</sup> Roy Morgan Research found that in the year July 2005 to June 2006, 3.4 per cent of Australian internet users visited MySpace within the previous four weeks.

### **VoIP**

Increasingly, consumers are using the internet to make voice calls, using VoIP as a means to reduce phone bills. While VoIP services can be considered as an application used over a broadband connection, in this report VoIP services are discussed in the voice chapter of the report (see Chapter 2).

## **New content and applications**

### **NEW MEDIA CONTENT DELIVERY METHODS**

During 2005–06, it has been evident that the delivery of music, movies, television, and other media entertainment is no longer confined to traditional outlets, such as radio, retail CD/DVD outlets, television, video hire, and cinema venues.

The first signs of significant changes in the industry have come from the large Hollywood movie studios, and US-based television networks, which are beginning to use broadband as a new distribution channel for content. In April 2006, the six major Hollywood studios introduced a new movie release window, where new movies would be available for download at the same time as the DVD release window, bringing forward the release date by 90 days from the old video-on-demand release window.<sup>22</sup>

Some Hollywood studios already own or have relationships with movie download services. Universal Pictures has partnered with Lovefilm to offer video downloads for sale. Cinema Now has formed licensing deals with MGM, Sony and Lionsgate, while MovieLink is owned by Sony, Universal, MGM, Fox and Warner Bros.

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<sup>21</sup> *The Age*, 17 July 2006, 'YouTube serves up 100 million videos a day'

<sup>22</sup> Ovum, 'US content providers: the new deal', 2 June 2006

In Australia, Telstra's BigPond Movies, and Reeltime and Yahoo's partnership provide PC movie downloads. Reeltime also launched its IPTV video-on-demand service in August 2006 to customers of South Australia's Adam Internet, and intends to provide a 'white label' wholesale version of this service for other ISPs and retailers to resell (see IPTV feature box below). Anytime's video-on-demand service has been available to TransACT customers since mid-2005 and was scheduled to launch in the third quarter of 2006 to customers of Regional Internet Australia. Regional Internet Australia intends to provide the service initially to Townsville, and subsequently to Cairns, Dalby, Gladstone, Mackay, Mt Isa, Rockhampton, Roma, and other small regional centres. Apple's Australian iTunes site also provides video downloads for purchase. On the music front, BigPond Music, Ripit.com.au, JB Hi-Fi, Sanity Digital and iTunes are offering legal downloads to Australian consumers.

Australian local broadcasters are also experimenting with new distribution methods. The Australian commercial podcast market is attracting a small but significant audience. The distribution of radio and TV programs via audio and video podcasts allows radio and TV networks to reach audiences at times which do not conform to rigid broadcast schedules. The ABC offers about 60 podcast subscriptions. The Austereo Network attracted approximately 300,000 downloads a month in November 2005, a significant growth from 5,000 downloads in March 2005. Macquarie Radio's 2GB attracts approximately 50,000 to 60,000 downloads per month.<sup>23</sup>

The Podcast network ([www.thepodcastnetwork.com](http://www.thepodcastnetwork.com)) is Australia's only multi-podcast access point, and is only one of a handful of large podcast publishers anywhere in the world. At June 2006, the network had 51 shows in production, attracting 140,000 downloads a month.

Australian media content continues to grow, with the NineMSN, Yahoo!7, ABC and SBS portals providing interactive website experiences for television viewers. The Seven and Nine networks are utilising the internet to provide a strong online presence for their respective magazine publishing arms (Australian Consolidated Press for the Nine Network and Pacific Publications for Seven). In 2005–06, all of these portals were delivering video content from their respective television networks, providing select news, current affairs, sport, entertainment, lifestyle and TV shows for viewing.

Internationally, search engine giants Yahoo and Google, and online retailer Amazon, are pioneering video-sales models based on consignment from content publishers. It is expected that, given the size of each of these participants internet presence, the consignment models currently being tested could result in the distribution of video content internationally, with opportunities for Australian consumers to access content, and Australian content owners and publishers to sell their content.

