14 Tickets ↓

Cyclone awareness amongst backpackers in Northern Australia

| Communication during emergencies in the US | Health care providers and HAZMAT | Meeting the natural disasters challenge |

historical snapshot

1852 Gundagai floods

On June 25th, 1852, the original township of Gundagai was swept away by the flooded Murrumbidgee River. It will never be known exactly how many people died on that night, there were probably many more than the 89 victims who were identified. Gundagai was the crossing place for people en route to the Victorian gold fields. The town was gradually growing from the few settlers who had arrived in the late 1820's to a village, with a store, a flour mill and several hotels and businesses. The town was built on blocks laid out by the Government surveyor on the flood plain, despite there having been several other floods, and despite warnings from the local aborigines. The initial flooding of 23–24 June looked set to subside when fair weather occurred after almost three weeks of rain. On Friday morning, 25 June, the speed and volume of the flow increased and with the rescue punt out of action, the townspeople were in serious trouble.

An aboriginal man named Yarri set out into the water to rescue stranded people. He and another aborigine named Jacky Jacky were instrumental in saving a number of people from their precarious perches. Some reports say they were in frail bark canoes, others that it was a small boat belonging to the Morley family from the Noah's Ark hotel.

Source: Gundagai Shire Council NSW. Reference: Gabriel Louise, 1957–1927. Gundagai photograph collection, taken by Dr C.L. Gabriel, from the Butcher and Bell collections.

Contents

Vol 19 | No 2 | **May 2004**

Please note that contributions to the *Australian Journal of Emergency Management* are reviewed. Academic papers (denoted by ⓐ) are peer reviewed to appropriate academic standards by independent, qualified experts.

FOREWORD

A New Paradigm for Anticipating Disasters

There has been a distinct shift in the fundamental way we look at natural disasters in Australia. The new paradigm moves beyond disaster response and recovery, towards anticipation and mitigation. In short, some recently announced progressive and exciting change will lead to Australians being better prepared for disasters.

On 8 June 2001, the Council of Australian Governments (COAG) agreed to undertake a review of Australia's approach to the relief, recovery and mitigation against natural disasters. The objective of the Review was to determine whether current arrangements provide an effective framework to meet the needs of those impacted by natural disasters. The Review report—*Natural Disasters in Australia: Reforming Mitigation, Relief and Recovery Arrangements* was released on 2 February this year.

The Review had an underlying premise that any arrangements should facilitate maximum involvement of State, Territory and Local Government in contributing to disaster relief and mitigation and also continued cost-sharing arrangements.

A High Level Group (HLG) chaired by the Secretary, Department of Transport and Regional Services (DOTARS)—Mr Ken Matthews, was commissioned to progress the Review and I participated on behalf of Emergency Management Australia (EMA) as an adviser.

The outcomes of the Review are now the markers for the future of emergency management in this country.

The HLG concluded that current arrangements could be improved to "ensure that Australia has a world-class national framework for natural disaster management, thereby achieving safer, more sustainable communities, and reduced risk, damage and losses".

Central to the new approach will be a systematic and widespread national process of disaster risk assessment. This will feature a shift in focus towards cost-effective, evidence-based disaster mitigation. What is clear is that this represents an historic move beyond disaster response and reaction, towards anticipation and mitigation.

Endorsement of the reform commitments and recommendations in the report and the proposed machinery for implementation was obtained from all jurisdictions in January this year and the Department of Prime Minister and Cabinet has authorised the start of work to develop the reform commitments. Implementation of some of the recommendations is already underway.

Significantly, the report proposed the creation of a national group comprising high level representation from Federal, State, Territory and Local Governments to replace the previous Emergency Management Committee arrangements. This will provide broader cross-jurisdictional and whole-of-government membership. A charter for the new Australian Emergency Management Committee (AEMC) arrangements has been prepared and agreed to by all jurisdictions. The reconstituted AEMC is chaired by the Secretary of the Attorney-General's Department—Mr Robert Cornall.

A strong recommendation will see emergency management matters taken to the top decision makers. The Australasian Police Ministers Council (APMC), augmented by Emergency Services Ministers, will now consider emergency management issues. The Federal Attorney-General—the Hon Philip Ruddock MP, will chair this group of senior ministers. The AEMC will report to the augmented APMC.

