

Senate Environment and Communications References Committee

**Inquiry into the capacity of communications networks and
emergency warning systems to deal with emergencies and natural disasters**

Department of Broadband, Communications and the Digital Economy

Supplementary Submission

September 2011

Background and Context

The Senate Environment and Communications References Committee has requested that the Department provide a written response to the ‘Summary of 800 MHz spectrum compared to 700 MHz’ that is attached to the Police Federation of Australia’s supplementary submission dated 3 August 2011.

To address the specific issues raised in the Police Federation of Australia’s supplementary submission, it is helpful to consider the answers in the context of international frameworks.

Overview of international frameworks for spectrum harmonisation

International developments have a significant influence on spectrum management and planning.

The International Telecommunication Union (ITU) is the United Nations specialised agency for information and communication technologies. The ITU has three main areas of activity:

- ITU Radiocommunication Sector (ITU-R)
- ITU Telecommunication Standardization Sector (ITU-T)
- ITU Telecommunication Development Sector (ITU-D)

The ITU-R coordinates the international regulation of radio frequency spectrum and satellite orbits. The ITU-R has established three regions in respect of spectrum planning and harmonisation:

- Region 1: Europe, Russia, Africa and the Middle East
- Region 2: North and South America
- Region 3: Asia Pacific

The Asia-Pacific Telecommunity (APT) establishes frameworks for Region 3 radiofrequency band plans. The APT is an intergovernmental organisation that was founded on the joint initiatives of the ITU and the United Nations Economic and Social Commission for Asia and the Pacific.

The spectrum planning arrangements in the APT feed into the Region 3 position for the ITU. Regional band plans have the ITU’s support and serve as a reference document for administrations, telecommunications providers or manufacturers.

Australia is a member of the APT and ITU. The Australian Communications and Media Authority (ACMA) leads Australian participation at regional (APT and APT Wireless Group (AWG)) and global (ITU) fora on spectrum planning.

The Police Federation of Australia submits that:

The 800 band is narrowband, not broadband and narrow and broadband communications cannot be carried by the same spectrum

From a technical perspective, frequency and bandwidth are independent, so the frequency of the band does not limit whether it can be used for narrowband or broadband services. The propagation characteristics of the 800 MHz band are useful for both narrowband (voice) and broadband (data) mobile services.

The key determining factor as to whether spectrum in a given frequency range is used for narrowband or broadband services is the applicable band plan – that is, how the spectrum is divided into different segments and the bandwidth of each ‘chunk’. For example, a 10 MHz ‘chunk’ has more data-carrying capacity than a 5 MHz ‘chunk’.

Discussions within the AWG on the use of broadband services in the 806-824 and 851-869 frequency bands are progressing. Australia’s participation in the AWG is led by the ACMA. At the next meeting of the AWG on 14-17 September in Chiang Mai, Thailand, the ACMA will support the use of this frequency range for PPDR in Region 3.

The frequency range proposed to be earmarked for allocation for public safety broadband use in Australia is, consistent with work being progressed within the AWG, a portion from 805-820 MHz paired with a portion from 850-870 MHz.

The Police Federation of Australia submits that:

88% of the 800/900 bands are already occupied by the three major telecommunications companies – Telstra, Optus and Vodafone Hutchison. A number of police and emergency services also occupy the 800 band for narrowband voice communications and they will continue to need this spectrum for that purpose

The portions of the 800 MHz band that are being considered for possible allocation to public safety agencies are not within the portions of the 800/900 MHz bands that are occupied by Telstra, Optus or Vodafone Hutchison Australia.

The police and emergency services that occupy part of the 800/900 MHz band currently use this spectrum for narrowband services. Consistent with the Council of Australian Government’s (COAG) *National Framework for Improved Radiocommunications Interoperability*, these narrowband services are being relocated to the 400 MHz band to enhance interoperability between states and territories.

In April 2010, the ACMA announced arrangements for the provision of harmonised spectrum for use by government agencies in the 400 MHz band. Under these arrangements, segments in the 403-470 MHz frequency range have been identified for the exclusive use of government. This is

primarily to support national security, law enforcement and emergency services, but is also available to support broader government use once these requirements are met.

The ACMA has provided for a transition period of December 2015 in areas of high population density, and until December 2018 in areas of lower population density, in line with the outcomes of the ACMA's review of the 400 MHz band. This timeframe takes into consideration the procurement cycles of police and emergency services for equipment that will operate within the 400 MHz band.

The Police Federation of Australia submits that:

There are more than 1,000 licensees in the 800 band and 20,000-30,000 users in the 820-825/865-870 band. Clearing that spectrum to provide 20 MHz for PSA broadband would be a long difficult job, taking decades, and that it appears that the 800 band is being held out to four or more different interests at the same time

The frequency range currently proposed to be earmarked for allocation for public safety broadband use in Australia is a portion within the frequency range 805-820 MHz paired with a portion within the frequency 850-870 MHz.