## **INSTANT MESSAGING SERVICES**

Instant messaging services such as AIM, ICQ, Yahoo Messenger, MSN Messenger, and Google Talk are applications that can be downloaded free of charge, and allow internet users to instantly communicate between two or more people. Instant messaging services differ from email, in that they allow users to communicate in real time, through a single screen, without the need to open individual emails. In this way, instant messaging acts more like a telephone conversation than email, which could be likened to writing a letter. Instant messaging also allows multiple users to converse

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<sup>23</sup> *Sydney Morning Herald*, 'Podcasting drifts toward radio's mainstream', 8 December 2005



simultaneously, thus generating a social experience that is often not available through a normal voice conversation.

Instant messaging services generally provide a contact list, indicating which of a user's friends are currently online and available for conversation. This facility allows users to manage their availability to others, and to indicate their presence or willingness to converse.

Most instant messaging services today have grown beyond simple messaging to offer voice and video-calling capabilities. While for a time instant messaging users were only able to make voice calls to users on the same proprietary platform (such as from one Yahoo Messenger user to another), steps are being undertaken in the US to provide voice 'out' calls to telephones on the PSTN (such as standard home or mobile phone numbers). While this functionality is not yet available to Australian users, it is likely that it will be enabled in the near future. In this way, instant messaging services are blurring the distinctions between traditional PSTN telephony and the internet, demonstrating that voice is now available as an internet application.

### **Interoperability between applications**

In July 2006, Microsoft and Yahoo launched beta test versions of their instant messaging applications, which enable interoperability between the two applications. Full interoperability will increase the combined user base of the applications, dramatically increasing the potential user base between which free on-net voice and video calls could be made.

### **Additional functionality**

Some instant messaging applications provide facilities for sharing of photos between users, making transfers a simple process. Other features include built-in-games, themes and skins to tailor the look of the application, and third-party add-ons that can provide even further functionality and access to web style content.

### **Messenger services on mobile phones**

Instant messaging applications are no longer confined to the home PC/laptop environment, and are now accessible using mobile phones. In November 2005, Optus became Australia's first provider of 3G instant messaging through a partnership with NineMSN, charging customers \$5.95 per month or 95 cents per day. '3' offers customers MSN Messenger and Yahoo Messenger at \$5 for 30 days unlimited usage. Telstra offers MSN Messenger through its i-Mode service. MSN Messenger and Yahoo Messenger are also available on the Telstra, Vodafone, and '3' CDMA networks utilising the SMS capabilities of mobile phones. These services charge for each text message sent and received using the service. In the near future, Australian mobile service providers may see some of their SMS revenues decline as instant messaging revenues increase, as consumers adopt instant messaging as their preferred messaging application on their mobile phone.

## **PEER-TO-PEER NETWORKS**

### **File sharing networks**

File sharing networks, which use peer-to-peer (P2P) protocols, allow efficient content distribution over the internet. They are responsible for more than 50 per cent of global

internet traffic.<sup>24</sup> P2P networks enable broadband users to share files between peers (other users), rather than downloading files from a centralised point. P2P is most commonly used for transferring music and video files. Some instant messaging and VoIP applications, such as MSN Messenger and Skype, use P2P protocols.

The defining principle of P2P is that the data being shared is distributed between individual users on the network, and that there is no central node (as in a traditional client-server network) on which the network is dependent for serving and stability. The key advantage of P2P networks is that individual users support the large majority of the network traffic load, as opposed to a central node in traditional client-server networks. Each node acts as a server to other users and is involved with uploading data. This additional role of the peer replaces that of a central server node.

