Australian Government

Department of Broadband,
Communications and the Digital Economy

THE SENATE ENVIRONMENT AND COMMUNICATIONS REFERENCES COMMITTEE
Inquiry into Emergency Communications

The capacity of communications networks and emergency warning systems to deal with emergencies and natural disasters

Submission by the Department of Broadband, Communications and the Digital Economy

INTRODUCTION

The Department of Broadband, Communications and the Digital Economy (the department) is responsible for providing policy advice to the Australian Government on communications matters, including those relating to emergency communications such as the Emergency Call Service (Triple Zero), critical infrastructure protection, the Integrated Public Number Database, the National Relay Service and spectrum policy matters.

The department also administers programs which facilitate communications in emergencies, including the Digital Regions Initiative, the Satellite Phone Subsidy Scheme and the Indigenous Communications Program.

The recent natural disasters in Australia highlight the essential role of communication technologies during an emergency. The department commends the telecommunications and broadcasting infrastructure providers in their rapid response to the recent emergencies and restoration of infrastructure and services.

RESPONSES TO THE TERMS OF REFERENCE

The department's responses to the inquiry's terms of reference are set out below. Further details are set out in Appendix 1.

a. The effectiveness of communications networks, including radio, telephone and Internet and other alert systems (in particular drawing on the spate of emergencies an natural disasters of the 2010/2011 Australian summer)

- ***(i) In warning of the imminent threat of an impending emergency***
- ***(ii) To function in a coordinated manner during an emergency***
- ***(iii) To assist in recovery after an emergency***

The Attorney-General's Department has a role, along with Emergency Management Australia and relevant state and territory agencies, in implementing and managing emergency warning systems. The department understands that the Attorney-General's Department will also make a submission to this inquiry.

The communications industry also has a vital role in warning the community of, and responding to, emergencies and natural disasters. Infrastructure providers have primary responsibility for managing, and responding to, emergencies and disasters which impact on their services. The department supports the work of critical infrastructure providers through its secretariat services for the Communications Sector Group, as well as through monitoring the work of the communications industry.

Communications Sector Group

The department provides secretariat and program support to the Communications Sector Group (CSG). The CSG consists of the owners and operators of critical infrastructure in the telecommunications, broadcasting, international submarine communications cables and postal sectors, as well as representatives from relevant Commonwealth, state and territory government agencies.

The CSG has conducted numerous discussion exercises since 2006 which were developed to raise awareness of the impact of communications during emergencies and build resilience for future prevention, preparedness, response and recovery activities. A key outcome has been the increased awareness of the interdependencies within the communications sector (for instance, broadcasting reliance on telecommunications) and across the broader critical infrastructure sectors (for instance, the communications sector's reliance on the supply of mains electrical power).

Members of the CSG have individual business continuity and disaster recovery plans to respond to, and mitigate, the impacts of an emergency or disaster.

Commercial Television and Radio Services

Free-to-air television and radio broadcasters play a vital role in the dissemination of emergency information.

In relation to commercial broadcasting, the Commercial Television Industry Code of Practice and the Commercial Radio Australia Codes of Practice and Guidelines require licensees to:

- implement, in consultation with appropriate emergency and essential service organisations, a set of internal procedures to enable the timely and accurate broadcast of warnings and information supplied by such organisations relating to an existing or threatened emergency;
- identify a designated position in relation to each station as the contact officer during business and non-business hours for dealing with emergency information; and
- review and, where necessary, update their internal procedures annually.

The *Broadcasting Services Act 1992* also requires that certain regional commercial radio licensees meet minimum service standards for emergency warnings.

ABC Local Radio Transmission Arrangements

With an estimated national penetration rate of 99.4 per cent, ABC Local Radio is often the only mobile source of vital weather and emergency service information for regional and rural Australians.

The ABC has numerous protocols and broadcast plans in place for responding to emergency situations. Under these protocols, Local Radio has the highest restoration priority, followed by analog TV, digital TV, NewsRadio, Radio National, Triple J and Classic FM.

The ABC has three portable ('flyaway') FM transmitter units with mixing desks, antennas and satellite receivers based in Townsville, Perth and Melbourne which can be deployed rapidly. A fourth less portable unit is based in Darwin.

The flyaway units have been used on various occasions, including the 2009 Victorian bushfires, the recent floods in Queensland and assisting areas which had been affected by Cyclone Yasi.

ABC News 24 is providing an increasingly useful service to broadcast emergency warning systems throughout affected areas.

Mobile Phone Carriers

The provision of mobile phone coverage is a commercial matter for carriers. In recent years, mobile phone carriers have significantly expanded their terrestrial mobile networks.

Carriers are continuing to enhance their capacity to anticipate damage to their networks in order to restore service as quickly as possible after a natural disaster occurs. For example, as part of their preparation for anticipated infrastructure damage from Cyclone Yasi, carriers moved resources such as portable base stations and power generators to North Queensland prior to the cyclone. This meant they were able to act quickly to restore services once the immediate danger had passed.

Carriers may choose to deploy temporary communications equipment where infrastructure has been damaged, or additional capacity is required. For example:

- A Mobile Exchange on Wheels (MEOW) which is a portable ADSL 2+ enabled exchange that can provide temporary landline and broadband services.
- A Cell on Wheels (COW) which is a mobile cell site that consists of a cellular antenna tower, electronic radio transceiver equipment and a generator on a truck or trailer, designed to be part of a cellular network where cellular coverage was either never available or compromised.
- A Satellite Cell on Wheels (SatCOW) which uses satellite transmission to connect terrestrial networks and provide coverage to surrounding areas.