There are a number of primary tasks for the new AEMC. It will oversee the implementation of the proposed disaster mitigation funding package; provide national leadership and strategic direction on emergency and natural disaster management, including national policies and priorities; and it will encourage best practice in disaster management among jurisdictions. Only substantial strategic and/or policy issues that require Ministerial consideration and endorsement will be considered by the Police and Emergency Services Ministers.

The COAG Report is a significant achievement in Australian emergency management history and it has the potential to greatly influence community safety throughout the country. The challenge confronting us all is to ensure that the reforms outlined in the report are fully implemented.

Further details of the COAG Report are provided in the article entitled *Meeting the Natural Disasters Challenge* on page 8 of this edition of the journal.

David Templeman
Director General

Communicating during Emergencies in the United States

By Jane A. Bullock, George D. Haddow and Richard Bell *

Communicating with the public is one of the critical tasks facing emergency management agencies (EM Agencies). Reaching the widest possible audience with the most up-to-date, credible information can save lives and property, reduce public fears and anxiety, and maintain the public's trust in the integrity of government officials.

We recently conducted a survey of how EM Agency communicators had fared during a number of national disasters and terrorist attacks. Our concern about the adequacy of Agency communications planning has been heightened by a striking change in the intensity of media coverage. In describing their work with the press, our respondents used imagery very much like that they applied to the emergency event itself. They found themselves swamped by a veritable "tidal wave" of reporters almost literally beating down their doors.

In this article we review the findings of our survey and interviews, and lay out the principal suggestions we received from a cross-section of EM Agencies on putting the personnel and infrastructure in place to execute robust, flexible communication plans.

Methodology

This article is based on responses to a questionnaire which we received from communicators involved in the following recent natural disasters or terrorist attack, including interviews in most cases with the principal spokesperson involved:

- Tropical Storm Allison, Harris County Texas, Office of Emergency Management, Mayor's Office, June 5–10, 2001
- The Hayman forest fire, Colorado, Public Affairs, U.S Forest Service, Rocky Mountain Region, summer 2000

- Attack on the Pentagon, northern Virginia, Office of the Assistant Secretary of Public Affairs and Media Relations, U.S. Department of Defense, September 11, 2001
- Attack on the Pentagon, northern Virginia, Capitol Police, September 11, 2001
- Sniper attacks, Washington, D.C. metro area, Media Services, Montgomery County Police Department, fall 2002
- Anthrax attack on Hart Senate Office Building, Washington, DC, October, 2001
- Anthrax attacks, Office of Communications, Division of Media Relations, Centers for Disease Control and Prevention, fall 2001
- F4 level tornado, La Plata, Maryland, Maryland Emergency Management Agency, April 28, 2002

Planning

Creating a communication plan on the fly during a crisis is an extremely daunting task. The absence of a plan virtually guarantees that communicators will not be able to reach the public as effectively as they would if they had a plan in place.

Producing a workable written plan is inherently an agency-by-agency process, contingent on available personnel, budget limitations, etc. By soliciting critical review of the plan from all the affected participants—the public, the press—other government agencies—EM Agencies have the opportunity to produce the best possible plan under the circumstances.

Some of the EM Agencies we talked with had highly elaborate communication plans. But regardless of length, they all agreed that their plans made them more effective during emergencies. And the EM Agencies who had been through a trial by fire without a written *communications plan were equally adamant about putting such a plan in place as soon as possible.*

The spokesperson's credibility is a key to his/her effectiveness at representing the government, reassuring the public, and keeping the media happy.

People

The most well-written communication plan is not worth much without a strong commitment from elected officials and department managers to put the infrastructure in place to carry out the plan.

The spokesperson's credibility is a key to his/her effectiveness at representing the government, reassuring the public, and keeping the media happy. In some jurisdictions, the highest ranking elected official or the head of the department managing the crisis will be the lead communicator, giving them a kind of automatic credibility at the onset of an event (like New York Mayor Rudy Guiliani after 9/11).

Given the increasing intensity of media coverage, the media spokesperson plays an increasingly important role in ensuring the overall effectiveness of an EMA. To maintain the spokesperson's credibility as a source with the media, the spokesperson needs to be "at the table" for all senior management decisions. If reporters believe that a spokesperson is not fully integrated into the decision-making process, they will inevitably be more suspicious of the information they receive.

By participating in decision-making, the spokesperson can also play a vital internal role by making sure that decision-makers have fully considered how their decisions may play out in the media, giving them a better chance of avoiding public relations blunders.