There are different types of file-sharing networks, generally referred to as P2P protocols. The four most popular protocols are Gnutella, FastTrack, eDonkey, and BitTorrent. Different P2P protocols are popular with users for accessing different types of content. For example, the Gnutella network is mainly used for accessing small audio files, while eDonkey is mainly used to access video content. BitTorrent is generally regarded as having the highest percentage of legitimate traffic, such as open-source software.

Many different applications implement the same protocol, and indeed some applications can implement multiple protocols, giving users access to peers on multiple file-sharing networks. Some of the most popular applications include Kazaa, which uses the FastTrack protocol, Limewire and Bearshare, which run on the Gnutella protocol. While each is slightly different, all protocols use the same basic P2P principles, to search and deliver files to end-users.

### **Influence on internet resources**

P2P traffic places an extraordinary load on network resources compared with web browsing and email traffic. It uses significantly more upload and download bandwidth. The use of file-sharing networks has grown in Australia in line with broadband uptake. This has had an influence on Australian ISPs, who must consider how best to manage changing internet use of their customers.

### **Commercialisation of P2P services**

A number of organisations are currently trialling legal file-sharing services, as they explore the commercial viability of P2P services.

BBC recently trialled P2P video distribution service called iMP. The twelve-month trial of 5,000 subscribers concluded on 28 February 2006, and was funded by UK television ownership licensing funds. iMP used Windows DRM (Digital Rights Management) and a P2P network to distribute, for free, all BBC programming content to members of the trial. Downloaded content was able to be viewed multiple times, for seven days after it was broadcast conventionally.

Other trials have used old or otherwise obsolete content. AOL Time Warner is using a P2P-like system to offer episodes of classic and discontinued TV shows through its In2TV broadband service, and is funded by advertising. BitTorrent, the application

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<sup>24</sup> Current estimates are that peer-to-peer internet traffic is between 60 per cent (CNet, 23.2.2006 MPAA sues newsgroup, P2P search sites, [http://news.com.com/MPAA+sues+newsgroup%2C+P2P+search+sites/2100-1030\\_3-6042739.html](http://news.com.com/MPAA+sues+newsgroup%2C+P2P+search+sites/2100-1030_3-6042739.html)) and 72 per cent (<http://www.computerworld.com.au/index.php/id;75779762;fp;2;fpid;4,30/5/2006>) of total global internet traffic.

using the protocol of the same name, is offering free classic movies such as westerns. The BitTorrent developers have announced a separate association with Warner Bros Home Entertainment to distribute new release movies using BitTorrent technology.

The main commercial P2P service being used for content distribution of music, games and videos is the US-based Peer Impact. Peer Impact rewards users for their assistance distributing content using P2P. By leaving Peer Impact running on their PC, a user allows the service to upload their files to another user that has purchased content. A user then receives credit to their account, up to five per cent of the item's purchase price, for the service they have provided in uploading.

Commercial uses of P2P protocols are still being developed. P2P is an efficient method of distributing content online and has great potential to profitably meet an area of high consumer demand in the future.

## **Demand for 3G mobile content**

In late 2005, Telstra, Optus and Vodafone entered the 3G mobile content market, a market that to date had previously consisted solely of the '3' network. At this time, the three new providers launched portal services through which their subscribers can access content on their 3G phones, including information and entertainment services (for a fee in addition to their plan cost).<sup>25</sup> These portals mirrored the existing business model delivered to consumers through the '3' Planet 3 service in delivering music, ring-tones and video downloads, enabling access to modified internet sites capable of being displayed on 3G phones, and mobile TV.

Respondents to the Australian Interactive Media Industry Association's (AIMIA) 2006 *Mobile Phone Lifestyle Index* demonstrated an interest in 'at least trying out content on their phone'. This willingness to try mobile content has encouraged 3G operators to push customers onto 3G content in an attempt to increase revenue.

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<sup>25</sup> Telstra launched iMode, Vodafone launched live! and Optus launched Zoo.

