

The Australian Journal of **Emergency Management**



Australian Government
Attorney-General's Department
Emergency Management Australia

EMA *'safer sustainable communities'*

Vol 23 | No 1 | **FEBRUARY** 2008

A photograph of a man in a grey shirt and blue pants standing in tall grass next to a dam. The dam has three spillways, and water is cascading over them, creating a large pool of turbulent, brownish water in the foreground. The man is looking down at something in his hands.

Community
preparedness a
key policy issue
for Australia.

Are we prepared
for tsunamis?

What is community?

Perceptions
of flood risk.

historical snapshot

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of the Winmalee Rural Fire Brigade.



Blue Mountains Fire 1968

In 1968 the Blue Mountains were struck by the most disastrous wildfire since 1957. The fire started in October out of the southern extension of a fire at Bilpin and crossed the Grose River to the outskirts of North Springwood (Winmalee) on October 28. During the next fortnight, the fire slowly burned in a south-westerly direction and on November 14 made a run across the Nepean River north of Castlereagh and burned almost to the Penrith-Windsor road. The western edge of the fire in the Grose continued to burn slowly in a south-westerly direction until November 28, when after burning out a huge tract of land north of the Great Western Highway, the fire made a final run out of Linden Creek, crossing the highway at Faulconbridge at 9 a.m. The fire wasn't stopped until 3 p.m. on that day after it had reached lightly timbered country on the eastern side of the Penrith-Wallacia road.

The fire claimed the lives of three volunteer firemen, razed more than 70 houses to the ground and destroyed 9,300 hectares of bushland.

The Australian Journal of Emergency Management

Vol. 23 No. 1, February 2008 ISSN: 1324 1540

PUBLISHER

The Australian Journal of Emergency Management is the official journal of Emergency Management Australia, a Division of the Federal Attorney-General's Department, and is the nation's most highly rated journal in its field. The purpose of the Journal is to build capacity in the emergency management industry in Australia. It provides access to information and knowledge for an active emergency management research community and practitioners of emergency management.

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Published on the last day of August, November,
February and May each year. Copies are
distributed quarterly without charge to
subscribers throughout Australia and overseas.

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The Australian Journal of Emergency
Management

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FOREWORD

by Tony Pearce, Director General, Emergency Management Australia.



This is the first issue of the Australian Journal of Emergency Management developed since the election of the new government.

In this issue Emergency Management Australia (EMA) showcases the Australian Safer Communities Awards.

The ceremony celebrating the Australian Safer

Communities Awards national winners was held in Parliament House, Canberra on Thursday 14 February 2008, hosted by the Attorney-General, the Hon Robert McClelland MP.

The election of the new government sees EMA's governance arrangements largely unchanged. EMA will report to the Attorney-General, who has expressed strong and sincere interest in emergency management in Australia. A profile of the new Attorney-General is on page 3 of this issue.

The change of Government has resulted in a transfer of responsibility of three programs from the former Department of Transport and Regional Services (DoTaRS) to EMA. This transfer of responsibilities covers several natural disaster programs - the Natural Disaster Relief & Recovery Arrangements (NDRRA), the Natural Disaster Mitigation Program (NDMP), and the Bushfire Mitigation Program.

This is the eighth year that EMA has been proud to organise the Australian Safer Communities Awards and they are a key part of our national role in developing community safety and self-reliance. Each year we have worked with the States and Territories to find projects that show innovative ways to raise awareness in the emergency management arena.

Disaster events over the past year have brought home to us the challenges for the whole community in managing the social and economic impact of destructive natural events. In this country recent events have included the Victorian bushfires in 2006 and 2007, the NSW storms mid-2007 and most recently the devastating floods in Queensland and NSW. I cannot stress enough how community preparedness is now a key policy issue for Australia in our efforts to adapt to the impacts of climate change and severe weather.

The new year has begun with a number of regions of Australia suffering extreme weather events. We have seen emergency management personnel from all levels of government working together tirelessly to ensure protection and safety of residents and property affected during these emergencies. We are privileged to work in such a cooperative and close knit sector which really does make a difference to people's lives.

May I advise that the Australian Disasters Conference, originally planned for early this year, is now to be held 10-13 February 2009 at the Canberra Convention Centre. Please check our website for more information on this important event: www.ema.gov.au

My colleagues and I are looking forward to a challenging, productive and exciting time ahead for emergency management in Australia.

Tony Pearce
Director-General
Emergency Management Australia



In Profile:

The Hon. Robert McClelland MP

Bringing a diverse range of experience to his new role as Federal Attorney-General.

The Hon. Robert McClelland MP was born on Australia Day in 1958. He graduated from the University of New South Wales with degrees in Arts and Law. Subsequently, he was awarded a Master of Law from the University of Sydney. After graduating, he worked as an associate to Justice Philip Evatt of the Federal Court of Australia and as a solicitor with Turner Freeman solicitors, becoming a partner in 1988. He specialised in litigation including industrial and sporting law, which led him to represent his beloved St George Dragons during the turbulent years of the Super League conflict.

After being elected to Federal Parliament in 1996, Mr McClelland held numerous Shadow Ministerial positions including Attorney-General, Justice and Community Security, Homeland Security, Defence and Foreign Affairs.

“Throughout my career I’ve had a strong interest and involvement in issues of law and justice, and national security,” Mr McClelland said.

Mr McClelland is particularly excited about the opportunity to pursue his interests in emergency management.

“For some time, I have wanted to be involved in making sure Australia is doing all it can to prepare for potential disasters. The Boxing Day Tsunami in 2004 has highlighted the need to be ready for significant emergencies on our own doorstep.

“Risks posed by terrorism, avian influenza and the increasingly volatile effects of global warming, could expose Australia to a situation where we are required to provide significant and large-scale assistance, both domestically and internationally. It’s a priority of mine to ensure that procedures and capabilities are in place to meet any demand that might arise.”

In order to address these threats, The Attorney-General will be working with his colleagues to implement a key Government election commitment of establishing an Asia Pacific Centre for Civil-Military Cooperation.

“The APC-CIMIC is a policy I have been closely involved with developing. Research and experience have shown that there is ample room for a body to enhance interagency training, cooperation and strategic interaction across a range of areas. Disaster management is a

prime example. The new Centre will enhance the coherence of the Government’s internal arrangements, as well as providing an opportunity to engage Australia’s neighbours in joint preparation.”

Disaster mitigation is another area that Mr McClelland would like to address.

“After the recent flooding in Queensland and New South Wales, everyone understands the need to ensure that our community anticipates risks and properly prepares for them. The Rudd Government has an important role to play and I am examining options to improve our capabilities in this area.”

The new Attorney-General has been highly impressed by the professionalism and cooperation that have characterised the response to natural disasters in his first weeks of office.

“It is refreshing to see state and federal emergency agencies working closely and seamlessly in such difficult circumstances. We can truly be proud of the thousands of volunteers, state emergency agencies and the staff at Emergency Management Australia. I look forward to working closely with them all in the future.”

Managing tsunami risk in coastal communities: Identifying predictors of preparedness

by Douglas Paton, Bruce E. Houghton, Chris E. Gregg, Duane A. Gill, Liesel A. Ritchie, David McIvor, Penny Larin, Steven Meinhold, J. Horan and David M. Johnston.

Abstract

This paper discusses the testing of a model predicting tsunami preparedness. Using data collected from a community identified as facing a high risk from locally-generated tsunami, the model illustrates how people's beliefs about the efficacy of mitigation interact with social context factors (community participation, collective efficacy, empowerment, trust) to influence levels of tsunami preparedness. The implications of the findings for tsunami hazard education programs are discussed.

Introduction

On Sunday 30th September, 2007 at 15.49 (AEST), the Joint Australian Tsunami Warning Centre detected a large undersea earthquake south of New Zealand and identified a potential tsunami threat to the South East mainland coast of Australia and to Tasmania. If a tsunami had been generated, it could have affected places such as St Helens (Tasmania) from 17.30, Hobart from about 18.15, and Sydney from 18.15. It would, consequently, have provided members of these communities with warning periods of some 90 minutes (St. Helens) to three hours (Hobart and Sydney). Whilst, in this case, the tsunami only reached a height of some 30cm (at St. Helens, Tasmania), this event has highlighted the susceptibility of coastal communities on Australia's Eastern seaboard to tsunami hazards and underlines the value of current work being undertaken to manage tsunami risk.

A key objective in this context is encouraging people to prepare (e.g., organizing an emergency kit containing food, water and essential medicines, developing and practising family response and evacuation plans) in ways that enhance their ability to respond should a tsunami occur (Horikawa & Shuto, 1983; Weigel, 2006). Using the September 30th event as an example, warning times of 90 to 180 minutes would have been too short for the members of the communities identified above to

have, for example, accepted that they faced a threat, developed evacuation plans and practised evacuation routes. Consequently, risk management must focus on developing people's capability to respond promptly and appropriately in advance of hazard activity occurring. Achieving this objective is a task that faces several significant hurdles.

Firstly, even when the hazard (e.g., bushfires in Australia, earthquakes in New Zealand) occurs relatively frequently, levels of preparedness are generally low (Paton, Smith & Johnston, 2005; Paton, Kelly, Bürgelt & Doherty, 2006). Consequently, attempting to encourage preparedness for a hazard that is effectively (from a community perspective) unknown in Australia will be difficult. A second challenge concerns the design of the public education component of a risk management strategy.

Growing recognition that public education programs based on the dissemination (e.g., using mass media, pamphlets etc) of general information (Lindell & Whitney, 2000; Duval & Mulilis, 1999; Paton, McClure & Bürgelt, 2006; Smith, 1993) are ineffective has called attention to a need for alternative approaches to hazard education. Researching the issues that hazard education should address requires sufficient variance in levels of people's preparedness to allow systematic analysis of predictor variables (that are then used to inform the development of hazard education content). However, the low levels of variance in tsunami preparedness (which reflects the fact that the majority of people in at



Coogee Beach, Sydney. Tsunami warning.

risk communities in Australia will not have undertaken any tsunami preparedness) likely to occur in Australian communities characterised by low tsunami risk awareness makes it difficult to test models directly on Australian populations at this stage.

One way of responding to this challenge is to conduct research in communities in which a risk has been recognised, and use these data to inform the development of preparedness strategies in Australia. This approach is adopted here to describe an evidence-based approach to facilitating tsunami preparedness using a model developed from research into how people interpret information about infrequent, complex and threatening hazards, their consequences and the actions proposed to mitigate their risk. This work identified a need to accommodate two processes.

The first involves a need for any model to be able to differentiate between people who decide to prepare from those that decide not to prepare (Paton, Smith & Johnston, 2005). The second entails accommodating how people's social context influences how they construe risk and decide what to do about it (Paton et al., 2006). By integrating these perspectives, Paton (in press) developed a model that describes how these interpretive processes interact to predict levels of hazard preparedness. Full details of the rationale for the model can be found in Paton (in press). Examining tsunami preparedness provided an opportunity to test the model.

Modelling tsunami preparedness

The model first examines people's beliefs about the efficacy of protective actions. This was assessed using the construct of outcome expectancy (Paton, in press). Negative outcome expectancy reflects beliefs that

tsunami consequences are too catastrophic for personal action to make any difference to people's safety. If people hold this belief, no further action is likely. In contrast, positive outcome expectancy (the belief that preparation can increase personal safety) can motivate people to prepare. However, a distinction can be drawn between the belief that preparing can be effective and knowing how to prepare. Consequently, it can be hypothesised that if people hold positive outcome beliefs and possess the necessary knowledge and resources to prepare, they will act. If however, they need guidance to understand their circumstances and what they should do, people look first to other community members and subsequently to emergency management agencies.

Faced with complex and uncertain events, when they do not possess all the information they need themselves, people's perception of risk and how they might mitigate it, is influenced by information from others who share their interests and values (Earle, 2004; Lion et al., 2002; Paton et al., 2006; Paton & Bishop, 1996; Poortinga & Pidgeon, 2004). Because participating in community activities provides access to information from people that share one's interests, values and expectations, information from this source can assist understanding one's circumstances and deciding what to do. Consequently, a measure of 'community participation' (Eng & Parker, 1994) was included in the model. However, the infrequent nature of tsunami means that people may first have to determine what consequences they could face in order to identify the information they need to further their preparedness planning. Because it provides a means of assessing community members' ability to identify the information, resource and planning needs required to advance their tsunami preparedness, a measure of 'collective efficacy' (Zaccaro, Blair, Peterson & Zazanis, 1995) was incorporated in the model.



Unloading food aid at Gizo, Solomon Islands.

© Ausaid Image Gallery

Given that this process may identify new information and resource needs that cannot be met within existing community contexts, the degree to which these needs are met by expert sources has a salient role in the model.

It is the consistency between people's estimation of their needs and the resources provided by expert sources that helps people construct more accurate estimates of risk, reduces their uncertainty, and influences their trust in a source (Earle, 2004; Eng & Parker, 1994; Paton et al., 2006). People's willingness to take responsibility for their own safety is increased, and decisions to prepare more likely, if they believe that their relationship with formal agencies is fair and empowering (e.g., agencies are perceived as trustworthy, as acting in the interest of community members) (Lion et al., 2002; Paton & Bishop, 1996; Poortinga & Pidgeon, 2004). If this relationship is not perceived as fair, the consequence is a loss of trust in the agency (i.e., the source of information), reducing the likelihood that people will act on the information and prepare.

The significance of this community-agency relationship derives from the important role that trust plays when people must make decisions under conditions of uncertainty (Earle & Cvetkovich, 1995; Siegrist & Cvetkovich, 2000). The infrequent and complex nature of tsunamis means that community members have to deal with considerable uncertainty. As uncertainty increases, so does the importance people attribute to their general trust beliefs about, and their past experiences with, the sources of information they turn to or have to rely on (Siegrist & Cvetkovich, 2000; Sjöberg, 1999). The degree to which agencies empower community members will influence trust and thus the likelihood that people will act on information. Empowerment was assessed using a measure developed by Speer and Peterson (2000) and trust with a measure used in an earlier study of hazard preparedness (Paton et al., 2005).

Finally, the model argues that the relationship between trust and preparing is mediated by behavioural intentions. The intention measure assessed people's intention to acquire tsunami information, increase levels of tsunami preparedness, and work with community and emergency management agencies to develop response plans. Drawing upon the recommendations of Horikawa and Shuto (1983), the preparedness scale measures people's ability to respond promptly should a tsunami occur.

Because tsunami risk awareness in Australian communities is low, the consequent level of variance in preparedness (see above) could preclude testing the model (Paton, in press). Consequently, the model was tested on an Alaskan population, allowing data to be collected from communities identified (General Accounting Office, 2006) as being in areas of high risk for locally-generated tsunami (for which readiness

to respond is particularly important). The variables described above were compiled into a questionnaire. Analysis is based on response from 353 residents of Kodiak, Alaska obtained during February 2007.

Table 1: Proportion of 353 participants reporting the adoption of emergency response items.

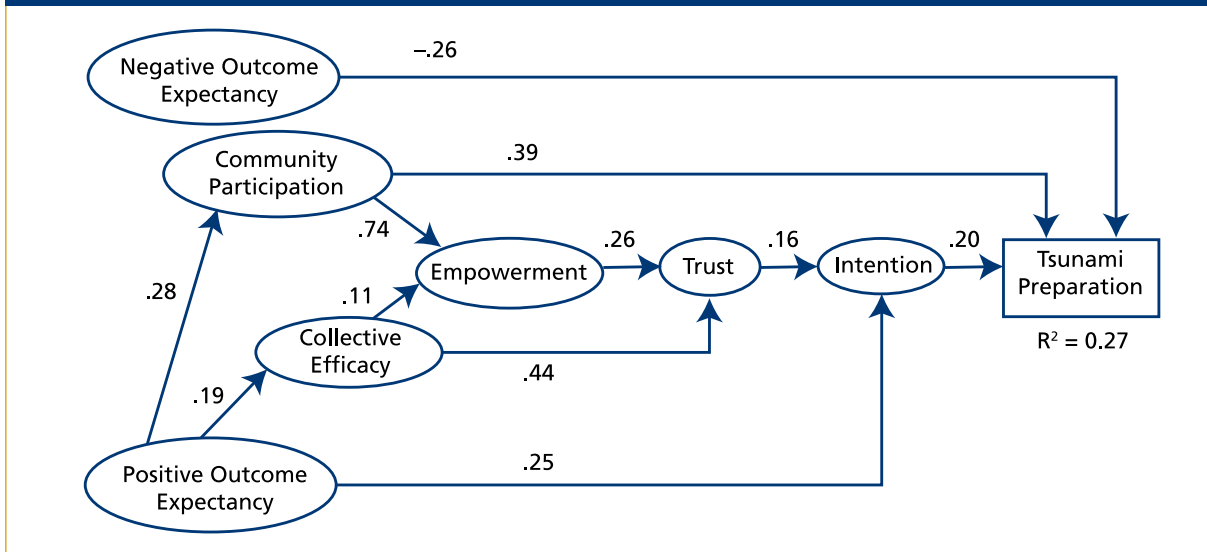
Emergency Response Item	% Adoption
Developed a family emergency response plan	34
Have a 3-day supply of non-perishable food and water	42
Have a back pack filled with supplies ready to take with me	30
Have a NOAA Weather Radio and working batteries	29
Prepared to respond to tsunamis in more places than my home	28
Participated in a tsunami evacuation drill	13

Results and analysis

Because it can estimate multiple and inter-related dependence relationships simultaneously, structural equation modelling allows statistics to be calculated to test the model as a whole and assess how well the data fit the hypothesised model (Goodness-of Fit). Data were analysed using the AMOS 6 structural equation modelling program.

The model (Figure 1) describes whether or not people prepare to respond to a tsunami as a causal sequence that commences with people's outcome expectancy beliefs and depicts a decision making process that flows from left to right. The numbers adjacent to each arrow indicate the strength of the path relationship. Table 1 indicates that levels of preparedness were present at low-moderate levels. Examination of the Goodness of Fit statistics ($\chi^2 = 19.19$, $df = 13$, $p=0.117$; $RMSEA = 0.037$, $90\% \text{ CI } 0.0 \rightarrow 0.07$, $NFI = 0.99$, $GFI = 0.99$, $AGFI = .96$) indicate that the data are a good fit for the hypothesised model (Arbuckle, 2006) and that the model can account for differences in observed levels of preparedness. The model accounted for 27% of the variance in levels of preparing (Figure 1).

Figure 1. The results of the structural equation analysis of tsunami preparedness.



Discussion

As hypothesised, negative outcome expectancy (NOE) beliefs predicted that people will not prepare (Figure 1). For those holding NOE beliefs, preparedness information will be discounted or ignored because it is inconsistent with their existing belief that nothing can make a difference. Because NOE is independent of the factors that influence deciding to prepare, it is important to distinguish between people who decide not to prepare (i.e., who form NOE beliefs) from those who accept a need to prepare but need guidance in how to accomplish this (Paton et al., 2005). For the latter, this starts with the belief that preparing can enhance their safety.

Positive outcome expectancy (POE) had a direct influence on intentions (Figure 1). For some people, this belief (assuming they have sufficient knowledge, resources etc) is sufficient to motivate preparing. Others, however, need more information. The relationship between POE and both community participation and collective efficacy (Figure 1) provides support for the hypothesis that other community members influence whether people prepare (Earle, 2004; Lion et al., 2002). That community participation can guide people's preparedness is evident in the direct relationship between it and preparing (Figure 1). The finding that community participation and collective efficacy both predict empowerment supports the hypothesis that, under conditions of uncertainty, being able to identify resource needs influences the quality of the community-agency relationship.

The more citizens perceive themselves as being empowered (i.e., having their needs met through their relationship with emergency management agencies), the more likely they are to trust them (Figure 1) and to use the information provided to guide their decisions to

prepare for tsunami. Confirmation of the efficacy of the model allows its components to be used to offer evidence-based suggestions for public education strategies.

Implications for Public Education

If a tsunami occurs, people's survival will be influenced by the degree to which they are prepared to respond. As the data presented here attests, even in areas identified as high risk for locally-generated tsunami (Kodiak), levels of readiness to respond are relatively low. This underscores the challenge to encouraging the adoption of readiness measures in Australian communities in which low levels of tsunami risk awareness and acceptance are currently likely to prevail. However, by identifying predictors of tsunami preparedness, the model discussed here can inform the development of strategies for use with Australian communities. To facilitate preparedness, strategies must address information content (e.g., outcome expectancy), social context (community participation, problem solving) and community-agency relationship (empowerment, trust) factors.

Strategies must accommodate outcome expectancy beliefs. An important predictor of NOE (Paton et al., 2005; Paton et al., 2006) are control beliefs that result in some people assuming that because a tsunami is uncontrollable its consequences are also uncontrollable. Consequently, information provided should help people differentiate between uncontrollable causes and controllable consequences and emphasise how hazard consequences can be managed (Paton et al., 2006; Paton & Wright, 2008). It is particularly important that the media echo these sentiments. Another strategy involves framing messages in ways that invite people to consider what could be done to protect more vulnerable (e.g., children at school, residents in a home for the



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Australian soldiers help local villagers.

elderly) members of society. By thinking about how they could assist those more vulnerable than themselves, people's NOE beliefs are more likely to break down (Paton et al., 2006).

Because NOE and POE make independent and opposite contributions to preparedness, reducing NOE will not, in itself, motivate preparing. That is, separate strategies are required to reduce NOE and increase POE beliefs. Consequently, strategies designed specifically to encourage the development of positive outcome expectancy beliefs must be developed.

POE beliefs are enhanced by information that not only identifies hazard consequences but also illustrates specifically how the recommended actions can mitigate the risk associated with each consequence (Paton et al., 2006). It may, however, be necessary to introduce recommendations gradually. Because presenting too much information at any one time can overwhelm people, strategies should start with relatively easily adopted items (e.g., preparing an emergency kit) and progressively introduce more complex actions (such as evacuation planning and rehearsing evacuation) over time. By presenting information on preparedness measures progressively over time, sustained adoption is more likely (Paton et al., 2006).

Because a distinction can be drawn between beliefs in the efficacy of preparing (i.e., POE beliefs) and knowing how to prepare, increasing the likelihood that people prepare involves encouraging community members to discuss hazard issues and identify the resources and information they need to deal with the consequences a tsunami would pose for them. This outcome could be encouraged by inviting representatives of community groups (e.g., community boards, Rotary, religious and ethnic groups etc.) to review tsunami scenarios and identify the implications and risk mitigation strategies appropriate for them (Paton, 2008). This increases the likelihood that the resources provided will be consistent with community beliefs, expectations and goals and be used to guide their preparedness. The effectiveness of these activities can be increased by working with community leaders and training them to facilitate (including, if necessary, developing problem solving competencies) community preparedness (Paton, 2008).

The effectiveness of such activities will, however, be a function of the extent to which the community-agency relationship is complementary and empowering.

One approach to empowering communities would involve emergency management agency representatives acting as consultants to communities (e.g., facilitators, resource providers, change agents, coordinators) rather than directing the change process in a top down manner (Paton & Bishop, 1996). By assimilating the needs and perspectives derived from community consultation, agencies are in a better position to provide the resources necessary to empower community groups and sustain self-help and resilience (Paton, 2008). Other approaches to promoting community empowerment can be found in Fetterman and Wandersman (2004).