After the terrorist attack on the Pentagon on September 11, 2001, Arlington County officials significantly upgraded its top public communications official. The change was more than just a title change (from Assistant County Manager for Public Information to Director of Communications and Public Affairs.) The county also raised the position's salary, and provided that the new Director would report directly to the County Manager. The job description for this new position includes the development of "a comprehensive communications program that will provide a cohesive image, identity, and brand message both externally and internally by optimising the use of existing electronic resources (internet, intranet, and cable television) and non-electronic sources (print media) as well as developing new communications venues."

If possible, one person should be the principal spokesperson (the single voice-single face model.) Nothing is likely to be more confusing to the media or the public than dealing with a constantly changing array of talking heads. (There's a reason almost all the daily White House press briefings are handled by one person!)

Media Training

Learning to be a media spokesperson in the middle of a crisis is risky. There is no substitute for practical media training before a crisis arrives. In Harris County, Texas, the three authorised spokespeople had all been through a FEMA-approved 32-hour Public Information Officer (PIO) course offered through the Texas Department of Public Safety's Office of Emergency Management. The Forest Service spokesperson during the 2002 Hayman forest fire had had roughly 50 hours of formal media training. In addition, the agency's public affairs staff worked with him on "war game" crises, creating what he called "murder boards" to put him through the kind of touch questioning he would encounter in a real crisis. And the Capitol Police officer who handled the

anthrax attack on the Senate Hart Building was a media trainer himself with over 160 hours of training.

Infrastructure

Building an Emergency Operations Center

Just as some jurisdictions had no written EM plan, some did not have an Emergency Operations Center (EOC), although there was broad agreement that having a well-equipped EOC was the physical foundation for an effective communications effort.

For planning purposes, the EOC should have redundant communications capabilities, both internally and with the outside. No communications technology works every time. Land lines can fail; during the attack on the Pentagon, there were frequent problems with mobile phones.

Without a well-equipped EOC, crisis managers face difficult hurdles staying on top of what is happening. After the 9/11 attack on the Pentagon, local officials found that their EOC was ill equipped for the emergency management team to communicate with first responders, or to receive accurate information from the scene. Phone lines were down, and the room was not equipped with radios or televisions. They were forced to delay press briefings until they could verify facts with first responders and people onsite.

EOCs should be designed with the media in mind. The Harris County, Texas EOC has an on-site press room with telephone and computer access. EOCs can make life easier for television reporters by preparing video footage (called "B-roll") of scenes that reporters could use, like the interior of the Emergency Operations Center. EOCs can also prepare fact sheets and other printed background materials on the major threats that the agency has identified.

Communicators can also provide the press with special support if necessary. During the Hayman forest fire, the Forest Service gave out personal protective equipment to reporters (hard hats, fire clothes, etc.)

Carving through the Jurisdictional Jungle

The communications plan provides a framework for mapping and, where possible, negotiating communication procedures about how to handle one of the most common problems of the EM Agency universe, overlapping jurisdictions. Such overlaps are inherent in the nature of almost every large-scale emergency event. A comprehensive plan must include not only local, state, and federal law enforcement and emergency management agencies, but also the spectrum of veterinary and public health agencies (in light of the threat of the use of biological, chemical, or radiological weapons by terrorists.)

In the aftermath of the anthrax attacks, the Centre for Disease Control and Prevention has published a useful analysis of the similarities and differences in public health and law enforcement investigations, and the steep learning curves for both sets of agencies in their collaborations. (*Collaboration Between Public Health and Law Enforcement: New Paradigms and partnerships for Bioterrorism Planning and Response,* Jay C. Butler et. al., http://www.cdc.gov/ncidod/EID/vol8no10/02-0400.htm). The authors emphasise the importance of pre-existing relationships between law enforcement and public health agencies, the need for practise exercises, and call for adding liaisons who are cross-trained in the public health aspects of communicable diseases and in law enforcement and criminal investigations.

Even without a written communication plan, an informal prior agreement can be helpful in reducing confusion. In the case of the anthrax attack on the Hart Senate Office Building, there was no written plan. But the Capitol Police Board and the House and Senate leadership had previously determined that the Capitol Police would be the designated agency to handle media inquiries after any terrorist or criminal incidents within the Capitol complex. Members of Congress—a group not known for being media-shy—conferred with the police spokesperson before holding their own press conferences, and the spokesperson attended these events, off camera, to provide guidance as needed.

