National Framework to

Improve Government Radiocommunications Interoperability

Towards a harmonised radiocommunications environment for public protection and disaster relief

2010 - 2020

The National Framework to Improve Government Radiocommunications
Interoperability has been produced in collaboration with the National Coordinating
Committee for Government Radiocommunications (NCCGR) and endorsed through
the Council of Australian Governments (COAG).

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Cover image

Government Radio Network Services antenna at Mt Tingha, NSW.

**IMPROVING GOVERNMENT RADIOCOMMUNICATIONS
INTEROPERABILITY**

A NATIONAL FRAMEWORK

Introduction

Mobile radio is the fundamental basis for communications in emergency situations, a situation that is unlikely to change in the foreseeable future.

However, agencies responding to emergencies are often hampered by low levels of radiocommunications interoperability to effectively communicate with other agencies within their jurisdiction or other jurisdictions.

Radiocommunications interoperability can be defined as the ability of users to communicate, by radio, with whom they need to, when they need to, when authorised.

In 1974, emergency services from all over Australia went to Darwin to provide assistance following Cyclone Tracy, just as they did in NSW in 1994, 1999 and 2001, Canberra in 2003 and Victoria in 2009. In each case, the same situation prevailed – the visiting units found it difficult, if not impossible, to interoperate with local units using radio.

This Framework provides a basis to use current and future opportunities, including the current review of government spectrum allocation to address shortfalls in emergency communications that have existed for over 35 years.

The case for change
Mobile radio networks have three features that are together unique compared to other means of communications in an emergency:

1.   They allow one user to simultaneously talk to many other users, which is critical in broadcasting warnings such as the need to evacuate a collapsing building.

2.   The number of users is restricted, which makes radio networks less likely to congest in emergency conditions.

3.   They transmit at relatively high power, which provides a wider area of coverage per cell and which makes radio networks less impacted by power outages.

Historically, each agency has operated its own network and therefore these benefits have mainly been realised on an agency by agency basis.

However, in the late 1980s, trunking technology became available which enabled agencies to share network infrastructure and frequencies, which made it possible for different agencies to communicate with each other by radio.

Some jurisdictions have already moved to operating the same trunking technology in the same frequency band, enabling the benefits of interagency interoperability to be extended to inter-jurisdictional interoperability.
This trend towards common technology in common bands is likely to increase as a consequence of the Australian Communications and Media Authority's (ACMA)

current stated intention to identify common spectrum specifically for use by governments Australia wide.

At the same time, the number of incidents involving inter-jurisdictional operations is likely to increase. In the 20 years between Cyclone Tracy and the 1994 Sydney bushfires, there were less than a handful of events in which interjurisdictional responses were mounted. In the 15 years since 1994 interjurisdictional responses have occurred on average every two and one half years, the latest being the 2009 Victorian bushfires.

The impacts of climate change and the continuing threat of terrorism are likely to increase the trend toward more inter-jurisdictional operations.

The purpose of this National Framework

The purpose of this National Framework is to provide the guiding principles and key areas of work for jurisdictions to enable transition towards radiocommunications interoperability.

The National Framework suggests an indicative ten-year timeframe to allow jurisdictions sufficient time to align technical requirements with their procurement cycles and thus significantly mitigate any cost of change. Most jurisdictions are already either implementing or planning their next technology refresh and all jurisdictions will most likely do so in the Framework's timeframe.

The scope of this National Framework

The National Framework primarily focuses on improving the voice mobile radiocommunications interoperability. It incorporates seven Guiding Principles and outlines key areas of work under each. Principle seven captures the ongoing assessment of common requirements for high speed mobile data interoperability.

National Framework – Guiding principles and key areas of work

1. **Jurisdictions to work together to develop a framework to deliver an appropriate level of interoperability between and across jurisdictions and agencies**

Key areas of work:

- Develop an agreed universal list of priority services for enhanced interoperability capability; and

- Develop a set of principles for agency access to harmonised networks.

2.   Jurisdictions to work collaboratively to establish a national baseline [plan] of interoperability with existing systems and develop transitional interoperability arrangements pending the adoption of future systems

Key areas of work:

- Survey national interoperability capabilities;

- Summarise existing interoperability capabilities and constraints within and between jurisdictions; and

- Working towards defined transitional arrangements pending a longer term program of systems development.

3.   Jurisdictions to work collaboratively to define interoperability standards

Key areas of work:

- Define existing interoperability requirements from an operational and technical perspective; and

- Develop interoperability policies and plans within the constraints of existing systems.