Finally, by drawing a distinction between intentions and actual behaviour, the model draws attention to the existence of several factors that influence whether intentions are converted into actions that are difficult to influence through public education programs. These include people's beliefs regarding when a tsunami might occur (the further into the future this is believed to be, the less likely people are to convert intentions into action) and the physical costs (e.g., time, money, need to work with others etc) associated with implementation (Paton et al., 2005). Knowledge of these factors can inform the development of additional public education and community engagement content.

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How people responded to the April 2007 tsunami warning in Cairns and Townsville

David King, Centre for Disaster Studies, James Cook University reports on some remarkable responses to warnings in Far North Queensland.

Abstract

Following the Indian Ocean Tsunami in 2004 there was heightened international awareness of this hazard and strategies were developed to improve tsunami warning systems worldwide. Australian emergency management and scientific agencies such as EMA, Geoscience Australia, the Bureau of Meteorology and state emergency management departments released warning and behaviour information through websites, and the development of warning systems has been ongoing. Despite the enormity of the tsunami, research on tsunami awareness has been limited. The tsunami warning that took place on 2nd April 2007 was a rare opportunity to record how people responded. Surveys carried out by the Centre for Disaster Studies showed that most (76%) people heard the warning while it was current during the morning of 2nd April, primarily before 0930, but that most people sought no extra information (70%) and took no action (53%). Townsville was significantly more laid back than Cairns, but only 35 per cent considered future tsunami warnings to be unlikely or are not bothered about them. People called for more information and advice. There were strong levels of concern about the warning, future warnings and knowledge of correct actions. However, significant proportions of residents did not know whether or not they lived in a storm surge zone.

Introduction

Early on the morning of 2nd April a tsunami warning was issued for the east coast of Australia following a strong earthquake off the coast of the Solomon Islands around Gizo. The GA website recorded an 8.1 earthquake at 2039 UTC, followed by other lesser earthquakes. This would have been at 0639 Queensland time, such that the warning was issued during early daylight hours, predicting initial impact on the Queensland coast, around Cooktown, after 0930 with subsequent impacts further southwards. Willis Island was identified as an initial point of impact before the tsunami reached the mainland. Information was relayed by media outlets, but regular updates were available on the BoM website, specifically information at around 0930 that nothing significant had been detected at Willis Island.

Following the warnings there was a strong reaction amongst residents in Cairns and there was significant media interest and coverage. This was the first time an official tsunami warning had been issued to mainland Australia since the Indian Ocean tsunami at the end of 2004. Only four articles have appeared in this journal addressing aspects of the relevance of that tsunami to Australian communities. Paterson (2006) was mainly concerned with the response, and Handmer and Choong (2006) looked at aspects of recovery, while Gurtner and I (2005) were particularly interested in how a tourist destination dealt with such a disaster. The only tsunami awareness and warning study was that conducted by Bird and Dominey-Howes (2006) in a limited pilot study that was aimed at developing a methodology for a much larger survey. Thus the April 2007 warning provided an opportunity to ascertain actual response and behaviour that can contribute to future tsunami education. This is the first survey of actual response to a real tsunami warning since the Indian Ocean tsunami occurred.

Household survey method

A sample household telephone survey was carried out in Townsville and Cairns in the days following the warning. Both sets of surveys were completely random, based on the Telstra white pages phone book.

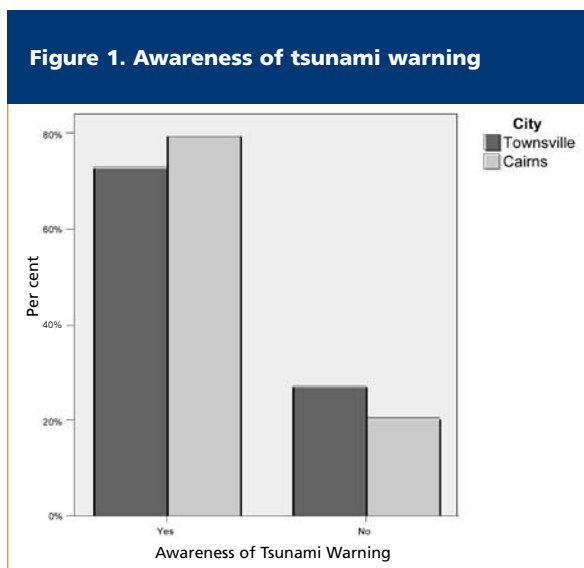
Questions were intended to be unambiguous and brief in order to retain the interest of respondents, as call centre surveys and telesales have reduced the effectiveness of research surveys, while the proliferation of mobile phones, especially among younger residents, is consistently skewing responses from conventional landlines. On the other hand mobile phones offer great potential for rapid transmission of warnings.

The warning

There is a statistically significant difference between Townsville and Cairns of residents' awareness of the tsunami warning, but as table 1 indicates, the proportions are high in each city, with a mean of 76%. This is a high response rate, but it must be noted that the situation for informing the population was probably the best that could be expected. A Monday morning travel to work period is a time when many people will be listening to radio or television and communicating with family and colleagues.

Table 1. Awareness of tsunami warning

Aware of Warning	City				Total	
	Townsville		Cairns		No.	%
	No.	%	No.	%		
Yes	291	72.9%	255	79.2%	546	75.7%
No	108	27.1%	66	20.5%	174	24.1%
Not stated			1	.3%	1	.1%
Total	399	100%	322	100%	721	100%



The following tables, 2 to 5, record the source of information of the tsunami warning by city, age group, length of residence, gender and living arrangements.

Table 2. Source of awareness of tsunami warning

Heard about warning	City				Total	
	Townsville		Cairns		No.	%
	No.	%	No.	%		
Commercial TV	83	28%	46	18%	129	23%
ABC TV			1	0%	1	0%
Sky News	1	0%			1	0%
Weather Channel	1	0%			1	0%
Commercial local radio	83	28%	83	33%	166	30%
ABC radio	18	6%	11	4%	29	5%
Word of mouth	59	20%	65	25%	124	23%
Shops/ commercial premises	5	2%	5	2%	10	2%
Work	35	12%	36	14%	71	13%
Other	3	1%	4	2%	7	1%
At school delivering children	7	2%	4	2%	11	2%
Total	295	100%	255	100%	550	100%

The three sources of information that are dominant are commercial TV, commercial local radio and word of mouth. The category of work may also be added to word of mouth. Table 2 breaks down the source of information by city and this is the primary categorisation used in most of the rest of the tables. The differences in sources are statistically significant for city and age group, but for the other socio-demographic categories of length of residence, and gender, the differences are not statistically different, although interesting variations are still evident. Gender is particularly consistent, with virtually no difference between the sexes.

Table 3. Source of awareness of tsunami warning by age group

Heard about warning	Age group						Total	
	Under 30 years		30-50 years		Over 50 years		No.	%
	No.	%	No.	%	No.	%	No.	%
Commercial TV	21	23%	49	19%	58	29%	128	23%
ABC TV			1	0%			1	0%
Sky News					1	1%	1	0%
Weather Channel					1	1%	1	0%
Commercial local radio	32	34%	84	33%	50	25%	166	30%
ABC radio	1	1%	11	4%	17	9%	29	5%
Word of mouth	26	28%	58	23%	40	20%	124	23%
Shops/commercial premises	2	2%	2	1%	6	3%	10	2%
Work	8	9%	38	15%	25	13%	71	13%
Other	3	3%	4	2%			7	1%
At school delivering children			10	4%	1	1%	11	2%
Total	93	100%	257	100%	199	100%	549	100%

Table 4. Source of awareness of tsunami warning by length of residence

Heard about warning	Length lived here					Total
	Under a year	1-5 years	5-10 years	> 10 years	All life	Row %
	Row %	Row %	Row %	Row %	Row %	Row %
Commercial TV	5	16	9	54	16	100
ABC TV				100		100
Sky News		100				100
Weather Channel				100		100
Commercial local radio	1	20	13	51	14	100
ABC radio	3	14	7	59	17	100
Word of mouth	4	22	14	46	15	100
Shops/commercial premises	10	10		70	10	100
Work	1	17	24	39	18	100
Other	14	14	43	29		100
At school delivering children		27	18	36	18	100
Total	3	19	14	49	15	100

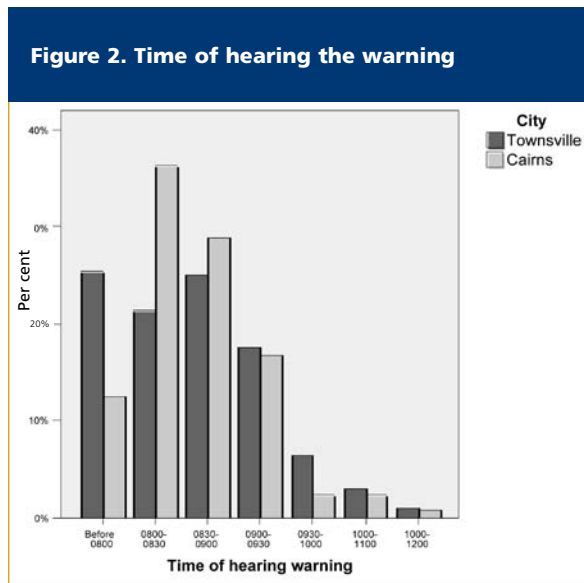
Table 5. Source of awareness of tsunami warning by gender

Heard about warning	Gender				Total	
	Male		Female		No.	%
	No.	%	No.	%		
Commercial TV	47	23	81	23	128	23
ABC TV			1	0	1	0
Sky News	1	0			1	0
Weather Channel			1	0	1	0
Commercial local radio	62	31	104	30	166	30
ABC radio	11	5	18	5	29	5
Word of mouth	48	24	76	22	124	23
Shops/ commercial premises			10	3	10	2
Work	28	14	43	12	71	13
Other	3	1	4	1	7	1
At school delivering children	2	1	9	3	11	2
Total	202	100	347	100	549	100

The warning was in the public domain before 0800 but only a minority 19% heard it at that time, whereas most of the 76% of the population who were aware of the tsunami warning during the morning, had become aware of it by 0900 – 74% of the aware population. This was well before the estimated impact time and therefore gave time for action. There is an interesting variation in timing before 0830, between Townsville and Cairns. Roughly the same proportion had become aware by 0830, but most of the Townsville respondents at these times indicated before 0800 whereas in Cairns it was between 0800 and 0830. It is probable that many of these were around the 8 am news and recall is more of an issue than an apparent time lag.

Table 6. Time of hearing the warning

Time of hearing warning	City				Total	
	Townsville		Cairns		No.	%
	No.	%	No.	%		
Before 0800	75	25%	32	13%	107	19%
0800-0830	63	21%	93	36%	156	28%
0830-0900	74	25%	74	29%	148	27%
0900-0930	52	18%	43	17%	95	17%
0930-1000	19	6%	6	2%	25	5%
1000-1100	9	3%	6	2%	15	3%
1000-1200	3	1%	2	1%	5	1%
Total	295	100%	100%	256	551	100%



Confirmation of the warning

Other sources of the tsunami warning were available around the same time. These served to confirm and verify the warning. Table 8 records these other sources, which follow a similar pattern to that of the initial warning information. Almost a third of respondents stated that they received no other warning information.

Table 7. Other sources of the warning

Other sources of warning	City				Total	
	Townsville		Cairns		No.	%
	No.	%	No.	%		
Commercial TV	46	16%	40	16%	86	16%
BoM website	38	13%	22	9%	60	11%
Other TV news channels	3	1%			3	1%
Weather Channel	1	0%	2	1%	3	1%
Radio	59	20%	41	16%	100	18%
Word of mouth	48	16%	54	21%	102	19%
TV/radio	11	4%	7	3%	18	3%
None	84	29%	87	34%	171	31%
Other	3	1%	3	1%	6	1%
Other website	1	0%			1	0%
Total	294	100%	256	100%	550	100%

The usefulness of all of the warning sources is indicated in tables 8 and 9, broken down by city and gender. In both cases there is no significant difference, but the majority of people, 56%, found the warning information unsatisfactory in one way or another.

Table 8. Usefulness of warning information by city

Was warning info helpful	City				Total	
	Townsville		Cairns		No.	%
	No.	%	No.	%		
Yes	128	43%	117	46%	245	44%
No	146	49%	114	45%	260	47%
Unsure	3	1%	12	5%	15	3%
Confusing	2	1%	7	3%	9	2%
Vague	10	3%	4	2%	14	3%
Aware	3	1%	1	0%	4	1%
Limited	3	1%	1	0%	4	1%
Total	295	100%	256	100%	551	100%

Table 9. Usefulness of warning information by gender

Was warning info helpful	Gender				Total	
	Male		Female		No.	%
	No.	%	No.	%		
Yes	81	40	163	47	244	44
No	103	51	157	45	260	47
Unsure	7	3	8	2	15	3
Confusing	2	1	7	2	9	2
Vague	5	2	9	3	14	3
Aware	2	1	2	1	4	1
Limited	2	1	2	1	4	1
Total	202	100	348	100	550	100

Tables 10 to 12 illustrate the responses to further information needs. A majority of 70% did not seek any further information beyond the initial warnings. There is a clear and statistically significant difference between Townsville and Cairns, with a much higher proportion of Cairns residents seeking further information.

Table 10. Need for further information

Sought further information	City				Total	
	Townsville		Cairns		No.	%
	No.	%	No.	%		
Yes	65	22%	98	38%	163	30%
No	229	78%	157	61%	386	70%
Total	294	100%	255	100%	549	100%

In seeking further information the BoM website is clearly dominant, and there is little difference in that source between the two cities. Townsville residents simply did not bother looking anywhere else. Other websites include Google and 9msn. Table 12 suggests that generally more people found that additional information useful rather than not.

Table 11. Where further information was sought

Where info sought	City				Total	
	Townsville		Cairns		No.	%
	No.	%	No.	%		
BoM website	46	16%	47	18%	93	17%
Other Website	2	1%	9	4%	11	2%
Word of mouth	4	1%	16	6%	20	4%
None sought	231	78%	158	62%	389	71%
Weather channel	1	0%	4	2%	5	1%
TV/radio	8	3%	16	6%	24	4%
Other	3	1%	6	2%	9	2%
Total	295	100%	256	100%	551	100%

Table 12. Usefulness of further information

Was extra info helpful	City				Total	
	Townsville		Cairns		No.	%
	No.	%	No.	%		
Yes	44	15%	56	22%	100	18%
No	21	7%	39	15%	60	11%
None sought	228	77%	160	63%	388	70%
Unsure			1	0%	1	0%
Vague	2	1%			2	0%
Total	295	100%	256	100%	551	100%

Location and actions

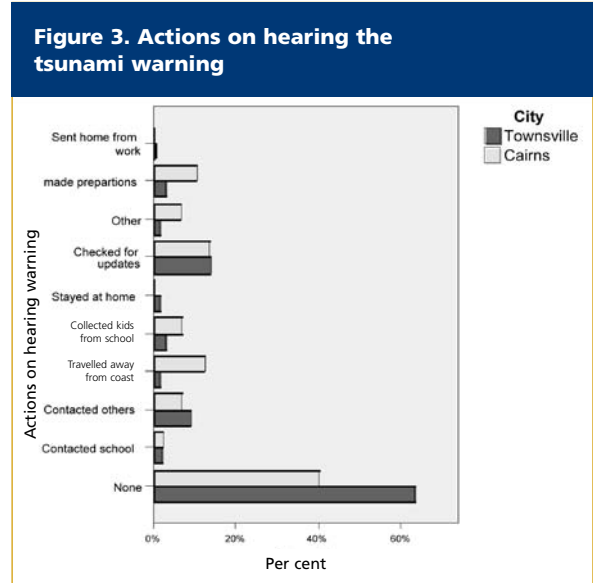
There is no statistically significant difference between Cairns and Townsville in terms of the location of people at the time of hearing the tsunami warning, but the response shows a strongly different reaction. Cairns residents took the warning more seriously than people in Townsville. However, despite the media portrayal of mass panic in Cairns, only 13% of the respondents actually relocated away from the coast, although even such a small proportion will amount to many thousands of extra vehicles on the road at rush hour.

Table 12. Usefulness of further information

Was extra info helpful	City				Total	
	Townsville		Cairns		No.	%
	No.	%	No.	%		
Yes	44	15%	56	22%	100	18%
No	21	7%	39	15%	60	11%
None sought	228	77%	160	63%	388	70%
Unsure			1	0%	1	0%
Vague	2	1%			2	0%
Total	295	100%	256	100%	551	100%

Table 13. Location of respondents on hearing warning						
Where were you	City				Total	
	Townsville		Cairns		No.	%
	No.	%	No.	%		
Home	169	57%	143	56%	312	57%
Work	69	23%	55	21%	124	23%
Travelling	38	13%	42	16%	80	15%
Other	15	5%	12	5%	27	5%
On a boat			3	1%	3	1%
School	4	1%	1	0%	5	1%
Total	295	100%	256	100%	551	100%

Table 14. Response to the warning						
Actions on hearing warning	City				Total	
	Townsville		Cairns		No.	%
	No.	%	No.	%		
None	187	63%	103	40%	290	53%
Contacted school	6	2%	6	2%	12	2%
Contacted others	27	9%	18	7%	45	8%
Travelled away from coast	5	2%	32	13%	37	7%
Collected kids from school	9	3%	18	7%	27	5%
Stayed at home	5	2%			5	1%
Checked for updates	41	14%	35	14%	76	14%
Other	5	2%	17	7%	22	4%
Made preparations	9	3%	27	11%	36	7%
Sent home from work	1	0%			1	0%
Total	295	100	256	100	551	100



When examining actions in response to the warning it is particularly interesting that despite a very significant difference between the cities, there is no statistically significant difference once again between genders. Cairns residents reacted more strongly than those of Townsville regardless of gender. Partly this may be explained by table 16, where proximity to the sea, or perhaps a perception of proximity, is statistically significantly different between the two cities.

Table 15. Response to the warning by gender

Actions on hearing warning	Gender				Total	
	Male		Female		No.	%
	No.	%	No.	%		
None	116	57	174	50	290	53
Contacted school	1	0	11	3	12	2
Contacted others	19	9	26	7	45	8
Travelled away from coast	13	6	24	7	37	7
Collected kids from school	3	1	24	7	27	5
Stayed at home	2	1	3	1	5	1
Checked for updates	26	13	50	14	76	14
Other	8	4	14	4	22	4
Made preparations	14	7	22	6	36	7
Sent home from work	1	0			1	0
Total	203	100	348	100	551	100

Table 16. Proximity to the sea

Close to the sea	City				Total	
	Townsville		Cairns		No.	%
	No.	%	No.	%		
Yes	77	26%	126	49%	203	37%
No	217	74%	111	44%	328	60%
Don't know			18	7%	18	3%
Total	294	100%	255	100%	549	100%

While the decision to evacuate inland or away from the coast was clearly different between Townsville and Cairns, there was a significant difference for the length of time that people had lived in either city, but no statistical significance for age group.

Table 17. Evacuation inland or away from the coast

Evacuate inland	City				Total	
	Townsville		Cairns		No.	%
	No.	%	No.	%		
Yes	10	3%	63	25%	73	13%
No	285	97%	193	75%	478	87%
Total	295	100%	256	100%	551	100%

Table 18. Evacuation inland or away from coast by length of residence

Length lived here	Evacuate inland				Total	
	Yes		No		No.	%
	No.	%	No.	%		
Less than a year	1	6	15	94	16	100
1-5 years	16	15	89	85	105	100
5-10 years	15	20	60	80	75	100
Over 10 years	34	13	238	88	272	100
All life	7	8	76	92	83	100
Total	73	13	478	87	551	100

Table 19. Evacuation inland or away from the coast by age group

Age group	Evacuate inland				Total	
	Yes		No		No.	%
	No.	%	No.	%		
Under 30 years	11	12	83	88	94	100
30-50 years	41	16	217	84	258	100
Over 50 years	21	11	178	89	199	100
Total	73	13	478	87	551	100

Very few people went down to the coast to watch for the tsunami. There is no knowledge of the extent to which the curious were informed about the real size and danger of the tsunami. Precaution takers far outnumbered the risk takers.

Table 20. Risk behaviour

Went to see	City				Total	
	Townsville		Cairns		No.	%
	No.	%	No.	%		
Yes	3	1%	15	6%	18	3%
No	292	99%	241	94%	533	97%
Total	295	100%	256	100%	551	100%

Table 21 records people’s knowledge of whether or not they were located in a storm surge zone at the time of the warning. The primary intent of this question was to record perception of surge zone and then attempt to map this by phone book address. This is an area for further research, and probably needs further data analysis to exclude respondents who related this answer to a place of work rather than residence.

Table 21. Knowledge of location in storm surge zone

In storm surge zone	City				Total	
	Townsville		Cairns		No.	%
	No.	%	No.	%		
Yes	78	26%	119	46%	197	36%
No	172	58%	77	30%	249	45%
Don’t know	45	15%	60	23%	105	19%
Total	295	100%	256	100%	551	100%

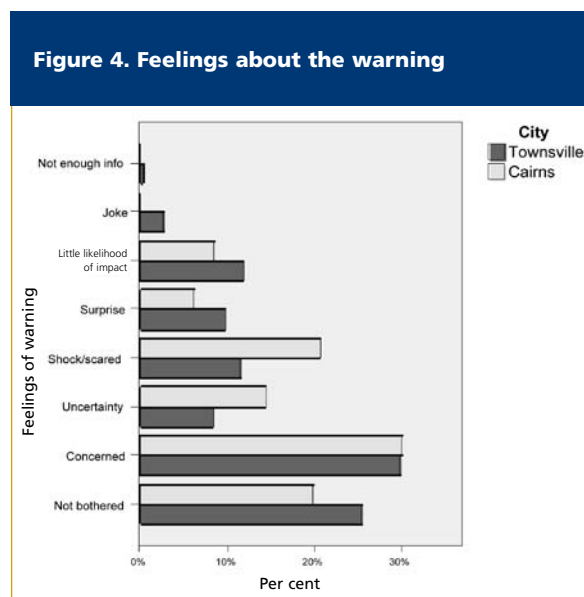
Knowledge and feelings

The question about people’s feelings towards the warnings was open ended. The responses that were given were coded into the categories that are listed in table 22. Only a third of responses are in the unconcerned/not worried categories. The majority of people were affected by the warning, even if most made no response to it. Between the two cities, despite a significant difference in response and action, there is no statistically significant difference in the emotional response to the tsunami. There is also no statistically significant difference between males and females. Not only does this lack of a gender difference occur throughout much of this survey, we have also seen a lack of gender difference in other surveys of awareness and preparedness, and hazard behaviour etc.