In our study, several communicators highlighted the importance of maintaining clear channels of communication with all of the government agencies involved, regardless of which agency had been designated the lead communication agency. This cross-

agency communication is essential for keeping everyone "on the same page," so that reporters do not get confusing or conflicting information from their contacts at other agencies. Up-to-date email and fax lists are a relatively cheap way to distribute breaking information to other agencies in a timely way.

The Office of Emergency Management in Harris County used an internet email and pager software they developed to reach more than 140 media outlets in the region, 125 law-enforcement agencies, 54 fire departments, 29 cities, and selected individuals throughout the surrounding 41 counties. After Tropical Storm Allison, the office expanded the list of individuals requesting real-time information, adding more elected federal, state, and local officials and media outlets. (Copies of the Harris County plans can be downloaded from http://www.hcoem.org)

Working with the Media
Building Prior Relationships

The media play an integral part in EM Agencies outreach efforts to keep the public informed and up-to-date. But without pre-existing relationships with reporters, it's not uncommon or unexpected that in the heat of the moment, EM Agencies might come to look upon the press in a crisis as adversaries engaged in a "feeding frenzy" for new facts.

Planning is essential to building relationships with the media, so that EM Agencies and the media understand each other's needs and operating styles, and how to work together as much as possible as allies. Both EM Agencies and the press share a deep concern about protecting the health and welfare of the public. Far from being adversaries, reporters can be valuable allies, particularly in devising an effective communications plan in the first place.

Harris County's Office of Emergency Management had a policy of inviting reporters in twice a year to talk about how the agency could better meet the needs of the press. Such conversations are no guarantee, of course, against future disagreements. But such meetings do allow for EM Agencies and reporters to share each others' perspectives in a non-stressed environment, reducing the possibility of misunderstandings later on during crises. And such exchanges also allow EM Agencies to plan to meet the media's needs where possible. Another useful technique for improving media relations is to schedule meetings with the editorial boards of local media outlets.

Conserving Credibility with the Media

Credibility is a dynamic asset in a crisis; a spokesperson can lose credibility quickly if the media and the public come to believe they're being misinformed, or under-informed. Every effort should be made to ensure that whatever information is released to the public is accurate and up-to-date. As one PIO told us, his goal was to be "the first and best source of information, especially if it's bad news."

EM Agencies might come to look upon the press in a crisis as adversaries engaged in a "feeding frenzy" for new facts.

Misinformation only compounds one of the other common communication problems during crisis, the rapid spread of unfounded rumours, which can take up valuable time rebutting. During the Capitol Hill anthrax attack, many Capitol Hill reporters—who were used to covering policy debates, not terrorist attacks—were anxious about their own medical conditions, having been in the "hot zone" at some point. Congressional staffers, their usual sources of information were also anxious about their own health, provided information often based on rumour, outside their areas of legislative expertise. Reporters, frustrated with what seemed to them to be the slow release of information, would go with these rumour sources, and end up being forced to backtrack later. Many of the communication managers in our survey said that combating such rumours was one of the most difficult tasks they faced during a crisis.

Limiting the amount of information that reaches the public poses a different kind of challenge. It is not uncommon for government or corporate managers to use the control of the release of information as a way of gaining or preserving bureaucratic power. But in a crisis, this withholding tendency can aggravate the public's anxieties. In Arlington County, Virginia, after the 9/11 attack on the Pentagon, officials found that although they might not have any new, more specific information about what might happen next, the public citizens still wanted frequent updates and reassurances from their county government.

In a crisis management setting, withholding information may well result in a loss of power and control. Our respondents agreed that one should lean in the direction of making more, rather than less, information available, consistent with law enforcement and public safety considerations.

In a full-blown media circus, even a vigorous attempt at openness may not be enough to halt a media feeding frenzy. One of the more striking examples of this press intensity came from the Montgomery County, Maryland police during the fall 2002 Washington DC area sniper attacks. The department was already providing frequent media releases, one-on-one interviews, web updates, and as many as four press briefings a day.

But reporters wanted more. Some went so far as to peer through a half-inch opening in the window shades at the operations centre, stealing a look at text on a white board. Within seconds, they were questioning Montgomery County police chief Charles Moss about the information they had gleaned, showing little concern about whether their questions might endanger public safety.

Keeping Alternative Media Channels Open

In addition to the traditional media (TV, radio, newspapers), EM Agencies have access to newer media like email, websites, and local cable TV, which can be used to reach the public directly. Because these tools also do not reach as wide an audience as traditional mass media, they should be seen as adjuncts, not substitutes.