<u>Carriers' response to the Queensland floods</u>

In the immediate aftermath of the flood peak, carriers deployed service personnel and equipment to provide interim remedies. Back-up battery systems prolonged the operation of many services where mains power supply was an issue. Telstra was able to restore some

mobile services through the deployment of COWs in flood-affected areas. Both Optus and Telstra diverted calls from customers' fixed-line phones to a mobile of their choice free of charge.

Carriers also offered additional services to flood-affected people. Optus delivered 1500 mobile handsets, each with $1000 worth of credit, to Red Cross centres. Telstra distributed 200 mobile handsets and phone cards though Anglicare and provided free local and STD calls from payphones in critical community evacuation centres.

Telstra also set up communication services in evacuation centres including temporary internet kiosks with laptops, free phonecards, wireless gateways for internet access, a modem for the Red Cross and the provision of chargers for people to recharge phone handsets.

Carriers' response to Cyclone Yasi

As noted above, prior to the cyclone, the carriers arranged for the provision of interim services. In the immediate aftermath, Optus and Telstra diverted calls from customers' fixed-line phones to a mobile of their choice. Telstra also provide free local and STD calls from payphones at evacuation centres, subject to the availability of mains power.

Optus distributed over 400 pre-paid handsets with $600 credit to evacuation centres in some of the worst-affected areas. Optus also made available a portable internet kiosk and customer service trailer to provide free communications services, including satellite phones for free voice calls and laptop computers with free internet access.

b. The impact of extended power blackouts on warning systems for state emergency services, including fire brigades and landholders or home owners

The department notes that the Attorney-General's Department has responsibility at the Commonwealth level for the national coordination of emergency management, and that primary responsibility for warning systems falls upon state and territory emergency management agencies.

c. The impact of emergencies and natural disasters on, and implications for, future communication technologies such as the National Broadband Network

Communications, like other utilities and essential services, are prone to infrastructure damage, power outages and accessibility difficulties during emergencies and natural disasters. No communications infrastructure or technology is likely to be infallible when exposed to the physical realities of a natural disaster.

The government recognises the importance of access to telephony during an emergency. That is why it has instructed NBN Co to deploy battery backup capabilities within all network termination devices (NTDs) connected within the fibre footprint, and to cover the cost of that installation. NBN Co is deploying battery backup within each NTD that is equipped with an Analog Telephone Adaptor (ATA).

During a mains power failure, the battery backup is expected to allow the end-user to receive telephony services for up to five hours. As an additional safeguard, when battery runs down to approximately half its capacity, power is automatically cut-off. This reserve would then be manually activated by the end-user to enable an emergency call to be made.

As set out in the government's Statement of Expectations to the NBN Co Board, released on 20 December 2010, the government and NBN Co will be undertaking further consultation with stakeholders, including state and territory emergency services, to ensure that the government is implementing the most effective solution that supports the provision of emergency services.

d. The scope for better educating people in high-risk regions about the use of communications equipment to prepare for and respond to a potential emergency or natural disaster

The department recommends that consumers, particularly in high-risk regions, rely on multiple communication channels where possible.

In addition, consumers are advised to:

- *Check their mobile phone coverage* – Information on the coverage available from each of the carriers is found on their respective websites.
- *Get the right model phone* – Mobile phones have different capabilities and how well a phone performs on a network depends on both the network coverage and the particular device.
- *Use an external antenna* – External antennas can improve access to mobile phone services, particularly along country highways and in rural locations.
- *Think about getting a satellite phone* - In areas that are sparsely populated or have little passing traffic, the only viable option for mobile phone services is via satellite. Satellite phone services cover the entire Australian landmass.

People living or working in areas without access to terrestrial mobile phone coverage may be eligible for assistance under the government's Satellite Phone Subsidy Scheme. The Scheme provides up to $1000 for eligible applicants who live in areas without terrestrial mobile phone coverage or up to $700 for eligible applicants who live in areas that have coverage, but spend more than 180 days across a two year period in non-coverage areas.

Under the Scheme's rules, those eligible to apply include individuals, small businesses, community groups, not-for-profit organisations, Indigenous corporations, emergency service organisations, health organisations and educational institutions.

An alternative to telephone communications is the use of distress beacon units. These devices are designed to assist in an emergency by alerting rescue authorities and indicating location. More recent models incorporate Global Positioning Satellite technology, enabling much more accurate determination of the location compared with earlier models.

The ABC also has a role in educating the public about the use of communications technologies during emergencies. The ABC's Emergency Broadcast Plans identify a number of initiatives in this area.

e. New and emerging technologies including digital spectrum that could improve preparation for, responses to and recovery from, an emergency or natural disaster

The department does not have direct involvement in the development of technologies, rather the department's role is to foster a policy environment which enables new emerging technologies. This includes matters such as spectrum policy.

Spectrum is a natural, finite, scarce and valuable resource which is an enabler of wireless communications. Spectrum alone however, cannot create wireless communications – it is necessary to build infrastructure and networks with compatible end-user equipment.

The government is committed to finding the most effective solution to support development of new mobile broadband capabilities for public safety agencies, to assist in their public protection and disaster relief operations. The government is working with public safety agencies, and with state and territory governments who have responsibility for them, to determine the most efficient and effective way to meet their needs.

f. Any other relevant matters

Triple Zero

For many Australians seeking emergency assistance, the Triple Zero emergency call service (ECS) is the first point of contact. The 000 number is the primary Triple Zero emergency number, with 112 the international mobile phone emergency call number.

