CHAPTER 1
Introduction

Conduct of the inquiry

1.1 On 28 May 2013, the Parliamentary Joint Committee on Law Enforcement (the committee) self-referred an inquiry into spectrum for public safety mobile broadband. The terms of reference are as follows:

> Pursuant to the committee's functions set out in subsection 7(1)(e) of the *Parliamentary Joint Committee on Law Enforcement Act 2010*, the committee will inquire into and report on:
>
> (a) how much broadband spectrum law enforcement agencies need to be able to communicate safely and effectively during mission-critical events such as natural disasters and potential terrorist incidents;
>
> (b) which of the 700 or 800 megahertz (MHz) bands is the most appropriate for law enforcement agencies given the current licensees occupying spectrum;
>
> (c) how the necessary spectrum for public safety should be secured in a timely manner;
>
> (d) what arrangements should be put in place to ensure that, in extreme circumstances, law enforcement agencies can effectively use spectrum of commercial carriers to protect public safety and maintain public order; and
>
> (e) what applications dependent on broadband spectrum will contribute significantly to saving lives and property.

1.2 The committee advertised the inquiry in *The Australian* and on the internet. The committee also invited submissions from interested organisations, individuals and government bodies. The committee received 17 public submissions and one confidential submission. A list of organisations that made public submissions to the inquiry, together with other information authorised for publication, is provided at Appendix 1.

1.3 The committee held public hearings in Canberra on 17 and 24 June 2013. The witnesses who appeared before the committee are listed in Appendix 2.

Role of public safety agencies

1.4 Australia's public safety agencies (law enforcement, fire, ambulance and emergency services) are critical to the safety and security of the community. Public safety and security agencies are responsible for enforcing the law, responding to accidents and emergencies, providing protection to leaders and heads of government, as well as performing the day-to-day activities that protect the public against threats to life, health and property. To this end, the role of law enforcement agencies is focused on the pursuit of a safe and secure environment.

1.5 In its 2013 report on government services, the Productivity Commission provided the following overview of the role of the police services as public safety agencies:

> Police services are the principal means through which State and Territory governments pursue the achievement of a safe and secure environment for the community. This is through the investigation of criminal offences, response to life threatening situations, provision of services to the judicial process and provision of road safety and traffic management. Police services also respond to more general needs in the community—for example, working with emergency management organisations and a wide range of government services and community groups, and advising on general policing and crime issues. Additionally, police are involved in various activities which aim to improve public safety and prevent crime.[1]

Historical overview

1.6 Radio networks are recognised as a fundamental component of public safety operations.[2] However, over a number of decades, successive reports and inquiries following natural disasters and other emergencies have highlighted the need to address a number of factors including shortcomings in emergency communications systems as well as a need for greater interoperability across Australian jurisdictions. Such reports have emphasised the growing frequency of natural disasters and other emergencies which demand an inter-jurisdictional response as well as community expectations regarding the effectiveness of emergency services to protect lives and property. Radiocommunications interoperability refers to the ability of public safety agencies (PSAs) to share voice and data communications between agencies and across jurisdictions.

1.7 After Cyclone Tracy in 1974, when emergency services from all over Australia went to Darwin to assist in the aftermath of the cyclone, it became apparent that Australia needed dedicated radio frequencies to ensure interoperability for police and emergency services.[3] Sixty-four channels were allocated for this purpose, otherwise known as the '64 Channel Block' or more recently the Law Enforcement and

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1 Productivity Commission, *Report on Government Services 2013*, 31 January 2013, p. 6.2, http://www.pc.gov.au/__data/assets/pdf_file/0006/121767/09-government-services-2013-chapter6.pdf (accessed 8 July 2013).

2 The Hon Nicola Roxon MP and Senator the Hon Stephen Conroy, Spectrum for public Safety Agencies, *Joint Media Release*, 29 October 2012, http://www.minister.dbcde.gov.au/media/media_releases/2012/169 (accessed 29 May 2013); Australian Communications and Media Authority, The ACMA to deliver a multi-layered spectrum solution to support public safety mobile broadband capability, *ACMA media release 81/2012–29 October*, http://www.acma.gov.au/WEB/STANDARD/pc=PC_600087 (accessed 28 May 2013).

3 National Coordinating Committee for Government Radiocommunications, *An Introduction*, 2011, p. 2, http://nccgr.govspace.gov.au/files/2012/02/NCCGR-A5-Booklet-2011-Strategic-Directions.pdf (accessed 6 June 2013).