The lower segment (805-820 MHz) will be released as part of Australia's 'digital dividend' band (694-820 MHz) via the switchover from analog to digital television and the relocation – or 'restacking' – of digital broadcasting services out of this band. Legislative amendments passed by the Parliament in May 2011 set a deadline of 31 December 2014 for completion of the restack.

The upper segment (850-870 MHz) is currently used for various services, including point-to-point services and trunked land mobile services. Within this spectrum, 865-870 MHz is currently allocated for trunked land mobile services.

The ACMA has commenced a review of future arrangements for the 800/900 MHz bands, and is empowered to review incumbents' spectrum holdings to relocate existing users under the regulatory framework. The ACMA's discussion paper titled *The 900 MHz band – Exploring new opportunities* sought comments on the migration of land mobile services out of these bands and potential relocation within the 805-820 MHz and 850-865 MHz bands. The comment period closed on 1 July 2011, and the ACMA is currently considering the submissions received.

The ACMA is expected to release its decision on the revised planning arrangements for the 800/900 MHz bands in the second quarter of 2014, with implementation to commence shortly thereafter. It is expected that any allocation of spectrum from the 800 MHz band for public safety agencies would be available by 2015 – that is, in the same timeframe as the 700 MHz band.

The amount of spectrum needed to deploy the mobile broadband capability sought by public safety agencies will be identified by the ACMA, in consultation with the Public Safety Mobile Broadband Steering Committee. The Steering Committee will work with the ACMA as part of the ACMA's review of the 800/900 MHz band to identify a suitable amount of spectrum necessary to meet foreseeable needs.

The Police Federation of Australia submits that:

A spectrum allocation in the 800 MHz bands for public safety would isolate Australia from the Asia Pacific Region, and the rest of the world. We understand that International Telecommunications Union (ITU) Public Safety and Disaster Relief (PPDR) spectrum in 800 MHz is intended for narrow band (less than 25 kHz) applications, and spectrum in the region is mostly occupied

ITU Resolution 646, passed by the World Radiocommunication Conference in 2003, identified the 806-824 MHz and 851-869 MHz frequency segments as suitable for advanced public protection and disaster relief (PPDR) solutions, in the context of regionally harmonized frequency bands/ranges for Region 3 (Asia-Pacific), and encouraged administrations to consider the identified frequency bands/ranges or parts thereof when undertaking their national planning.

In Region 3, the 806-824 and 851-869 frequency bands are currently accepted by the APT as bands designated for PPDR narrowband (voice) services. Use of these bands for broadband services is progressing, and will be supported by Australia at the next meeting of the AWG on 14-17 September in Chiang Mai, Thailand.

The Police Federation of Australia submits that:

Industry suppliers are advising that there will be limited supply of public safety broadband devices in the 800 MHz band. All development of public safety is currently planned for the 700 MHz bands, and so can more easily be adapted to harmonise with the Region 3 Digital Dividend

The assertion that all development of public safety is currently planned for the 700 MHz bands is incorrect.

In Australia, dedicated spectrum has been set aside in the 400 MHz band for narrowband voice and data communications for exclusive government use (primarily police, fire and emergency services). Australia is also in the process of making arrangements within the 4.9 GHz band for high-capacity public safety communications.

A key step in establishing a market for technology and equipment that can be used in the 800 MHz band is the standardisation via international standards setting bodies, such as the 3rd Generation Partnership Project (3GPP). These standards are used by manufacturers when developing and deploying equipment to ensure that equipment complies within relevant technical, safety and legal parameters. This will, in turn, increase the number of different manufacturers and suppliers, leverage economies of scale for equipment and enhance interoperability and roaming.

The 3GPP has included examination of LTE services in the 806-824 and 851-869 MHz bands in its workplan. 700 MHz band public safety broadband technologies comply with the USA's 700 MHz band plan, which differs significantly from the 700 MHz band plan adopted in Australia (that of the APT). The differing band plans mean that this equipment would be no more easily adapted to the Australian 700 MHz band than to the 800 MHz band.

The Police Federation submits that:

Any chipsets and devices coincidentally developed that could potentially cover the 800 MHz PPDR bands would most likely not roam onto the other public networks in Australia. This is because the market for the limited selection of chipsets developed for commercial operators will be for other regions, with different spectrum bands and technologies deployed to that of Australia.

It is common for commercially produced devices to contain multi-band chipsets, which allow automatic roaming across a number of different bands. Part of the standardisation process is to provide for interoperability between different air interface standards and frequencies.

The alternative to using standardised technology is to use proprietary technology. The use of proprietary technology would require committing to one supplier and potentially limit the ability to roam onto other public networks.

The Police Federation of Australia submits that:

The implementation schedule for 800 MHz public safety broadband will be extended significantly. This is due to the uncertain future plans for the 800 MHz band, the time required for clearance of sufficient spectrum and to minimise disruption to potentially thousands of other users displace by such a plan

The ACMA has commenced a review of future arrangements for the 800/900 MHz band. It is a normal part of any spectrum band review process that existing users of the band may need to be relocated. The ACMA is empowered to review incumbents' spectrum holdings to make this happen under the regulatory framework.