Table 22. Feelings about the warning

Feelings of warning	City				Total	
	Townsville		Cairns		No.	%
	No.	%	No.	%		
Not bothered	75	25%	51	20%	126	23%
Concerned	88	30%	77	30%	165	30%
Uncertainty	25	8%	37	14%	62	11%
Shock/scared	34	12%	53	21%	87	16%
Surprise	29	10%	16	6%	45	8%
Little likelihood of impact	35	12%	22	9%	57	10%
Joke	8	3%			8	1%
Not enough info	1	0%			1	0%
Total	295	100%	256	100%	551	100%

In order to contribute to future research and the development of tsunami information and education that supports a warning system, summary phrases of people’s responses and concerns have been listed in the full report on the Centre’s website (King 2007). These give further words and phrases that may be significant in determining the wording of educational materials and information. The same has been done for tables 23 and 24 below, which indicate, respectively, people’s feelings about future tsunamis, and their knowledge of tsunamis.



Although there was no difference between the cities about this specific warning, there is a strong statistically significant difference in the responses about future tsunami warnings. Here Townsville residents emerge with far fewer being unconcerned (as well as those who were concerned), but a much higher proportion than Cairns wanting to find out more/be prepared, or sure it won't happen again.

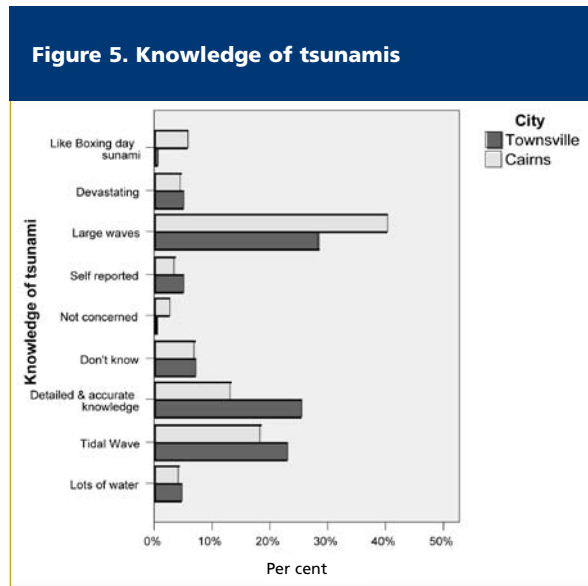
Table 23. Feelings about future tsunami warnings

Future Warnings	City				Total	
	Townsville		Cairns		No.	%
	No.	%	No.	%		
Un-concerned	53	18%	89	35%	142	26%
Concerned	71	24%	92	36%	163	30%
Find out more	55	19%	3	1%	58	11%
Be more prepared	32	11%	42	16%	74	13%
It won't happen	51	17%	1	0%	52	9%
Don't know	26	9%	28	11%	54	10%
Evacuate	1	0%			1	0%
Other	5	2%			5	1%
Stay at home	1	0%			1	0%
Total	295	100%	255	100%	550	100%

The question prompting knowledge of tsunamis was intentionally general in order to generate a range of words, phrases and attitudes that could inform awareness and education strategies. Consequently the categories recorded in table 24 are quite separate and discontinuous. Some people simply replied that their knowledge or understanding of tsunamis was good, without providing details, while others gave long presentations.

Table 24. Knowledge of tsunamis

Knowledge of tsunami	City				Total	
	Townsville		Cairns		No.	%
	No.	%	No.	%		
Lots of water	14	5%	11	4%	25	5%
Tidal Wave	68	23%	47	18%	115	21%
Detailed & accurate knowledge	75	25%	34	13%	109	20%
Don't know	21	7%	18	7%	39	7%
Not concerned	1	0%	7	3%	8	1%
Self reported as good etc.	15	5%	9	4%	24	4%
Large waves	84	28%	103	40%	187	34%
Devastating	15	5%	12	5%	27	5%
Like Boxing day tsunami	2	1%	15	6%	17	3%
Total	295	100	256	100%	551	100%



7. Socio-Demographic characteristics

Non intrusive social and demographic questions were asked at the end of the survey, so that some of the hazard and warning responses could be analysed by age, sex, length of residence and family type. Both Townsville and Cairns have a high turnover of population. Comparison of survey age groups with the census data suggests that the survey was statistically representative.

Tests of statistical significance between the cities were carried out on all four socio-demographic indicators. There was no significant difference between Townsville and Cairns in terms of length of residence, age group and family type, but there is a significant difference in gender. However, it has already been indicated that on most responses there was no significant difference between sexes.

8. Concluding comments

These are important indicators towards a gap between receipt of a warning and knowledge of what to do in response. The most important anomaly is the differences in responses between Cairns and Townsville residents. Although many of the citizens of these cities like to consider themselves to be radically different and better than the other bunch, the reality is that their populations are very similar. There are three probable reasons for the slightly greater response and action in Cairns.

1. Warnings in the media referred to a potential impact on Cooktown and Cairns, and also mentioned the Whitsundays. Anecdotal suggestions from respondents were that Townsville was not mentioned. Apart from concurring with my own experience on first hearing the warning, many respondents mentioned this during interviews in justifying or explaining their non response.
2. A major source of warning information came from the Channel Seven's Sunrise program. Professor Jon Nott was interviewed live on the program and gave sensible and realistic advice, mentioning Cairns in his explanation. He is a well known hazard expert in Cairns, where he is resident, such that his advice probably had a greater impact in that city than it would in Townsville.
3. Cairns has been subject to a concerted long term cyclone awareness campaign that has been reinforced in the media, and in a succession of cyclones. It is likely that at least some of the population of Cairns has been educated to take warnings seriously and to respond to them.

While only a small proportion of the Cairns population actually evacuated away from the coast, it was this minority action that created the gridlock on the roads during the tsunami warning period. There is clearly a lesson to be learned from this part of the experience, that Cairns would have significant problems coping with a mass evacuation – whether from a tsunami threat or storm surge.

References

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Acknowledgements

This study was funded by a James Cook University Internal Research Grant Linkage with Industry, supported and co-funded by the Bureau of Meteorology.

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Policy development and design for fire and emergency management

*by John Handmer, Centre for Risk and Community Safety, RMIT University
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Abstract

Fire and emergency managers have generally been more concerned with undertaking their immediate, vital mission than longer term, strategic policy development. This paper draws on a recent book by the authors to suggest a process for developing and implementing robust policy for fire and emergency management. Different approaches to policy development are discussed. The case is made that there are distinct types of policy problems in fire and emergency management, each requiring distinct approaches. The need for thought on policy implementation style, the advantages of multiple problem framing and the challenge of policy instrument choice are set out.

political profile. Such strategic policy is dependent upon the suitability of the institutional settings within which policy is formulated, developed, implemented and monitored, and within which it evolves. Fire and emergency management is constrained or enabled by these policy and institutional settings.

Our aim is to provide a framework to help achieve this and to widen the focus to include not only the disaster event but to encompass longer-term thinking about the disaster process, including issues such as vulnerability, resilience, preparedness and recovery – and the frequently overlooked area of policy.

'Policy' might be one of the most overused and least understood words in contemporary governance. Policies appear to exist for almost everything, but are rife with ambiguity, indifferent support, and implementation problems. We are not advocating specific policy instruments here, but examine processes for developing and implementing robust policy. The paper suggests a definition, examines the adaptation of Bridgman and Davis' (2004) Australian policy cycle to fire and emergency management, and identifies some fundamental issues and pitfalls. To do this it draws on aspects of a recent book by the authors (Handmer and Dovers 2007). Note that only some aspects of the material set out in the book are covered here: defining policy; making policy; aligning policy with the problem; strategic implementation style; and choosing specific policy instruments.

Introduction

Disasters, even if not large, are often treated to intense media coverage with the consequent need for political involvement and public sympathy. The media, political and local constituencies generally endow special status on those who show leadership and empathy with the affected, while the less visible process of strategic policy development and implementation for disaster reduction may carry little political reward. Ironically, less visible success in reducing the impacts of events that might otherwise have become disasters carries the risk of budget cuts and reduced status and profile for those involved. This is because media and political rewards are, not surprisingly, skewed towards the heroes of response, rather than towards behind-the-scenes strategic planners.

This points to the desirability of developing policy that serves a number of aims – national and local; social, economic and environmental; focused on preparedness, response and long-term recovery – and that is flexible enough to cope with shifts in community and political priorities, while ensuring a high positive media and

Defining policy

Public policies are positions taken and communicated by governments, in more or less detail – they are 'avowals of intent' that recognize a problem and state what will be done about it. Policy documents should set out the rationale, evidence, approach, responsibilities, monitoring and implementation instruments. (Private or community organisations also develop, communicate and seek to implement policies, however the focus here is on public policy). Policy statements would usually be preceded by wide public debate – the argument being that this brings broad ownership and support for the policy easing implementation.



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Mr Phil Koperberg former Commissioner of NSW Rural Fire Service with the media at a daily press briefing.

Policy programs are specified and substantial manifestations of a policy, comprising elements of implementation as well as of intent. Beneath this level, for an applied policy, there will be specific, practical projects. For example, a policy on community flood preparedness might include, a program of community-based flood protection and evacuation plans, and within that program a number of discrete projects, implementing this program in different locations.

Making policy

Policies emerge through complex and variable policy processes that include both government and non-government players. Although reflecting the institutions of governance in a jurisdiction, policy processes vary greatly across issues, sectors and over time. The term policy cycle is often used as synonymous with policy process, emphasizing the cyclic and reiterative nature of policy making. Policy system is a related term, and policy sub-systems refers to the fact that, within the broader landscape of public policy in a jurisdiction, distinct sets of processes and actors exist for specific sectors or issues. That is, one can delineate the policy sub-system concerned with emergency management, as opposed to public health policy (but also recognise links).

There are many views on policy and policy making. The following are some of the main perspectives (for a more detailed discussion, see Howlett and Ramesh 2003).

Policy making is often seen and discussed as a rational evidence-based exercise. This 'rational-comprehensive' view sees policy making as an exact and well-informed problem-solving exercise, where an issue or problem is thoroughly investigated, all possible options considered, and the optimal policy choice made. It is usually

unrealistic, as sufficient information is rarely available, and political values would normally play some role.

This 'rational' view was challenged by the 'incremental' view encapsulated in Lindblom's famous phrase 'the science of muddling through' (Lindblom 1959, 1979). This view argues that policy change occurs in small steps, taking possible rather than ideal measures, dealing with discrete parts of larger problems. In the context of US flood risk management policy, Gilbert White has argued that progress was "two steps forward, one step back" in the face of political and other difficulties. This is realistic in many circumstances, but can be criticized as not very strategic.

Other models include that proposed by Etzioni (1967) who suggested a compromise, 'mixed scanning', where an initial more superficial scoping exercise reduces the policy choices, which can then be analysed and compared in depth. March and Olsen's (1979) 'Garbage can model' may be depressing, but is also perhaps realistic where ends and means are mixed in a rush for answers to emergent problems or sudden demands. It is indicative of a complete lack of policy preparedness.

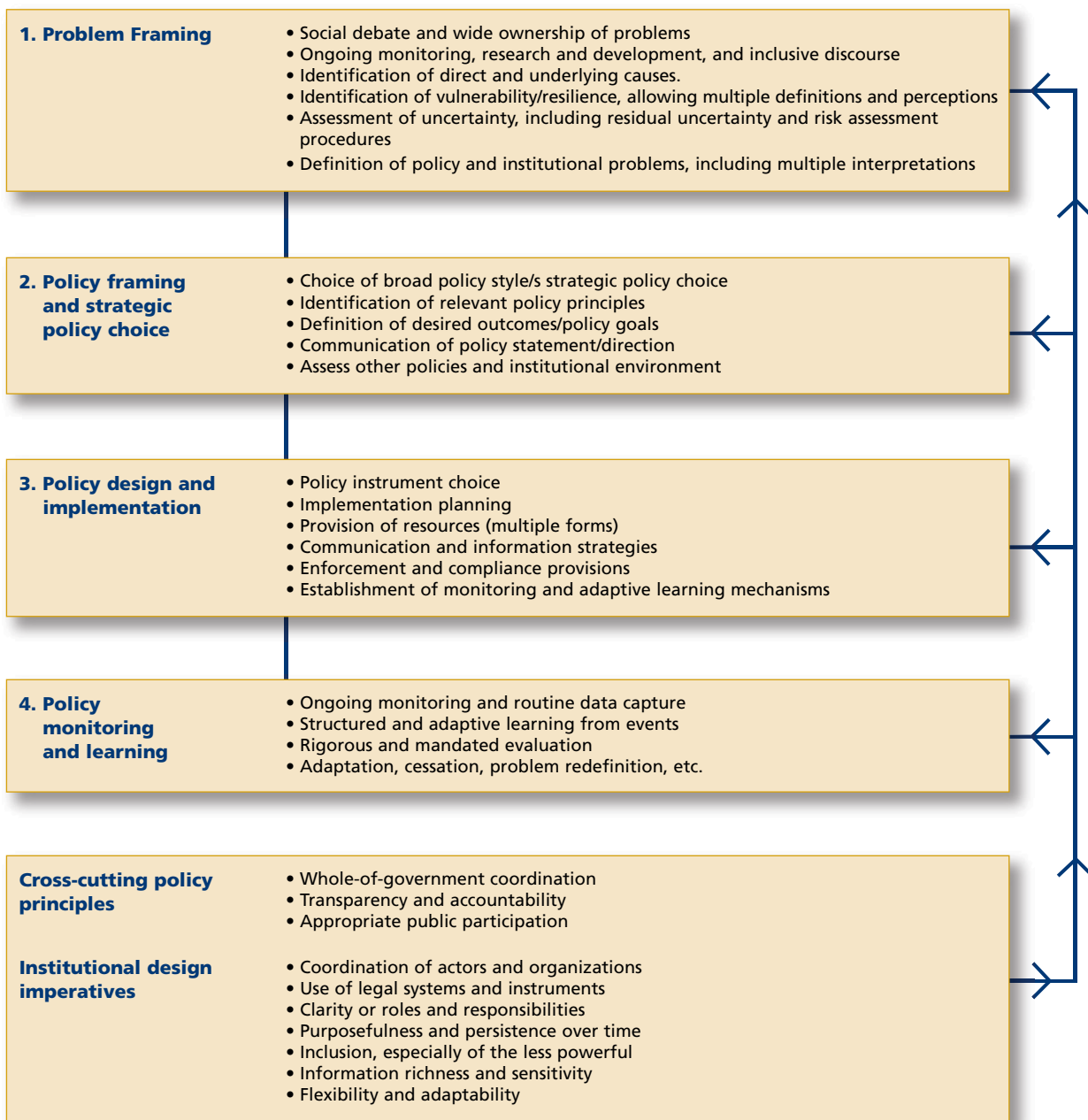
The above views represent only four of many different ways of thinking about policy and policy making. In Australia, the Australian 'policy cycle' approach has come to dominate as an answer to, and reaction against, the linear logic of the rational-comprehensive model. It recognizes the iterative and cyclic nature of policy processes, and the importance of monitoring and review of policies. Rather than staged 'models', much contemporary policy literature emphasises political negotiation and the discursive and contingent nature of policy-making (Jenkins-Smith and Sabatier 1994; Healy 1997; Fischer 2003).

Despite these recent and well-argued shifts in understanding, all four of the linear approaches set out above are evident in practice with most, under the right circumstances, being valid.

For the purpose of fire and emergency management policy, we suggest a framework informed by elements of (i) Bridgman and Davis' (2004) Australian policy cycle and similar models (see Dovers 2005) and (ii) the emergency risk management process (EMA 2000), itself based on the Australian/New Zealand Risk Management Standard (Standards Australia (current version - 2004).

The framework for emergencies and disasters policy and institutional analysis combines an understanding of both policy and disasters. It does not say 'how' to design specific policies and institutions, but rather represents a comprehensive and integrated framework and checklist, not a prescriptive model or sequence. The lines between the elements of the framework recognize that, while neither in theory nor in practice strictly a cycle, the elements are nonetheless tightly interdependent (Figure 1).

Figure 1. Framework for emergency management policy development (Handmer and Dovers 2007)



The following summarises the framework:

Problem framing (stage 1).

Problem framing emphasizes the importance of how we arrive at an understanding of policy and institutional problems in emergencies and disasters. Damaging events or natural phenomena such as floods are not policy or institutional problems, but they serve to define such problems, along with the characteristics of human systems. The approach should include the different frames of multiple stakeholders, and an open assessment of risk and uncertainty (including for example distortion, taboos, unknowables and probabilities). How a problem is defined will determine ownership of the problem, and circumscribe our search for solutions and may lead to important issues being ignored, for example by focusing on what we know well or find easy to measure. Where multiple stakeholders are involved they will bring distinctive ways of problem framing with them; ignoring this may lead to stakeholders failing to understand each other's positions. Some drivers for different ways of framing problems include:

- Legal requirements and the need to avoid liability and legal risk;
- Disciplinary perspectives or different worldviews;
- Political considerations, where disasters create political risk, political opportunities to be generous to specific groups, or to blame identifiable groups or nature (eg climate change);
- Economic and commercial opportunities and constraints;
- Fear, and perceptions that disaster is likely may stigmatize an area.

Policy framing and strategic policy choice (stage 2).

The policy response can be reactive or proactive, involving the choice of general policy styles, based on clearly understood principles and aimed at achieving agreed and clear objectives; and addressing conflicting or minority concerns. Strategic policy choice defines the parameters within which policy design and implementation occur – that is, what and who is included or excluded.

Policy design and implementation (stage 3).

Ideally, achieving policy objectives involves the choice of specific policy instruments chosen transparently from a wide menu of options. To implement these instruments, resources are required (financial, informational, human, administrative, statutory, etc.), and mechanisms for monitoring should be put in place to allow evaluation, learning and adaptation.

Policy monitoring and learning (stage 4).

Learning from experience demands ongoing adaptation and improvement, which requires policy monitoring after initial policy design and implementation. The link between this and stage 1 begs the integration of policy and basic monitoring to enable separation of the impact of policy interventions and other variables.

Beyond the four stages above, there are a number of principles and imperatives that need to be accounted for throughout any exercise of policy or institutional analysis or design:

Cross-cutting policy principles.

The policy process should be informed at all stages by: the need to coordinate or integrate activities across the sectors and portfolios of government; transparency and accountability to improve policy formulation and trust; and appropriate and genuine forms of public participation.

Institutional design imperatives.

All that occurs will be enabled or constrained by the institutional system within which policy is formulated and implemented. Institutional arrangements should allow coordination across organizations; reflect agreed principles and directions (purpose); balance longevity of efforts (persistence) with the ability to adapt (flexibility); and there should be effective use of information and wide social inclusion.

Handmer and Dovers (2007) go into each step in considerable detail. Here we simply highlight some of the more strategic aspects of the framework.

Aligning policy with the problem

A well entrenched view appears to be that there is only one type of policy problem, and one way of framing emergency management policy problems. This approach can lead to consideration of only one set of solutions for policy problems that vary enormously and that include problems that are not amenable to a standard approach. Here we suggest some attributes or dimensions of policy problems within fire and emergency management, and drawing on these attributes set out a typology of such problems with their implications for management (Table 1). The attributes were developed by an EMA funded project, The Science of Surprise, by Handmer and Proudley (2005). Each attribute can be thought of as a continuum from low to high, small to large, or easy to very difficult. Some attributes are:

- Scale (in space and time)
- Uncertainty (probabilities to ignorance)
- Visibility (low to intense media interest)
- Problem solving approach (see Table 1)
- Tractability (well practiced, few players to no experience, whole of society)

Drawing on these, we suggest that emergencies can, as a usable first approximation, be placed in three categories: routine, non-routine, and complex unbounded (Table 1):

- The attributes of *routine emergencies* will generally be at the lower end of the attribute continuums. Responsibility is clear and there is agreement over

the problem. Risk reduction in the context of routine incidents is relatively straightforward as the dimensions of the risks are usually well understood and solutions are a matter of resources and clear trade-offs. Recovery would normally be concerned with restoration to the pre-impact state.

- *Non-routine emergencies* lie in between routine and complex emergencies. Flexibility and adaptability are called for in response and prevention, the capacity of emergency services is stretched during such events, and resources from outside the affected area are likely to be needed. But the problems do not pose overwhelming challenges to existing emergency management policy and practice, or to technological capacities. This category could also include policy processes or decisions across a suite of routine problems, such as establishing a multi-hazard policy process or national floodplain management standards.
- *Complex emergencies* are characterized by attributes at the higher, more difficult end of the continuums. Response will need maximum flexibility and adaptability, and would have to provide the needed leadership to make decisions, harness society's resources and have the capacity to expand critical facilities, such as casualty care, identification and handling of the dead, and transportation and rationing of food supplies. This is especially critical: even if there is spare capacity, it may not be sufficient to make a difference. The gap in capacity will have to be filled by harnessing all of society's resources – government, commercial, civil society and international assistance. Recovery planning for coordination of resources, rather than command and control, is the key as normal response capacity will almost always be overwhelmed. Institutional capacity

Table 1: Emergency management typology by attributes. (Handmer and Dovers 2007)

Attributes					
	Scale	Uncertainty	Visibility	Problem solving approach (Funtowicz and Ravetz 1993)	Management attributes (eg. tractability)
Typology					
Routine	Modest and well defined in space and time. Small impact	Known and quantified	Recognised, but low visibility	'Applied science'	Known, anticipated and well practiced
Non-routine	May be large, but defined	Known, but less quantified	High visibility	'Professional consultancy'	Medium, some planning
Complex	Large and/or ill-defined in space and time & may appear unbounded. High impact. Possibly irreversible	Large or unknown in many dimensions. May not be quantifiable	Often very high profile with intense and long lasting political and media interest	'Post-normal science'	Low. Often well outside previous experience

for adaptability and for whole-of-government and whole-of-society response is needed. Restoration is unlikely to be possible. The emphasis will be on transformation and seeking advantage from opportunities presented by the disaster.

There could be more categories, but the intermediate classes could be difficult to distinguish clearly. The classification unintentionally illustrates the issue of language – the same term is sometimes used to describe an event whether it is ‘routine’ or ‘the largest ever’. For example, the term ‘flood’ covers every event from a centimetre deep surface flow with nuisance value, to an inundation of Biblical proportions which threatens a regional economy; similarly with wildfires (although there is now an attempt to distinguish very large fires as ‘megafires’, eg Williams 2007).

This typology reflects a categorization of policy problems by Dovers (2005), and also draws from an emergency management interpretation by Tarrant (2006) of the three way classification developed by Funtowicz and Ravetz (1993). In their own words, Funtowicz and Ravetz’s (1993) work places problems where values are central, facts are in dispute, stakes and uncertainty are high and there is little agreement about what to do, into a category that demands a form of understanding and knowledge they term ‘post-normal science’ (PNS). Their other categories are ‘professional consultancy’, applicable to non-routine problems, and ‘applied (or normal) science’ applicable to routine problems. PNS problems include situations where there is conflict over how to approach a risk, or even over how to define the risk. Where the physical dimensions of the risk are well defined and agreed, the response and event management may take the form of a PNS problem, as with Hurricane Katrina.

Note that complex emergencies may be so because they have emerged after periods of low visibility as conditions worsen. (See, for example, the European Environment Agency’s report *Late Lessons from Early Warnings*, 2001).