The Triple Zero emergency service is administered by Telstra, which is the emergency call person. State and territory emergency service organisations are responsible for receiving Triple Zero calls from the emergency call person and dispatching the appropriate emergency service (police, fire and ambulance) in response to the call.

Arrangements are in place to allow Telstra to direct callers seeking information to Department of Human Services call centres, if state and territory emergency call centres become overwhelmed by extreme call volumes, for example during an extreme event.

Access to emergency communications services for deaf, hearing or speech impaired Australians

Deaf, hearing and speech impaired Australians currently use the National Relay Service (NRS) to contact anyone in the wider telephone network. The NRS offers several types of relay services depending on the communications needs of the user, including text-based communication from a teletypewriter (TTY) or computer, to voice callers in the community. The service can be similarly used by voice callers to have their messages relayed into text.

For emergency calls, the service uses a separate '106' number which ensures calls are prioritised above other calls to the NRS.

While the 106 service has generally delivered quick and reliable contact with emergency services, the recent severe flooding in Queensland caused the temporary suspension of most services provided by the NRS for a period of 24 hours due to concerns about staff safety and access during the floods. The 106 emergency service was uninterrupted throughout this period, as a result of the combined efforts of the relay service provider and Telstra.

In addition to addressing the specific issues associated with the Queensland floods, the Minister for Broadband, Communications and the Digital Economy has announced that the department will conduct a comprehensive community consultation process to explore ways in which the NRS could be improved and developed. The department is currently working with key stakeholders to develop the terms of reference for the review.

The Minister has already announced the government's intention to establish a mobile text-based emergency service for deaf, hearing and speech impaired Australians who currently have limited access to emergency services outside of the home when they cannot access a TTY or modem to call the dedicated NRS 106 emergency service.

The department is currently working with stakeholders to address a range of technical and legislative issues associated with the implementation of a mobile text-based service and is also evaluating appropriate service options including basic short messaging services (SMS) and the use of more sophisticated smart phone applications.

The government is aware that people with a hearing or vision impairment want greater access to electronic media. On 3 December 2010, the Minister tabled in Parliament the *Access to Electronic-Media for the Hearing and Vision Impaired – Media Access Review Final Report*.

The final report contained 22 recommendations, including three that relate to emergency broadcasts:

Recommendation 10—That people with disability should have access to emergency services when at home and outside of the home. The government has committed to the establishment of an SMS emergency service for people with a disability.

Recommendation 11—That the government mandates the captioning or subtitling of all pre-produced emergency, disaster or safety announcements broadcast on television and introduces a voiceover requirement for essential information such as contact numbers.

Recommendation 12—That the government acknowledges the community need for captioning and audio support for such warnings, and works with industry to develop such a capability so that warnings can be broadcast with these features in a timely and effective manner, noting that for emergency warning requests that are not pre-produced, the priority remains for the warning to be broadcast without delay.

The government is moving to implement the report's recommendations, and call on industry and disability group stakeholders to similarly take action to implement recommendations that affect them.

A further review of captioning and audio description on electronic media will commence by 2014. That review will consider the effectiveness of action agreed in 2010 in light of transformational communications initiatives such as the National Broadband Network and the switchover to digital-only television.

Appendix 1

FURTHER INFORMATION

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Communications Sector Group

The department provides the secretariat and program support to the Communications Sector Group (CSG). These functions are provided under the department's responsibilities within the framework of the Trusted Information Sharing Network (TISN)[1] led by the Attorney-General's Department. The CSG is one of the seven industry sector groups within the TISN and meets five times per annum.

The CSG consists of the owners and operators of critical infrastructure in the telecommunications, broadcasting, international submarine communications cables and postal sectors, as well as representatives from relevant government, and state and territory government agencies.

The CSG's objective is to identify, analyse, discuss and share information in a trusted environment on issues affecting the protection and resilience of Australia's critical communications infrastructure. In June 2010, the focus of the TISN shifted from protection to resilience with an 'all-hazards' focus.

In 2005, the CSG developed a sector level Risk Management Framework to provide the sector with a collaborative approach to assessing and identifying broad risk treatment strategies for sector wide risks. This Framework did not replace the enterprise-level risk management arrangements in place within the communications sector nor does it contain any enterprise-level data that may be commercially or risk sensitive. The Framework was designed as a tool to complement and enhance the existing arrangements. The Framework was updated in 2009.

[1] *www.tisn.gov.au*

In 2010, the CSG developed a Strategic Plan 2010-2012 which outlines the objectives, deliverables and benefits for the CSG. This Plan, together with the revised Risk Management Framework, forms the basis of the CSG's work program which includes discussion exercises with other critical infrastructure sectors and jurisdictions.

Discussion exercises

The CSG has conducted numerous discussion exercises since 2006 with strong engagement with state and territory governments and other critical infrastructure sectors. These discussion exercises were developed to raise awareness of the impact of communications during emergencies and build resilience for future prevention, preparedness, response and recovery activities.

CSG discussion exercises have been conducted in Queensland (May 2008), the Northern Territory (August 2010), Western Australia (September 2010) and South Australia (September 2010). These exercises deepened participants' understanding of issues around critical communications infrastructure and the effect of natural disasters on them.

A key outcome of the CSG discussion exercises has been the increased awareness of the interdependencies within the communications sector (for instance, broadcasting reliance on telecommunications) and across the broader critical infrastructure sectors (for instance, the communications sector's reliance on the supply of mains electrical power).

