Public Safety Risk Management: assessing the latest national guidelines

John Salter, EMA
Delivered at the IIR 3rd Annual
Emergency Services Forum,
Sydney, August 12–13, 1998

The need for a national Emergency Risk Management guideline

My underlying assumption is that for any service provision, national guidelines meet a need to provide the basis of a consistent approach. Further, Australians have a reasonable expectation if not a right to consistency in service provisions that relate to public safety.

Two basic rules of life (1. change is inevitable, 2. change is resisted) have provided an interesting context for the development of the national Emergency Risk Management guidelines over the last three years.

Machiavelli aside, the range of conservative reactions to the development of national Emergency Risk Management guidelines has varied from the 'dismissal' position (same wine, different bottle), to the 'entrenched' position (when it is not necessary to change, it is necessary not to change).

The risk management approach is not just business as usual, nor does it merely provide a tool (for analysis/assessment). The approach provides a framework for the systematic application of management policies, procedures and practices to the tasks of identifying, analysing, evaluating, treating and monitoring risk (AS/NZS 4360 Australia/New Zealand Risk Management Standard:1995).

Advantages of adopting a risk management framework (as identified and agreed by the National Emergency Management Committee, 1996) included:

- it is a formalised, systematic analysis and decision-making process
- it is being widely used, thereby providing a common language and process across all organisations, facilitating both promotion and integration.

An outcome of that 1996 meeting was the agreement to develop national Emergency Risk Management guidelines, and to incorporate the risk management approach into other emergency management products.

The guidelines are derived from a standard (AS/NZS 4360 Australia/New Zealand Risk Management Standard:1995) and therefore outline expectations related to processes and outcomes. Emergency management lacked clear guidance in the past and was often marred by approaches characterised by working in isolation (from the community at risk). [Process] features in the guidelines emphasise involving all stakeholders in decision making and the [outcomes] focus is on risks to communities, not just hazard agents.

> **Overall, a positive view (reflecting a commitment to continuous improvement) has prevailed in line with Benjamin Franklin's philosophy 'when you're finished changing, you're finished'.**

Public safety has long been dogged by the unhelpful distinction between 'emergency managers' and 'emergency management'. The guidelines are at a level of generalisation with the flexibility to provide sufficient advice to accommodate all emergency risk management contexts—from local governments to multi-national corporations.

Other influences that have contributed to the 'need' for a national Emergency Risk Management guideline include externalities associated with more general philosophies on service provisions, such as accountability and economic rationalism.

Overall, a positive view (reflecting a commitment to continuous improvement) has prevailed in line with Benjamin Franklin's philosophy 'when you're finished changing, you're finished'.

Exploring the evolution of the final product

The guidelines were developed by the process outlined in *Figure 1*.

Assessing the guidelines – what do they mean to you?

Assessment is an interesting word—one that causes the risk management industry some angst. Internationally there is disagreement—some see it as a broad and general term that captures 'analysis and evaluation'; others use the term in a very specific way related to 'scientific analysis'. It is a term the current risk management standard still treats inconsistenly. Within the emergency management guidelines, it is used in the broad and general sense.
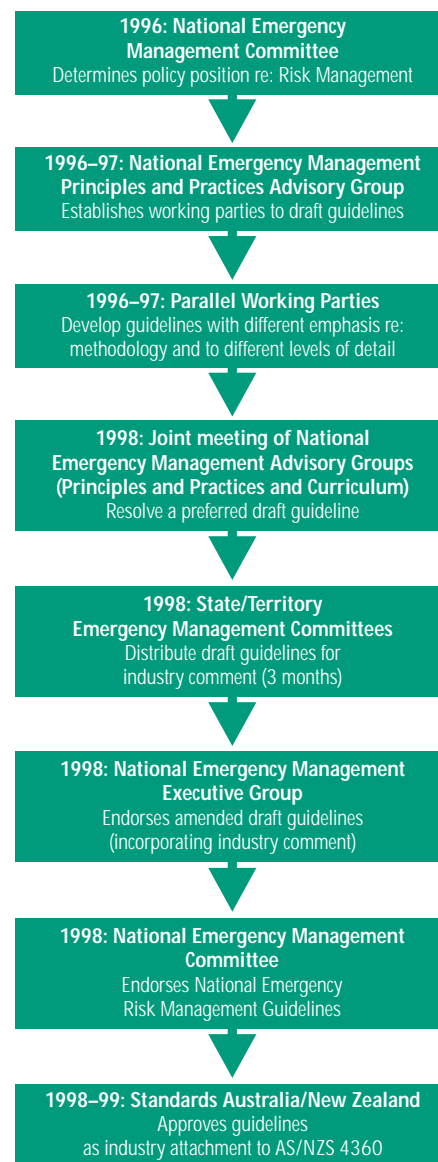