Policy implementation styles

Decisions are needed on the policy style or styles to be adopted. Here policy style describes the strategic nature of policy implementation in jurisdiction, government or political systems, ranging from legal or rule-based, coercive styles dominated by government, through ‘corporatist’ traditions where policy is negotiated with major interest groups, to a reliance on local communities or commerce. Style will vary according to the nature and severity of the issues faced, such as in the case of a rapidly emerging threat. Routine emergencies tend to use rule based approaches, while complex problems demand a range of approaches emphasizing negotiation. Policy styles also vary by jurisdiction and

over time as conditions and social values change or as administrations change their political persuasions.

Typically an agency or higher level government authority develops policy which requires officials, lower levels of government or the public to implement it. The challenge is how to achieve implementation (see May and Handmer 1992; May et al 1996). In the hazards and disaster domain, policy implementation style can be classified into three classes:

- *Coercion* (eg. through regulations, threats of punitive measures), and instruments termed in the general policy literature as regulatory instruments. Coercion comes from mechanisms for monitoring the actions of local entities and others required to implement the policy, and in the form of penalties for failure to comply. Limitations with coercion stem from the need for adequate monitoring and penalties to force compliance, which often do not exist or are very difficult or costly to apply. One reason for this difficulty is the potential for a political backlash that may threaten the whole policy (eg see Handmer 1986);
- *Cooperation* (eg. financial incentives, assistance with planning, or negotiating tradeoffs to accommodate multiple objectives), also known as incentive or collaborative instruments. Typically, incentives are offered by higher levels of government for cooperation by lower levels, in contrast to the penalties used in coercive policy design, and may comprise money, technical assistance or even immunity from legal liability (on this last point, see, for example, NSW, 2001, p30). Cash or technical advice for retrofitting buildings, making gardens more fire resistant or the installation of smoke alarms, or the provision of a facilitator to help those at risk reach decisions on what to do are typical examples. A cooperative approach is inherently flexible.
- *Exhortation* such as public education and other information provision, otherwise known as moral suasion or educative instruments. Most preparedness and planning rely on exhortation through awareness-raising and education programs. The approach has two essential logics underpinning it, which suggest two forms of communication:
 - appeals to the self-interest of a community, individual, business or other organization, and/or to their sense of community obligation. These tend to be motivational, as in the “moral suasion” of anti-litter and safe driving campaigns; or
 - an assumption that there is a knowledge deficit. If people have the knowledge provided by an awareness campaign, the assumption goes, they will do what is thought to be appropriate by officials; although this assumption holds in some circumstances there is little evidence for its general applicability (Sims and Baumann 1983).

Table 2: Criteria for selecting policy instruments (Handmer and Dovers 2007)

Criteria	Question, relative to other instruments
Dependability	How certain is it that the instrument will lead to achievement of policy goals?
Timeliness	Can the instrument be designed and applied within the necessary time frame?
Cost and efficiency	What is the likely gross cost and efficiency of the instrument, relative to the stated goals?
Systemic potential	Does the instrument address underlying causes, rather than only direct causes and symptoms of vulnerability?
Information and monitoring requirements	Is the necessary information available to design, implement and monitor the performance of the instrument, or can it be feasibly made available?
Distributional impacts	Will implementation of the instrument have uneven or inequitable impacts across the affected population, and if so can these be managed in an acceptable manner?
Political and institutional feasibility	Is proposal and implementation of the instrument feasible in terms of (i) political support and (ii) institutional capacity?
Enforcability and avoidability	Can implementation/uptake of the instrument be enforced, can it be avoided easily?
Communicability	Can the logic, detail and implementation requirements of the instrument be communicated to those responsible for implementation or affected by it?
Flexibility	Is the instrument capable of being adapted and adjusted in the face of changing circumstances?

In practice, a combination is often used. Policy programmes utilizing multiple approaches and instruments are common, if not always successful, in emergency management. Mixed instrument packages fit with changes in thinking around policy and regulation that generally argue for a more flexible approach that includes self-regulation and incentive-based policy mechanisms as well as, or in place of, straight 'command' regulation (see Gunningham and Grabosky, 1999; Braithwaite and Drahos, 2000).

Regardless of the policy style there are certain prerequisites. If any one of these is absent the policy is unlikely to be effective. These can be seen most simply as:

- those responsible for implementation must want to do it, that is they must have commitment to the policy objectives, and that commitment must be matched with a recognized and respected mandate;
- they must have the ability or capacity to implement the objectives, in terms of human, financial, information resources, etc, and the organizational capacity; and
- cutting across both these attributes, there should be a process to deal with conflicts between the different interest groups, in particular the actual and perceived conflicts between the imperatives of emergency management, economic development, and environmental amenity.

These attributes apply to implementation in many areas outside emergency management, which however are linked and relevant. For example, private sector regulation, intergovernmental relations, and the criminal justice system.

Specific instruments for policy implementation

Actual implementation requires specific tools or instruments. Policy makers and policy communities have at their disposal many instruments, all of which will be useful in different situations and combinations. And, we can remind ourselves that all instruments are forms of information, aimed at changing individual or collective behaviours. Whether the 'message' is a threat, a plea, an incentive or disincentive, or a signpost, policy instruments are messages. A massive tax impost, crippling fine or a prison sentence are all threatening messages, whether considered market or legal mechanisms. An educational instrument may be subtle and respectful or, as some health programs do, use shocking and confronting images. Choosing policy instruments is a matter of choosing the most appropriate medium for the message in a given situation. Viewed like this policy instrument choice should contain an objective component, based for example on the criteria set out in Table 2. Too often, the choice is more a matter of disciplinary and ideological argument over, for example, the relative generic merits of economic versus legal versus educational instruments.

These criteria have two uses. The first is to aid analysis and discussion of the most suitable policy choice for the purpose at hand. They do not make an answer necessarily obvious or easy, in fact consideration of multiple criteria will complicate the process. But they do encourage a more sophisticated, defensible and more easily communicated process of choice. The second use arises from the observation that 'perfect' choices are rare:

a chosen instrument will rarely score highest on every criterion, but the process highlights possible weaknesses that can be addressed (eg strengthening institutional capacity, attending to monitoring needs, etc). Table 3 sets out some examples of instruments.

In addition to the issue of policy style mentioned above, instrument choice for fire and emergency management may also involve other strategic decisions. Given limited resources, should the focus be on short-term measures that focus directly on the hazard, such as education and flood walls, or to build longer-term community resilience through wealth generation and improved livelihood security? Concentrating solely on measures to alleviate the impacts of specific disasters is unlikely to address the avoidable causes of disaster, even though many such measures alleviate the symptoms of disaster and have high political credibility – and rightly so given that they save lives and property. They may also sometimes be the only solution, other than emigration.

Conclusions

The above brief discussion, and the book it is drawn from, seeks to provide some ideas for making emergency management more effective by improving the policy and institutional system EM operates within. But however careful, objective and strategic we are, the political context should not be forgotten:

‘Politics is the essential ingredient for producing workable policies, which are more publicly accountable and politically justifiable ... While some are uncomfortable with the notion that politics can enhance rational decision-making, preferring to see politics as expediency, it is integral to the process of securing defensible outcomes. We are unable to combine values, interests and resources in ways which are not political.’ Davis et al (1993: 257)

All policy is political – though not necessarily in the sense of party politics or expediency - especially strategic disaster and emergency policy that addresses the distributive issues of the vulnerability and resilience of people and communities.

Given factors such as population increase, wealth, trends in settlement patterns and climate change, it is inevitable that the future will bring more emergencies and disasters, and it seems similarly inevitable that the severity of these will increase. The fire and emergency management field faces escalating challenges and expectations. The rewards for successful policy may seem nebulous compared with those from high profile operational action, but events of the last few years in Australia and overseas highlight the need to develop more effective strategic policy processes that address the future rather than respond well to the past.

Table 3: A menu of selected illustrative policy instruments for emergencies and disasters

Class	Selected, major instruments	Style
Research and monitoring	Increase knowledge in a general or specific sense, re hazards, vulnerability, success of policy initiatives, community awareness, etc.	Exhortation, Cooperation, Coercion
Training and education	General public education, education targeting sub-sets of community; formal curricula in schools, universities; specific skill development and training.	Cooperation, Exhortation
Intergovernmental agreements	Intergovernmental agreements/policies, memoranda of understanding, etc between countries or within countries, for cooperation, joint response, information sharing, etc.	Cooperative, Coercion
Legal	(i) Statute law: statutes or regulations under existing law to: create institutional arrangements; prohibit certain activities; zone land and control development; (ii) Common law: applications of doctrines such as negligence or nuisance to prevent or punish, for example, risk-creating behaviours.	Coercion
Community participation	Community-based risk assessment and management; public participation in higher level policy formulation; freedom of information laws; community monitoring of hazards;	Cooperation
Market and economic	Taxes/charges; use charges; subsidies; rebates; penalties; performance; competitive tendering.	Cooperation, Coercion, Exhortation
Institutional change	New or revised institutional system or organizational features, to enable implementation of other instruments.	Cooperation, Coercion, Exhortation
Do nothing	Inaction is usually seen as a policy failure, but may be justified, after reasoned analysis.	n/a

Acknowledgements

This article is drawn from a recent book: *The Handbook of Disaster and Emergency Policies and Institutions* by John Handmer & Steve Dovers (Earthscan, 2007). We acknowledge with gratitude our universities and the Bushfire CRC for support while the book was being prepared, as well as the many people in our organizations, the fire and emergency services and elsewhere who helped with the project.

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Glimpses of ‘community’ through the lens of a small fire event

Helen Goodman and John Gawen analyse a community’s reaction to the ‘Shire of Boldrewood’ fire.

Abstract

In eliciting feedback from household members affected by ember attack in an urban interface fire, researchers found evidence of latent and actual strengths at the individual, household and community levels. How the emergency services acknowledge and work with these strengths across Australia’s varied community landscape provides both ongoing challenges and opportunities for increasing community safety.

Introduction

This article describes results from part of a small study that was carried out following a fire on the boundary of a rural Australian town. We discuss community responses to the threat, at the informal household level of family and friends assisting those who were impacted by the fire, and at the neighbourhood level. At the household level, we see a thread of similar states of mind and action running through those households that had had farming experience, in terms of their acceptance of the threat of fire, some preparedness for this, and an ‘automatic’ decision to stay with their properties. At the community level, we highlight two particular responses. One is the response of a community member with expertise in fire safety, who resided outside the fire impacted area, and assisted in his role as a concerned citizen. His efforts were regarded by the relevant households as valuable and substantial. The other is the ‘post fire’ widening of membership of a pre-existing neighbourhood group of three households who had jointly purchased a private fire unit prior to the fire. We link our findings particularly to some recent Australian literature in the field.

The setting is made anonymous to encourage readers to make connections with their own communities. We will refer to the fire event as the Boldrewood Fire, and the city impacted as the city of Starlight. This study was carried out in a region where an ongoing fire service position in community education/development was only beginning.

Two Bushfire Cooperative Research Centre (BCRC) researchers were in the area within a month of the Boldrewood fire. Interest was expressed in a small study to gain feedback from the community on their response to the fire. This article draws on data arising from 11 interviews, 10 with affected households, and one with private fire unit owners in a nearby neighbourhood. Additional research on the timing and content of the public broadcasting of this fire event is not presented in this article.

The context of the fire event

The Boldrewood fire began before the official fire season at around 9.30 on a weekday morning, in the rural Shire of Boldrewood. This was the first fire to threaten the City of Starlight (population 15,000) since the Marsh fire a few years prior in which there were significant community losses. The Boldrewood fire crossed into the City of Starlight and impacted on homes on its perimeter. The fire – said to have commenced from a machinery spark at a rural Shire home – was initially extinguished by a neighbour with the use of a jointly owned private fire unit. It reignited in nearby scrub, travelled across several acres over the city boundary, into a privately owned gully with a disused factory site at the bottom. It then emerged at the first of several city streets



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Several homes in ‘Boldrewood’ experienced ‘urban interface’ fires.

adjoining this rural land, with spotting at two locations further into these residential streets. The gully hampered fire fighting efforts, but the fire was brought under control within a period of about four hours.

No homes or lives were lost. The city street facing the gully was the most impacted, with several homes experiencing ember attack and one home losing some roofing. The fire is accurately described as an ‘urban interface’ fire. In all, resources used included at least 29 vehicles from the combined emergency services attended, aerial suppression, and an unknown number of private fire units.

Profile of urban households

Sixteen homes were approached using a doorknock method within a month of the fire. Residents in three declined (“not convenient”), three were unoccupied, and 10 responded favourably to the opportunity. We refer to these households as ‘household A’, ‘B’ etc’. Tables 1 and 2 below set out the number of households interviewed, and describe some of their characteristics.

Category	Count
Number of households interviewed	10
Number of adults present during interview	17
Total number of usual occupants (including children) of these 10 households	22

Household Number ²	Life stage	Years at present address	Home ownership	Farming Experience	Fire Experience	‘Stay-Go’ Decision
B	Family with young children, with at least one partner working	2	Yes	No	No	Go
G		17	No	No	No	Go
H		Less than 1	Yes	Yes	Yes	Stay
C	Couple Middle Aged: both working	10	Yes	No	No	Go
D	Couple - Older /retired (over 70)	Less than 5	Yes	Yes	Yes	Stay
F		11	Yes	No	No	Go
I		30	Yes	No	Yes	Stay
E	Single woman – 40’s: working	2	No	No	No	Stay
J	Single woman, 60’s: retired	6	Yes	Yes	Yes	Stay
A	Single woman, 70’s: retired	15	Yes	Yes	Yes	Stay

Life Stage and Home Ownership

Of the ten households, three comprised families with young children with at least one partner in paid work, one comprised an employed middle aged couple, three comprised retired couples, and three comprised single women, one in paid work and the other two retired.

Six of the households had lived at their current address for over 5 years, and four for less. The longstanding

residents included one of 30 years, one of 17 years and one of 15 years.

Of the ten homes, eight were owned and two were rented. At the time of the interview, residents in two households intended to leave and find work in another part of Australia. Of the five workplaces referred to, three were local, the fourth more than 80 kilometres away, and the fifth offshore.

¹ The Australasian Fire Authorities Council (AFAC) has a national policy position known as the ‘prepare, stay and defend or leave early’ policy, and is sometimes abbreviated to the ‘stay or go’ position. The AFAC position paper, “Position Paper on Community Safety and Evacuation During Bushfires is available at: www.afac.com.au

² The households were ascribed an alphabetical letter in the order in which they were interviewed.

“Farm” Experience

Four households in Table 2 (H, D, J & A) have or had farming experience. One household (H) currently owned and ran a farm and three (households D, J and A) were retired farmers, one comprising a couple and the other two, single women. These four households had farmed within 100 kilometres of Starlight, typically in grain and sheep industries. On the day of the Boldrewood fire, a member of household H retrieved their fire unit from the farm and used it in the defence of their own and neighbours’ property.

Fire Experience

Table 2 details 5 households with fire experience (H, D, I, J and A). Four of these households (H, D, J & A) are discussed above as having ‘farm experience’. These households reported their familiarity with stubble fires from their work as grain growers, with fires from other causes, and with the fire prone nature of the farming landscape which surrounded Boldrewood.

While the farm currently owned by household H had narrowly missed being impacted by the Marsh fire in 2005, fire had been part of their landscape as farmers. Within household H was an older family member who had been a past member of the rural fire service. As noted above, this household also owned a fire unit which they retrieved from their farm the day of the Boldrewood fire.

While retired from farming, households D, A and J reported drawing on their past experience with fire in their approach to the Boldrewood fire. Household J readily recalled her (farming) father fighting fires with “spades and wet bags” in her childhood, and recalled her own adulthood with her husband in a farming community near Starlight, which she described as a “tinder box”. Household A said she too had “learned what to do” in fires. “We always burned off as farmers”. She was alert to the smoke on the skyline at the outset, as was household D, a couple, who reported sighting “a wisp of white smoke”.

There was only one household (I) in Table 2 who did not have farming experience but whom we have classified as having “fire” experience. The male in this household reported that he had experienced fires during the WW2 Blitz in London, and that as a young boy had learnt that small fires following a fire hazard can be extinguished.

No Fire Experience

Table 2 also denotes five households (B, G, C, F and E) with no fire experience. We see these households as constituting a continuum, which we describe starting with the ‘least experienced’ in relation to the threat of fire.

The residents in Household B were born outside Australia, and had had no exposure to or experience with bushfire. Household F had retired to Starlight from outback Australia, where they regarded the grassfires they had experienced as in no way comparable to either the Marsh or the Boldrewood fires.

The next three households (C, E and G) while not having direct bushfire experience, drew on some hazard related experiences. Household C reported being threatened by a nearby fire 10 years previously in another part of Australia. Household E recalled her prior experience some years prior as an SES volunteer, and reported that she gained further courage on the day of the fire when she put on her one remaining piece of State Emergency Service (SES) gear, her boots. Household G, the last of the five households on the ‘no fire experience’ continuum, comprised a young family where the mother had always intended to leave in the event of fire. She always had a packed bag near the front door on a Total Fire Ban day. Her partner, who worked offshore, felt his offshore workplace training included dealing with structural fires may have assisted him in circumstances other than the ones he faced that day, when he felt obliged to accompany his partner and children who wanted to leave the area.

Risk Perception

We asked householders how they rated the risk of fire in their area. Eight of the ten households regarded Boldrewood as a high risk area. Some regarded the area as fire prone, given its similarity to the terrain on which they had previously farmed. Some used the phrase “a tinder box”, and drew attention to two previous “lucky escapes” for the city of Starlight: the Marsh fire in 2005 and another in 2001. Several noted that the Marsh fire had heightened their perception of risk.

Two households, (B and I) were both overseas born. While stating that they did not see Boldrewood as a high fire risk area, their other responses suggested otherwise. Household B expressed dissatisfaction with the continually dry climate and found it “scary” and “isolated” asking: “Where do you go if there’s a fire in Starlight - into the sea?” They were moving out to a “greener” part of Australia, more like their country of origin. Household I had had several discussions with their neighbour about the fire risk of tires piled against their shared fence³. We concluded that both these households had some risk awareness.

Awareness of risk was expressed in other ways. Two households noted that while the City cleared scrub, it had been left in a pile, thus increasing the fire risk. Two other households reported that property owners in the rural Shire of Boldrewood appeared not to be required to put in the fire breaks which were required of them when they were farming. Three households

referred specifically to the threat posed by the pile of wooden pallets in the disused factory site at the bottom of Boldrewood Gully. One resident said she was unhappy about this rubbish in the gully but did not know who she should approach. One resident felt that their risk was increased by the failure of the Water Authority to remove fallen timber from a nearby access track.

Property Preparedness and Planning

Our data on household property preparedness levels were not comprehensive across all the households.

The households of current or past farmers (H, D, J and A) had made a prior decision that they would stay with their property, although the female partner in household H had decided she would go with the children in the event of a fire. Households D, J, and A talked of trying to keep their fuel loads down, and household H had only just moved into their home, which they regarded as poorly prepared for fire, with dense shrubs close to the house⁴. Household I had also decided he would stay, and had prepared his garden, had assembled and checked his equipment to deal with spot fires, but his wife was not committed to a plan. For at least one of the older farmers, their preparation was limited by their age. Household A was over 70, and while she regularly raked and cleared fine fuels, she was not able to clean her own gutters, which were full of leaves on the day of the fire.

The female partner in household G had always planned to leave, with the male partner stating that it would depend on circumstances. Household C had planned years before that they would leave, and had discussed this with their neighbour, and had also attended to minimising garden foliage.

Household B (overseas born young couple) had not heard of the 'stay and defend or leave early' plan. We have no data on household E or F on this question of household preparedness and planning.

The resident in household E, while not saying that she had made a plan or prepared her rental home, did report an ongoing dispute with her neighbour involving trees on her rental property which were regarded by all parties prior to the fire as a fire hazard. The managing estate agent had been unable to get the interstate landlord to agree to act.

***"Stay and defend or leave early"* (abbreviated to 'stay' or 'go')**

Table 2 shows six households (H, D, I, E, J, A) who decided to 'stay' with their property. Five of these households are categorised by us as having 'fire experience' (H, D, I, J, A) and four of these five (H, D, J, and A), as having 'farm experience'. We have explained household I as not being from a farming background, but having experience from the Blitz in London as a small boy. What is noteworthy here about these five of the six households who stayed with their properties (H, D, I, J and A), is not only that they stayed, but that they reported this position as if it was an uncontested decision. Households A and D for example reported immediately making preparation, getting in washing, turning on sprinklers, filling the bath and gutters, and wetting towels. It seemed to us that the action pattern in these households does not formally follow a step wise direction through planning, preparedness, towards the 'stay' or 'go' question, but appears to be more integrated into a 'wholistic' pattern of thinking, or state of mind.

The only household then that did not have fire experience but remained with her property, was household E. A single woman living alone, household E was initially equivocal about whether to stay or leave, but accepted the offer of support from a community member – someone she had not met - with fire experience who arrived at a critical time. She reported his arrival as "providing a link to the substance of community". This is also the householder who recalled drawing on her past history with the SES.

Assistance given or received – family and neighbourhood informal support.

Families and friends provided considerable support. Eight households were assisted by visits from partners (households B, H and G), workmates (households B, and H), adult children (households C, G and J), other adult relatives (households A, and D), and neighbours (G). One household (D) declined the offer of help from adult children deeming it unsafe for them to enter the district due to the traffic congestion. Household C had visiting adult children, and grand children, in temporary residence at the time.

³ These tires caught alight on the day of the fire, and heightened the risk to both properties

⁴ Household H was working on landscaping his garden the afternoon of our interview. Some other examples of post fire activity included a household deciding to leave their fire unit at this home not at their farm; quotes received for tree removal; requests to researchers for information on desirable garden plants and maintenance strategies; praise of the City of Starlight having created incentives with removing fees for dumping rubbish at certain times; purchase of additional equipment, and where this was not affordable, expressions of regret; household debates about the danger of mulch.

Assistance at the neighbourhood level was evidenced in the farming family who brought their fire unit in from their farming property and used it for their own and others' protection. Households A, D, and G accepted help from someone unknown to them who had considerable fire experience, and who elected to help as an individual rather than under the auspices of a formal authority, such as a fire service⁵. One woman who lived on her own doubted that she would have stayed had it not been for this person's assistance.

We cite one other piece of relevant data. Household B comprised a young woman and child who left the property. Her husband whom she had called, arrived home with a workmate, and they too decided to leave. As they drove away, this man turned around and noticed that others were staying. He thought that perhaps he too could manage to stay, so he returned to their home. What is interesting to us here is his report that he drew support from the mental picture of others staying.

Some households commented on the differences between farm and urban communities. One said that as a farmer "you expect to manage on your own", but that also "others will jump in and help where necessary". More than one person felt that "Starlight people" were less neighbourly and less inclined to "pitch in".

In short, there was considerable informal support from a range of associated people, both in terms of able bodies and private equipment. Some felt, however, that the level of community assistance associated with farming communities was greater than in this urban environment.