Disaster management

The CSG member organisations have individual business continuity and disaster recovery plans which are enacted in the event of an emergency or disaster. In 2010, CSG members developed a members' contact list for the CSG which facilitates communication between members in the event of a disaster.

The TISN is not an operational forum though the individual member organisations, as providers of Australia's critical infrastructure services, have a significant role in maintaining and/or restoring their services to affected communities.

Through engagement with the TISN and the CSG, individual organisations within the communications sector have enhanced their existing commercial arrangements to prepare, respond and recover from emergencies and natural disasters.

Commercial Television and Radio Services

Commercial television and radio services are provided under a co-regulatory framework established by the *Broadcasting Services Act 1992* (BSA).

The Australian Communications and Media Authority (ACMA) oversees the development of codes of practice by the various broadcasting industry sectors. The ACMA registers these codes when it is satisfied that they provide appropriate community safeguards, are endorsed by the majority of broadcasters in the relevant sector and the public has had an adequate opportunity to comment on them.

The ACMA has registered the Commercial Television Industry Code of Practice (January 2010) and the Commercial Radio Australia Codes of Practice and Guidelines (June 2010). Both Codes contain provisions concerning the broadcast of emergency information that require licensees to:

- implement, in consultation with appropriate emergency and essential service organisations[2], a set of internal procedures to enable the timely and accurate broadcast of warnings and information supplied by such organisations relating to an existing or threatened emergency;
- identify a designated position in relation to each station as the contact officer during business and non-business hours for dealing with emergency information; and
- review and, where necessary, update their internal procedures annually.

The Commercial Television Industry Code of Practice requires licensees when broadcasting emergency, disaster and safety announcements to provide the essential information visually, whenever practical, to assist the hearing impaired and deaf people. This should include relevant contact numbers for further information.

In addition to the requirements of the Code, the major metropolitan television networks have adopted Audio-Captioning[3] Guidelines for their primary channels, which Free TV Australia recommends all other commercial television stations adopt for consistency. In relation to emergency announcements, the guidelines state that:

- wherever reasonable and practical in the circumstances, the Networks will provide audio captioning of any on-screen textual information appearing in emergency announcements;
- emergency information that is provided textually without breaking from regular programs, such as information provided in the form of a crawl, will not be provided orally;
- where it is not possible to provide audio captioning of emergency announcements, the Networks will attempt to ensure that any textual information that is not provided orally is available by ringing the station.

In addition to the requirements in the Commercial Radio Australia Codes of Practice and Guidelines, the BSA separately requires regional commercial radio licensees subject to a trigger event[4] to meet minimum service standards for emergency warnings. A licensee will meet the minimum service standards during a particular week if on one or more occasions during the week, one or more emergency service agencies asked the licensee to broadcast

[2] The Codes provide that emergency or essential service organisations generally include Police, Fire, Rural Fire Service, Ambulance, State Emergency Service (SES), water, port or health authorities and the Bureau of Meteorology.

[3] Audio-captioning means the provision of basic voice-overs of textual information displayed on screen. It does not refer to or include the insertion of verbal descriptions about the setting, action or other non-textual visual content of a program.

[4] A trigger event occurs when there is a transfer of a regional commercial radio licence, the formation of a new cross-media group (involving a radio station plus one or both of associated newspapers and commercial television licensees) or a change of controller of a cross-media group. Ninety regional commercial radio licences have been subject to a trigger event since the relevant provisions commenced on 4 April 2007.

emergency warnings, and the licensee broadcast those warnings as and when asked to do so by those emergency service agencies; or there was no occasion during the week when an emergency service agency asked the licensee to broadcast an emergency warning.

ABC Local Radio Transmission Arrangements

With an estimated national penetration rate of 99.4 per cent, ABC Local Radio is often the only mobile source of vital weather and emergency service information for regional and rural Australians.

The ABC's transmission system is based on "AM" and "FM" transmitters, fed by terrestrial and satellite input. Some are supported by back-up generators in the event that mains power is affected.

During the 2010-2011 weather crisis in Queensland, the ABC's Brisbane and four regional offices were evacuated as a precaution to keep staff safe. The need to keep staff safe, and to protect some equipment, resulted in some programs being 'networked' i.e. provided from a central studio, rather than from the usual ABC studios. However, at no time during this time did any community not have reliable service from the ABC, although numerous facilities were affected for long periods.

In recent years, ABC Local Radio has provided "emergency broadcasting" for fires in all states; for cyclones in three states; for flooding in Queensland, Western Australia, New South Wales and Victoria; and for equine flu outbreaks, tsunamis, locust plagues, heatwaves in Western Australia and South Australia, and storms in all states.

ABC News 24 is providing an increasingly useful service to broadcast emergency warnings throughout affected areas.

There is no legislative requirement for the ABC to broadcast warnings, nor any funding to assist with disaster coverage.

ABC service restoration priority and protocols

- During natural disasters, Local Radio has the highest restoration priority, followed by analog TV, digital TV, NewsRadio, Radio National, Triple J and Classic FM.
- Broadcast Australia (BA), the ABC's transmission services provider, works closely with the ABC and alternative program feeds can be put in place to maintain service continuity. A new operations protocol agreed between ABC and BA in August 2010 resulted in substantial improvements to the process being out in place by BA.

ABC standard emergency protocols

- The ABC has emergency broadcast plans at each of its 60 Local Radio stations, which have been developed locally in conjunction with emergency services agencies.