## Mobile TV

Mobile TV is a continuous, live stream of television broadcast through a mobile phone handset or other portable handheld device. By late 2005, Australian consumers had access to four 3G network operators providing mobile TV services, mostly in metropolitan areas of capital cities. The 3G networks are providing mobile television content through a combination of live streaming and on-demand content.

On the live streaming front, networks have utilised sports coverage to encourage user take-up. In 2005–06, ‘3’ provided coverage of Australia’s cricket series, and live coverage of all 2006 FIFA World Cup soccer games broadcast by SBS television (requiring an \$8.00 fee for unlimited viewing). Vodafone also provided live streaming of select Australian games through its Vodafone Live service for free during the World Cup, with additional services such as score updates and video highlights attracting service fees.

Live streaming by ‘3’ of the *Big Brother* reality television show appears to be one of the most significant mobile TV subscriptions offered to date, providing unlimited viewing to customers for \$6 per month. ‘3’ revealed that consumers accessed 3.5 million video streams of the *Big Brother* series in 2006, totalling 542,500 viewing hours. The average period of streaming by ‘3’ mobile customers was 9.3 minutes, up by five minutes from the previous year. Other content provided live includes 24-hour news channels, music stations, cartoons and comedy shows.

On-demand mobile TV services provide consumers with the ability to access TV content at any time, such as when in transit, or waiting for friends. On-demand content includes news updates, sports updates, cartoons, comedy, music video clips and mobisodes (a term used to describe content specifically produced for mobile TV). Vodafone offers mobisodes of the popular *24* television series with the made-for-mobile *24: Conspiracy* series of mobisodes.

In July 2005, Telstra and The Bridge Networks commenced a trial of mobile TV using DVB-H (digital video broadcasting – handheld) technology. DVB-H is a broadcasting standard designed specifically for broadcasting TV to mobile phones (and similar handheld devices), taking into account the screen size and battery life demands of mobile handsets. The trial took place in Sydney and used around 1,000 handsets issued to Telstra staff and customers to test the technical capability and commercial prospects for DVB-H applications in Australia. The trial involved the broadcast of the TV channels Fox Footy, Fox Sports News, Sky News, Sky Business News, the Weather Channel, the Lifestyle Channel, E-entertainment, Channel V, History, Nickelodeon, ABC2, SBS, CNNi and Boomerang. In March 2006, Telstra demonstrated mobile TV by broadcasting live events from the Melbourne Commonwealth Games.

## CONTENT USAGE

Although voice services remain the main contributor to mobile revenues, and SMS is also strong (93 per cent of respondents to AIMIA's survey identified SMS as an expenditure item on their mobile phone bill), consumers are increasingly accessing some form of content. The percentage of consumers who have purchased mobile content in the last 12 months rose from 50 per cent in May 2005 to 66 per cent in May 2006. Of available content, news, weather and movie information services are most popular. However, the same survey indicates that consumers are infrequent purchasers of content.

## SPENDING PATTERNS

At present, consumer spending on mobile content represents a very small proportion of overall average mobile spending by consumers. In March 2006, '3' customers spent an average of \$6.00 per month on mobile content, compared with \$1.05 for Optus, \$0.80 for Vodafone and \$.053 for Telstra customers.<sup>26</sup> Given the late 2005 launch of 3G service offerings by Optus, Vodafone and Telstra, it may be some time before a meaningful analysis of mobile content demand can be made.

When compared with forecasts of declining average revenue per user (ARPU) in the mobile market, it is apparent that revenue streams from content services have gained increasing importance for providers to maintain ARPU. Supply-side factors may ultimately be responsible for future growth in the mobile content market, including the introduction of new business models that facilitate the delivery of low-cost content to end-users.

One strategy has been the use of unlimited monthly subscription services for content such as news, sport and weather. 3G mobile providers have also tried to capitalise on exclusive content agreements to lure and maintain a loyal customer base. For example, over the past year '3' has had exclusive rights to stream live video footage of the *Big Brother* TV series at \$6.00 per month per user (see Mobile TV in this chapter).