Public Safety Spectrum.[4] However, over time, the availability of the channels for emergency services was not maintained.[5]

1.8 According to the National Coordinating Committee for Government Radiocommunications (NCCGR) which is tasked with improving government radiocommunications interoperability, low levels of interoperability have hampered the response of PSAs to emergencies since 1974. Poor interoperability is particularly needed when incidents require an inter-jurisdictional response. The NCCGR recognised that:

> …the greatest challenge for the NCCGR to improve government radiocommunications interoperability in Australia is not technically-based; rather it has been the development of a coordinated and collaborative approach to this issue across agencies, within jurisdictions and across Australia.[6]

1.9 The NCCGR asserted that in the 20 years between 1974 and 1994, there were three incidents that required an inter-jurisdictional response and since 1994, there have been at least eight. According to the NCCGR, this trend towards multi-agency and cross-jurisdictional operations is likely to continue given the impact of climate change and continuing threat of terrorism.[7]

1.10 The Sydney Hilton bombing in 1978, which was recognised as the first terrorist attack in Australia, brought into sharp relief the need for interoperable radio spectrum specifically for counter-terrorism response operations under national arrangements.[8] During the 1980s, eleven radio channels were established and allocated in the 480–490 MHz band. However, according to Mr Bob Waites, then Assistant Commissioner of the NSW Police Force, respective governments did not prioritise the need for interoperability when purchasing radio equipment or systems on

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4 Mr Bob Waites, Assistant Commissioner, NSW Police Force, RadComms Conference Melbourne April/May 2008, p. 2, http://www.acma.gov.au/webwr/_assets/main/lib310661/13bobwaites.pdf (accessed 3 June 2013).

5 Council of Australian Governments, *National Inquiry on Bushfire Mitigation and Management,* 31 March 2004, p. 137, http://www.coagbushfireenquiry.gov.au/report/pdfs/report_large_size.pdf (accessed 3 June 2013).

6 National Coordinating Committee for Government Radiocommunications, Introduction, p. 1, http://nccgr.govspace.gov.au/files/2012/02/NCCGR-A4-Intro1.pdf (accessed 10 June 2013).

7 National Coordinating Committee for Government Radiocommunications, *An Introduction*, 2011, p. 2, http://nccgr.govspace.gov.au/files/2012/02/NCCGR-A5-Booklet-2011-Strategic-Directions.pdf (accessed 6 June 2013).

8 Spectrum is described as the 'waves' of electric and magnetic energy moving together through space. These waves carry information or communications. Department of Broadband, Communications and the Digital Economy, *Fact sheet 1: Introduction to spectrum management*, December 2012, http://www.dbcde.gov.au/__data/assets/pdf_file/0003/139116/Fact-Sheet-1-Dec-2012.pdf (accessed 7 June 2013).

the basis of an opinion that the 'likelihood for interoperability needs were rare or remote'.[9] As a consequence, they acquired systems that operated outside the designated band.

1.11 In 1991, in an attempt to improve productivity and reduce spectrum congestion, the states and territories commenced reviews of their spectrum use and began to migrate from single-channel radios—which are considered to be inefficient in their use of spectrum—to multi-channel radios.[10] However:

> Some jurisdictions chose to operate these new systems in the very high frequency (30–300 megahertz) band; others chose the ultra high frequency (300–3000 megahertz) band. These decisions restricted opportunities for interoperability.[11]

1.12 In 2004, Police Commissioners and Police Ministers established the Law Enforcement and Security Radio Spectrum Committee (LESRSC) with the aim of developing a long-term strategic plan for law enforcement and security radiocommunications.[12] In a submission to the Australian Communications and Media Authority (ACMA) regarding spectrum reform in 2008, the LESRC identified a number of key issues which needed to be addressed in relation to acquiring and operating radio systems. These included:

> …use of dissimilar frequency bands, scarcity of frequency, capacity and coverage constraints, interference issues, interoperability problems, and changing industry standards.[13]

1.13 Following the severe 2002–2003 fire season, a 2005 Council of Australian Governments (COAG) report on Bushfire Mitigation and Management highlighted significant impediments to good communication between public safety agencies. In

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9 Mr Bob Waites, Assistant Commissioner, NSW Police Force, RadComms Conference Melbourne April/May 2008, p. 2, http://www.acma.gov.au/webwr/_assets/main/lib310661/13bobwaites.pdf (accessed 3 June 2013).