- The ABC aims to broadcast before, during and after any event, accurately and in a timely way, to give the communities the information they need to respond to the event.
- The Local Radio Manager of Emergency Broadcasting assists with editorial direction, training, strategic policy and resource allocation, and liaises with emergency agencies and other specialist bodies.

ABC priorities during and after an emergency

- The ABC's priorities are to be available immediately if an emergency arises and to broadcast accurate and timely information that enables the listener to respond to the event.
- The ABC aims to be as local as possible, including broadcasting from small towns and isolated communities; sending reporters and broadcasters to communities to understand their needs and to understand the process of recovery as it affects each community.
- The ABC has developed guidelines for "recovery broadcasting" to assist communities with recovery information and support for many weeks after an event.

ABC agreements with states and territories

- ABC Local Radio Regional Program Managers and Metropolitan Program Managers are active members of most state or local emergency management committees (except in Western Australia and Tasmania).
- Formal and informal arrangements are in place where emergency agencies and recovery specialists can use the ABC Local Radio network to deliver emergency warnings.
- The ABC has Memoranda of Understanding (MOUs) in all states, committing the ABC to use its best endeavours to provide emergency warnings and working to help emergency service agencies. MOUs are reviewed annually. There is no legislative framework supporting these agreements, nor is it a component of the ABC's Charter.

Portable 'flyaway' FM transmitters

The ABC has three portable ("flyaway") FM transmitter units with mixing desks, antennas, satellite receivers based in Townsville, Perth and Melbourne, which can be deployed rapidly by road, rail or air for broadcasting Local Radio to affected communities by ABC personnel. A fourth less portable unit is based in Darwin.

During the bushfires in Victoria in 2009, the ABC relocated its Western Australian and Queensland flyaway units to Melbourne, which were used for emergency broadcast purposes to the communities of Kinglake and Healesville/Warburton.

During February 2009, the ABC deployed a flyaway unit to Ingham in Queensland during flooding and in early 2011, deployed a standby fly-away unit to Emerald, which was subject to inundation of 80 percent of buildings, and used a flyaway unit in the Cassowary Coast

Shire to assist Tully, Cardwell, Mission Beach and Tully Heads areas which had been affected by Cyclone Yasi.

Mobile Phone Carriers

In recent years, mobile phone carriers have significantly expanded their terrestrial mobile networks. The provision of mobile phone coverage is a commercial matter for mobile phone carriers.

Carriers are continuing to enhance their capacity to anticipate damage to their networks in order to restore service as quickly as possible after a natural disaster occurs. For example, carriers had prepared for damage to their infrastructure from Cyclone Yasi by moving resources such as portable base stations and power generators to North Queensland prior to the cyclone, which enabled them to act quickly to restore services once the immediate danger had passed.

Transportable mobile phone infrastructure

Carriers may have a number of options available for providing temporary communications equipment where normal infrastructure has been damaged. For example:

- A Mobile Exchange on Wheels (MEOW) is a portable ADSL 2+ enabled exchange that can provide temporary landline and broadband services in areas affected by a natural disaster.
- A Cell on Wheels (COW) is a mobile cell site that consists of a cellular antenna tower and electronic radio transceiver equipment on a truck or trailer, designed to be part of a cellular network. A generator is part of the structure, to provide power in areas where it is not available. COWs can be used in disaster areas where cellular coverage either was never present or was compromised by the disaster.
- A Satellite Cells on Wheels (SatCOW) uses satellite transmission to connect terrestrial networks and provide coverage to surrounding areas. They are powered by a generator, are portable, and can provide quick temporary service.

These mobile units can be quickly transported to a disaster area to provide communications to both assist in managing the disaster, and to enable those affected by the disaster to maintain social and business networks after the emergency. The units can be ‘pre-deployed’ in advance of an impending emergency situation, for example, close to where a heightened bushfire danger is present, or an area where a cyclone is expected to cross land (as was the case with Cyclone Yasi).

Queensland floods

Telecommunications services in south east Queensland were severely affected when the floods peaked in early January 2011. Mobile phone towers and telephone exchanges in the areas around Brisbane, Ipswich, Toowoomba and the Lockyer Valley were submerged and mains power was cut, causing disruption to voice and data service.

Telstra reported that almost 38 000 services were disrupted during the floods, including service lines, mobile base stations, network sites that lost power, and sites which were inaccessible. Telstra reported a fourfold increase in calls about service faults, and in excess of 200 of their network sites were inaccessible.

At the height of the floods Vodafone Hutchison Australia's voice and data services were disrupted in Brisbane, the Gold Coast and much of south east Queensland. Optus reported some outages to mobile services mainly due to loss of power, and many landline services were affected.

Carriers' response to the Queensland floods

In the immediate aftermath of the flood peak, carriers deployed service personnel and equipment to provide interim remedies. Where mains power supply was the issue, back-up battery systems prolonged the operation of many services. Telstra was able to restore some mobile services through the deployment of COWs in flood-affected areas. Both Optus and Telstra diverted calls from customers' fixed-line phones to a mobile of their choice free of charge.

Following the restoration of mains power in the days following the peak of the floods, networks were stabilised and services for the majority of customers returned to normal.

Carriers also offered additional services to flood-affected people. Optus delivered 1500 mobile handsets, each with $1000 worth of credit, to Red Cross centres, while Telstra distributed 200 mobile handsets and phone cards through Anglicare, and provided free local and STD calls from payphones in critical community evacuation centres.