Additional Community Interview

The only additional interview presented here was with one of the joint owners of the private fire unit from the rural Shire which first attended the fire. He reported that three weeks after the Boldrewood fire, the fire unit owners met and extended their group membership from 3 to 8 households. Members inspected each other's equipment, set up a telephone tree, and made a map of their households showing the type and location of equipment. These activities, while self initiated in this example, also form part of a range of approaches used by fire service community education staff in facilitating community groups to strengthen their capacity to respond to the threat of fire. The common characteristics of this Boldrewood neighbourhood group, several of whom had been farmers, was described to researchers as "an awareness of and an understanding of fire".

Discussion

This small study finds resonance with findings made in other Australian studies of community response to the threat of bushfire. Even the brief descriptions of these 10 households are enough to remind us of the need to be careful with the use of the word 'community'. Marsh and Buckle's (2001) notion of thinking of a 'mosaic of communities' is helpful here. The idea of a 'mosaic of communities' suggests that while we need to examine place based communities within a defined geographic area such as the 'urban interface', we also need to be mindful of other forms of 'community'. For example, it is also important to understand how, if at all, residents in a particular area relate to each other and have preexisting networks, skills, resources or beliefs which might influence how they respond to the threat of fire.

In this study for instance, a group of residents drew on prior experience as farmers in their response to the impending threat posed by the Boldrewood fire. Other research has pointed to fire awareness among people with a long term association with the land (McGee and Russell, 2003; Stone, 1994) and also the willingness of some in this group to share that experience and knowledge with others in a crisis (Goodman, Healey and Boulet, 2007). Those with a farming background presumed they would remain with their properties as a matter of course. Interestingly, while there appeared to be a carryover of knowledge and skills from a life of farming (how to prepare a home, observe the landscape etc), there was a sense of loss voiced by some in this group about the social networks which accompanied farming, networks that were not present for them in their new interface residential area.

Most of the Boldrewood interviewees believed that they lived in a high risk environment, a finding we attribute in the main to the recent Marsh fire experience, although we acknowledge the caution in the literature about the time frame over which a positive effect of experience can have an impact on individuals' thinking, as suggested by Weinstein (1989).

Clearly some residents self organize, and act with local independence. A local group in the Boldrewood fire neighbourhood area collaborated with each other through the joint purchase of the private fire unit and related collective actions. The presence of existing knowledge and skills held by some as farmers was seen to underpin this collaboration, in a similar way as it appeared to underpin the decision to stay for four of the affected households. These strengths contribute to community capacity and resilience and warrant recognition. Some residents respond to emergency service agencies working alongside them through programs such as Community Fire Guard

⁵ We have interviewed this person but do not present this data in this article.

(Beckinsale, 1994; Boura, 1998) and other State variants (eg Community FireSafe in South Australia). It is also the case that resources to facilitate activities like 'community fire guard' groups are not available across all high risk areas, although printed materials and website information is typically available to those who self organize.

There are significant indications from fire service community education staff that many residents regard community meetings such as occur through the convening of in a 'Community FireSafe' group, as a welcome relationship building exercise in its own right. When this observation is thought about alongside what we saw to be both the latent and realised capacity at the household and neighbourhood levels, this suggests there is more capacity within neighbourhoods for active and effective cooperative ventures than may be evident. The case of household E provides an interesting image: a single woman, who was initially unprepared and unsure of her capacities, was assisted by the unexpected arrival of a person – whom she did not know - with expertise. This unexpected help prompted her to feel "connected to the substance of community". This in turn (or at the same time?) encouraged her to draw on the strength of her experience as an SES volunteer. How best, then, to draw on these latent interacting community strengths for the overall goal of enhancing community safety?

Social systems at the community level are complex and diverse. Cottrell (2005) has noted that this domain of study raises more questions than answers, and with others, argues that we view 'community' as a resource not a problem (Bushnell, Balcombe and Cottrell, 2007; Tarrant, 2006; Paton, 2000). Tibbitts and Whittaker (2007) have set out some of the challenges which as yet have to be addressed in the implementation of the "stay and defend or leave early" policy. There are no 'quick fixes' here, although we do have exemplars from different States of structures and processes for community involvement in Emergency Management (Pisaniello and McKay, 2002; Cottrell, 2005), that can build on the resources which exist, such as Australian Bureau of Statistics data (Ferrier, 2000) and Geospatial data (McRae, 2001).

Inquiry towards understanding patterns of interaction in community systems is necessary to see where and how it is appropriate for formal systems, such as fire services, to seek to develop collaborative relationships with those whose actions at a community level can increase bushfire preparedness. The idea of 'governance' (Pierre, 2000; Kooiman, 2000) is one promising one to tease out the different types of association between key parties in a particular domain: self governance, with exemplars from the collective response of citizens as forms of association within a community; co-governance, where collaborative structures are formed to advance a shared goal, and hierarchical governance, as might be seen in certain strictly adhered to communication systems within an

organization. These concepts help us to build theory about constituent elements in the widely used policy framework of 'shared responsibility' between governments and community in relation to community safety and the threat of fire. Knowing what these key interactive elements are, we can then think evaluatively about what criteria to use to assess their presence, their processes and their effect on desired outcomes. Knowing more about the latent and actual community capacities may help us think about respectful approaches to 'shared responsibility' between community and emergency services for community safety, and, as we will set out in our future theoretical work, how different patterns of 'governance' arrangements may be formed and sustained.

Acknowledgements

The authors acknowledge the role of Mae Proudley, Project C6 of the Bushfire CRC, who acted as scribe for the two half days of interviews, and worked with Helen Goodman on transcribing these 10 interviews, while heavily occupied in her own Master's research. We also acknowledge discussions held with members of BCRC Project C7, Project Leader, Gerald Elsworth, and researchers, John Gilbert, Kaye Stevens, and Alan Rhodes.

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Fire, families and decisions

Using the Wangary fire in South Australia (10-11 January 2005) as a case study, Mae Proudley explores the factors influencing decision making within families when they are threatened by bushfire.

Abstract

“As I was getting the kids in the car embers were coming over the fence.”

Scant attention is paid to women and their roles in the emergency management landscape. This is particularly relevant in the field of community bushfire preparedness and mitigation. The culture of emergency management remains a very masculine field with the command and control system continuing to dominate and influence the roles and processes of emergency events.

Within this context, research into gaining a deeper understanding of families and the role of women in bushfire has been neglected.

Acknowledging and understanding how families and women make decisions in critical times must help shape future bushfire education programs. This includes the modification, application and implementation of the ‘prepare, stay and defend or leave early’ policy. The family and a woman’s role within the family are where crucial decisions are made in advance of and during a bushfire. The family unit, in its various forms, is an important and frequently overlooked field of bushfire research.

This paper explores how family dynamics inform critical decisions and suggests that there is significant value in listening to the narratives of families and couples who have experienced a major bushfire. A people-centred focus, not a pre-determined system or a theory, is needed. In order to reduce, or eliminate, last minute decisions to evacuate at the height of a bushfire, there must be recognition and understanding of how family dynamics and women’s role within the family influence behaviour during a crisis.

“There was panic. We are going to burn in this bathroom. There was some panic there.”

Locating the case study in the literature

In their assessment of English and Spanish literatures on gender relations and disaster contexts Enarson and Meyreles (2004) note the lack of attention to gender and an absence of a community of scholars and activists pursuing gender and disaster concerns in Australia. In her segment on ABC radio in 2005 Merilyn Childs, from the University of Western Sydney, made reference to Enarson’s puzzlement over why Australia remains one of the few countries in the world that “does not have a vibrant conversation about women and disasters” (Childs, 2005). Childs emphasised that “it simply isn’t possible to foster disaster resistant communities if we fail to see that women make up half the communities we live in and that they have something to offer” (Childs, 2005).

Enarson and Meyreles (2004) state that developing countries are more advanced with their analysis of the effects of disaster on women. Researchers in developing countries cover ground that is too often overlooked by their counterparts in industrialised countries where populations have the protection of emergency management systems and generally high living standards. Disaster researchers in industrial countries have been slower to examine how social structures of gender, race, age and class impact on specific disaster experiences of men and women. Whilst the issues of poverty, and how women are impacted, are more obvious in developing nations, the complex social, historical and cultural construction of gender in industrial countries needs to be understood in the context of disasters and how women’s resilience, or lack of it, is determined.

Gender is a central organising principle of social life and thus far has largely been overlooked by Australian bushfire researchers. In their guidelines for future gender-focused research, Enarson and Scanlon (1999, p. 119) assert that couple-focused research (“comparative investigation of the ‘his and hers’ of disaster experiences”) should be a priority.

Fordham (2001) identified some of the areas within environmental management that have been neglected. Her paper, 'Challenging Boundaries: A gender perspective on early warning in disaster and environmental management,' argues that the scarcity of studies incorporating gender analysis "points to a real need in both research and practice" (Fordham, 2001, p. 2).

Within the Australian research environment, two studies conducted on drought by Stehlik, Lawrence and Gray, (2000) and Alston (2006) have been influential in this bushfire case study. Bushfire (particularly in the South Eastern region of Australia) and drought are a common, and inevitable, part of the national landscape. These two case studies on drought place the people who have been impacted by the disaster in the foreground with the aim of contributing to and informing social policy through the lived experience. This bushfire case study will attempt to mirror that approach.

"I just wish I could have that day all over again... I would've sort of done it so differently...would've felt better with yourself."

'Prepare, stay and defend or leave early'

"It is time government and agencies stopped pretending that awareness raising campaigns and information dissemination will ever be sufficient or effective." (Rhodes, 2003, p. 5).

Although the dilemma of whether to flee or fight had been previously recognised it was after the tragic Ash Wednesday fires of 1983 when surveys were conducted that a position became firm and, later, official. The important Wilson and Ferguson (1985) study assessed the merits of staying with the home or evacuating. Based on the experiences of Mt Macedon residents during the Ash Wednesday bushfires it was suggested that "able-bodied residents who are threatened by a bushfire should remain in their houses" and that "evacuation should not be undertaken lightly."¹ Through this study and others, it was established that fewer people perished in their home than out in the open.

It is this knowledge that has informed the national policy position adopted by the Australasian Fire Authority Council (AFAC), known as the 'prepare, stay and defend or leave early' policy.²

This case study will explore the assumptions that underpin the 'prepare, stay and defend or leave early policy' with the crisis decision making of families and women threatened by fire. Some of the questions, in relation to the policy, worth considering include:

- Does the policy take into account any of the dynamics of how people live together and make decisions together?
- Is it possible to acknowledge and cater to the complexities of families?
- Is there value in investigating what people do and why they do it rather than prescribing correct behaviour?
- Should the focus shift from prescribing how people should behave to how people are likely to behave?
- Is it reasonable to expect people to respond to a bushfire in a mechanical, rational manner?
- Is there a heavier emphasis on defending the property? Is there acceptance, within the fire agencies, that 'leaving' is a valid option? How do people go? Where do they go?

Stehlik (2003, p. 88) states that "Public policy, designed for the many, under great stress and in times of turbulence, often assumes a homogeneity where none exists. It tends not to challenge 'taken for granted' assumptions." Stehlik's report to the National Rural Women's Coalition was based on the premise that "voices of women are less likely to be heard in the policy development process because of their lack of opportunities, and because of the continued gendered structured of Australian governance processes" (2003a, p. 7).

This premise strongly resonates in the field of emergency management where women are largely absent from decision-making roles. It is essential to look beyond the traditional reading about community education and awareness of emergencies. Literature on conflict and cohesion in families and family decision making will be more insightful.

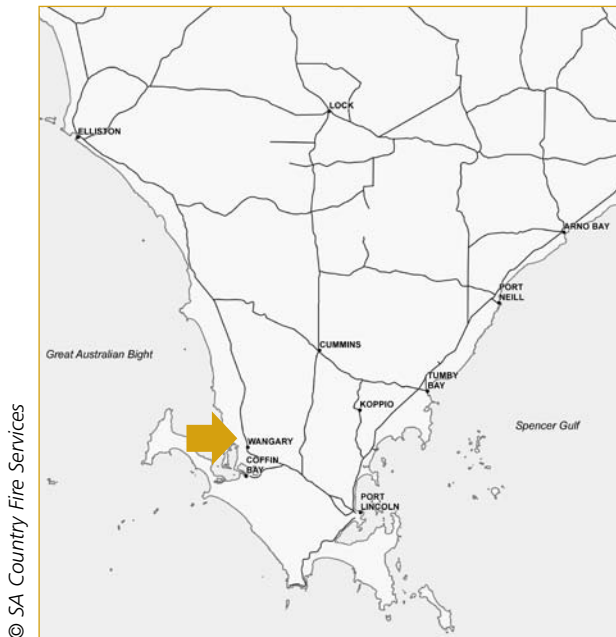
"We lost our business and our home and our routine and everything."

¹ Wilson and Ferguson, (1985), p. 1 and p.8

² AFAC provides advice to the public about what they should do during a bushfire. In this paper the national policy position is referred to as the 'prepare, stay and defend or leave early' policy. The position is sometimes referred to as the 'stay and defend' or the 'stay or go' policy. The AFAC position paper on bushfires and community safety is available at: www.afac.com.au

Context of the research

Wangary is located on the Lower Eyre Peninsula of South Australia. The largest town in the region, Port Lincoln, has a population of approximately 14 000 and is 645 kilometres west of Adelaide, the state's capital city. This is a remote location – the landscape is largely agricultural with two major national parks and coastal areas that support a substantial fishing and tourist population.



© SA Country Fire Services

South Australia, Lower Eyre Peninsula.

On this isolated coast, in the Wangary District, a bushfire started on the afternoon of Monday 10 January 2005. It broke containment lines the following morning (now commonly referred to as Black Tuesday).

The weather conditions were extreme: strong winds, high temperatures and low humidity. Due to the speed, complexity and ferocity of the fire most people had very little, if any, warning of the impending danger. The Wangary fire burnt over 77 000 hectares of agricultural and forest lands, destroyed ninety-three homes, over 46 000 livestock, approximately 6, 300 kilometres of fencing and caused substantial damage to essential infrastructure (Smith 2005, p. 10). Nine people perished (three women, four children and two fire fighters on a private unit). The scale of the devastation had not been seen in South Australia since the Ash Wednesday fires of 1983. The death of seven women

and children, six of whom were fleeing the fire in cars, warrants an investigation into family decision making, gender roles and bushfire.³

“I’m still on bloody anti depressants and that.”

The Case Study

In order to obtain a more comprehensive understanding of family dynamics in relation to decision making in a crisis, the researcher spent eight weeks engaging with the community on the Lower Eyre Peninsula nearly two years after the Wangary fire. Open-ended interviews were conducted with thirty-eight families and couples across the fire affected region: Charlton Gully, Edillilie, Greenpatch, Koppio, Louth Bay, North Shields, Poonindie, Vanilla and White Flat. Within the participants there were variations in age (20s – 90s), occupation, cultural background and socio economic status. Only one participant was a single parent, all the other families (who had children living at home) had two parents. Interviews were conducted on the properties and in the homes of the participants with a few nominating to meet in the town of Port Lincoln. Nine of the families interviewed had their homes destroyed; many others had their homes considerably damaged. The large quantity of rich narratives from the interviews will form the backbone of this case study. Seeking to understand people’s lived experience of bushfire through narratives is the primary focus.

Interview material will be used as evidence, in the following section of this paper, to demonstrate the complexity of decision making in a crisis.⁴ Due, in part, to the current lack of family focused bushfire research it needs to be emphasised that this case study is exploratory in nature and that it is not the intention of this paper to report on the entire case study.

“A primary way that individuals make sense of experience is by casting it in narrative form. This is especially true of difficult life transitions and trauma: As Isak Dinesen said, ‘All sorrows can be borne if we can put them into a story.’” (Riessman, 1993, p. 4).

The data gathered for this project is sensitive in nature. At the core of this case study are relationships and family dynamics. Whilst there is value in knowing that many of the interviewees were exposed to danger by leaving their properties in vehicles either together, alone or in convoy, there is no value in assessing or labelling behaviour as ‘right’ or ‘wrong.’ The key motivation

³ Haynes (in press: Tibbits, Handmer, Haynes, Lowe and Whittaker) has been analysing the circumstances of each bushfire fatality in Australia over the last 100 years, a total of 566 fatalities (this figure is the lay public, excluding fire fighters) and has concluded that the number of women dying in fires has increased over the past 30 years.

⁴ All interviewees have been assigned a pseudonym.

behind the decision to undertake a purely qualitative case study is the recognition of needing to avoid the categorisation of the participant's actions and respecting what the interviewee's have said about their perceptions of their own experience.

"I would have thought he would have discussed all of that with you if a fire ever came through....he's in the fire service."

The presence of children⁵

A significant number of women interviewed for this project were home alone with babies and young children on the day of the Wangary fire. During the interviews the presence of children and how that factor informed their decision on the day of the fire were explored at length. Heavy reliance on volunteer fire fighters (the majority of which are men) translates to a burden on families, in particular women alone with children, during a bushfire.

On the day of the Wangary fire, Kathy was home alone with her baby:

"Basically, I remember going outside and there was just smoke everywhere and I just knew. My head told me: 'you can't get in the car and go anywhere because you know that would just be sealing your fate with Lily.' But my heart was like 'you've got to go you've got to get out of here the fire's coming, you've got to go you don't want to be here' so that was very strange."

"I remember actually thinking, I remember being really angry with myself because she (Lily) was still here. How could you get her in this situation?"

Another woman, Karen, who was home alone with her seven year old child, was critical of herself and the decision she made to flee their property. She said over and over again:

"That day, I regret what I did. I should never ever have gone. I could have saved a lot of things. But I didn't and now I've got to deal with it."

Another female interviewee, Marie, was home alone with three children, a baby and a neighbour's child. Her decision to leave hinged on their welfare:

"I experienced an overwhelming feeling of 'I'm not happy being here on my own.' All I thought was just 'get to the beach and we'll be OK'."

Marie said she was more scared of having a car accident, due to poor visibility, than the fire harming them.



Historic Greenpatch Homestead.

Despite crashing the car into a tree stump she believes it would have been a worse situation had she not left:

"I would have been worse being stuck in the house and having the front go over the house and be in there with five children and not knowing what to do. Because I had no idea we've never discussed a fire plan. We're on mains but there was no water anyway was there?"

Their home was destroyed.

Sandra had two teenagers with her on the day of the Wangary fire and consulted with them during her decision making process:

"I said to the kids 'Do we go or do we stay?' and they both said 'go' so we came home and let the kangaroos and our chooks out and grabbed the photos, the computer and the dogs and jumped in the car and took off. They were old enough to do as they're told and put in."

Their home was destroyed.

The difficult decision of when is it early enough to remove children from danger and when is it too late to safely leave was explored with each family.

"If you had plenty of warning, I possibly would say, yeah pretty hard, might go but if you had a lot of time, grab what you need and go. If the fire was as intense, but you never bloody know."

Bushfire as a shared experience

Mutual decision making occurred in a number of couples and families:

Vicki was home with her four children on the day of the fire. She anticipated there would be a bad fire on the

⁵ Domestic pets and livestock were also key factors in the decision making process

Tuesday as her husband, Rod, had phoned on Monday evening (he was interstate). He asked her for the weather forecast for the following day. He said to Vicki: "You're up shit creek." He phoned Vicki at 20-minute intervals throughout the Tuesday as he was unable to get home due to the closure of the local airport. His advice to Vicki was comprehensive and practical:

"I was under strict instruction by Rod to stay at home and not to panic. Rod said, Repeat after me, 'I'm not to panic.' He would test me, what did I just say?...do you understand that?...repeat after me."

At his instruction she sent their children into town hours before the fire arrived and then set about defending the home once the fire front had passed.

Alana and Keith were trapped in their home with half a bucket of water during the height of the fire:

"We should have had time to leave but we didn't. This can't be happening, it's not real. We never had the discussion. 'It's here.' The choice was made for us'."

The radiant heat was too much to bear (they were dressed, like most people, in summer clothing) so they couldn't leave. Their house caught fire and they believed they would die in the bathroom.

Alana was pivotal in persuading her husband to remain inside the house. Had Keith been alone he said he would have attempted to make a run for the dam on their property:

"I would have done a runner....and it would have been the wrong thing to do. Alana didn't want me to go outside."

This interview was infused with fear and panic and what could have happened.

"It's quite a harsh environment so you have to learn survival."

Bushfire as an individual experience

There is an expectation that those either active in the fire service or with fire fighting experience have the knowledge necessary to protect life and provide a fire plan for their family. There were a number of couples and families interviewed for this case study where the male, who was a volunteer fire fighter of many years and in some cases decades, did not advocate developing a family bushfire plan, prior to or since the Wangary fire.⁶ The absence of a fire plan in these families was striking.

It was quite challenging to question experienced and senior volunteer fire fighters about why they had no plan.

One such couple, Amanda and Peter, discussed their separate roles.

Peter: *"For me I wouldn't be here anyway, so I wouldn't have to evacuate. I'd be fighting the fire approaching."*

Amanda: *"It would be me and that would depend on whether I'm at home or whether I'm not and I guess it would be put down to the day I would have to make that decision as to even if I come home, Is the power on? Can I prepare anything? Or would I just collect my valuables and run?"*

An interesting exchange took place during this interview. Amanda said she would shelter in the house whilst Peter recommended that she shelter in the shed:

Amanda: *"Um, I think I'd basically stay within the house like they recommend."*

Peter: *"I would suggest you go to the big shed, the shed won't burn the house will."*

The more experienced member of the family, usually the man, has more authority and yet, as demonstrated briefly in the exchange above, they do not necessarily subscribe to the recommended advice or possibly have not been made aware of the national policy.

The words of the interviewees, about their experience of a severe bushfire, are grounded in the family unit. How a family functions is informed by the internal roles and dynamics that have established over time. Traditions and stereotypes can contribute to the way a family, and the members of that family, relate and make decisions in a crisis. What is made clear by these interviews is that a number of the female participants who were alone during the crisis had no reference point for making such a critical decision. Traditionally, their role would be to carry out their husband's instruction.

"I wanted my husband's decision. I regret what I did. I should never have gone."

Conclusion

"...policy that recognises heterogeneity is a challenge to create and to deliver." (Stehlik, 2003, p. 88)

There is much to be gained from exploring decision making processes and family dynamics. Interviews (and participant observations) conducted with fire

⁶ The researcher did encounter volunteer fire fighter families that were advocates of a bushfire family plan. There were also families with no prior fire experience who had access to an independent water supply. Each family (and family members within it) had their own unique experience of the Wangary fire.

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Judith Griffith and her grandchildren, Star and Jack Borlase, perished in the fire.

affected families identified that the roles that people have within a family unit play a major part in what family members do, how they behave and respond during a crisis. Pre-existing social relations influence actions taken during a bushfire. The key question that emerges is whether or not that process or pattern changes when a crisis or threat occurs.

In a sector that is dominated by the command and control system there is a very low research emphasis on exploring couple and family decision making in emergencies. The lack of research in this important field, particularly around the influence of roles and traditions, is a major concern.

Using the crisis decision making of families to question the assumptions that underpin the national 'prepare, stay and defend or leave early' policy should be viewed as useful, not judgmental.