These unmediated channels can be very effective tools for providing the public with a great deal of information without tying up large numbers of the EM Agency's staff. However, if an EM Agency is using a website, it is essential that staff update the site on a frequent basis; stale information drives users away.

The agencies we surveyed reported a wide range of satisfaction in using new media tools. In some cases, results were disappointing because too few people were aware of the local cable TV channel or did not know the agency had a website. On the other hand, one agency reported over 1.6 million contacts on its website from press, first responders, and the public, and regarded the website as a valuable component of its overall communication strategy.

Conclusion

Communicating during emergencies is necessarily fraught with uncertainty: the unexpected is most likely to happen. No emergency communication plan can fully encompass all of the scenarios that may arise. But the findings from our survey show that EM Agencies can take steps to create a robust communication plans, train spokespeople, and build the infrastructure that will enable EM Agencies to roll with the punches and maximise their effectiveness at getting their messages to the press, the public and other government agencies.

Authors
Jane A. Bullock is Co-founder and Principal of Bullock & Haddow LLC and serves as an Adjunct Professor at the Institute for Crisis, Disaster and Risk Management at the George Washington University in Washington, DC. Ms. Bullock worked for over 22 years at Federation of Emergency Management Agencies, serving as Chief of Staff to former FEMA Director James Lee Witt responsible for day-to-day management and policy direction and implementation. She is a coauthor of Introduction to Emergency Management published in June 2003.

George D. Haddow is Co-founder and Principal of Bullock & Haddow LLC and serves as an Adjunct Professor at the Institute for Crisis, Disaster and Risk Management at the George Washington University in Washington, DC. Mr. Haddow served as Deputy Chief of Staff to FEMA Director James Lee Witt responsible for policy formulation and planning in the areas of disaster response, public/private partnerships, public information, environmental protection and disaster mitigation. He is a coauthor of Introduction to Emergency Management published in June 2003.

Richard Bell is a writer and editor interested in environmental disasters, national electoral politics, and online organising. He is currently a Senior Fellow at GlobalSecurity.org.

Contact information:
George Haddow
Adjunct Faculty
Institute for Crisis, Disaster and Risk Management
George Washington University
1776 G St., NW Room 111
Washington, DC 20052
(202) 994-3929
(202) 994-0245 Fax
ghaddow@gwu.edu

Meeting the Natural Disasters Challenge

By David Prestipino

Floods, bush fires and tropical cyclones occur regularly across the Australian continent, causing more than $1.14 billion damage each year to homes, businesses and the nation's infrastructure, and serious disruption to communities. Research indicates that more extreme weather events, and large-scale single events such as more severe cyclones, storms, floods and wildfires, are expected in the future.

A major report recommending a new, more coordinated approach to natural disaster management in Australia was released in February 2004.

The scope of the review encompassed all elements of natural disaster management including land use planning, building standards, insurance, the needs of remote indigenous communities, relief and recovery arrangements and more.

The Council of Australian Governments (COAG) commissioned the review in June 2001 to identify the strengths and weaknesses of current arrangements for managing natural disasters. A High Level Group (HLG) of senior officials from Federal, State and Territory governments and the Australian Local Government Association (ALGA) was established to undertake the review. The HLG was chaired by the Secretary of the Australian Department of Transport and Regional Services, Ken Matthews. The work was supported by a Review Secretariat with staff drawn from the Department of Transport and Regional Services and the Queensland Department of Emergency Services.

The HLG met on ten occasions to examine the matters specified in the Terms of Reference. The group also had the benefit of two meetings with specialists to examine aspects of the review, and of 24 submissions received from a range of interested stakeholders, including the participating governments, ALGA, academics, scientific and research bodies, community groups and industry organisations.

The review concluded that current natural disaster arrangements could be improved. Central to the recommended new approach is a systematic national process of disaster risk assessments and, most importantly, a fundamental shift in focus towards cost-effective, evidence-based disaster mitigation. This represents an historic shift from disaster response and reaction, towards anticipation and mitigation.

A key recommendation of the review is that all levels of government agree to a comprehensive five-year package of 12 commitments (see box) to reform the way natural disasters are managed to achieve safer, more sustainable communities and regions in economic, social and environmental terms.

The Council of Australian Governments agreed in principle to the review's recommendations in December 2003. It was also recognised that implementation of the reforms should commence as soon as possible and work is now under way on the implementation of a number of recommendations. One of these is the Disaster Mitigation Australia Package which

includes a new funding program for natural disaster mitigation.