10 Council of Australian Governments, *National Inquiry on Bushfire Mitigation and Management,* 31 March 2004, p. 137, http://www.coagbushfireenquiry.gov.au/report/pdfs/report_large_size.pdf (accessed 3 June 2013).

11 Council of Australian Governments, *National Inquiry on Bushfire Mitigation and Management,* 31 March 2004, p. 137, http://www.coagbushfireenquiry.gov.au/report/pdfs/report_large_size.pdf (accessed 3 June 2013).

12 Law Enforcement and Security Radio Spectrum Committee, Comments for Australian Communications and Media Authority, Spectrum Reform Discussion Papers, Version 2, 28 July 2008, p. 3, http://www.acma.gov.au/webwr/_assets/main/lib310714/lesrsc.pdf (accessed 7 June 2013).

13 Law Enforcement and Security Radio Spectrum Committee, Comments for Australian Communications and Media Authority, Spectrum Reform Discussion Papers, Version 2, 28 July 2008, p. 1, http://www.acma.gov.au/webwr/_assets/main/lib310714/lesrsc.pdf (accessed 7 June 2013).

the report, COAG noted its support for the NCCGR's efforts to develop a national strategy to enable interoperability of emergency service radio communication across Australia.[14]

1.14 Between November 2010 and February 2011, Australia experienced a series of natural disasters which saw more than 99 per cent of Queensland disaster-declared while all other states and the Northern Territory experienced severe weather events or other natural disasters including bushfires.[15] In its March 2012 final report, the Queensland Floods Commission of Inquiry noted that the fire, ambulance and police services used stand-alone radio communications networks and did not have interoperable radio communications during the disaster. The Commission found that the 400 MHz spectrum could not be effectively used for data communication because the size of each spectrum allocation was too small to transmit large files. Because of the insufficient spectrum for transmitting large files and/or during times of high demand, the network became congested.[16] The Commission concluded that the allocation of broadband spectrum to Australia's emergency services organisations was 'vital' to avoid congestion on narrowband communications and to assist Australian emergency service organisations in achieving interoperability.[17]

1.15 In November 2011, the Senate Environment and Communications References Committee made six recommendations in relation to communications networks and emergency warning systems including the allocation of sufficient spectrum for dedicated broadband public protection and disaster relief (PPDR) radiocommunications in Australia. The committee further recommended that any allocation of broadband spectrum to emergency service organisations (ESOs) for PPDR must be provided on the basis of interoperability amongst Australian ESOs and with ESO counterparts overseas.[18] The committee did not have the 'technical expertise' to recommend whether this spectrum should be in the 700 MHz, 800 MHz

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14 Council of Australian Governments, *National Inquiry on Bushfire Mitigation and Management*, 31 March 2004, pp xv and xxvii, http://www.coagbushfireenquiry.gov.au/report/pdfs/report_large_size.pdf (accessed 3 June 2013).

15 Australian Bureau of Statistics, 'The 2010–11 summer of natural disasters', cat. 1301.10 *Year Book Australia, 2012*, http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/1301.0Main+Features1952012 (accessed 7 June 2013).

16 Queensland Floods Commission of Inquiry, *Final Report*, March 2012, p. 398, http://www.floodcommission.qld.gov.au/__data/assets/pdf_file/0007/11698/QFCI-Final-Report-March-2012.pdf (accessed 7 June 2013).

17 Queensland Floods Commission of Inquiry, *Final Report*, March 2012, p. 399, http://www.floodcommission.qld.gov.au/__data/assets/pdf_file/0007/11698/QFCI-Final-Report-March-2012.pdf (accessed 7 June 2013).