The primary aim of this case study is to record and analyse the complexities that need to be acknowledged and addressed if the national policy is to evolve in a constructive and helpful direction. To enrich and enhance education programs, fire agencies need to be receptive and willing to incorporate the real experiences of families who have lived through a bushfire.

One of the major lessons from this case study is that emergency managers and fire agencies need to consider the context within which families are making crucial decisions when they are threatened by bushfire. Currently, the 'prepare, stay and defend or leave early' policy is too narrow in its scope and is individually focused rather than systemically or culturally focused. Moving beyond the narrow emergency management mindset and applying knowledge from relevant fields of study, such as conflict and cohesion within families and family decision making, is the way forward.



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Tractor on a farm in Greenpatch.

In order to reduce, or eliminate, last minute decisions to evacuate at the height of a bushfire, there must be recognition and understanding of how family dynamics and traditions influence behaviour during a crisis. These interviews demonstrate that in a crisis, women are often forced to make decisions alone based purely on survival (and the survival of their children).

Roles people have within a family play a major part in the decision making process. A significant number of women interviewed for this case study were faced with a whole new set of consequences with very little or no experience of making such a vital decision.

The idea that people should conform to the prescriptions of emergency services is futile. This case study is working towards bridging the glaring gap that exists between the Emergency Services attitude, the national policy and the behaviour and decisions of families threatened by fire.

"He's told me for years 'if ever there's a fire we'll stay.' He just reminded me not to panic, not to panic as the fire gets close that's when I'll get frightened, not to get in the car, stay in the house wait until the fire has gone over and then go outside so that's basically what happened, yeah."

Acknowledgements

This work is funded by a scholarship from the Bushfire Cooperative Research Centre (BCRC). The author was invited to present at the annual joint AFAC/BCRC Conference in Hobart, 19-21 September 2007. Ideas and issues covered in this paper were raised on that occasion.

The author would like to thank Robyn Betts and John Handmer for their advice and input during the writing of this paper. The author also acknowledges and

extends a thank you to the many families and couples who participated in this project and the warmth and generosity of the Lower Eyre Peninsula community.

The Country Fire Service (CFS) provided essential fieldwork resources. The author values the assistance and support of the CFS.

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About the Author

Mae Proudley is a Masters by Research candidate at RMIT University, where she is undertaking a case study of the Wangary fire for the BCRC. Upon completing her fieldwork in the fire affected region of the Lower Eyre Peninsula, Mae took leave from her project in 2007 to take up a short-term opportunity in the Research Projects Unit at the Office of the Emergency Services Commissioner (OESC). Mae is due to complete her case study of the Wangary fire in 2008.
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Are house fires changing?

Chris Lewis questions whether domestic house fires are becoming faster and more ferocious.

Abstract

NSWFB Fire Investigation and Research Unit continually undertake case study analyses of significant house fires. This analysis and recent statistical analysis of fire services response data indicate that the effectiveness of containing a fire to the object or room of origin has deteriorated slightly over the last five years. This domestic research resonates with fire research from other countries showing a possible increase in speed and ferocity of experimental domestic fires. Furthermore, this is supported by a survey of the perceptions of operational firefighters within the NSW Fire Brigades. If confirmed, this emergent trend in domestic fires will present an ever increasing risk to the life safety of both building occupants and firefighters.

To test this hypothesis NSW Fire Brigades has entered into a collaborative project with CSIRO to research changes in the residential environment in Class 1a dwellings (houses), looking in particular at changes over the last three decades that may affect life safety outcomes for residents and firefighters exposed to residential fires.

This article will outline the findings and outcomes of stage one of this research and briefly discuss the implications of applied research in gathering evidence for the design, implementation and evaluation of strategic fire prevention policy.

Introduction

The NSW Fire Brigades Fire Investigation and Research Unit (FIRU) commenced 20 years ago in 1987 as the Fire Investigation Unit (FIU). The initial focus was to address the high level of undetermined cause of fire rates by providing specialist fire investigation and fire investigation training. In 1998 research was added to broaden the focus to include research of human behaviour, building behaviour and fire behaviour and the name was changed to the Fire Investigation and Research Unit (FIRU). Undertaking a holistic case study approach allowed FIRU to gather and provide contextual and interrelationship information regarding the interaction of the victims of fire and the actual fire. This was done to support statistical analysis in identifying 'at risk groups', 'at risk behaviours' and 'at risk environments'.

In support of this case study methodology FIRU conducted research into significant house fires, in particular those that resulted in fatality or serious injury. This case study analysis and recent statistical analysis of fire services response data indicates that the effectiveness of containing a fire to the object or room of origin has deteriorated slightly over the last five years (NSWFB 2005). Overseas fire research also points to a possible increase in speed and ferocity of domestic fires (Bukowski 2004).

The case study research seems to indicate that modern furniture and increased fire loads within light weight construction, in addition to the open plan design of many modern homes may be leading to house fires that have a higher and faster heat release rate than was previously the case. If this is accurate then this in turn may lead rapidly to untenable conditions for occupants, faster fire break out from the room of origin and to a quicker building collapse.

This hypothesis, if accurate, will have some serious impacts on the way fire services undertake service delivery. Strategic planning for fire station locations based on the standard time temperature curve may no longer be relevant. Decreasing escape times for occupants coupled with increasing risk to firefighters from flashover would mean that we would need to adjust the way we fight fires, optimise our early intervention and prevention strategies and increase our efforts aimed at influencing and changing building codes for residential buildings.

What we did to test the hypothesis

NSW Fire Brigades and CSIRO Fire Science and Technology Laboratory entered into a joint research project aimed at testing this hypothesis and assessing changes in the Class 1a residential built environment that may have led to changes in levels of safety for occupants and firefighters. Specifically the objective of the project is to identify changes in the domestic environment, in particular Class 1a buildings, over the last three decades that may affect life safety outcomes for residents and firefighters exposed to residential fires. In addition the project is to establish whether or not the current requirements of the Building Code of Australia (BCA) adequately reflect the risks associated with Class 1a buildings. This project is made up of multiple stages and has been designed to improve our understanding of the interrelationship between building design; building construction and building contents and furniture.

Stage one of the project has been completed and involved a literature review, statistical analysis and a survey of firefighters.

Stage two of the project will commence shortly and will firstly require the definition of typical fire loads and types in the 1970s and now and then to carry out an experimental study on typical rooms to map fire initiation and growth. Specifically CSIRO will conduct four room fire experiments on furnished single rooms at the CSIRO facilities at Highett in Melbourne. The room types and contents will be designed to examine the fire behaviour of existing soft furnishings and electrical and electronic equipment, both new and thirty years old. The objective is to compare fire initiation and growth in rooms containing a modern fire load with rooms containing an older fire load.

What we found

Literature review

The objective of the stage one literature review was to establish the current level of knowledge regarding the changes over a thirty year period in building design structure and furnishings and contents that may influence changes in levels of fire safety of residential building, in particular class 1a houses.

The literature review found that information regarding most other classes of building was available, however data regarding houses and contents were not nearly as plentiful, which in its self is an interesting commentary on the availability of public good research as opposed to commercial fire research. The scant research that was available did not conclusively prove or disprove the hypothesis. However what was found did resonate with FIRU case study research indicating that in some cases changes to construction practises and modern contents



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Firefighters investigating a house fire, where the blaze threatened to spread to neighbouring properties.

and furniture may have influenced the way fires develop in Class 1a dwellings.

For example, the National Institute of Science and Technology (NIST) Smoke Alarm Report (Bukuwksi, 2004) considered the performance of smoke alarms rather than houses and contents; however the study necessitated carrying out a series of test burns mimicking studies carried out in the 1970s. These tests highlighted that escape times were systematically shorter than those found in a similar study conducted in the 1970s. This is related to faster fire development times for today's products that provide the main fuel sources for fires, such as upholstered furniture and mattresses.

This report was interesting in that these tests were carried out originally in 1975 and then again almost 30 years later. One notable result was that the more recent test fires using a piloted flaming combustion reached 65° C at ceiling height on average in 130 seconds as opposed to an average of 970 seconds in the 1975 tests. This is a reduction from 16 minutes to 2 minutes within the room of origin of the fire. This is important as it has long been considered that, on average a fire will not flashover and break out of the room of origin for at least seven minutes under average conditions. This study also highlighted that with a reduced escape time due to modern furnishings and contents, a well placed, working smoke alarm may not be enough to guarantee survival.

The report summary advises "in many cases, available escape time would be sufficient only if households follow the advice of fire safety educators, including sleeping with doors closed while using interconnected smoke alarms to provide audible alarm in each

bedroom, and pre-planning and practicing escape so as to minimize pre-movement and movement times during egress" (p.236).

In a New Zealand study of how furniture contributes to fatalities in fires, Wong (2001) found that "the fire performance of individual furnishing items have a crucial effect on the swiftness of a room becoming untenable thereby preventing further evacuation of occupants within the building" (p.111). Furthermore she found that a single piece of upholstered furniture is able to yield a fire severe enough to result in flashover of a compartment. Wong also highlights that the contents of typical New Zealand households has changed considerably with the use of modern materials. This trend has been most notable in upholstered furniture with the use of cheaper and more durable synthetic materials.

In an Australian study, Dowling et al (1991) undertook research on fires starting in fully made up beds. The mattresses contained various foams and were ignited by smoldering or flaming sources. Fires started by igniting crumpled sheets lead to total involvement of the bed in all cases regardless of whether the foam was fire retarded polyurethane or latex rubber foam.

Still in Australia, Webb et al (1999) reported on room fire experiments in which a small room contained an upholstered armchair went to flashover in 4 minutes. The armchair used consisted of non fire retarded polyurethane foam.

Statistical Analysis

Data was accessed from various sources including, Australian Bureau of Statistics (ABS), National Coronal Information System (NCIS), Australian Institute of Health and Welfare (AIHW) and the Australian Incident Reporting System (AIRS) as used by fire services. There are a number of limitations in comparing data from these sources. Definition of fire related deaths and fire injuries vary between sources and the quality of AIRS data can be dependant on information available to the fire service officer at the time. In addition the AIRS system relies on the fire officer's level of training, knowledge of fire science and experience in reporting on fires to accurately record what has happened. Despite its limitations AIRS data provided the best time line data and thus was used for this particular report.

AIRS data sourced in regard to injuries and fatalities in NSW indicated that;

- The annual rates of fatalities per 1,000 building fires and fatalities per 1,000 dwelling fires has increased each year consecutively since 2000 till 2005
- The annual rates of fatalities from building fires per 100,000 population and fatalities from dwelling fires

per 100,000 population has also slightly increased each year since 2000 till 2005

- There has been a general upward trend in annual rates of injuries from building fires and dwelling fires per 100,000 of population.

In relation to building and dwelling fires the AIRS statistics indicated that there had been a general downturn trend in the number of building and dwelling fires per 100,000 population over the past three decades however the decline in building fires had been steeper than the decline in dwelling fires.

Dwelling fires accounted for 47% of the total building fires in New South Wales between 1974 and 2005, and flats, units and other residential types accounted for an additional 17%. The data between 1974 and 2005 also shows that:

- The percentage of structure fires occurring in Class 1a buildings appears to have been slowly decreasing since 1995;
- The percentage of structure fires occurring in residential buildings other than class 1 such as units, has almost double since 1974.

Some caution is required when it comes to interpreting time series for confinement rates of fire to object or room of origin. There have been a number of changes to definitions and coding schemas between 1974 and 2005. In 1997 significant data collection changes were implemented and a new category for small structure fires was introduced. Since the change in data collection in 1997 small structure fires are not given a classification for extent of flame damage.

For this analysis it was assumed that small fires are almost always confined to the object, and hence were added to the confinement fires categorised within the object of origin.

Some general observations of the data show that:

- there was a general downward trend in confinement rates between 1974 and 1994 for building and dwelling fires, however since about 1996 the rates have increased;
- since 1999, the majority of building fires (80%) have been confined to the object, area or room of origin;
- since 1999, just over half of building fires have been confined to the object of origin, and
- in the past six years the majority of dwelling fires (78% - 80%) have been confined to the object, area or room of origin.



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Distraught residents in the burnt out bedroom of their former home.

Survey of firefighters

The NSW Fire Brigades designed a questionnaire to be completed by experienced NSWFB firefighters. The survey was completed by 85 participants with the focus on utilising fire fighters who had attended a large number of house fires over a 10-20 year career or fire fighters who had been exposed to house fires over a 20+ year career.

The strength of this report lies in the information provided through statistics gathered from a widely experienced group of fire fighters from all over NSW. Over 96% of respondents had over 10 years experience and 48 % of those had in excess of 20 years service. An estimated 10,000 house fires had been attended by the respondents.

From the questionnaire's findings, over 75% of firefighters believed that the risks to firefighters had increased because of changes in the construction, design layout and contents of houses. Almost 50% believed that modern house fires were taking longer to bring under control due to the fuel loads within and the type of construction. Another important finding was that over 80% of respondents believed that the structural stability was lower in modern style houses during fire incidents.

The last two questions required the respondents to recall house fires they had attended and the responses reinforced the anecdotal evidence that had been observed over the past few years. The issues such as lightweight construction, air conditioning ducting, open plan design, lack of compartmentation, and household furnishings all ranked highly in having a significant impact on fire spread and structural integrity.

Other specific issues raised by the firefighters included I-beams, expanded polystyrene (EPS) cladding, and heating ducts.

In addition, 61% of senior NSWFB firefighters interviewed as part of this study believed that modern security measures such as deadlocks and security screens directly contributed to injuries and fatalities at house fires.

Conclusion

The literature review indicated that the changing nature of housing contents was having an impact the time it took for experimental fires to flashover and would thus support the hypothesis that modern furniture and increased fire loads is leading to fires that have a higher and faster heat release rate than was previously the case. However the statistical information in regard to fire fatalities and injuries does not support the hypothesis and the statistics on confinement of fire are inconclusive. The fact that fires occur in building stock that may vary in age from newly built to over one hundred years old would also be a factor. It may also be that other factors such as fire education programs, smoke alarms and escape plans may also be having an influence, in the opposite direction, on death and injury rates. Additionally, confinement rates for residential fires in particular, must be influenced by factors such as smoke alarms, improved training and better placement of fire stations.

The survey of firefighters did support the hypothesis and would indicate that apparent risks to firefighters had increased because of changes in the construction, design layout and contents of houses. Once again modern training methods and improved protective uniforms and

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Two children were trapped, and subsequently died in this house fire.

equipment may be balancing out any increased risk from changing operating environments for firefighters.

The overriding conclusion of stage one of the joint CSIRO / NSWFB project was that there was insufficient information available to comprehensively compare over a thirty year period, the impact of changes in individual factors such as building design, construction, furniture and contents. This is an important point to note; while there is a detailed history of research into various other classes of buildings, research into the impact of fire on residential dwellings is not so readily available. Considering dwelling fire make up 47% of all fires attended, this paucity of usable knowledge in regard to dwelling fires can only hinder fire services in making evidence based decisions regarding service delivery to the community. However, it should also be noted that while the report could not prove that modern house fires are increasingly dangerous, it could not disprove the possibility either. Obviously more evidence will be required to fully understand current and future risks to the community and to design, implement and evaluate future strategic fire prevention policy to meet those risk needs. It may be that case study research by FIRU, perceptions of firefighters and some experimental research is pointing to an emergent trend that has yet to register as fatalities, injuries and confinement rates. Or it may be that increasing risk from domestic environments is being balanced by fire education campaigns, smoke alarm legislation and improved capabilities of firefighters. Once again a lack of credible data in regard to the evaluation of fire education and fire prevention programs makes any in depth analysis difficult.

While stage one established the context and levels of existing knowledge, stage two of the project will involve experimental burns aimed and proving or disproving the hypothesis at least in the experimental context. Beyond this there is a continuing need for further research to identify any possible emergent fire trends and the impact of fire on the community. Likewise there is a continuing need for fire research and credible evaluation of the effectiveness and impact of fire safety programs

if fire services are to continue improving community resilience to disasters such as fire.

Acknowledgements

This paper is based on the Joint NSW Fire Brigades / CSIRO Stage One Report, "Changing Levels of Fire Safety in Class 1 Dwellings". That report was based on the work of a project team that included; Vince Dowling CSIRO Fire Science and Technology Laboratory, Nick Nicolopolous NSWFB's Strategic Information Services, Steve Apps and Mark Cavanough Research Officers, Roslyn Bailey Project Officer and Damon Chamberlain Technical Writer from NSWFB's Fire Investigation and Research Unit.

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Weighing up the risks — the decision to purchase housing on a flood plain

Vogt, Willis & Vince interviewed residents in Launceston to better understand community perceptions of flood risk.

Abstract

This paper examines how residents living in a flood plain perceive risk. Sixty residents in Invermay/Inveresk in Launceston, Tasmania, were interviewed in a study conducted by Launceston City Council and the University of Tasmania to identify their level of worry, flood preparedness and risk communication strategies. In order to explore ideas of voluntary and involuntary risk, this paper analyses the views of those residents who were owners and/or renovators in the flood-prone area. We argue that risk decision-making is a complex undertaking involving the consideration and weighing-up of a range of factors. In addition, we found that just as people may be viewed as 'risk takers', they are also 'at risk' and they see broader social factors such as development in the area as contributing to their risk.

Introduction and Background

Launceston is a flood prone municipality. The suburbs of Invermay and Inveresk, built on a floodplain, are significant flood prone areas in Launceston. The last major flood occurred in 1929 when approximately 4000 people were made homeless overnight. If a similar flood to the 1929 flood occurred today, Invermay would be most affected, with approximately 3000 residents and 270 commercial properties being considered at risk. In addition, it is envisaged that a flood of this magnitude would cause significant damage to infrastructure of state significance such as Aurora Sports Stadium, the Queen Victoria Museum and Art Gallery, and the University of Tasmania's Inveresk Campus. Such damage would incur significant financial loss and require both immediate and long term economic and social recovery.

Despite this risk, Invermay and Inveresk are considered by many to be areas offering a lifestyle suitable to their needs. People entering the property market, including those cognisant of the area's flood risk, similarly value what the area has to offer and continue to invest there. With this and other factors in mind, the Launceston City Council and the University of Tasmania embarked on a collaborative research project aimed at assisting Council to better understand community perceptions of flood risk. The information gained from this study will assist the Council in developing effective risk communication strategies. It will also assist Council to work with the community to develop future policies and plans for the area in a way that appropriately balances flood risk considerations with the needs and wishes of residents.



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1929 Flood where 4000 people were made homeless overnight.

Approaches to Risk

In contemporary society the word 'risk' is so commonly referred to that it pervades almost every part of our lives (Kemshall, 2002, p. 3; Tulloch & Lupton, 2003, p. 1). Moreover there have been changes in the way that risk is conceptualised. Early references to risk were largely neutral and spelt mainly in terms of both loss and gain (Kemshall, 2002, p. 3; Lupton, 1999, p. 12). Risk is now viewed and discussed in negative terms, with the probability of loss constituting its prime focus.

(Botterill & Mazur, 2004, p. v; Durodie, 2004, p. 14; Lupton, 1999, p. 12).

The language of risk as it directly refers to the public has also changed. Whereas earlier conceptions of risk as value neutral tended to position the public as self-governing 'risk takers', contemporary conceptions more commonly position the public as dependently 'at risk' (Furedi, 2005, p. 79), with language use referring to voluntary or involuntary risk. This shift is notable. While the former conceives people as autonomous agents, the latter more resolutely and paternalistically conceives people as the vulnerable and inert subjects of risk (Furedi, 2005, p. 79). From this perspective, 'risk' rather than 'people' is the active and objectified agent with the suggestion being that people lack the capacity to navigate their way in the landscape of today's risk society (Furedi, 2005, p. 79). In constructing the public as 'at risk', risk is distinctively involuntary in that it is determined not by people, but instead by controlling agents external to them (Sjoberg, 1987, p. 134). Risk is more something that 'happens to you', suggesting all that is possible is a reactive response to forces that are beyond control (Durodie, 2004, p. 14).

Lupton (1999) and Kemshall (2002) argue that an understanding of risk must take account of humans as capable of being active negotiators of risk. While risk language relies on rational, objective and scientific terms, these authors claim that people make choices about acceptable levels of risk, negotiating and managing the risks associated with contemporary life. Lupton (1999) points out that these decisions do not occur in a vacuum. Taking a sociocultural approach to risk, she shifts the emphasis from the individual as an involuntary subject and situates voluntary approaches to risk within the context of broader social beliefs and values. In arguing that we must take account of both individual action and the broader socio-political environment, Tierney's (1999; 2007) work identifies the links between risk exposure and government and public policies. She argues that risk and power are related and this affects risk exposure, risk knowledge and risk identification. While natural disasters may be real events, the way in which they are positioned and responded to on the public agenda are the result of social processes. In this way, Tierney (1999) argues that risks are socially constructed.

Thus the concepts of voluntary and involuntary risk, being a 'risk taker' or 'at risk' provided a framework for examining how residents in Invermay and Inveresk perceived the risk of flood. We were keen to explore the extent to which these categories fitted with how residents themselves perceived their risk situation. As indicated in our findings (detailed below) clear cut divides between these seemingly opposite concepts do not resonate with those living on the flood plain.

Method

We used a qualitative interview method to understand community perceptions of flood risk. Qualitative methods allow a thorough exploration of the 'personal experiences, meanings and interpretations' (Sarantakos 2005:48) and are best suited to areas 'where there is a need to study reality from the inside...from the point of view of the subject' (Sarantakos 2005:134). They also gain a deeper understanding of beliefs, values and perceptions. This method allowed a focus on applying an interpretive approach to understanding community perceptions of flooding and flood risk. This approach sees that it is only through individuals' perceptions of events, the reasoning they apply to everyday life, and an understanding of the broader social context, that an understanding of beliefs and behaviours surrounding flood risk is possible.

We undertook individual semi-structured interviews with 60 residents living in the suburbs of Invermay and Inveresk. The semi-structured interview format ensured that information on the key areas of research was gained, at the same time providing flexibility by allowing residents to discuss as little or as much as they wished in response to the questions. A broad cross section of the community was recruited for this research. Participants ranged in age from 19 to 93 years of age. Each age grouping comprised participants who were single, married, and apart from participants aged 70 years or older, living in families with children.

Over half the sample own, or are purchasing, their own home (31 participants) and it is this group that is the focus of the research reported here. As one of the older suburbs in Launceston, the area has become popular with renovators who wish to restore the older buildings. Of the sample, nine were currently, or had recently, renovated their home. We were interested in exploring how those people with a substantial investment in the area perceived the risk of flood – whether it affected their decision to live in the area. We were also interested in gaining a sense of whether their living in a flood prone area was a case of voluntary risk taking.

Findings

All but two of the residents who were home owners/renovators claimed to be aware of the flood risk prior to moving into the area. Almost one third of home owners have resided in the area for a considerable length of time (eighty years in one case), with a small portion of those having inherited the home from family. Whilst a portion of residents did not directly cite reasons for having moved to the area, many (over one third) stated that lifestyle factors such as accessibility, sense of place and community, easy access to transport and other services, were important factors in choosing to live in the area. A smaller but nonetheless significant portion of residents

cited housing affordability as a key reason for living in the area illustrating that Invermay and Inveresk offers an important (and sometimes sole) means for people to enter the housing market.