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<sup>26</sup> *CommsDay Weekly*, 'Big three turning consumers off mobile content', 2 April 2006

# Appendixes

## **Appendix 1: Satellite broadband service providers**

In 2005–06, satellite broadband services were provided by the following companies:

- Australian Private Networks (ACTIV8me)
- Be Communications (BeCom)
- BorderNet
- BroadbandNet
- Clear Networks
- DragNet Internet Services (one-way satellite only)
- Ecopost,
- Intrapower Sky Pty Ltd
- iPSTAR Australia
- My Wisp
- NewSat/New Skies
- Optus
- Telstra

## Appendix 2: Wireless data card options

### Mobile broadband services, June 2006

Company	Product name	Monthly price	Volume	Cost of card	Networks
'3'	Mobile Broadband – NetConnect card	\$29 plan (384 kbit/s) \$69 plan (384 kbit/s) \$99 plan (384 kbit/s) \$129 plan (384 kbit/s)	100 MB 300 MB 600 MB 1 GB	\$0 on 18 month plans	3G
Optus	Optus Wireless Connect	\$29.95 \$39.95 \$79.95 \$129.95 Data rate varies depending on whether customer is in a GSM, 3G, or Wi-Fi coverage area.	75 MB 200 MB 500 MB 1.5 GB	Up-front with no ongoing contract \$399 (3G/GSM card). \$599 (3G/GSM/Wi-Fi card). Monthly repayments \$10–\$24 per month on 12 and 24 month contracts.	3G/GSM or 3G/GSM/Wi-Fi
Vodafone	Vodafone Mobile Connect	\$29.95 (384 kbit/s) \$49.95 (384 kbit/s) \$99.95 (384 kbit/s)	100 MB 300 MB 1 GB	\$299 up-front	3G/GPRS coverage
Telstra	BigPond Wireless Broadband mobile card	\$49.95 (256 kbit/s) \$79.95 (256 kbit/s) \$79.95 (512 kbit/s) \$109.95 (512 kbit/s)	200 MB 1 GB 400 MB 1 GB	\$299 up-front. 12-month plan required.	3G (EVDO) and CDMA (1xRTT)
Unwired	Unwired PC card	\$49.95 (512/128 kbit/s) \$69.95 (750/128 kbit/s) \$89.95 (750/256 kbit/s) \$109.95 (750/256 kbit/s)	400 MB 2 GB 6 GB 12 GB	\$299 up-front. 12-month plan required.	Unwired Network (metropolitan Sydney and Melbourne)
iBurst – Personal Broadband Australia	Pacific Internet wireless plans*	256 kbit/s 512 kbit/s 1 Mbit/s	200 MB 500 MB 1 GB	\$274 up-front. \$129 set-up fee without contract commitment, \$64.50 set-up fee with 12-month contract.	Personal Broadband Australia Network (metropolitan areas of Sydney, Melbourne, Brisbane, Gold Coast, Canberra)

\* Personal Broadband Australia does not sell iBurst directly to end-users. iBurst services are provided by resellers and retail distributors.