4.   Jurisdictions to work collaboratively towards harmonising and aligning technologies, including addressing any impediments to moving towards fully compatible mobile radio networks

Key areas of work:

- Achieve consensus on technologies and standard operating protocols that will be adopted across jurisdictions to enable interoperability; and

- Working towards incrementally adopting these technologies by leveraging existing opportunities in relation to: infrastructure; procurement cycles; and spectrum planning and management.

5.   Jurisdictions to develop and implement networks in appropriately identified harmonised spectrum

Key areas of work:

- Jurisdictions and the ACMA establish agreed harmonised spectrum arrangements, which are adequate in size to meet the needs of security, law enforcement and emergency service use; are contiguous to the extent feasible; provide increased certainty of access; and improves to the maximum extent possible technology choices for users; and

- Develop spectrum planning and coordination arrangements to improve interoperability at the national level.

6.   **Jurisdictions to establish arrangements for the effective and efficient operation of radiocommunications equipment nationally**

Key areas of work:

- Establish roaming protocols; and

- Investigate more efficient national procurement arrangements, where relevant.

7.   **Jurisdictions to assess common requirements for high speed mobile data interoperability as well as assessing emerging technologies that support increased interoperability**

Key areas of work:

- Continually assessing common requirements for mid to high speed mobile data with a view to developing efficient interoperability guidelines that align with this National Framework; and

- Continuing to assess emerging technologies that will support and enhance interoperability.

Governance

The National Coordinating Committee for Government Radiocommunications (NCCGR) was established by agreement of First Ministers in 2004.

The NCCGR consists of representatives from each of the nine Australian jurisdictions as well as observers from law enforcement, security and public safety organisations through the Law Enforcement and Security Radio Spectrum Committee (LESRSC), Emergency Management Australia and the Department of Defence. The Australian spectrum regulator, the ACMA is also represented.

The NCCGR under its Terms of Reference has a specific role to "promote improved interoperability of government radiocommunication services" and under the Framework would work with jurisdictions to facilitate this work and provide a forum for discussion of interdependencies.   In leading this work, the NCCGR will consult with other relevant bodies with an interest in radiocommunications as described in **Appendix A**.

The NCCGR would refer its work on the implementation of this Framework to the proposed National Emergency Management Committee (NEMC), who would sponsor progress reporting on national radiocommunications interoperability to COAG. In sponsoring this work, the NEMC would ensure the coordination of input from, or referral of work to, other relevant national committees as required. The NCCGR will continue to report in accordance with its constitution for all other matters.
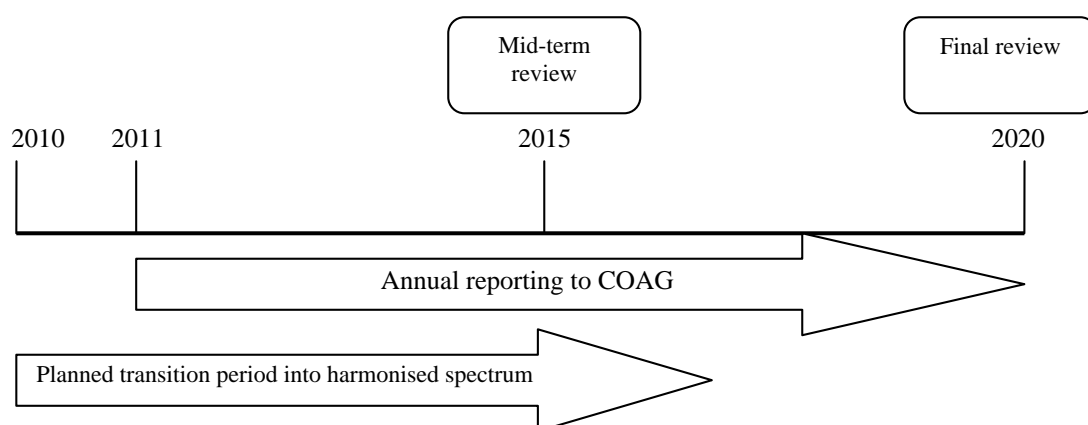
<u>Indicative Timing</u>

The National Framework aims for all Australian governments to commence transitioning their domestic radiocommunications equipment to interoperable systems, modes and frequencies over the ten-year period commencing 2010.

Once the final outcome of the current ACMA review of the 400 MHz band is known in late 2009 the NCCGR could develop a coordinating strategy, implementation plan and finalise a transition timeline by the first quarter of 2010 which will outline how jurisdictions might work with other jurisdictions that choose to adopt the principles as outlined above. By the first quarter of 2011 it could complete development of a nationally harmonised band plan for government spectrum.