Telstra also set up communication services in evacuation centres including temporary internet kiosks with laptops, free phone cards, wireless gateways for internet access, a modem for the Red Cross and the provision of chargers for people to recharge phone handsets.

There was significant damage to normal infrastructure and, in addition to these interim measures, the carriers worked on the permanent restoration of their telecommunication networks.

Cyclone Yasi

Telecommunications services in northern Queensland were disrupted in early February 2011 following Tropical Cyclone Yasi. The biggest issues were the loss of mains power and the inability to safely access sites. Carriers deployed back-up power where possible.

In the immediate aftermath Telstra estimated that over 70 000 landlines were affected; a week later it reported that 1600 had not yet been restored. As mains power was restored in the days following the cyclone, the Telstra and Optus networks were stabilised. Five days after the cyclone, both carriers reported that almost all mobile sites were operational, and a week later they were operating at normal levels.

Carriers' response to Cyclone Yasi

Prior to the cyclone, preparations had been made by the carriers for the provision of interim services. In the immediate aftermath, Optus and Telstra diverted calls from customers' fixed-line phones to a mobile of their choice, and Telstra provided free local and STD calls from payphones at evacuation centres, subject to the availability of mains power.

Optus distributed over 400 pre-paid handsets with $600 credit to evacuation centres in some of the worst-affected areas. These handsets were available to residents regardless of whether they were an Optus customer. Optus also made available a portable internet kiosk and customer service trailer to provide free communications services, including satellite phones for free voice calls and laptop computers with free internet access.

The National Broadband Network and Battery Backup

The government has established NBN Co Limited (NBN Co) to build and operate a new high-speed National Broadband Network (NBN). The government's objective is to connect 93 per cent of Australian premises with fibre to the premises technology providing broadband speeds of up to 100 megabits per second. All remaining premises will be served by a combination of next-generation wireless and satellite technologies providing peak speeds of at least 12 megabits per second. The rollout of the NBN will represent a step-change in how Australians access and use telecommunication services. Throughout the process of transitioning to the NBN, the government is requiring NBN Co to ensure that telephony services will be available at all times.

The copper lines used in current telecommunications networks provide power to standard home telephones without the use of a power point, allowing continued operations during a power outage. Unlike copper, fibre does not carry electricity. As such, the government has instructed NBN Co in its Statement of Expectations, publicly released 20 December 2010, to deploy battery backup capabilities within all network termination devices (NTDs) connected within the fibre footprint, and to cover the cost of that installation. This will ensure the continuation of telephone capacity in the event of a power failure for standard non-powered home telephones.

Consistent with the government's requirements, NBN Co is deploying battery backup within each NTD in the fibre footprint that is equipped with an Analog Telephone Adaptor (ATA) port. The battery backup capability will provide backup power to the ATA port. This will allow analog phone calls to be made in the case of a power outage.

During a mains power failure, the battery backup is expected to allow the end-user to receive telephony services for up to five hours. As an additional safeguard, when battery power runs down to half its capacity, power is automatically cut-off. This reserve would then be manually activated by the end-user to enable an emergency call to be made.

In relation to concerns about non-voice equipment that may be powered by the NBN, such as alarm panels and medical alert systems, these devices often contain their own battery backup capability and in that case would continue to operate during a power outage.

NBN Co will also be providing a back-to-base alarm function which will alert retail service providers when a battery needs replacing, when the battery is nearly flat and when a battery is missing. This will ensure that end-users receive sufficient notification to arrange for a replacement battery to be purchased and installed.

NBN Co's battery backup solution is currently being deployed in the five mainland first release sites. The rollout in the first release sites is being used to comprehensively test network arrangements including battery backup.

As set out in the Statement of Expectations, the government and NBN Co will be undertaking further consultation with stakeholders, including state and territory emergency services, to ensure that the government is implementing the most effective solution that supports the provision of emergency services.

Educating Consumers

ABC Transmission Arrangements

The ABC has a role in educating the public about the use of communications technologies during emergencies. The ABC's Emergency Broadcast Plans identify a number of initiatives in this area, including delivering education campaigns to help communities in understanding threats, and providing information "…that people can use to respond to the event" and recovery information.

ABC Local Radio has funded emergency road signs throughout Victoria and a small number in South Australia. It proposes all states take up this initiative, although funding is an issue.

The signs provided information on the local frequency used by the ABC to broadcast during emergencies. The ABC encourages emergency agencies using "state alert" to include the frequency on which people can hear more information on a disaster, although this only occurs in Victoria.

ABC TV, particularly News 24, promotes local frequencies when there is a major event occurring.

The NBN and Battery Backup

NBN Co has provided end-users and retail service providers with clear information about battery backup arrangements. However, it will be important that retail service providers reinforce education and awareness efforts by providing consumers with clear information about their options for telephone availability during blackouts. Devices which require local power such as cordless phones or phones connected to network termination unit NTD data ports will not operate during loss of mains power (as is the case with the

current copper network). In addition, ethernet data and video ports connected to the NTD will not be supported by battery backup.

What Consumers Can Do

There are also additional actions that consumers can undertake.

(1) Check your mobile phone coverage

Information on the coverage available from each of these carriers is found on their respective websites:

- Telstra (www.telstra.com.au/mobile/networks/coverage/maps.cfm)
- Optus *(*www.optus.com.au)
- Vodafone Hutchison Australia (www.vodafone.com.au and www.three.com.au)

There are other mobile phone service providers that resell services from these carriers. These include AAPT and Dodo Mobile (that resell services from Vodafone's network) and Virgin Mobile (that resells services from the Optus network).