## Glossary

<b>2G</b>	<b>second generation mobile telecommunications</b> Digital mobile telecommunications services provide voice communications and relatively low transmission rate for data (principally evolved GSM and CDMA platforms in Australia).
<b>2.5G</b>	<b>second generation plus mobile telecommunications</b> 2.5G cellular systems allow a mobile station to be 'always online' for sending and receiving packet data. The two major forms of 2.5G enhancements to 2G systems are the general packet radio service (GPRS) and enhanced data rates for global evolution (EDGE). <sup>27</sup>
<b>3G</b>	<b>third generation mobile telecommunications</b> Third generation mobile technology supports high-speed data capacities and is intended for applications other than voice. It supports applications such as full-motion video, video-conferencing and full internet access. <sup>28</sup> The main standards for 3G mobile are UMTS (W-CDMA) and CDMA2000
<b>ADSL</b>	<b>asymmetric digital subscriber line</b> A modem technology that converts twisted-pair telephone lines into access paths for multimedia and high-speed data communications. The bit rates transmitted in both directions are different. <sup>29</sup> Downstream data (data downloaded by user) transmission rate is much higher than the upstream data rate. Recent enhancements to ADSL include <b>ADSL2</b> , and <b>ADSL2+</b> . See also <b>DSL</b> .
<b>ADSL2</b>	ADSL2 increases data rates available through ADSL, as well as extending the reach from the exchange to the subscriber. It is theoretically capable of providing maximum data rates of 12 Mbit/s downstream and 3.5 Mbit/s upstream.
<b>ADSL2+</b>	<b>extended bandwidth ADSL2</b> ADSL2+ provides three times better performance than traditional ADSL technology. A novel attribute of ADSL2+ is that it can be configured for different applications, such as maximum performance to the user (Annex A), maximum performance from the user (Annex M) or maximum reach (Annex L). <sup>30</sup> ADSL2+ services are theoretically capable of download speeds of up to 24 Mbit/s.
<b>ARPU</b>	Average revenue per user.
<b>bandwidth</b>	(1) In data communications, the maximum data transmission rate, measured in bits per second. (2) In radiocommunications, the amount of radiofrequency spectrum used by a service, measured in Hertz.
<b>BPL</b>	<b>broadband over power lines</b> Communications technique using the electricity grid or mains cabling within premises to deliver broadband services.
<b>broadband</b>	Broadband is the general term used for any type of 'always on' high data rate connection. The bandwidth (data rate) is relative to narrowband and not universally agreed upon. In this report it means any internet connection with an access data rate greater than 256kbit/s <sup>31</sup> , which is capable of supporting a variety of voice and data applications, such as voice telephony, internet access, pay TV and multimedia services.

<sup>27</sup> Australian Mobile Telecommunications Association (AMTA) <http://www.amta.org.au>

<sup>28</sup> Australian Mobile Telecommunications Association (AMTA) <http://www.amta.org.au>

<sup>29</sup> International Telecommunications Union (ITU) <http://www.itu.int>

<sup>30</sup> <http://www.ericsson.com>

<sup>31</sup> This is the data rate used by the Organisation for Economic Cooperation and Development (OECD)



<b>BWA</b>	<b>broadband wireless access</b> Provides high-speed wireless 'last mile' access. The most commonly discussed standards used to provide BWA are the ETSI HiperLAN, IEEE 802.11 (Wi-Fi) and IEEE 802.16 (WiMAX) standards. It aims to provide the same connectivity as wired broadband access systems, such as ADSL and cable. See also <b>WLL</b> , <b>WiMAX</b> .
<b>cable</b>	A data connection that is delivered to a subscriber through channels in a coaxial cable or optical fibre cable to a cable modem installed externally or internally to a subscriber's computer or television set.
<b>carrier</b>	The holder of a telecommunications carrier licence in force under the <i>Telecommunications Act 1997</i> .
<b>CDMA</b>	<b>code division multiple access</b> CDMA is a digital mobile standard that separates subscriber calls from one another by code instead of time or frequency. It is a "spread spectrum" technology, which means that it spreads the information contained in a particular signal of interest over a much greater bandwidth than the original signal. <sup>32</sup>
<b>CSP</b>	<b>carriage service provider</b> Person supplying or proposing to supply certain carriage services, including a commercial entity acquiring telecommunications capacity or services from a carrier for resale to a third party. Internet and pay TV service providers fall within the definition of carriage service providers under the <i>Telecommunications Act 1997</i> .
<b>data rate</b>	The volume of data that is able to be transmitted over a period of time. Data rates are usually measured in bits per second.
<b>dial-up subscribers</b>	Subscribers who connect to the internet via modem and dial-up software utilising the PSTN, including ISDN connections that require the user to dial-up.
<b>DSL</b>	<b>digital subscriber line</b> Transmission technique that provides high-speed digital data transmission over copper local loop. It describes several technologies including ADSL, ADSL2, ADSL2+, SDSL, HDSL and VDSL. It exploits the unused frequency spectrum on twisted pair cables running between the local exchange and subscriber (local loop). See also <b>ADSL</b> .
<b>DSLAM</b>	<b>digital subscriber line access multiplexer</b> A device located in an exchange required to connect a subscriber to a DSL service.
<b>Exchange</b>	Network node where various numbers and types of communication lines are switched by the telecommunications network operator. Exchanges operate at local, trunk and international levels.
<b>GPRS</b>	<b>general packet radio service</b> A 2.5G wireless technology within the evolved GSM platform providing packet switched data and data rates up to 171 kbit/s.
<b>GSM</b>	<b>global system for mobile communication</b> A European digital cellular network standard. Telstra, Optus and Vodafone currently operate GSM networks in the 900 and 1800 MHz band. The standard employs time division multiple access techniques.
<b>Hertz</b>	A measure of frequency; one cycle per second.
<b>HFC cable</b>	<b>hybrid fibre coaxial cable</b> Network topology consisting of optical fibre on main routes, supplemented by coaxial cable closer to a customer's premises.

