

## NATIONAL SECURITY UPDATES

# Flood Management Manuals reviewed – and available

**Keys, Gissing and Godber make the case for the newly-released flood management manuals to be used by practitioners in the State and Territory Emergency Services and other agencies**

Flooding is a very costly hazard in Australia but, as is often said, it is also amongst the most manageable of the natural perils which communities face. And so it is: we can know a good deal about where floods will occur, advance notice is usually given of their arrival, much can be understood ahead of time about what their consequences will be and it is invariably possible to identify and implement 'treatments' which will reduce the damage and the distress they can cause. Nevertheless the statement hides many of the difficulties which managing floods impose upon those who are responsible for doing so. Flood 'manageability' has to be earned, and earning it is no simple matter.



play important roles, usually in relation to particular functions (councils in relation to flood mitigation measures and the management of the use of flood-prone land, for example, and the Bureau in the context of flood forecasting). But in the main it is the S/TESS and their thousands of volunteers that carry the key responsibility for protecting communities and their assets when floods assail them. The tasks to be performed are many. They include amongst others resupplying people or communities which are or will become isolated by floodwaters; protecting property and infrastructure; providing warning and information to people at risk of flooding; evacuating those who are or who soon will be in danger from flooding; and rescuing those who have entered or become trapped by floodwaters.

Most S/TESS organisations also have responsibilities in relation to planning for floods, for contributing to arrangements designed to ensure that people are warned and given information about how to react to flooding, and in some jurisdictions for providing councils with advice about land-use decisions relating to floodplain land and helping community members to understand their flood risk and what they can do to protect themselves and their belongings from floods. Given the great dollar damage which flooding creates in this country, and the significant potential for death and injury, the responsibilities are considerable.



### Who manages floods?

Foremost amongst the flood management agencies in Australia are the State and Territory Emergency Service organisations (the S/TESSs), which are charged either in legislation or in emergency management arrangements with the responsibility for responding in the community's interests during times of flooding. The details of the responsibility vary between jurisdictions, but enough is common across the nation to suggest that all the S/TESSs must develop the means to become expert in managing floods in ways that reduce their negative effects. The task is one which demands attention outside the periods when floods are actually occurring.

Many other organisations — voluntary groups, local councils, the Bureau of Meteorology and elements of the state, territory and federal governments —

floodboats, and in some jurisdictions S/TESS members and other people are taught how to deploy sandbags to keep water out of buildings or essential installations. But these activities are skills-oriented rather than managerially-focused. In New South Wales the SES has developed the 'Nevagazunda' suite of exercises which go part of the way to filling the

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gap in training material directed at building skills in flood management, and some S/TEs have developed exercise programmes to test flood management expertise and emergency plans. More is needed, though, so S/TEs volunteers and staff can learn about such things as the best means of warning people about approaching floods or how to evacuate at-risk people safely and speedily before they are trapped by floodwaters. To date there are no wide-ranging courses designed to help emergency personnel to plan in advance for flooding. Often, S/TEs members learn about floods and how they can be managed by dint of real-time experience — in other words, when floods are actually occurring.

While on-the-job training has a real place in emergency management, relying solely upon it is dangerous. Floods occur frequently in Australia but very unevenly in a temporal sense, and there are many areas which have seen no flooding of consequence for years on end. The Murrumbidgee River in New South Wales, for example, the scene of several catastrophic floods since the beginning of European settlement, has not had even minor flooding since the early 1990s, and some other parts of Australia, known to be liable to flooding, have gone even longer without floods. For the S/TEs, long flood-free periods create difficulties in terms of the maintenance and augmentation of flood management expertise: at the local level, complete turnovers in unit membership and leadership positions are virtually guaranteed and gaining real-time learning for later application becomes impossible. When a flood occurs, the danger is that there will be little or no practical expertise amongst those who are responsible for the management of the event. The potential for mistakes to be made, and for responses to fall well short of good practice, is considerable.

Genuinely large and catastrophic floods are quite common in Australia but they are rare at the local level, and on-the-job learning in such events to inform later responses to severe floods is virtually by definition not possible for the members of local SES units. Unfortunately, these are the floods in which high-quality management by the S/TEs and their partner organisations will be most vital. Simply because they are rare they will almost always be outside the experience of those who will be called upon to manage them, and what is appropriate in smaller, more familiar floods may be irrelevant. The potential for a flood to become a human disaster, perhaps exacerbated by poor management, is surely magnified in such circumstances.

### The manuals

Expertise in managing flooding cannot be built, then, only by experience garnered during floods. It must be built at least partly by 'synthetic' means, and this is where the recently revised flood management manuals have a place. Four of the five documents which were produced by Emergency Management Australia in 1999 have been extensively revised to reflect advances over the past decade and to make them more user-friendly and useful. These documents came about because some practitioners saw a need for more written guidance in the various aspects of flood management, but in most parts of the country they have not been well utilised — indeed they have probably been used more effectively overseas than in Australia — and over time they have become increasingly dated.