The National Framework will undergo a mid-term review in 2015 with a final review in 2020 to assess the extent of national interoperability.

Figure 1 – National Framework Indicative Implementation Timeline

The indicative timeline in Figure 1 takes into account ACMA's currently proposed five-year transition period to move government radiocommunications into a harmonised block of spectrum.

<u>Costs</u>

Every Australian jurisdiction is now either implementing its next mobile radio technology refresh or planning it. This occurs on a seven to ten year basis and generally involves a procurement and expenditure process, the timing and value of which will vary from jurisdiction to jurisdiction. These decisions will be influenced by the current ACMA review of the 400MHz band.

By allowing an indicative ten-year timeframe, the National Framework accommodates existing procurement cycles and is not likely to add significantly to costs.

That said, the interoperability planning process will incur, and indeed has been incurring, some costs. These costs will relate to becoming interoperable in a harmonised government band, developing standard operating protocols and procedures and training. Such costs cannot be articulated in this document as they need to be investigated by jurisdictions. These costs are likely to vary between jurisdictions.

Benefits

Improvements to interoperability arising from the National Framework will enable government radiocommunications users to:

o   more effectively use their own equipment across jurisdictions, enabling more effective and efficient cross-jurisdictional operations and more rapid deployment of emergency responders;

o   more effectively undertake their daily operations covering responses to routine public safety such as building fires that may require support from several agencies within a jurisdiction or during police vehicle pursuits that may cross boundaries requiring cross-jurisdictional assistance;

o   seamlessly switch from 'day-to-day' communications to multi-agency and/or cross jurisdictional communications required in an emergency situation such as natural disasters, catastrophic accidents, large scale incidents, and similar events that may occur without much warning; and

o   take advantage of new and emerging technologies that support improved interoperability as a result of a nationally consistent coordinated approach to improving interoperability.
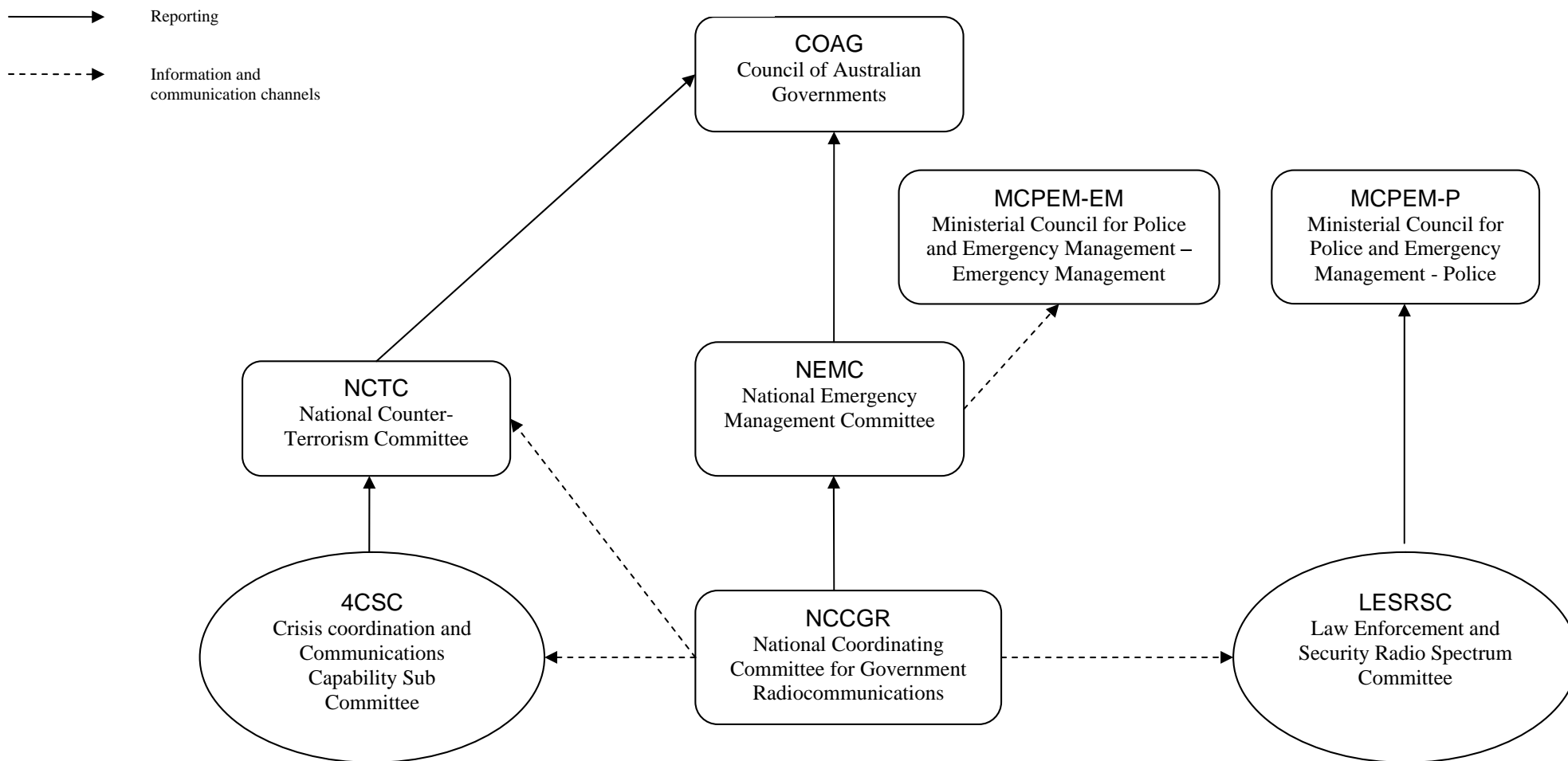
Conclusion