The new Natural Disaster Mitigation Program will provide funding for a range of natural disaster mitigation works, measures and related activities. These could include disaster research, risk assessments and mitigation strategies; structural works and disaster-resilient infrastructure; warning systems, community education campaigns and other preparedness measures.

The program was officially launched by the Minister for Local Government, Territories and Roads, Senator the Hon Ian Campbell, on 1 April 2004. Local councils and other eligible organisations will shortly be invited to submit applications for funding of suitable projects in 2004–05.

In launching the program the Minister said:

> "We can't control the forces of nature, but we can be better prepared to reduce loss of life, injury and property damage. Under this program, the Australian Government in partnership with the states and territories will help communities develop a clearer understanding of the natural disaster risks they face and assist them to adopt strategies to minimise those risks."

COAG agreed that an Augmented Australasian Police Ministers' Council will have overall responsibility for the implementation of the review's recommendations. The Council will be supported by the Australian

12 Reform Commitments:

1. Develop and implement a five-year program of systematic and rigorous disaster risk assessments.

2. Establish a nationally consistent system of data collection, research and analysis to ensure a sound knowledge base on natural disasters and disaster mitigation.

3. Develop, for each level of government, a natural disaster mitigation strategy to be implemented by the Commonwealth and each State and Territory commencing in year 2, and by local governments in year 3.

4. Take action to ensure more effective statutory State, Territory and local government land use planning, development and building control regimes that systematically identify natural hazards and include measures to reduce the risk of damage from these natural hazards.

5. Support cost-effective natural disaster mitigation measures through a Disaster Mitigation Australia Package, consisting of a new Disaster Mitigation Program and continuation of the Regional Flood Mitigation Program, to address the risks identified in (1) above.

6. Reduce the problem of public infrastructure repeatedly damaged by natural disasters through cost-effective mitigation measures to make infrastructure more resilient, where feasible, by proactive measures under the Disaster Mitigation Australia Package, and post-disaster measures under the Commonwealth Natural Disaster Relief Arrangements.

7. Develop jointly improved national practices in community awareness, education, and warnings, which can be tailored to suit State, Territory and local circumstances.

8. Enhance the Commonwealth Natural Disaster Relief Arrangements to better support community recovery from natural disasters and agree to ten complementary model State and Territory arrangements providing more equitable natural disaster relief and recovery assistance nation-wide.

9. Endorse a set of national cost-sharing principles for natural disaster management that includes a focus on the responsibilities of individuals, businesses and insurers, as well as those of governments.

10. Support emergency management volunteers in tangible ways and remove obstacles to their involvement in community safety by addressing key priorities, namely legal protection, financial incentives, recognition and training needs.

11. Establish new national machinery consisting of a Ministerial Council or Ministerial Implementation Forum, and a National Emergency High Level Group, to ensure effective collaboration and coordination of Commonwealth, State, Territory and local government action in implementing the reform commitments.

12. Endorse a statement of contemporary roles and responsibilities of each level of government in natural disaster management.

Emergency Management Committee (AEMC). A charter for the new AEMC has been prepared and agreed to by all jurisdictions. The AEMC will be chaired by the Secretary of the Commonwealth Attorney-General's Department— Mr Robert Cornall, with a Secretariat provided by Emergency Management Australia (EMA). EMA is the Australian Government agency with responsibility for national coordination during disaster and emergency events EMA is an agency within the Attorney-General's Department.

Other Ministerial Councils will have responsibility for their relevant components of the reforms, including, significantly, the Local Government and Planning Ministers' Council, which will play a major role in the implementation of land use planning reforms that address natural hazards.

More information is available on the website of the Department of Transport and Regional Services at http://www.dotars.gov.au, or via EMA at www.ema.gov.au

Copies of the Summary Report are being sent to all local councils and a range of other stakeholders. To obtain copies of the Summary or the Report, phone freecall: 1800 026 222

Author
David Prestipino is the Director—Natural Disaster, Planning and Research Section Department of Transport and Regional Services
GPO Box 594
Canberra ACT 2601