(2) Get the right model phone

Mobile phones have different capabilities and how well a phone performs on a network depends on both the network coverage and the particular device. Telstra labels with a 'blue tick' the Next G handsets that it recommends for areas of marginal handheld coverage to make it easier for consumers to choose the right handset. Handsets such as these are designed for use in areas where there is a weaker signal. Other service providers can provide advice on the best handsets for local conditions.

(3) Use an external antenna

External antennas can improve access to mobile phone services, particularly along country highways and in rural locations. Antennas range in size and types but fall into three categories:

- low gain antennas that plug into your handset to improve handheld reception
- medium gain antennas for use with handheld reception or fixed to a vehicle, and
- high gain antennas that are fixed to a vehicle to maximise coverage.

Contact your service provider to ensure you purchase the antenna that best suits your mobile phone handset and the area where you expect to use the phone. Be aware that not all mobile phones can connect to an antenna. When you upgrade your mobile phone handset, consider whether the new device can connect to any antenna or car kit you already have installed.

If you use a mobile phone when travelling, you must ensure that you comply with laws relating to the use of mobile phones in vehicles. For information on these laws, contact your state or territory government roads or transport agency.

(4) Think about getting a satellite phone

In areas that are sparsely populated or have little passing traffic, the only commercially viable option for mobile phone services is via satellite. Satellite mobile phone services cover the entire Australian landmass and population, including the external territories. They are available from a number of providers.

People living or working in areas without access to terrestrial mobile phone coverage may be eligible for assistance under the government's Satellite Phone Subsidy Scheme.

Satellite Phones

Satellite phones are not as reliant on the local power supply and are more reliable than ground-based systems during an emergency. Satellite phone services cover the entire Australian landmass.

The Satellite Phone Subsidy Scheme improves the affordability of mobile communications for people living and working in areas without terrestrial mobile coverage, by providing subsidies for the purchase of satellite phone handsets.

The scheme provides up to $1000 for eligible applicants who live in areas without terrestrial mobile coverage or up to $700 for eligible applicants who live in areas that have coverage, but spend more than 180 days across a two year period in non-coverage areas.

Under the scheme's rules, those eligible to apply include individuals, small businesses, community groups, not-for-profit organisations, Indigenous corporations, emergency service organisations, health organisations and educational institutions.

Emergency Beacons

An alternative to telephone communications is the use of distress beacon units, such as an Emergency Position Indicating Radio Beacons (EPIRBs) or Personal Locator Beacons (PLBs). These devices are designed to assist in an emergency by alerting rescue authorities and indicating location.

More recent models incorporate Global Positioning Satellite (GPS) technology, enabling much more accurate determination of the location compared with earlier models.

These devices are not as limited by terrain as mobile phones and, by providing the location, will speed up any rescue effort. A variety of providers around Australia offer these for sale or hire.

Other technologies that could operate in areas without terrestrial mobile phone coverage include Citizens Band (CB) or ultra-high frequency (UHF) radio. These technologies cannot connect to the telephone network.

Spectrum and Emergency Communications

The department provides policy advice to the government on spectrum management matters. The ACMA has day-to-day responsibility for managing, allocating and regulating Australia's radiofrequency spectrum. All spectrum use in Australia is licensed by the ACMA under the *Radiocommunications Act 1992*. The Act aims to provide for the management of spectrum so as to, amongst other things, maximise the overall public benefit from using spectrum.

Spectrum is a natural, finite, scarce and valuable resource which enables wireless communications. Spectrum alone however, cannot create wireless communications – it is necessary to build infrastructure and networks, and seek or commission compatible equipment and end-user devices.

The various frequency ranges of spectrum have different propagation characteristics, making certain bands of spectrum more suitable for certain services, such as voice, broadcasting or broadband.

The government recognises the importance of public safety agencies' requirements for access to high-speed mobile data capabilities. The department is working with the Attorney-General's Department on a way forward for public safety agencies to access new mobile broadband capabilities.

Emergency Call Service

For many Australians seeking emergency assistance, the Triple Zero (and 106 for people with speech or hearing impairment) emergency call service is the first point of contact. The Triple Zero emergency service is administered by Telstra, which is the emergency call person for calls to 000 the primary emergency service number and 112 the international emergency mobile phone call number (and the Australian Communication Exchange Ltd as the National Relay Service (NRS) is the emergency call person for 106 calls).

As the nominated Triple Zero call person, Telstra is required to provide an operator-assisted service that connects Triple Zero callers to the appropriate jurisdiction's police, fire or ambulance service in a life threatening or time critical situation.

State and territory emergency service organisations (e.g. fire, police and ambulance) are responsible for receiving Triple Zero calls from the emergency call person and dispatching the appropriate emergency service in response to the call.

Responsibilities

The department has policy responsibility for the emergency call service regime as part of its broader telecommunications policy and legislative responsibility. The emergency call service is regulated by the *Telecommunications Act 1997* and the *Telecommunications (Consumer Protection and Service Standards) Act 1999*. The service is further regulated by subordinate legislative instruments.

The ACMA administers the *Telecommunications (Emergency Call Persons) Determination 2002* which imposes requirements on the emergency call person, currently Telstra.