1996: National Emergency Management Committee
Determines policy position re: Risk Management

1996–97: National Emergency Management Principles and Practices Advisory Group
Establishes working parties to draft guidelines

1996–97: Parallel Working Parties
Develop guidelines with different emphasis re: methodology and to different levels of detail

1998: Joint meeting of National Emergency Management Advisory Groups (Principles and Practices and Curriculum)
Resolve a preferred draft guideline

1998: State/Territory Emergency Management Committees
Distribute draft guidelines for industry comment (3 months)

1998: National Emergency Management Executive Group
Endorses amended draft guidelines (incorporating industry comment)

1998: National Emergency Management Committee
Endorses National Emergency Risk Management Guidelines

1998–99: Standards Australia/New Zealand
Approves guidelines as industry attachment to AS/NZS 4360
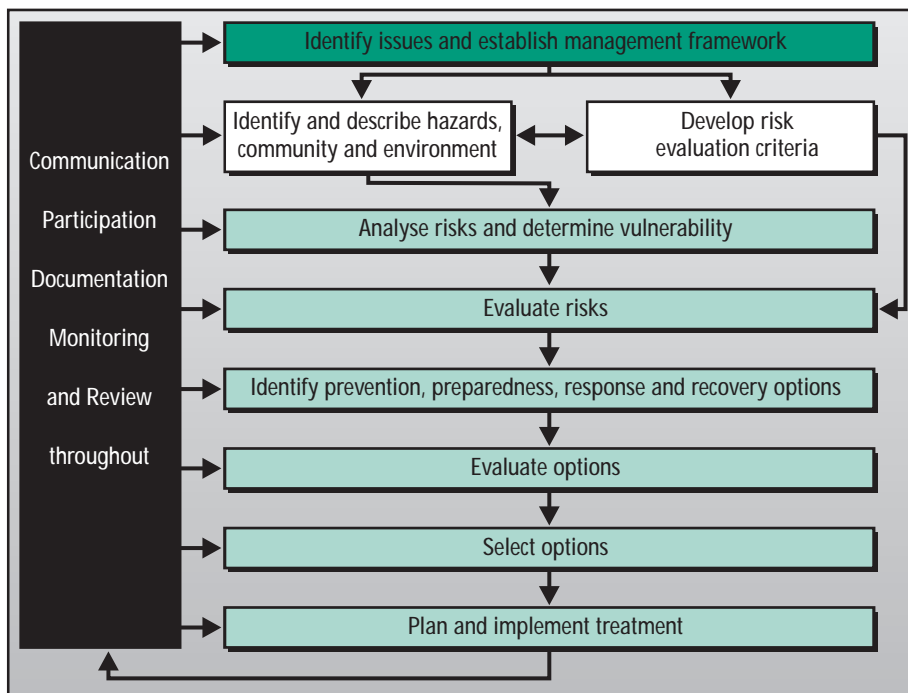
Figure 1: ERM Guidelines development process

Figure 2: main elements of the Emergency Risk Management framework.

The specific meanings attributed to words are not what is most important in the guidelines. Nevertheless, some terms within the 'emergency management community' are terms that have a specific particular use, special meaning or emphasis. Indeed these context sensitive terms, and the concepts and principles they reflect, differentiate the emergency risk management guidelines from the general risk management standard. These terms provide a basis for identifying some of the key features of the guidelines in terms of 'what they mean to you'.

As outlined in *Figure 2*, the Emergency Risk Management Guidelines provide a contextually-enhanced framework that parallels the Risk Management Standard (AS/NZS 4360).