18 Senate Environment and Communications References Committee, *The capacity of communication networks and emergency warning systems to deal with emergencies and natural disasters*, November 2011, Recommendation 2, p. vii, http://www.aph.gov.au/Parliamentary_Business/Committees/Senate_Committees?url=ec_ctte/completed_inquiries/2010-13/emergency_communications/index.htm (accessed 28 May 2013).

or 900 MHz band. It did, however, note the concerns raised by some submitters regarding the availability and cost of equipment for use in the 800 MHz and 900 MHz spectrum bands and suggested that the availability and cost of equipment for use by ESOs be explicitly considered by the Public Safety Mobile Broadband Steering Committee (PSMBSC) as part of its deliberations.[19]

Reliance on narrowband mobile networks

1.16 Public safety agencies (PSAs) have historically relied on narrowband voice and data communications to support their operations. Narrowband networks were primarily deployed in the 400 MHz band with some systems operating in the very high frequency (VHF) and 800 MHz bands. Currently, the majority of dedicated public safety radiocommunications services in Australia are narrowband mobile networks operating in the VHF and ultra-high frequency (UHF) bands.[20] However, mobile broadband and newer technologies have increasingly been recognised as important information sharing tools to help enhance situational awareness in the field and to maximise operational effectiveness.[21] With stronger networks and greater capabilities, it is possible for PSAs to supplement existing two-way radio voice communications with rich data and video content. These capabilities would provide emergency service responders with the best possible information to best serve and protect the community.[22]

1.17 In 2008, the ACMA instigated an assessment of PSA needs through a wide-ranging review of the 400 MHz band. According to the ACMA, it resulted in an expansion of PSA spectrum resources and a framework for national interoperability.[23] In 2011, growing demand for an interoperable mobile broadband capability for the use of PSAs led the Australian Government to announce the possible 'earmarking' of spectrum from the 800 MHz band for potential use by PSAs to build their mobile broadband capability. The PSMBSC was established to examine how a provision in the 800 MHz band could support a public safety mobile broadband (PSMB)

19 Senate Environment and Communications References Committee, *The capacity of communication networks and emergency warning systems to deal with emergencies and natural disasters*, November 2011, p. 27.

20 Australian Communications and Media Authority, *Spectrum for public safety radiocommunications, Current ACMA initiatives and decisions*, October 2012, p. 9, http://www.acma.gov.au/webwr/radcomm/frequency_planning/radiofrequency_planning_topics/docs/spectrum_for_public_safety.pdf (accessed 29 May 2013).

21 Motorola Solutions, *Submission 10*, p. [1].

22 Motorola Solutions, *Submission 10*, p. [2].

23 Australian Communications and Media Authority, The ACMA to deliver a multi-layered spectrum solution to support public safety mobile broadband capability, *Media release*, 81/2012, 29 October 2012, http://www.acma.gov.au/theACMA/the-acma-to-deliver-a-multi-layered-spectrum-solution (accessed 29 May 2013).

capability.[24] The migration of Australia's television broadcasting systems from analogue to digital technology presented a rare opportunity for the allocation of valuable spectrum.[25]

Spectrum as a scarce and valuable public resource

1.18 Spectrum is used to send electromagnetic signals through space. It carries signals used for radio, television, mobile phones, mobile broadband, scientific research, defence activities, public safety and other personal communication systems.[26]

1.19 In 2012, the Minister for Broadband, Communications and the Digital Economy recognised spectrum as a 'national resource that needs to be managed in the public interest' and as a 'valuable public asset'.[27] Many witnesses to the inquiry similarly recognised spectrum as an important scarce public resource.[28] According to the ACMA, as spectrum is a 'scarce natural resource', the public benefit from its allocation must be optimised.[29] The ACMA also recognised spectrum as an increasingly important factor of production for the Australian economy.[30]

1.20 The Police Federation of Australia (PFA), noted that spectrum is a 'finite and scarce resource, wholly-owned by the Commonwealth Government'.[31] The Western Australian (WA) Government recognised spectrum as a 'resource that belongs to the citizens of Australia'.[32] The WA Government argued that the jurisdictions expect that

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24 Australian Communications and Media Authority, *Spectrum for public safety radiocommunications, Current ACMA initiatives and decisions*, October 2012, p. 1, http://www.acma.gov.au/webwr/radcomm/frequency_planning/radiofrequency_planning_topics/docs/spectrum_for_public_safety.pdf (accessed 29 May 2013); The Hon Robert McClelland MP and Senator the Hon Stephen Conroy, Discussions on national broadband for public and emergency services, *Joint Media Release*, 10 May 2011, http://www.minister.dbcde.gov.au/media/media_releases/2011/177 (accessed 28 May 2013).

25 Motorola Solutions, *Submission 10*, p. [2].

26 Department of Broadband, Communications and the Digital Economy, What is 'spectrum'?, http://s2.dbcde.gov.au/what-is-spectrum/ (accessed 16 July 2013).