These findings provide interesting insights concerning community perceptions of flood risk, particularly regarding how the community calculates risk, formulates risk decisions and trades-off risk with other factors. Equally, they shed light on people's perceptions regarding determinants of risk.

Voluntariness and Risk

In order to gain a picture of whether home owners voluntarily chose to live in a flood risk area, residents were asked if in investing there they had given prior consideration the risk of flooding. Many residents indicated that they were aware of the flood risk prior to their making an investment. Their responses indicate that risk decision-making involves a complex weighing up of multifarious factors. Emerging home owners citing housing affordability demonstrate this point well.

For Danni, flood risk was part of the choice that she made:

“Well obviously there's risk involved in it, but when you want to get into the property market I guess, then that was just one of those things that I don't know, you look at it and you weigh it up, and I just decided to go ahead.”

Susie expressed a similar sentiment:

“...the price was right...there was certain things I wanted when I was buying a home and I couldn't afford to live in all the areas...[I was]...limited...and this one came up.” (Susie)

Whilst Danni and Susie's choice to invest in the area signals voluntariness in risk decision-making, Con demonstrates that such decisions are not so straight forward. Citing housing affordability as a reason for entering the Invermay/Inveresk housing market, he stated:

“...well this place came up and at the cost. We wanted to buy and we needed somewhere because a child was on the way at the time and we just needed to have somewhere.”

Jolene similarly demonstrates the complexity of risk decision-making. Whilst conceding that she chose to live in the area, again housing affordability was cited as a key reason. However, fourteen years later, changing life circumstances (i.e. age, income, health factors) impinge greatly on her ability to voluntarily move out of the area.



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Despite the flood risk, Invermay and Inveresk are considered by many to be areas offering suitable lifestyle choices.

“I'd hate to have to start again now that I'm older...I'm on a limited income...[I have]...no real wish in me to ever have to work full-time again because I don't think I could...It's a really good place to live but now I have to question...my decision back then...but I don't have the luxury of turning that around anymore.” (Jolene)

The complexity of risk decision-making is further evidenced in people's citing of lifestyle factors as a part of their weighing up process. The following statements demonstrate that sense of place and quality of life play an important role. They also demonstrate people's capacity to trade-off risk in order to attain their desired lifestyle.

“...we're here, and we really love it and it's the choice that you make... I love my business; I love where I live, really enjoy it, so it's a quality of life thing.” (Leon)

“We thought nothing of floods or anything like that when we first moved in. I mean, we always knew that it was prone to flooding, but it didn't really come into consideration...No, it was just good, flat land, central, they style of the house was what we wanted; the character...and it had potential...” (Bruce)

People's perception that risk is a part of everyday life also factored in the decision-making process for many residents. Flood risk was just one of the many events that expose people to risk, as Joe and Bruce stated:

“... [An]... airplane could crash into the house and kill ya... Yeh, you are taking a risk every day of your life...when you get out in your car, anything. Why worry about it.” (Joe)

“It's a bit like, you know, do I worry we're in the flight path of a plane falling down. Do I worry about walking out onto Invermay Road and getting hit by a bus? You know, lightning strikes! Really, you know it's there; it could happen, but it's not like, gees, I got to get out of here.” (Bruce)

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The 1929 flood in the Launceston municipality.

These comments point to a pervasive belief that life and risk are synonymous. This highlights that in making risk decisions, people are required to not only identify and assess a variety of factors, but must do so in an environment wherein risk is not easily separated from everyday life. Thus, determining the voluntariness of people's risk decisions is not a straightforward process.

We also found that perceptions of risk are often accompanied by a sense of inescapability. For some, this is expressed in terms of the inevitability of flood risk; others hold a more fatalist view.

"It's only one bloke that knows about...[the risk of flooding in Invermay]...and that's ah, his nibs upstairs...You can't do nothing about it." (Joe)

"I sometimes worry about it but if something happens, something happens. What can you do?" (Tanya)

"There's nothing we can do about it; it's out of our hands." (Leon)

Notably, each of these residents acknowledged that living with flood risk is a part of the choice they made. Despite this, their comments signal that residents hold a concurrent belief that the potential consequences of this choice are substantially less within their control. In this sense, voluntariness intersects with involuntariness in a way that sees people both as risk takers and as 'at risk'.

Whilst the inevitability of flood risk provides an important theme, it is significant that roughly one quarter of residents convey a belief that it is the actions of people as well as nature that determine flood risk. While flood risk is an act of nature, flood disasters are, at least in part, symptomatic of human-made problems; they are socially constructed (Tierney, 1999, p. 236; Britton & Clark, 1999, p. 3). Whilst many residents perceive flood risk as inevitable or fatalistic, they also were aware that their vulnerability to natural hazards is neither accidental nor fatalistic. Illustrative of this widespread view are the comments by Kevin, Leon and Sally:

"...if no-one built here...there wouldn't be a flood issue...[Our actions]...change what will occur; you know, the likelihood of floods...because we make the situation for ourselves..." (Kevin)

"...because they've chosen to put the levee banks up and approve residential living and industrial living in these areas, you would have to then say that...[flood risk in the area is]...man made because they've already decided to hold back nature by putting people in a below sea level area. So, therefore, It'd have to be man made – the disaster." (Leon).

"...Flooding...is a natural occurrence. Look through history and there's always been floods and whatnot... but obviously, knowing that...[when]...cities are built and such, then they need to consider that and look at where boundaries should be or whatever." (Sally)

Conclusion

Our analysis of the views of homeowners in Invermay and Inveresk indicates that risk decision-making is a complex process: one that involves the identification and calculation of multifarious factors (risk; lifestyle; other). Responses from residents in the area demonstrate that flood risk is not easily separated from other risks that form a part of people's everyday lives. The analysis also reveals that in some cases, voluntariness in risk taking is at times less to do with choice, and more to do with lack of choice (affordable housing being an example of this). It may also be to do with the 'risk trade-offs' that people are prepared to make in their 'whole of life' decisions. As modern day risk takers then, people are required to consider a complex array of factors in a way that sees them engaging not simply in a voluntary risk taking, but more in terms of intricately balancing and trading off risk. Significantly, this research demonstrates that despite people's demonstrated capacity to take a risk, in specific relation to the potential consequences of living in a flood risk area, many see themselves as 'at risk'. They attribute their risk to both the inevitability of natural disasters – that the natural world is unable to be controlled - at the same time as identifying social causes such as development as shaping their risk exposure. While these two positions may be viewed in some ways as contradictory, they comprise part of a complex web of ideas, values and beliefs that shape residents' perceptions of risk. Residents' perceptions of risk, including their capacity to see risk as a trade-off, defy conventional categories of voluntary or involuntary risk, thus requiring policy makers to deepen their understanding of how risk is constituted by residents who may be simultaneously 'risk-takers' and 'at risk'.

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The logo for ALIES features the word "ALIES" in a bold, dark blue, sans-serif font. A stylized orange oval with a white center is positioned behind the letters "E" and "S", partially overlapping them. The background of the top and bottom corners of the page is a dark blue circuit board pattern with glowing orange lines.

AUSTRALASIAN LIBRARIES IN THE EMERGENCY SECTOR

ALIES is a cooperative information network that aims to serve the common interests of emergency management agencies.

ALIES supports the information requirements of the emergency sector by sharing knowledge and resources within Australia and New Zealand.

Ask your librarian how ALIES is improving the information capacity of your organisation!

information catalysts

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REPORTS

Australasian libraries in the emergency sector – information catalysts

by Troy Watson, Library Manager, Emergency Management Australia.

Australasian Libraries in the Emergency Sector (ALIES) is a cooperative information network that aims to serve the common interests of emergency management agencies.

ALIES supports the information requirements of the emergency sector by sharing knowledge and resources within Australia and New Zealand, to increase the information capacity of emergency management agencies. The network collaborates to exchange and share knowledge, skills and resources, to maintain a distributed Australasian emergency management collection, and to provide an expert information service to the emergency sector.

The ALIES network was formed in 1991 and included a handful of emergency service libraries. By 2003 ALIES had 26 member libraries, and in 2008 has grown to include 40 member organisations from Australia and New Zealand. Membership of ALIES has grown particularly quickly in the last few years as we realise that more libraries (and their parent organisations) have a role to play in a whole-of-government approach to emergency management. In particular, this has seen the network move from a strictly 'emergency service' base, to a broader membership base that covers the full spectrum of emergency management. This has led to an increase in members from the recovery, science and environment areas.

Membership of ALIES is based on the involvement of a library's parent organisation in at least one of the four stages of emergency management – Prevention/Mitigation, Preparedness, Response, and Recovery. Member libraries range from Police, Fire & Ambulance services, through to State and Federal Government departments including Geoscience Australia and

the Bureau of Meteorology, and non-government organisations such as Australian Red Cross. New members that have joined ALIES in the last twelve months include: Department of Human Services (Victoria), Department of Sustainability and Environment (Victoria), Department of Justice and Community Safety (Australian Capital Territory), GNS Science (New Zealand - Geological and Nuclear Sciences), Department of Internal Affairs (New Zealand) and Department of Families and Communities (South Australia).

ALIES library professionals may be known as librarians, knowledge managers, or information specialists, but our common goal is to promote the professional status of emergency management agency libraries and information services. ALIES works as a community of practice, providing an opportunity to exchange ideas, knowledge, experience, skills and resources, as well as a mechanism for contributing to wider policy issues affecting emergency management practices. The ALIES charter provides a formal framework for future direction of the network, and an Executive Committee of elected members is responsible for managing the affairs of the network.

ALIES library collections contain Australasian and international resources in subject areas across the emergency management sector including:

- Policing, criminology, security, intelligence and law
- Science and environment
- Hazards, disasters and epidemics
- Fire, ambulance and emergency services

Over recent years, ALIES has developed a number of tools to facilitate the sharing of resources across the network, and affordable access to electronic resources. These include: ALIESnet, a gratis Document Delivery network which includes the journal holdings of ALIES members; the ALIES e-list to communicate with members; an online secure 'Quickplace' for sharing information and managing knowledge; and consortia arrangements for a range of online databases. ALIES has

been an important contributor to the development of the AusDIN portal, particularly in relation to taxonomy development and adding content.

ALIES libraries vary from multi-branch government library services to small one person libraries. There are a number of 'big issues' that these libraries face and these are relevant across the special library sector, such as: downsizing; organisational restructure; changes in management; and budget cuts. In addition, marketing of the library within our organisations and externally is important, as well as changing services to meet the demands of users. In relation to delivery of library services ALIES libraries are particularly focused on targeted information services, online delivery of services, and delivery of services over distance, training and e-learning.

The ALIES conference/workshops, held annually since 2002, have become a regular and highly valued experience for ALIES librarians. Each conference has provided a forum for library professionals to engage with their colleagues and discuss ideas that ultimately benefit the emergency management sector. Hosted and funded by Emergency Management Australia at the Institute in Mount Macedon, Victoria, the annual conference is a valuable investment in the development of networks, knowledge transfer and professional practice. The development and maintenance of relationships within the network is as important to the individual members as it is to the network and its continuity.

The ALIES 2008 Conference will be held from Sunday 16th to Thursday 20th March 2008 at Emergency Management Australia, Mt Macedon Victoria. The theme of the conference is 'ALIES 3.0: information catalysts' and reflects the impact of Web 2.0 technology on libraries and how ALIES is evolving in a changing information environment. The focus of ALIES 3.0 is to go further than Web/Library 2.0 technologies and plan for the next 'version' of ALIES in order to move forward in the emergency sector information environment. The conference is designed with four streams:

- Trends in emergency management – the current and future issues
- Pushing forward – the professional skills required to move ALIES libraries forward
- ALIES 3.0 – implementing Web 2.0 technologies to benefit member organisations
- ALIES in the 21st Century – strategic planning for the future of ALIES

The conference features keynote speakers from emergency management, knowledge management and libraries, including: Tony Pearce (Emergency Management Australia), Andrew Coghlan (Australian Red Cross), Bruce Budge (Queensland Fire and Rescue Service), Liz Curach (University Librarian, University

of Western Sydney), Christine Mackenzie (CEO, Yarra Plenty Regional Library), and Anne-Marie Schwirtlich (CEO & State Librarian, State Library of Victoria).

The objectives of the ALIES Conference are:

- To assist member libraries to broaden their focus by incorporating current knowledge and information management principles and practices into core business
- To conduct the ALIES Annual General Meeting (AGM)
- To exchange information on current information management trends which will encourage innovative practices within and between emergency sector libraries
- To discuss and plan marketing strategies for ALIES and individual members
- To contribute to a better understanding of resources of other emergency Sector libraries by creating improved access to information and people
- To develop strategies for future co-operation between member libraries, parent organisations and government bodies involved with emergency management

The 2007 conference featured 40 representatives from 30 ALIES libraries and was a fantastic opportunity for idea sharing, networking, and professional development. Similarly, the 2008 conference will prove to be an important event for emergency sector librarians, to assess the current and future role of ALIES and to identify key issues and projects for the next twelve months.

The Executive Committee is always keen to identify potential ALIES members. If you think your library may be eligible, please visit the ALIES website for more information or contact your nearest member library. A directory of member libraries is available on the ALIES website: www.ema.gov.au/alies.

Ask your librarian how ALIES is improving the information capacity of your organisation!

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AUSTRALASIAN LIBRARIES IN THE EMERGENCY SECTOR

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Australian Federal Police

Australian Institute of Criminology

Australian Institute of Police Management

Australian Red Cross

Bureau of Meteorology

Commonwealth Scientific and Industrial
Research Organisation -
CMIT - Information Services Group

Commonwealth Scientific and Industrial
Research Organisation - Livestock Industries
Australian Animal Health Laboratory

Country Fire Authority (Victoria)

Department for Families and Communities
(South Australia)

Department of Emergency Services
(Queensland)

Department of Environment and
Conservation (Western Australia)

Department of Human Services (Victoria)

Department of Internal Affairs (New
Zealand)

Department of Justice (Victoria)

Department of Justice and Community
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Department of Primary Industries & Fisheries
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Department of Primary Industries and
Water (Tasmania)

Department of Sustainability and
Environment (Victoria)

Emergency Management Australia

Environmental Science & Research
(New Zealand)

Fire and Emergency Services Authority
of Western Australia

Geoscience Australia

GNS Science (New Zealand)

Metropolitan Fire Brigade (Victoria)

New South Wales Fire Brigades

New South Wales Police Service

New South Wales Rural Fire Service

New Zealand Fire Service

New Zealand Police

Northern Territory Police,
Fire & Emergency Services

Queensland Police Service

South Australia Police

South Australian Fire and Emergency
Services Commission

St John Ambulance (Western Australia)

Tasmania Fire Service

Tasmania Police

Tasmanian Ambulance Service

Victoria Police

Victoria Police Forensic Services

Victorian Institute of Forensic Medicine

Western Australia Police

Identifying nationally recognised emergency management skill sets: godsend or poisoned chalice?

Andy Smith provides an overview of the skills that will grow capabilities and performance within Australia's Emergency management sector.

Abstract

The Public Safety Training Package was first published in July 2000 by the then Public Safety Industry Training Advisory Board (PS ITAB) and provided the first nationally recognized qualification in emergency management being an Advanced Diploma in Public Safety (Emergency Management). In this paper, Smith provides an overview of nationally recognised skill sets and opportunities for the emergency management sector to identify skill sets that may strategically enhance capability and performance within the sector. He draws upon the experience of the Australian Broadcasting Corporation, the State/Territory Emergency Services sector in addition to researchers within the vocational education and training (VET) sector. Since inception, the emergency management sector has clustered competency standards to meet industry and employer needs, rather than as a strategic decision informed by the Australian Qualifications Framework (AQF).

Introduction

Emergency management has become a key feature for industries outside of the 'traditional' emergency services. The drivers of this change range from legislative amendments that have increased the emergency management-related roles and responsibilities of some organizations (such as local government) in addition to capability enhancements initiated in part as a response to significant events (such as business continuity within the critical infrastructure sector). The training sector has not always kept pace with the drivers of change within industry, and this has often resulted in tension between the industry (especially employers) and the training sector (specifically training providers).

This paper provides an overview of skill sets within the vocational education and training sector that arose following a Higher Level Review of Training Packages in 2006 that informed a directive by the Council of Australian Governments (COAG) to the National Quality Council (NQC) to explore the development and identification of skill sets or "those single units [of competency] or combinations of units which link to a licence or regulatory requirement or defined industry need." (in tpatwork, April 2007)

The High Level Review of Training Packages identified that "Increasingly, individuals are finding that it is a job requirement to possess specific sets of skills to meet industry standards or regulatory and legislative requirements. The national training system now has processes in place to identify specific skill sets within training packages and allow formal recognition of those skills.

In 2006 the Council of Australian Governments (COAG) acknowledged that this was a problem which was inhibiting economic growth and productivity. It made the recognition of skills, including skill sets, a priority for the national training system." (tpatwork, April 2007)

The Public Safety Training Package (PUA00) contains the single, emergency management specific qualification for the sector, namely the Advanced Diploma in Public Safety (Emergency Management). The PUA00 was first endorsed in 2000 with the qualification that was heavily weighted towards emergency risk management. A review of the PUA00 in 2003/04 resulted in changes to the structure of the qualification to reflect changes within the sector, especially the organizations identified as participants in the various emergency management arrangements.

The major review of the PUA00 is being undertaken by Government Skills Australia (GSA) — the industry skills council for the government and community safety industries, in consultation with the Emergency Management Sector Working Group (EMSWG) — the representative body for emergency management within the vocational education and training sector. (GSA/DEST, 2007) The EMSWG noted that the "identification and initial recommendations for

improvement have been proposed through extensive consultation, research and analysis that have been approved by the industry.” (EMSWG, 2007) The identification of skill sets are among the proposed improvements to the qualification.

Emergency management is one of the ‘industry-wide (or cross-industry) sectors’ within the PUA00, while Defence, Police, State/Territory Emergency Services (SES) and Fire are sectors within their own right. Skill sets have attracted the interest of other sectors, including those who represent public safety volunteers. Within the context of the PUA00 review project, it has been noted that “there is an opportunity for SES personnel to train to role and maintain current competency in key skill areas as they choose or local demand requires, rather than be driven by a qualifications-only outcome.” (GSA/NETC, 2007)

Skill sets

Skill sets will not be unique to the emergency management or public safety sector, rather they will “appear in all industries and across all levels of work” (tpatwork, April 2007) implying that they will be equally relevant to entry level (Certificate II) training to higher level training such as that which is available to the emergency management sector. Many industries that ‘train to role’ have been delivering and assessing training using skill sets ‘by proxy’, since the inception of the nationally recognized training system in the mid-1990s.

Skill sets are “a new look nationally portable Statement of Attainment [SOA] setting out consistently and clearly for employers the competencies and skills a person has achieved” (Cleary, 2007) yet “are not a new qualification within the national training framework, but they are a way of publicly identifying on a Statement of Attainment, logical groupings of units of competency which meet an identified need or industry outcome.” (NQF, 2007)

The authority to research, identify and validate skill sets within nationally endorsed training packages for all industries commenced with the High Level Review of Training Packages that “identified that there are many individuals and enterprises looking not for full qualifications, but rather for flexible skill sets made up of individual units of competency.” (tpatwork, April 2007) The Review further noted that “Before 2007, individuals received no formal recognition when completing a particular combination of units within a qualification to meet a required industry or job need. They received either a statement of attainment or a full qualification. In most cases the statement of attainment made reference to a partial completion of a qualification rather than acknowledging that the completed units constituted a skill set.” (tpatwork, April 2007)

The latter was certainly correct within the public safety sector, including emergency management, where the delivery and assessment of the Advanced Diploma qualification by registered training organizations (RTOs) occurred by default to meet the diverse industry need, rather than a strategic decision within the Australian Qualifications Framework (AQF). The emergency management industry strives to remain responsive to a number of drivers that influence its capability requirements, including recommendations arising from significant events and exercises/simulations to shifts in government policy and legislation. Skill sets, as defined in this paper, formalise an approach that has been acceptable to the emergency management industry since the endorsement of the first version of the Public Safety Training Package.

Before exploring the skill set concept in further detail, the purpose of units of competency or competency standards must also be defined. In addition to the various working definition used by the VET sector, Phil Rutherford, a former member of the National Training Board (1993-1996) states that competency “standards provide a clear understanding of what each person or group must do in order to achieve business and strategic objectives at all levels of an organization – be it private or public sector.” (Rutherford, 2006)

Further to Rutherford’s broad definition of competency standards, he asserts that “competency standards are not, and never have been, written for the purpose of training. They describe the standards of work required in the workplace and if people can be fully or partially trained to this level then all well and good, but training is not their primary purpose.” (Rutherford, 2006) This view has formed the underpinning philosophy adopted by EMSWG as part of the review of the emergency management qualification and competency standards. The implications for the emergency management sector include ensuring that the broad range of emergency management related roles, functions and tasks are captured during the review. These must then be validated and informed by the emergency management industry, that is an industry which has grown exponentially since 2000 to include organisations not previously seen as ‘players’ in the emergency management arrangements.

During the first round of national consultations undertaken by GSA partnership with EMSWG members, the list of organisations participating and/or contributing to a jurisdiction’s emergency management capability appeared endless. The lists were consolidated at the conclusion of the consultative workshops and demonstrated that there is increased participation within the following sectors:

- Australian (Federal) Government agencies and departments

- Local government
- Essential services and critical infrastructure
- Recovery and welfare service organisations
- Large industries with significant emergency risks to workers and surrounding communities

(This is a summary of the groups of organisations identified by stakeholders and should not be construed as complete).

The key driver for the development of Skill Sets within endorsed training packages has been driven by industry. Geof Hawke, Senior Research Fellow with the Centre of Research in Learning and Change at the University of Sydney observed that in 2006 “governments agreed to employer demands to introduce ‘skill sets’ into the VET system. These will not be qualifications but “a way of publicly identifying ... logical groupings of units of competency which meet an identified need or industry outcome.” (Hawke, 2007) Such demands have come from a cross section of industries including those driven by the “resources boom”, in addition to some not readily considered including the Australian Broadcasting Corporation (ABC).

Jenny Ferber, Head of ABC Learning with the ABC stated that support for the Skill Sets approach was based upon “an increasing impatience with what is seen as the bureaucratic nature of the training system and an increasing urgency to acquire skills as the need emerges.” (Ferber, 2007) The ABC draws upon the national training system for four key reasons, including “quality assurance through the Australian Qualifications Training Framework (AQTF); the establishment of agreed standards; the practical, hands-on skills; and the quality of trainers and assessors.” (Ferber, 2007) These reasons are consistent with those of most public safety organizations and employers.

Margaret Kling, an Accredited Practitioner of the Australian Institute of Training Development, identified an added benefit for trainees are that “skill sets still constitute a pathway to a full qualification, as with any of SOA, if that is subsequently required.” (Kling, 2007) This fact is important for the emergency management sector, with a single qualification accessed by a variety of pathways from a range of industries.