The crucial role of Communication and Participation

Underpinning the emergency risk management process is a requirement for communication, consultation and participation. The basis for this philosophy is that where all stakeholders contribute to the decision making process, there is a much larger pool of information and expertise to enable valid solutions to be developed. Further, for any decision making process to be successfully implemented, it must engender ownership and commitment from all parties influenced by it.

The resolution of issues related to risk management is not so much technical as it is political. It is about power and negotiation. If risk is recognised as a socially-constructed attribute, risk communication becomes pivotal, and focuses on the devel-opment of procedures for structuring dialogue; to develop shared understandings about risk and its acceptability. This raises issues about the use of communication and participation to facilitate a transfer of risk management to the community without incorporating sufficient enabling provisions.

If risk communication, as something fundamental to the design and implementation of treatments, is about facilitating meaningful dialogue that addresses any concern (information, attitudes, opinions), it becomes essential to recognise risk communication is a political process. Implications include the need to provide open, democratic processes that are underpinned by enabling provisions. Risk as a social construct in this context will also highlight the quality and performance of organisations within the emergency management community. Report cards will feature institutional values related to things such as bureaucratic access, caring, competence, trust and credibility. These social processes will be significant factors in the alignment of risk management towards vulnerability as any indicators of vulnerability must be chosen by reference to assumptions about underlying processes.

The core information — hazard, community and environment

As noted by Phillipe Boullé , Director of the International Decade for Natural Disaster Reduction, 'information, such as that necessary for understanding hazards and assessing the nature of prevailing vulnerabilities is essential for the determination of risk'.

The general Risk Management standard applies a method that views risk as arising from the interaction between 'sources of risk' and 'elements at risk'. This method is especially appropriate for closed systems and clearly bound problems, however it is considered inadequate for use in the emergency management context.

'Identify and describe hazards, community and environment' involves a detailed investigation of the characteristics of the hazards, the community, and the environment that form the basis of the problem to be solved.

'Hazard'

A hazard is a situation or condition with potential for loss or harm to the community or environment. Hazards may include:

Natural Hazards. These include bushfire, storm, flood, cyclone, storm tide, earthquake, and extreme heat or cold.

Technological Hazards. Technological hazards are caused by the failure of socio-technical systems. These include dam and levee failure and systems failures related to agriculture (e.g. drought), food contamination, industrial sites, infrastructure and transportation.

Biological hazards. These include the spread of disease *or pests* among plants, animals or people.

Civil and political hazards. These include terrorism, sabotage, civil unrest, hostage situations and enemy attack.

Organisational hazards. These include poor organisation, low resourcing, low staff competence, lack of awareness of responsibilities, and the potential of these to cause harm to the community or environment.

Most hazardous situations are rarely simple, and the situation studied in emergency risk management processes may involve a combination of a number of the types of hazard above.

Characteristics

The process of hazard identification and description involves determining information about significant fields including likelihood, spatial distribution, intensity, speed of onset, duration and the concern that the hazard arouses in the community. Information about a range of possibilities within each of the fields should be considered (e.g. in flood hazards variability in fields such as river height, duration of flood event and rate of river rise may be considered).

'Community'

In terms of 'community', a group may be identified by:

Geographically-based groupings of people such as households, neighbourhood, suburbs, towns, local government areas, cities, regions, states and the nation.

Shared-experience groupings of people such as particular-interest groups, ethnic groups, professional groups, language groups, age groupings, those exposed to a particular hazard.

Sector-based groupings such as agricultural, manufacturing, commercial, mining, education sectors. It may be necessary to consider groups within these sectors (e.g. the food processing group within the manufacturing sector).

Functionally-based groupings such as service providers responsible for systems or networks that provide for the movement of people, goods, services and information on which health, safety, comfort and economic activity depends (lifelines).

Most communities are rarely simple, as individuals are generally members of more than one community. The situation studied in emergency risk management processes may involve a combination of a number of different types of communities.