Meeting the Natural Disasters Challenge – continued

Working with Communities on Disaster Management
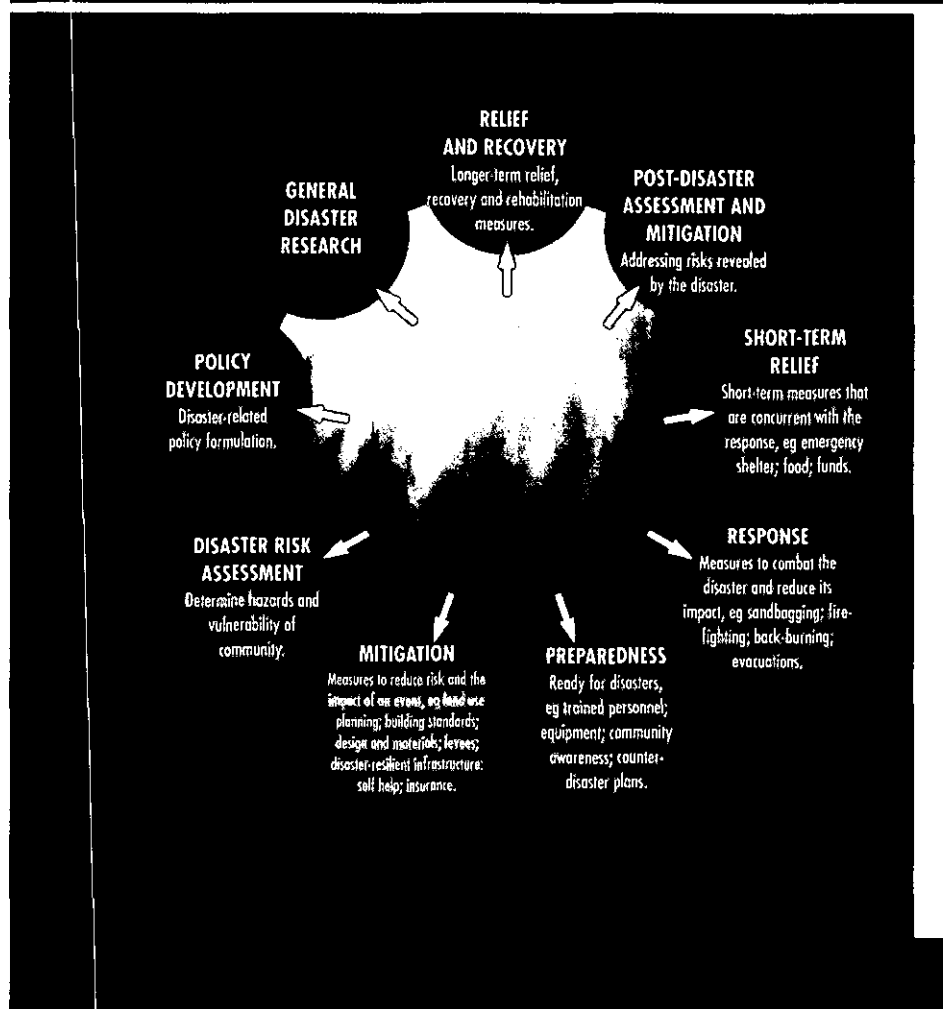
During the review, the High Level Group developed the diagram above which represents the key elements of disaster management. They are mitigation, preparedness, response, relief and recovery. The activities involved are not sequential, and aspects frequently take place concurrently. For example, immediate response to a disaster situation, and immediate help for the affected community, usually occur at the same time.

Children's understanding of natural hazards in Christchurch, New Zealand

By Kirsten Finnis, Sarah Standring, David Johnston, Kevin Ronan

Abstract

Children need to understand and be prepared for natural hazard events as much as adults. Children are vectors of hazard education, having the ability to educate those around them. This study investigated natural hazard risk perceptions, levels of preparedness and participation in education programmes of children from a school in Christchurch, New Zealand. Although hazard education programmes had been attended by a majority of the children hazard awareness was only fair and reported levels of household preparedness were low. Continuing hazards education is needed to increase understanding of hazards and to improve household preparation in the Christchurch community.

Introduction

This is a study of children's natural hazard risk perceptions, levels of preparedness and participation in education programmes. Children have influence on their community and their communities have influence on them. Children can educate those around them about civil defence preparedness through involving them with homework exercises or assignments, or general discussion. Studies evaluating the effectiveness of using student-to-parent communication of school curriculum to increase awareness and/or promote behavioural change among both the students and their families (Crawford et al., 1990; McDevitt and Chaffee, 2000; Ronan and Johnston, 2001b; Saphir and Chaffee, 2002) have proven this method to be successful. The community's influence on children may primarily come from their parents and the media. Children's level of fear towards a natural hazard can be biased by their parents' fear. Muris et al. (1996) found that children of mothers who often express their fears exhibit high fear levels, children of mothers who never express their fears have low fear levels, while children of mothers who sometimes express their fears fall in between. Following a disaster, children look to their parents' reactions to determine its seriousness and by witnessing a parent distressed by the situation the child will likely become fearful (Deering, 2000). Fearful children following a disaster have parents who tend also to report (Allen & Rosse 1998, Ronan et al. 2000) and be perceived by children (Ronan, 1997) as more fearful.