The development of Skill Sets within endorsed training packages has sparked passionate discussions regarding the role and place of qualifications. Skill Sets will not replace qualifications; rather provide pathways to them while supporting the immediate skills needs of industry. It is at this point that there may be a divided view of Skill Sets across all industries including those in the public safety sector. There are those industries and organisations that view qualifications as integral to not only strengthening workforce capability and succession planning, but also provide a balanced objective measure

to inform career advancement and performance management. There are other organisations that do not see the importance of qualifications in the same way, and remain focussed on ensuring that workers, paid and volunteer, can perform the requirements of their job to an agreed set of national standards.

On the subject of the importance of qualifications generally, Hawke notes that key reasons that support the belief that the level of qualifications in society is important include:

- “People with qualifications are more likely to be able to gain and keep a job.
- People with qualifications earn more over their lifetime than those who haven’t.
- Having a qualification makes it easier for a person to move from employer to employer, especially in difficult economic times.
- People with qualifications are held in better regard and feel better about themselves.
- Gaining a qualification is an important way of encouraging people to continue to improve their knowledge and skills. It sets them on an upward path.
- Australia has fairly low skills base in contrast to its major competitors. We need to increase our level of skills in order to compete effectively.

He concludes by noting that based on his own research, and that of his colleagues, “only the first two of these beliefs are clearly supported by evidence. All of the rest are assertions that are not, in general, true. (Hawke, 2007)

Skill Sets will be developed and identified in endorsed training packages “where there is industry demand, national training qualifications will include identified skills clusters” (Cleary, 2007) from 2008 onwards. Initial reaction to the inclusion of Skill Sets by industry and the VET sector has been positive, as “the new skill sets are seen to provide an accepted and respected statement of attainment (SOA) which will be compete in its provision of skills related to the trainer’s role and thereby remedy the precise issue many organizations have experienced.” (Kling, 2007)

Many organizations, including those within the public safety sector, have openly supported the Skill Sets recommendation as a strategy to address the key skills shortages within industry. A unique example cited within the ABC case study cites specifically the areas of broadcast technology and in television production, where the ABC has “designed entry-level training programs to develop the precise skills we need.” (Ferber, 2007) Within the public sector, the “SES sector has demonstrated a need for clusters of units that support particular job roles within volunteer ranks.” (GSA/NETC, 2007)

Support for Skill Sets has been largely driven by the appearance of them being a logical approach to workforce capability development, the ABC case study indicates that “the backdrop for this whole issue is an increased emphasis in the ABC, as in other corporations, on general workforce capabilities and culture, rather than purely on technical and professional skills.” (Ferber, 2007) Further, to make Skill Sets attractive to trainees and employees, “[the skills] have been mapped against qualifications from training packages and over time they will deliver graduates with complete qualifications. But the issue is not the qualification, it is the urgent need for skills.” (Ferber, 2007)

The skills shortage issue is not as significant for the public safety industries as it is for the resources sector and that of the ABC as argued above, however volunteer public safety groups including the SES “have emphasized the changing nature of the SES sector and, in particular, the specific needs of volunteers while recognizing the importance to provide training that targets key skill areas based on job roles, rather than qualifications.” (GSA/NETC, 2007) An outcome of the review of the PUA00 for the SES will be an agreed set of national Skill Sets that will provide a training pathway for new and existing volunteers to be trained and assessed to perform key roles more efficiently, thus training for role.

It is the sense of urgency for appropriate skilled emergency management personnel rather than the single qualification that will be among the key concepts for further consultation as part of the review of the PUA00. To avoid the development of Skill Sets on a ‘whim’ or to address short term need, the NQC have agreed to principles and protocols for the inclusion of Skill Sets in endorsed training packages.

Principles and protocols

The following Principles and Protocols were developed in widespread consultation with stakeholders and provide guidance to Training Package developers in defining and developing skill sets in Training Packages.

The three (3) principles for the development of Skill Sets include:

Principle 1: Skill sets should be considered by Training Package developers in the same way that units of competency and qualifications are. That means consideration must be given to logical clusters that meet the needs of an industry, or sector or specific part of the industry and have value in the workplace.

Principle 2: Target groups for all qualifications and skill sets should be clearly defined in the Training Package.

Principle 3: The identification and development of skill sets within Training Packages should increase, rather

than decrease, available skill development options for individuals and enterprises. (Cleary, 2007)

The five (5) protocols for the development of Skill Sets include:

Protocol 1: Consultation and validation must be undertaken to establish the extent of industry need for the skill set, just as it is required to establish demand for units of competency and qualifications.

Protocol 2: Consideration must be given to identifying clear relationships between skill sets or between skill sets and qualifications where this may be appropriate.

Protocol 3: The Training Package customisation and packaging guidelines must be designed to encourage the use of proposed unit combination(s).

Protocol 4: Identified skill sets should be noted within the Qualifications section of the Training Package. The relationship that identified skill sets may have with any of the qualifications in the Training Package should also be made clear.

Protocol 5: Where a Training Package developer considers a skill set should be constructed consisting of units across Training Packages consideration should be given to whether units should be imported or advice provided to Registered Training Organisations. (Cleary, 2007)

The key question challenging those involved in developing the direction and possible outcomes of the major review project is ‘will the emergency management industry accept or discard formalised skill sets?’ As outlined earlier in this paper, the sector has been wedded to skill sets by default since the initial endorsement of nationally endorsed training packages. Therefore, the key challenge is actually agreeing on a profile of nationally endorsed skill sets as an industry and informed not led by RTOs.

The approach agreed by the EMSWG at a combined workshop with representatives of the National Project Steering Committee (for the PUA00 review), was to seek feedback from the diverse emergency management industry for the purpose of identifying skill sets that reflect the work currently being undertaken within the sector. At the time of preparing this paper, the skill sets that had been identified at the first four national consultation workshops indicated overwhelming support for skill sets that articulate towards a qualification, that will remain as an ‘end point’ for the sector, while not being the only focus. The skill sets that were identified by industry in October 2007 will be validated and enhanced during the second round of national consultation workshops scheduled for April 2008.

If support from the emergency management industry for the skill set concept remains supportive, then the EMSWG is aware that the greatest challenge will always

be implementation by RTOs. Kling (2007) notes that “training organizations delivering the skill sets must have a clear understanding of how each skill set will transfer into the full qualification under the packaging rules. If this information is cumbersome, many (RTOs) will opt to stay with the full qualification and this will perhaps deepen the division of opinion even further (notwithstanding that organizations are making decisions based on their individual business needs).” This aspect is relatively simple for the emergency management sector, that has a single qualification within the PUA00 rather than a suite of qualifications spread across all AQF levels.

Skill sets are not an entirely new approach to training and assessment within the VET sector. The NQC (2007) noted that “some Training Packages have developed skill sets in the past, particularly by showing combinations of units which link to licence or regulatory requirements.” For the emergency management sector, the COAG decision which identified “that by 31 December 2008 national training qualifications will include identified skills clusters where there is industry demand” provides an opportunity to review the structure of the qualification to ensure that the units of competency that make up the core and elective choices, articulate with the nationally agreed skill sets for the sector.

The EMSWG (2007) agreed at the combined July workshop that “it is important for the emergency management sector to develop accurate competency standards that may assist with workforce planning, recruitment and performance management processes within the industry as well as providing outcome statements for the development of learning and assessment strategies.” (EMSWG, 2007) Discussion at this meeting also reflected “an increased emphasis on informal, just-in-time learning, individual exploration and sharing, both virtual and personal, over and above structured skills acquisition” that was the experience of many other industries. (Ferber, 2007)

At the conclusion of the first round of national consultation workshops (October 2007), the EMSWG were informed that “[some stakeholders] have expressed the need for clearer linkages between emergency management job roles and functions, the performance requirements involved for each and career pathways from one to another.” (GSA/EMSWG, 2007) From this, it was further noted by the project team that “it may be possible to include some relevant information in the revised [Public Safety] Training Package in terms of the alignment of emergency management [related] skill sets and qualifications with job roles and functions.” (GSA/EMSWG, 2007)

It appears that determining the structure and possible application of skills for the sector is straight forward if the EMSWG and stakeholders adhere to the agreed Principles and Protocols. The ultimate challenge will be the

implementation in partnership between industry and the RTOs. EMA is an example of an industry based RTO that has developed a learning and assessment pathway model that may facilitate the introduction of nationally agreed skill sets. Previous published research noted that “the fundamental rationale used by Emergency Management Australia (EMA) conforms to the main practices of experiential learning theory (ELT), where relatively abstract ideas, such as the need to plan for risk, are transformed into concrete experiences, experimentation and skills, which the participant can then understand even more fully upon subsequent reflection.” (Kolb and Boyatziz, 2000 in March and Henry, 2007)

If the skill sets are packaged correctly to reflect job roles, and a logical grouping of units of competency, there is potential for all RTOs within the public safety sector to deliver and assess training that not only leads to a qualification, but provides industry with an individual who has the right skills for the job. The successful outcome must require an effective and acceptable learning and assessment model such as ELT to support the acquisition and application of these new skills. The EMA approach discussed above asserts that “participants leave the course having practised new and enhanced skills in a “safe” environment, as well as having challenged, and been challenged by, different ideas, points of view, and methodologies.” (March and Henry, 2007) Such a model may just provide an insight for other RTOs to explore and possibly contextualise for their own client base.

The identification and validation of skill sets must be supported and informed by industry in partnership with subject matter experts and those involved in the delivery and assessment of the skill sets. Failure to do so at any stage of the major review project may result in a concept seen to date by many as a Godsend turning into a poisoned chalice.

Conclusion

The emergency management sector is unique when compared to other sectors, in that it has very few defined, full time employees. While there has been a slight increase in the number of identifiable emergency management roles (particularly within local and State/Territory governments), they are generally aligned to other parts of an organizations business. Even this slight increase is a change that the EMSWG have identified as a driver for a new qualification structure supported by endorsed competency standards for the sector.

Other drivers that will inform the final recommendations (due in October 2008) have been supported by research and consultation completed within other sectors, that are not dissimilar to the emergency management sector when it comes to the actual implementation of vocational education and training at the enterprise or

industry level. An example of another driver that will inform the final recommendations of the EMSWG to the National Project Steering Committee include that “for the next decade or so, qualifications will not be quite the driving force for government policy that we have seen in the last 20 years.” (Hawke, 2007)

While in terms of skill sets, that “will allow for several new and existing units to be combined in a “set” which will provide the relevant skills for certain types of trainer roles and allow many organizations access to better aligned, less costly (both in time and funds) and more relevant courses.” (Kling, 2007)

When developing the consultation approach to review the individual units of competency, the EMSWG will need to remain aware that “[Employees, their managers, and workplace assessors] are key players in the recognition, quality and application of any standards of workplace competence but too often [Rutherford has been] told that they are neither consulted during the development of such standards not conferred with to ensure they are both understandable and useable.” (Rutherford, 2006) A number of feedback mechanisms have already been identified and analysed to inform possible changes to the units of competency that will comprise the skill sets and ultimate the qualification.

The emergency management sector has, and always will, pride itself on having a well practiced approach to continuous improvement across the development of policies, plans, exercises/simulations and training. These elements of emergency management capability for jurisdictions and organizations have received an increase in their profile as a result of significant events and increases in government funding and interest. Australia’s emergency management capability is well placed to be further strengthened by the incorporation of nationally agreed skill sets that will underpin the structure of its vocational qualification. It is time to return to the core principles of the vocational education and training system by focusing on training for role rather than for qualification, and to draw upon the experiences of other industries that may assist in the shaping of the next version of the Public Safety Training Package.

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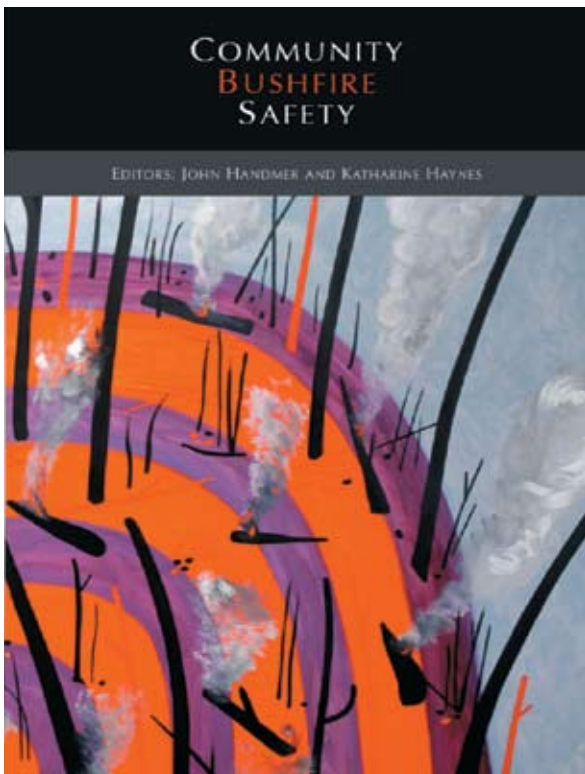


Emergency Events Database

<http://www.emdat.be/>

Since 1988 the World Health Organisation (WHO) Collaborating Centre for Research on the Epidemiology of Disasters (CRED) has been maintaining an Emergency Events Database EM-DAT. EM-DAT was created with the initial support of the WHO and the Belgian Government.

BOOK REVIEW



John Handmer & Katharine Haynes (Eds.)

Due February 2008

CSIRO PUBLISHING 9780643094260

256 pp. Paperback

\$49.95

Community Bushfire Safety brings together in one accessible and comprehensive volume the results of the most important community safety research being undertaken within the Australian Bushfire Cooperative Research Centre (CRC).

Managing community safety requires a diversity of knowledge and an understanding of the many social processes that shape and ultimately determine a community's resilience to bushfire. The wide range of issues covered in this volume reflects this diversity.

Handmer & Haynes have produced a book which will be accessible to practitioners, policy-makers, researchers and students. While the research reported in this book has been undertaken entirely in Australia, much of the material is generic and is likely to be relevant and useful to those dealing with community bushfire safety elsewhere.

"The work that is reflected here is among the most progressive and most innovative anywhere in the world".

Jerry Williams, Senior Policy Advisor Megafire Project, Brookings Institute. Former National Fire Director U.S. Forest Service

"Transferring the findings of this research into fire agencies to influence practical implementation is a crucial activity ... This book is a very effective way of bringing about the knowledge transfer".

John Gledhill, Chief Fire Officer Tasmania Fire Service

Attorney-General The Hon. Robert McClelland MP and Minister for Home Affairs The Hon. Bob Debus MP presenting the Australian Safer Communities Awards to:



Chief Executive Officer, Surf Lifesaving Australia, Mr Brett Williamson.



Arthur O'Brien (Qld Ambulance Service) and Dennis Pashen (James Cook University).



Conrad Barr (ACT Government SES) and Anthony Polinelli (Canberra Connect).



Garry Harding and David Cornett (Council of City of Sydney).



Lyndall Thomas (Drug and Alcohol Services) and Hugh Grantham (SA Ambulance Service).



Mayor Michelle Macdonald (Maribyrnong City Council) and Ben Schramm (Cube Management).



Ralph Smith and John Butcher (Fire and Emergency Services Authority of Western Australia).



Russell Dippy and Prof Paul Arbon (St John Ambulance)

2007 AUSTRALIAN SAFER COMMUNITIES AWARDS

The 2007 Australian Safer Communities Awards ceremony was held in the Mural Hall at Parliament House, Canberra on 14 February 2008.

The Awards recognise best practices and innovations that help to build safer communities. They cover organisations and individuals working in risk assessment, research, education and training, information and knowledge management, prevention, preparedness, response and recovery.

The Attorney-General, the Hon Robert McClelland MP and the Minister for Home Affairs, the Hon Mr Bob Debus MP presented Awards to the following recipients on the next page.



Andrew Coghlan & Shanna Provost (Australian Red Cross) with Tony Pearce, Director General Emergency Management Australia.



Attorney-General The Hon Robert McClelland MP with Chris Tomes and Sandra Barber (Tasmania Fire Service).

For more information about the Australian Safer Communities Awards (ASCA), please refer to www.ema.gov.au and select the ASCA link.



Jane Sexton (Geoscience Australia) and Gordon Hall (Fire and Emergency Services Authority of Western Australia).

John Schauble and Anna-Marie Shew (Sassafras - Ferny Creek Fire Brigade).

Len Fiori and Christine Barber (St John Ambulance).

CATEGORY	RECIPIENT/PROJECT
Highly Commended Pre Disaster – Federal/State	Tasmania Fire Service – Bushfire: Prepare to Survive DVD project
Winner Pre Disaster Federal/State	Fire and Emergency Services Authority – Western Australian Bush Fire Management Guidelines and Tables
Winner Pre Disaster Local Government	Council of the City of Sydney – Let's Get Ready Sydney
Winner Pre Disaster Volunteer organisations/ community groups	Sassafras-Ferny Creek Fire Brigade – 'Living safely with bushfire'
Winner Pre Disaster Combination - joint projects	Drug and Alcohol Services South Australia, South Australian Ambulance Service and Southern Adelaide Health Service – Hospitality First Responder Training
Highly Commended Pre Disaster Projects of national significance or cross-jurisdictional	Australian Red Cross – Personal support training for people working at emergencies and disasters
Highly Commended Pre Disaster Projects of national significance or cross-jurisdictional	St John Ambulance Australia – Developing safer communities through flexible learning
Winner Pre Disaster Projects of national significance or cross-jurisdictional	Geoscience Australia and Fire and Emergency Services Authority – Tsunami Planning and Preparation in Western Australia
Winner Post Disaster Federal/State	ACT State Emergency Service and Canberra Connect - Enhancing ACT Government responsiveness to affected communities during storm and flood events
Winner Post Disaster Combination – joint projects	Maribyrnong City Council and Cube Management Solutions – 'Emergency Relief (Evacuation) Centre Management Guidelines for CALD Groups
Winner Post Disaster Projects of national significance or cross-jurisdictional	St John Ambulance – Public Access Defibrillation (PAD) Project
Winner Community Safety Focus	Surf Life Saving Australia – Australian Lifesaving Academy
Highly Commended Community Safety Focus	Queensland Ambulance Service & James Cook University - Rural and Remote Paramedic Program

USEFUL INFORMATION

Australian Journal of Emergency Management

The Journal is published quarterly and is disseminated throughout the emergency management community and related disciplines, in Australia and overseas. Articles identifying and discussing issues, policies, planning or procedural concerns, research reports and any other information relevant to the emergency/disaster management community are welcome.

Refer to the EMA website (www.ema.gov.au/ajem) for current and past issues and information on how to subscribe and contribute.

Letters to the Editor

The Journal welcomes Letters to the Editor. Please note that letters should be no more than 300 words. Letters exceeding this limit may be edited or refused. Letters must be in good taste and focus on issues of emergency management or past AJEM content.

Letters must contain a name, address and daytime phone number of the author. Unsigned letters or those submitted without a phone number will not be considered.

Regular contributors should submit letters on varied subjects. Letters by the same author that reiterate opinions previously expressed may not be published. The editor reserves the right to reject or edit any Letter to the Editor.

Advertising in AJEM

Display and classified advertising may be accepted for publication with the agreement of the Editor-in-Chief. The editor reserves the right to insert the word "Advertisement" above or below any copy.

Conference Diary

Full details of local and international conferences relating to emergency management are available from the EMA website. For information, please visit www.ema.gov.au.

READERSHIP SURVEY THANK YOU

The AJEM Advisory Committee would like to thank everyone who filled in the survey as your feedback is essential to the continuous improvement of the Journal.

The survey questionnaires are currently being analysed and collated.

A summary of the results and the response of the Committee to the survey will be published in this Journal. Should you wish to provide further feedback at any time please email your comments to ajem@ajem.ema.gov.au

Government Skills Australia Industry Skills Council

Government Skills Australia (GSA) is the national Industry Skills Council for government and community safety. GSA provides quality training resources and services to support the recognition of skills and professionalism in the Corrections, Local Government, Public Safety, Public Sector and Water Industries.

Contracted by the Australian Government through the Department of Education, Employment and Workplace Relations (DEEWR), Government Skills Australia manages the Training Packages for its industries determining priorities from the direction of Industry Advisory Committees.

In 2007, two new reviewed and updated Training Packages under the GSA mandate were endorsed, the CSC07 Correctional Services Training Package and the NWP07 Water Training Package.

Version 6 of the PUA00 Public Safety Training Package was endorsed in July 2007 and a wide spread review of that Training Package commenced. The review has progressed into the Development Stage (of Phase II) – where extensive industry consultation is sought across all industry sectors.

A continuous improvement project to enhance and extend the Local Government Training Package commenced in September 2008. A project steering committee made up of key industry stakeholders has been formed and National Consultation Workshops were convened during the months of November to December 2007.

Version 2 of the PSP04 Public Sector Training Package is progressing through the endorsement process having had employability skills added and a new qualification Certificate IV in Government (Revenue Administration).

Government Skills Australia welcomes feedback on the quality and currency of our training materials. We are currently developing an issues register on the GSA website: www.governmentskills.com.au. This will allow users to view each of our Training Packages by qualification or unit, provide feedback and view the feedback provided by others. The issues register will be online in March 2008. In the interim, feedback can be provided by contacting our Industry Advisory and Project Officers (contact details on: www.governmentskills.com.au)

Andy Smith - Public Safety Project Officer
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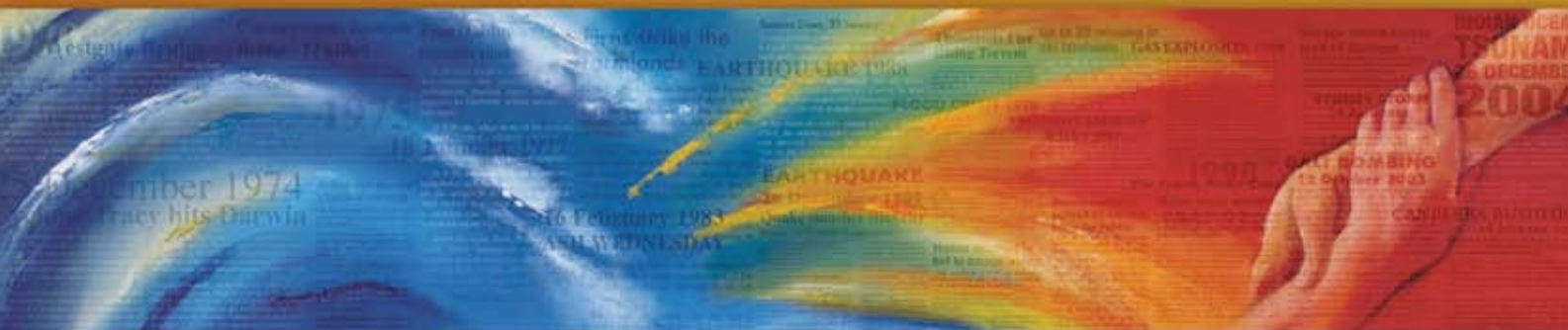
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