Characteristics

The process of identifying and describing a community involves determining information about significant fields including: size, spatial distribution, remoteness, prior experience or perception of the hazard, degree of exposure to the hazard, capacity to affect the environment or the hazard, access to resources, susceptibility or resilience to the hazard(s). Information about a range of possibilities within each of the fields should be considered (e.g. for geographically-based communities, variability in fields such as degree of exposure and ability to cope may be considered).

'Environment'

The 'environment' is a set of conditions or influences that surround or interact with a community and the hazards. Concepts of environment include:

Built environment. Elements such as buildings and infrastructure that provide for the movement of people, goods and services.

Physical environment. Elements from the natural environment such as topographical features, water bodies, vegetation communities, and ecosystems.

Social environment. Elements such as politics, economics, commerce, culture and public safety service provisions that relate to how the community functions.

These environments have complex interactions with the community and hazards. The situation studied in emergency risk management processes may involve a combination of a number of different aspects of the environment.

Characteristics

The process of identifying and describing

the environment involves determining information about significant fields including the degree of mitigation effected on the hazard, the degree of protection afforded to the community, susceptibility or resilience to the hazard(s). Information about a range of possibilities within each of the fields should be considered (e.g. for an earthquake hazard and the built environment, a range of building types that provide differing degrees of protection may be considered; for a fire hazard and the social environment, variability in mitigation measures may be considered).

The centrality of vulnerability

Central to emergency management is a focus on determining vulnerability by establishing the capability of communities, the environment and systems to anticipate,

---

Modelling scenarios accommodates uncertainty by examining how results vary as specific assumptions are changed. The output from modelling provides information that can be used to determine effective treatments.

---

cope with and recover from hazards. In order to profile the vulnerability of a community, the environment, or systems it is necessary to identify appropriate vulnerability indicators. Studies of vulnerability involve both quantitative and qualitative methods. Vulnerability indicators should be capable of measurement and meet tests for necessity and sufficiency.

Some vulnerability indicators will apply across all hazards. For example the proximity of any community, system, environment or asset will be a key consideration in relation to all hazards. However some vulnerability indicators are peculiar to each element of a community, the environment, or systems and will vary in relation to specific hazards. For example different buildings are vulnerable to different hazards; and hence characteristics such as

the age of a component, its design, the construction materials used, location and prevailing ground conditions become considerations in determining vulnerability indicators.

The nature of vulnerability varies according to the study area and its proneness to specific hazards. Elements should be analysed at an appropriate level of geographic resolution for the problem at hand (e.g. for a community the resolution may range from individual household, collector's district, local government level, region, State or nation). Methods used for vulnerability analysis may be different for a small community as opposed to a big city, different for an area prone to a single hazard from one prone to multiple hazards.

Geographic Information Systems are useful in vulnerability assessment because of their power for exploring qualitative and quantitative relationships between communities, the environment, systems and hazards, by visualising situations, analysis, and modelling. Modelling is a simulation of processes associated with the problem being studied. Emergency risk modelling is used to estimate risk for a given scenario. Modelling facilitates the progression from a known situation to a prediction, based on expected behaviour. Modelling can be:

- *Physical.* A scaled replica is used for prediction;
- *Mathematical.* A mathematical relationship between cause and effect is used
- *Intuitive.* Intuitive understanding of the behaviour (based on experience or an understanding of the processes) is used.

Modelling of the processes that give rise to the risk is fundamental to the processes of emergency risk management.

Modelling scenarios accommodates uncertainty by examining how results vary as specific assumptions are changed. The output from modelling provides information that can be used to determine effective treatments.

The changing nature of service provision

The shift toward risk management has significant implications for emergency management service provision, especially in terms of implementation and organisational change. As reported by Smith *et al* these include:

- increased service provision diversity (including a shift to prevention)
- community empowerment and responsibility
- increased inter-agency cooperation.

Under the broad public policy umbrella of 'risk management for safer communities', we are moving into the domain of client

focused service provision. Several new skill sets will be required of the emergency management community, for example:

- risk communication processes (based on planning with, not for) to negotiate appropriate levels and types of emergency management service provision will require facilitation skills to conduct service reviews and agree service level definition with clients
- contract specifications associated with outsourcing emergency management service provision will need a thorough understanding of and sensitivity to implications in order to achieve appropriate outcomes and performance indicators.