It is expected that any allocation of spectrum from the 800 MHz band to public safety agencies would be available by 2015, that is, in the same timeframe as the 700 MHz spectrum.

As indicated above, the 805-820 MHz segment of the frequency range that is being earmarked for possible allocation to public safety agencies will be released as part of Australia's digital dividend band. This, along with spectrum in the 700 MHz band is being released via the switchover from analog to digital television and restacking of digital broadcasting services out of the digital dividend band. Legislative amendments passed by the Parliament in May 2011 set a deadline of 31 December 2014 for completion of the restack. The spectrum in the digital dividend band would therefore not be available for new services until 2015.

Senate Standing Committee on Environment and Communications

Answers to Questions on Notice

Inquiry into the capacity of communication networks and emergency warning systems to deal with emergencies and natural disasters, August 2011

Broadband, Communications and the Digital Economy Portfolio

Department of Broadband, Communications and the Digital Economy

Question No: 1

Program No. Department of Broadband, Communications and the Digital Economy

Hansard Ref: In Writing

Topic: NBN battery back up

Senator Fisher asked:

In relation to the implementation of the NBN, it is noted that NBN Co will be deploying battery back-up capabilities within all network termination devices (NTD). Are these battery back-up facilities still effective if the NBN Point of Interconnect (POI) suffers a total power outage because of fire?

Answer:

NBN Co is currently deploying a battery backup solution that is designed to ensure a voice service can still be accessed in the event of a power outage at a consumer's premises.

While facilities used to house NBN POIs are very resilient, in the event that a POI was destroyed by fire, services supplied to end users, who were using retail service providers connected to the destroyed POI, would be interrupted until NBN Co was able to activate a temporary POI.

This scenario is analogous to a fire destroying one of the exchanges supporting the existing copper network, which would also result in a significant service interruption.

Senate Environment and Communications References Committee

Answers to Questions on Notice

**Inquiry into the capacity of communications networks and emergency warning systems
to deal with emergencies and natural disasters, August 2011**

Broadband, Communications and the Digital Economy Portfolio

Department of Broadband, Communications and the Digital Economy

Question No: 2

Program No. Department of Broadband, Communications and the Digital Economy

Hansard Ref: In Writing

Topic: Mobile Exchanges on Wheels and Cells on Wheels

Senator Fisher asked: Should the number of Mobile on Exchange Wheels (MEOW) and Cell on Wheels (COW) look at being increased given their effective use in Cyclone Yasi recently? Can additional funding be directed to the relevant service provider to further enable this essential service?

Answer:

The Commonwealth has been working with the broader telecommunications industry on mobile coverage as a critical infrastructure issue. This involves recognising that mobile telephony infrastructure can be vulnerable when natural disasters occur, including being damaged by bushfires and floods.

The role of the Commonwealth Government is to work with carriers so that systems are as robust and as resilient as possible and can be reinstated quickly if they are damaged.

The provision of communications through the use of Mobile Exchanges on Wheels and Cells on Wheels is an operational and commercial decision by carriers. There is currently no government funded program for the extension of portable base-stations.

Senate Environment and Communications References Committee

Answers to Questions on Notice

Inquiry into the capacity of communications networks and emergency warning systems

to deal with emergencies and natural disasters, August 2011

Broadband, Communications and the Digital Economy Portfolio

Department of Broadband, Communications and the Digital Economy

Question No: 3

Program No. Department of Broadband, Communications and the Digital Economy

Hansard Ref: In Writing

Topic:

Senator Fisher asked: Under the NBN, is there a Universal Service Obligation (USO) on the carriage providers and/or NBN Co to ensure that Emergency Services communication systems are appropriately maintained and enhanced?

Answer:

There are two aspects to emergency communications:

- the communications systems used by emergency service organisations (ESOs); and
- systems for the provision of the emergency call service (000).

With respect to communications systems, ESOs will continue, as is the case today, to be responsible for maintaining and enhancing of their own communications systems, including entering into commercial service agreements with service providers, as required.

With respect to the emergency call service, Part 8 of the *Telecommunications (Consumer Protection and Service Standards) Act 1999* (the Act) requires the Australian Communications and Media Authority (ACMA) to make a determination placing requirements on carriers, carriage service providers and emergency call persons (Telstra and the National Relay Service) for the emergency call service. The relevant determination is the *Telecommunications (Emergency Call Service) Determination 2009*.

Part 2 of the Act establishes a Universal Service Regime to ensure that all people in Australia, wherever they reside or carry on business, should have reasonable access, on an equitable basis, to standard telephone services and payphones. Telstra is the Primary Universal Service Provider.

On 23 June 2011 the Australian Government and Telstra reached an agreement for the ongoing delivery of the Universal Service Obligation for voice and payphone services and other public interest services, including the Emergency Call Service. Telstra will be paid an annual fee up to \$20 million for delivering the Emergency Call Service in accordance with requirements determined by the ACMA. To ensure that the Emergency Call Service continues to deliver high quality outcomes, Telstra will be compensated for the reasonable costs of any major upgrades to its platforms and systems.