The 2005 COAG report on Bushfire Mitigation and Management observed that:
> *"Shortcomings in communications systems have been a recurrent theme in past coronial inquests and independent inquiries."*

The National Framework specifically targets radio interoperability within and across jurisdictions. It is not a technology prescriptive document nor is it the design of a single body.

The National Framework has been developed in consultation with jurisdictions and sets a pathway for improving radiocommunications interoperability nationally. In order to achieve improved levels of interoperability, jurisdictions and agencies within jurisdictions will need to commit to investing in and using aligned radiocommunications technologies to interoperate in a harmonised spectrum band.

Attachment E

Appendix A

National Framework – Reporting & Communications and Information Arrangements

→ Reporting

- - - → Information and
communication channels

COAG
Council of Australian
Governments

MCPEM-EM
Ministerial Council for Police
and Emergency Management –
Emergency Management

MCPEM-P
Ministerial Council for
Police and Emergency
Management - Police

NCTC
National Counter-
Terrorism Committee

NEMC
National Emergency
Management Committee

4CSC
Crisis coordination and
Communications
Capability Sub
Committee

NCCGR
National Coordinating
Committee for Government
Radiocommunications

LESRSC
Law Enforcement and
Security Radio Spectrum
Committee

Attachment E

Appendix A *(cont'd)*

National and Australian Government Committees and Groups

- **The National Coordinating Committee for Government Radiocommunications** (NCCGR) comprising representatives from each jurisdiction and key Commonwealth agencies was established to address core issues of spectrum, inter-jurisdictional operations and to ensure that relevant issues are considered in any nationally agreed framework.

- **The Law Enforcement and Security Radio Spectrum Committee** (LESRSC) comprises representatives from each jurisdiction's police service as well as the Australian Federal Police and Australian Customs Services. This committee considers strategic issues for law enforcement and security radiocommunications users.

- **The National Counter-Terrorism Committee** (NCTC) comprises representatives from Commonwealth, State and Territory governments and contributes to national security through the coordination of a nation-wide framework to counter terrorism.

  o The Crisis Coordination and Communications Capability Sub-Committee (4CSC) provides advice to the NCTC on State and Territory crisis centres and secure communications and information capability.

- **National Emergency Management Committee (NEMC)** The NEMC is a national committee of relevant senior officials charged with providing strategic leadership on nation-wide emergency management policy and through supporting related capability and capacity development activities. The NEMC reports to MCPEM-EM on matters within the MCPEM-EM charter and other Ministerial Councils as required. NEMC reports directly to COAG as required, including an annual update on significant national issues being progressed by the Committee.

- **The Ministerial Council for Police and Emergency Management – Police** (MCPEM-P) comprises Ministers responsible for police from Australia and New Zealand and, inter alia, promotes a coordinated national response to law enforcement issues and police resources.

- **Ministerial Council for Police and Emergency Management – Emergency Management** (MCPEM-EM) The MCPEM-EM is chaired by the Attorney-General of Australia and comprises all State and Territory emergency management ministers. Members of the Council also include the New Zealand Minister of Civil Defence and the president of the Australian Local Government Association.

  The Council guides the strategic direction of emergency management in Australia and meets once a year.