27 Minister for Broadband, Communications and the Digital Economy, Senator the Hon Stephen Conroy, Renewal decision provides certainty for mobile customers, *Media Release*, 10 February 2012, http://www.minister.dbcde.gov.au/media/media_releases/2012/015 (accessed 19 June 2013); Minister for Broadband, Communications and the Digital Economy, Senator the Hon Stephen Conroy, Government provides certainty for digital dividend auction, *Media Release*, 14 December 2012, http://www.minister.dbcde.gov.au/media/media_releases/2012/204 (accessed 19 June 2013).

28 The Australian Mobile Telecommunications Association (AMTA) also viewed spectrum as an 'important national resource'. AMTA, *Submission 6*, p. 6.

29 Mr Chris Cheah, ACMA, *Committee Hansard*, 24 June 2013, p. 7; ACMA, *Submission 7*, p. [1].

30 Mr Chris Cheah, ACMA, *Committee Hansard*, 24 June 2013, p. 7.

31 Police Federation of Australia, *Submission 2*, p. 14.

32 Western Australian Government, *Submission 4*, p. 2.

the Commonwealth will make spectrum available at no cost to the states and territories as a national PSMB network will 'produce a significant public safety benefit for the people of Australia'.[33]

Legislative and policy framework

1.21 The legislative framework for the management of radiofrequency spectrum in Australia, including spectrum plans and frequency band plans, spectrum licencing and apparatus licences, is provided by the *Radiocommunications Act 1992* (Radiocommunications Act).

1.22 The objective of the Radiocommunications Act is to provide for management of the radiofrequency spectrum in order to:

> (a) maximise, by ensuring the efficient allocation and use of the spectrum, the overall public benefit derived from using the radiofrequency spectrum;
>
> *(b) make adequate provision of the spectrum:*
>
> *(i) for use by agencies involved in the defence or national security of Australia, law enforcement or the provision of emergency services; and*
>
> *(ii) for use by other public or community services;*
>
> (c) provide a responsive and flexible approach to meeting the needs of users of the spectrum;
>
> (d) encourage the use of efficient radiocommunications technologies so that a wide range of services of an adequate quality can be provided;
>
> (e) provide an efficient, equitable and transparent system of charging for the use of spectrum, taking account of the value of both commercial and non-commercial use of spectrum;
>
> (f) support the communications policy objectives of the Commonwealth Government;
>
> (g) provide a regulatory environment that maximises opportunities for the Australian communications industry in domestic and international markets;
>
> (h) promote Australia's interests concerning international agreements, treaties and conventions relating to radiocommunications or the radiofrequency spectrum.[34] (emphasis added)

1.23 Section 9 of the *Australian Communications and Media Authority Act 2005* (ACMA Act) sets out the spectrum management functions of the ACMA. The ACMA is responsible for the regulation of broadcasting, the internet, radiocommunications and telecommunications. It has statutory responsibility for issuing licences for spectrum use and determining relevant charges.[35] The role of the ACMA in relation to

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33 Western Australian Government, *Submission 4*, p. 2.

34 *Radiocommunications Act 1992*, s. 3.

35 Department of Broadband, Communications and the Digital Economy, Fact sheet 2: Public safety mobile broadband capability—process overview, December 2012.

spectrum was described by Mr Chris Cheah, Authority Member of the ACMA who noted that a key ACMA statutory function is to 'manage the spectrum resource of Australia independently and in the public interest'.[36]

1.24 The ACMA Act requires that the ACMA manage the radiofrequency spectrum in accordance with the Radiocommunications Act, as well as to advise and assist the radiocommunications community. In March 2009, the ACMA released its *Principles for spectrum management* to guide its decision making on spectrum management. The principles are:

1. Allocate spectrum to the highest value use or uses.
2. Enable and encourage spectrum to move to its highest value use or uses.
3. Use the least cost and least restrictive approach to achieving policy objectives.
4. To the extent possible, promote both certainty and flexibility.
5. Balance the cost of interference and the benefits of greater spectrum utilisation.[37]

Acknowledgement

1.25 The committee thanks the organisations and individuals who made submissions and gave evidence at the public hearings.

36 Mr Chris Cheah, ACMA, *Committee Hansard*, 24 June 2013, p. 7.

37 Australian Communications and Media Authority, *Principles for spectrum management*, March 2009, http://www.acma.gov.au/webwr/_assets/main/lib310828/principles_for_spectrum_management.pdf (accessed 30 May 2013).