<sup>32</sup> Australian Mobile Telecommunications Association (AMTA) <http://www.amta.org.au>

<b>HiBIS</b>	<b>Higher Bandwidth Incentive Scheme</b> Australian Government program for subsidising ISPs providing approved broadband services to consumers in rural and remote areas at less than specified prices.
<b>IEEE</b>	<b>Institute of Electrical and Electronics Engineers</b> <sup>33</sup> A US-based organisation of international scope promoting the engineering process of creating, developing, integrating, sharing, and applying knowledge about electro and information technologies with major involvement in standards setting.
<b>IEEE 802</b>	A group of standards addressing all aspects of computer networking. <sup>34</sup>
<b>IEEE 802.11</b>	A sub-group of wireless standards within the IEEE 802 group covering wireless short-range communications equipment. It is frequently known as Wi-Fi. <sup>35</sup> See also <b>Wi-Fi, WLAN and WiMAX</b> .
<b>IEEE 802.16</b>	A sub-group of wireless standards within the IEEE 802 group primarily addressing broadband wireless metropolitan area networks. <sup>36</sup>
<b>IP</b>	<b>internet protocol</b> One of the protocols used for transmission of data over the internet, also used for data communications across other packet-switched networks.
<b>ISDN</b>	<b>integrated services digital network</b> Technology that enables digital transmission of voice and data over the PSTN. Provides transmission of voice and data at up to 128 kbit/s.
<b>ISP</b>	<b>internet service provider</b> Service provider offering internet access to the public or another service provider.
<b>kbit/s</b>	<b>kilobits per second</b> Data communications transmission rate of 1,000 bits per second.
<b>MB</b>	<b>megabyte(s)</b> One million bytes.
<b>Mbit/s</b>	<b>megabits per second</b> Data communications transmission rate of one million bits per second.
<b>pay TV</b>	<b>subscription television service</b> Service providing access, for a fee, to television channels transmitted using cable, satellite or terrestrial microwave.
<b>PSTN</b>	<b>public switched telecommunications network</b> Public telecommunications network operated by a carrier to provide services to the public.
<b>satellite</b>	A satellite is a wireless receiver/transmitter that operates in orbit around the earth and acts as a microwave relay station, receiving signals sent from a ground-based station, amplifying them, and retransmitting them on a different frequency to another ground-based station. Satellites can be used for high-speed transmission of computer data, even where the most basic utilities are lacking such as regional and remote locations.
<b>SMS</b>	<b>short message service</b> Mobile telecommunications data transmission service that allows users to send short text messages to each other using the mobile phone keypad.
<b>STS</b>	<b>standard telephone service</b> The telecommunications service defined as a carriage service providing voice telephony or an equivalent service that meets the requirements of the <i>Telecommunications (Consumer Protection and Service Standards) Act 1999</i> and the <i>Disability Discrimination Act 1992</i> .