The ACMA also administers the *Telecommunications (Emergency Call Service) Determination 2009,* which imposes requirements on carriers, carriage service providers and emergency call persons in relation to emergency call services. This includes the general requirements for: the carriage of emergency calls by service providers; the speed, efficiency and reliability of the 000, 112 and 106 numbers provided by carriage service providers and the emergency call person; and the call information available to the emergency call person. It also convenes the Emergency Call Service Advisory Committee and has responsibility for registering the Industry Code – Emergency Call Services Requirements.

Under the emergency call service determination, Telstra is obliged to ensure that each emergency call is received, appropriately handled and transferred to the appropriate state or territory emergency service organisation (Police, Fire or Ambulance). Telstra has responsibility for one aspect of the Triple Zero service as part of its licence conditions and is not remunerated for it. There are currently around 75 state and territory emergency call centres to which Telstra, as the emergency call person, has to transfer calls.

Arrangements are in place to allow Telstra to direct callers seeking information to Department of Human Services call centres, if state and territory emergency call centres become overwhelmed by extreme call volumes, for example during an extreme event.

State and territory emergency service organisations are responsible for responding to Triple Zero calls.

Handling of calls

Telstra Triple Zero operators who answer calls use a set script. When the caller is using a fixed land line, their address automatically appears on the operator's console and the Telstra operator will say 'Emergency – Police, Fire or Ambulance?' When the Telstra operator receives a response, they transfer the call to the appropriate emergency services organisation answering point. That point is automatically identified by the computer system that Telstra Triple Zero operators use, and with reference to the caller's number and phone address. The Telstra operator only hangs up when the call is connected and the caller and the operator at the emergency call service are in conversation. The overlap is usually a matter of three or

four words, which the Telstra operator is required to hear before they press 'disconnect' and move to their next call. The role performed by the Telstra Triple Zero operator usually lasts less than 30 seconds.

Calls made from mobile phones are handled slightly differently. Because they do not operate from a fixed locality, the Telstra operator needs to establish the state and town where the emergency is. In all other respects, mobile calls are handled in the same way as calls from a fixed land line.

106 Emergency Call Service for Deaf, Hearing and Speech Impaired Australians

Deaf, hearing and speech impaired Australians currently use the NRS to contact anyone in the wider telephone network. The NRS offers several types of relay services depending on the communications needs of the user, including text-based communication from a teletypewriter (TTY) or computer, to voice callers in the community. The service can be similarly used by voice callers to have their messages relayed into text.

In 2000, a dedicated text-based service was established under the NRS for relaying calls to emergency services. The service uses a separate '106' number which ensures calls are prioritised above other calls to the NRS. The call answer performance standard for 106 calls requires that 99 per cent of calls are answered by a relay officer within 10 seconds, averaged quarterly.

The service is delivered under contract with the Commonwealth by Australian Communication Exchange (the relay service provider) and WestWood Spice (the outreach provider). The ACMA manages the contracts on behalf of the Commonwealth and monitors the performance of the NRS providers.

Over the last three financial years, there have been over 300 genuine calls to the 106 service each year.[5] In 2008-09 the ACMA reported that the number of non-genuine calls had reduced by almost 50 per cent since 2006-07, which may be attributable to ongoing network enhancements including automatically terminating calls with excessive digits.[6] Performance of the service has been at above 99.9 per cent of calls answered within 10 seconds for the last three years, with call blockage rates meeting the performance standard of less than 0.5 per cent.[7]

While the service has generally delivered quick and reliable contact with emergency services, the recent severe flooding in Queensland caused the temporary suspension of most services provided by the NRS for a period of 24 hours due to concerns about staff safety and access during the floods.

[5] Data sourced from National Relay Service Performance Reports 2008-09, 2007-08 and 2006-07, available on the ACMA's website at *www.acma.gov.au*
[6] National Relay Service Performance Report 2008-09, available on the ACMA's website at *www.acma.gov.au*
[7] Data sourced from National Relay Service Performance Reports 2008-09, 2007-08 and 2006-07, available on the ACMA's website at *www.acma.gov.au*

This situation has been the subject of a report by the Australian Communications Consumer Action Network (ACCAN) that was released on 11 March 2011. The report, titled *The Queensland flood disaster: Access for people with disability to phone services and emergency warnings*, recommended that the NRS emergency site is located in an area less prone to floods or other risks, a text-based emergency service for people with disability is introduced as a priority and that users who access Triple Zero through the NRS have guaranteed access at all times. Other recommendations included regulatory changes to the emergency call service to better protect consumers and arrangements relating to emergency broadcasts.

However, it is important to note that despite these findings, ACCAN acknowledges that access to the 106 emergency service was uninterrupted throughout this period as a result of the combined efforts of ACE and Telstra.

The ACMA has publicly responded to the report in a media release of 11 March 2011 and is currently working with ACE to address many of the report's findings on the need for improved contingency arrangements (chiefly findings 1, 5 and 7).

Future developments

In addition to addressing the specific issues associated with the recent Queensland floods, the Minister for Broadband, Communications and the Digital Economy has announced that the department will conduct a comprehensive community consultation process to explore ways in which the NRS could be improved and developed for the future. The department is currently working with key stakeholders to develop the terms of reference for the review.

The Minister has also announced the government's intention to establish a mobile text-based emergency service for deaf, hearing and speech impaired Australians who currently have limited access to emergency services outside of the home when they cannot access a TTY or modem to call the dedicated NRS 106 emergency service.

The department is currently working with stakeholders to address a range of technical and legislative issues associated with the implementation of a mobile text-based service and is also evaluating appropriate service options including basic short messaging services (SMS) and the use of more sophisticated smart phone applications.