Predictions for further development of the guidelines

The material outlined above reflects the draft guidelines as they are about to go to the National Emergency Management Executive Group (AUG 98). As such two caveats apply—first, the material is only in part and draft and should therefore not be applied in the field; second, the draft must go through amendment, endorsement and forwarding to the National Emergency Management Committee.

The guidelines are only that (guidelines), and require substantively detailed supporting documentation to facilitate implementation. This 'how to' manual will be an Emergency Management Australia priority over the next twelve months. That there are already several attempts at 'implementation manuals' that are inadequate in various ways is testimony to the market need for a quality, detailed product.

There is a gap within the required detail at the level of 'vulnerability indicators'. Significant work will be required to identify appropriate indicators and associated research methodologies. Further, modelling tools need to better integrate the appropriate information factors and layers (hazard, community and environment characteristics) to analyse risk and determine vulnerability.

The guidelines could be developed into a flexible 'capability audit' framework that could be applied in any context. Such a product would have significant potential for applications in the private sector (e.g. infrastructure and asset management) and in the public sector in relation to the quality of public safety protection measures.

Closing reflections

The management priority is how to reduce community exposure to major risks. Hazards and strategies of prevention, preparedness, response and recovery are necessary elements of emergency management; however they are not sufficient. We have adopted, and are grappling with, the implications of the internationally promulgated construct that R ¦ H & V (where R = Risk, H = Hazard and V = Vulnerability). Indeed, the only reason for emergency managers to analyse hazards and assess vulnerability is to enhance their capability to manage risk.

A risk management approach, centred on considerations of vulnerability and processes of communication and participation, provides a flexible and holistic framework to better advise emergency management. Analyses focused on vulnerability will by identifying processes that bring about risk, highlight management options that address the key underpinning social features, structures or processes.

A risk management approach, centred on considerations of vulnerability and processes of communication and participation, provides a flexible and holistic framework to better advise emergency management.

In sum, in an era of increasing accountability, the guidelines provide a framework which, by focusing on managing community exposure to major risks, will facilitate the identification and implementation of intervention options that address the socially significant problems.

Slumber not in the tents of your fathers

For those of you who feel discomfort with the heralded changes, I suggest at a minimum the words of Washington Irving: 'There is a certain relief in change … As I have often found in travelling in a stage-coach, that it is often a comfort to shift one's position, and be bruised in a new place'. However, I would urge you to consider the more positive view that develops from a recognition that you can not do today's job with yesterday's methods and be in business tomorrow.

Draft definitions

Definitions went to the NEMEG meeting (August 98) for amendment and endorsement.

For the purpose of the guidelines, the agreed definitions derived from those below will apply.

Community. A group with a commonality of association and generally defined by location, shared experience, or function.

Consequence. The outcome of an event or situation expressed qualitatively or quantitatively. In the emergency risk management context, consequences are generally described as the effects on persons, society, the environment and the economy.

Emergency Risk Management. A systematic process that produces a range of measures that contribute to the well-being of communities and the environment.

Environment. Conditions or influences comprising social, physical, *biological* and built elements, that surround or interact with a community.

Hazard. A situation, substance or condition with potential for loss or harm to the community or environment.

Lifelines. Systems or networks that provide services on which the well-being of the community depends.

Likelihood. A qualitative description of probability and frequency.

Preparedness. Measures to ensure that, should an emergency occur, communities and other–resources and services are capable of coping with the effects.

Prevention. Measures to eliminate or reduce the incidence or severity of emergencies.

Recovery. Measures that support disaster-affected individuals and communities in the reconstruction of the physical infrastructure and restoration of emotional, economic and physical well-being.

Response. Measures taken in anticipation of, during and immediately after an emergency to ensure its effects are minimised.

Risk. A concept used to describe the likelihood of harmful consequences, which is a function of hazards and the vulnerability of a community and environment.

Risk Analysis. The systematic use of available information to study risk.

Risk Evaluation. The process used to prioritise risks.

Treatment Options. Measures that modify the characteristics of hazards, communities and environments.

Vulnerability. The susceptibility and resilience of the community and environment to hazards.