<sup>33</sup> [www.ieee.org](http://www.ieee.org)

<sup>34</sup> [www.ieee.org/portal/pages/about/802std/index.html](http://www.ieee.org/portal/pages/about/802std/index.html)

<sup>35</sup> [grouper.ieee.org/groups/802/11](http://grouper.ieee.org/groups/802/11)

<sup>36</sup> [grouper.ieee.org/groups/802/16](http://grouper.ieee.org/groups/802/16)

<b>ULL</b>	<b>unconditioned local loop</b> Use of unconditioned communications over copper wire pairs between the boundary of a telecommunications network at a customer's premises and a point of connection with a service provider usually other than the owner of the unconditioned network.
<b>USO</b>	<b>universal service obligation</b> Obligation under the <i>Telecommunications Consumer Protection and Service Standards Act 1999</i> to ensure standard telephone services, payphones and prescribed carriage services are reasonably accessible to all people in Australia on an equitable basis, wherever they reside or carry on business.
<b>VoIP</b>	<b>voice over internet protocol</b> A protocol for transmitting voice over packet-switched data networks. Also called IP telephony.
<b>Wi-Fi</b>	<b>Wireless Fidelity</b> Specifically, a marketing term for the standard IEEE 802.11b/g, and also used generically to refer to wireless local area network (IEEE 802.11) technology providing short-range, high data rate connections between mobile data devices and access points connected to a wired network. <sup>37</sup>
<b>WiMAX</b>	<b>Worldwide Interoperability for Microwave Access</b> Industry group organised to advance the IEEE 802.16 standards for broadband wireless access networks for multimedia applications with a wireless connection.
<b>WLAN</b>	<b>wireless local area network</b> Network using radiocommunications (rather than cable) to connect computer terminals or other digital devices over relatively short distances. The most common type of WLAN is <b>Wi-Fi</b> . See also <b>IEEE 802.11</b> .
<b>WLL</b>	<b>wireless local loop</b> The local loop is the 'last mile' of the telephone network, or the connection from the local exchange to the subscriber. It is traditionally provided via twisted copper wires. The WLL, also referred to as broadband wireless access (BWA), connects subscribers to the PSTN using radiofrequency signals as a substitute for the copper wire for all or part of the local loop. <sup>38</sup>

<sup>37</sup> <http://www.Wi-Fi.org/OpenSection/index.asp>

<sup>38</sup> Australian Mobile Telecommunications Association (AMTA) <http://www.amta.org.au>

## **Source information**

### **ROY MORGAN RESEARCH**

Roy Morgan Research is the largest and longest established Australian market research company, with more than sixty years of experience in Australia. The syndicated Single Source survey in Australia provides an integrated understanding of consumers aged 14+ years based on an annual sample of around 55,000 respondents, with information detailing what consumers are like, what they buy, consume, think, intend, watch, read and listen to. As all information has been gathered from the same respondents, the strength of relationships between different characteristics of the population can be measured directly.

Roy Morgan Research has been collecting information on mobile phone, fixed line, internet, and pay TV services for several years, providing continuous trend data that is both consistent and trialed over time. Major telecommunications network providers, service providers, handset manufacturers and government bodies use this unique information across a variety of business applications. Roy Morgan Research constantly refines the questionnaire to ensure information is current and relevant to the industry. By taking into account the overall economic climate, regulatory issues, international trends and changes in technology, Roy Morgan Research provides key insights into the evolving telecommunications and technology markets.