The manuals deal with Flood Preparedness, Flood Warning, Flood Response and Emergency Management Planning for Floods Affected by Dams. They were revised with input from emergency managers and other practitioners from the various states and territories, with the aim of producing a body of accessible, easy-to-follow and easy-to-use material reflecting best practice in flood management as this is currently understood in Australia. Launched by the federal Attorney General, Robert McClelland, at Lismore in October 2009, the manuals are available free of charge at [www.ema.gov.au](http://www.ema.gov.au). A small charge applies in relation to printed copies.

The manuals seek to cover the principles of managing floods of all origins, including riverine, storm surge and dam-failure events and events ranging from flash floods to floods with warning times of several weeks. Flood Preparedness deals with the essentials of the preparation of flood emergency plans and the means of ensuring that agency members and members of flood-liaison communities can be made ready for flooding. Planning for floods has long been a vexed matter in Australia, many agency managers and S/TEs volunteers being unsure of both the nature of the planning task and the best means of going about it. This manual describes and seeks to demystify 'flood intelligence' as the basis of planning activity, the planning process itself and the content of flood emergency plans. Special attention is given to planning for specific functions (such as warning, the provision of information and advice, evacuation, resupply, property protection and rescue) and special environments (flash flood environments, communities protected by levees and areas downstream of dams from which water may be released, including catastrophically as a result of dam failure).



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The manual also seeks to define the means by which members of flood-liable communities can be helped to manage floods in their own interests. This is another vexed area in Australian flood management, albeit one in which some progress has been made in very recent times in a number of states with the implementation of the FloodSafe community education programmes.

The Flood Warning guide deals with the various phases of the warning process in the context of what has become known in Australia as the 'Total Flood Warning System', beginning with flood monitoring and prediction and going on to determining (using flood intelligence) what the consequences of flooding will be in a specified area given a particular flood forecast. It then deals with the design of flood warning messages for whole populations and for subsets of them, the dissemination of messages using the increasingly wide array of 'devices' available, and the important (but often forgotten or poorly managed) task of reviewing system performance after flood events. Particular attention is given to how to choose appropriate dissemination techniques in particular types of environment, with different amounts of lead time available and given specified severities of forecast flooding.

Emergency Management Planning for Floods Affected by Dams provides guidance for preparing for dam-failure flooding and for the consequences of the unintended or deliberate releases of water when these may cause flooding. There are in Australia many dams from which water can be released, deliberately (for irrigation purposes or to maintain environmental flows) or unintentionally (because of equipment malfunctions or human error), and some dams have been found to be 'deficient' in construction, maintenance or spillway capacity to the point that their failure, usually with catastrophic consequences downstream, is possible. In preparing for water releases and dam failure, special warning procedures are often necessary along with special arrangements for evacuation. There was considerable input from dam owners and dam safety regulators in the review of this manual.

The Flood Response manual completes the quartet. It deals with the various modes of real-time flood management which are available and with the principles of flood response operations, the utilisation of flood intelligence during flood events, setting objectives for a flood response operation, making decisions to achieve these objectives, and establishing appropriate coordination mechanisms. The document then moves to the management of individual functions during periods of flooding: attention is given to the 'how-to' of flood warning, information collection, property protection, evacuation, resupply and rescue. The document concludes with developing the means of achieving an effective transition from response to recovery and with the points which must be dealt with in reviewing response operations. An important element of this manual, much needed by busy responders during floods, is the provision of a series of checklists (aides memoires) for the individual functions.

In all four manuals, much attention is given to the effective use of flood intelligence (sometimes termed flood information). These days, as a result of the many floodplain management studies which have been undertaken in flood-liable areas across the country, much more flood intelligence is available than was the case in years gone by, but not all flood managers are aware of what exists and how to use it in the planning, warning and response contexts. Guidance is given about the sources, compilation and utilisation of flood intelligence.

High-quality flood management — broadly, management which helps communities to deal better with floods by reducing damage, death, injury and disruption and facilitating recovery — cannot be achieved without expertise being consciously developed by those responsible. It is not acceptable, in this day and age, for flood responses to be developed 'on the run' without considerable preparation well in advance and genuine efforts to determine how management can best be carried out. Warning services cannot possibly be properly developed without considerable design work. Likewise, attempting a mass evacuation without a good deal of prior thinking about the most appropriate ways to stage it should be regarded as unthinkable given the inherent dangers involved in moving many people in a short period of time under stressful conditions. Unplanned mass evacuation would be likely to be chaotic and would increase the risk to people's safety.

These manuals are, in effect, the 'textbooks' by which expertise can be developed outside flood time (and added to, naturally, by experience when floods occur). Their intention is to make flood management both more comprehensible and easier to fulfil to high standards. Flood managers, both within the S/TEs and in other agencies, should seek to come to grips with the contents of the manuals and to plan appropriate applications for the areas for which they are responsible in the times when flooding occurs. There remains a need for a national course in the management of floods.

### About the authors

**Chas Keys** is a former Deputy Director General of the New South Wales State Emergency Service and is now a consultant and researcher on flood and floodplain management.

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These three individuals, and **Norm Himsley** of the New South Wales Dams Safety Committee in the case of Emergency Management Planning for Floods Affected by Dams, were principally responsible for the reviews of the manuals. Many other emergency management practitioners from the various states and territories contributed ideas to the review process and are acknowledged in the individual documents.