Educating children on civil defence matters through hazard education programmes is intended to decrease the child's vulnerability and promote personal, family and community resilience. Knowing the types of hazards, their recurrence intervals and appropriate protective behaviour should help mentally prepare a child for a hazard event, helping them understand what happens and that they have the power to help themselves. Knowledge of protective behaviour will decrease a child's vulnerability if alone or unsupervised and will decrease a family's vulnerability as the child can act independently and, depending on age, can help others who are unaware of the correct actions to take. Some protective behaviours will increase resilience, such as closing doors in a fire and shutting windows in a volcanic eruption, as they are intended to prevent damage to a house, reducing loss and destruction and enabling faster rehabitation. Not only does this facilitate resilience in a child and their family, as they can more easily return to a familiar lifestyle, but it also increases the resilience of their community by reducing the drainage of resources and helping the community to return to its prior level of functioning more quickly.

This study supplements other investigations recently undertaken in New Zealand and Washington State that have measured community risk perceptions, hazard awareness and preparedness and identified factors contributing to vulnerability in communities (Johnston and Benton, 1998; Johnston et al., 2001; Johnston and Houghton, 1995; Ronan and Johnston, 2001b; Ronan and Johnston, 2003)

Method

Participants and setting

The 102 participating students were from Cobham Intermediate School in Christchurch (54 boys, 47 girls, and one did not report gender). The ages of the children ranged from 10 to 12 years (Mean age = 10.9; SD = 0.4; Modal age = 11). Rather than 'ethnicity', the children were asked if they had always lived in Christchurch; a majority (n=54) of the children have always lived in Christchurch, where as other children have lived in other parts of New Zealand (n=15), Asia (n=14), North America (n=5), Europe (n=5), Australia (n=3), other places (n=5) and 1 did not report.

Survey

The questionnaire, based on one developed for an Auckland study (Ronan and Johnston, 2001a) was designed to assess children's level of awareness, risk perceptions, factual knowledge and physical preparedness for hazards and mass emergencies (i.e. floods, storms with high winds, fires, earthquakes, volcanic eruptions, tsunami, heavy snow storms and tsunami). It also assessed children's prior exposure to a) specific hazards and b) education programmes designed to increase awareness, knowledge and preparedness that were provided either by Emergency Management or by school teachers.

Procedure

The survey was administered within four classes by their teachers between the 18th and 21st June, 2003. Children were encouraged to ask questions if they did not understand a particular item. Questionnaires were returned to the teachers and forwarded to the researchers.

Results

Hazard awareness and risk perceptions

The children were asked to identify the two most likely hazards that could affect them in Christchurch. Table 1 shows that the hazards children felt most likely to affect them were storms with high winds, and earthquakes; these were followed in order of decreasing likelihood by grass or forest fires then floods. Perceived as least likely were volcanic eruptions, tsunami, tornadoes and heavy snow storms by less than 7% of respondents. In a report on the affects of hazards in Christchurch (Christchurch Engineering Lifelines Group, 1997), heavy snow storms were reported to have the lowest return period, followed equally by tsunami, storms with high winds, and destructive earthquakes (Modified Mercalli Intensities (MM) VII to MMVIII), with floods having the highest return period. Volcanic activity was not considered to be a hazard in Canterbury and tornadoes and forest fires were not discussed. The last large snowstorm to affect Christchurch was in 1992, the year most of these children were born.

Table 1. Rank order of the two hazards perceived to be the most likely in Christchurch

Hazard	% (n = 102)
Storm with high winds	54.4
Earthquake	53.4
Grass or forest fires	37.9
Flood	27.2
Volcanic eruption	6.8
Large sea wave (tsunami)	2.9
Tornado	1.0
Heavy snow storm	1.0

Children ranked the likelihood of future hazard occurrence and perceived physical risk in the event of each hazard on a 3-point scale (likely = 1, a chance = 2, unlikely = 3). The ranked order of hazards most likely to occur in the future reflected that of the hazards most likely to affect Christchurch with the exceptions of a) heavy snow storms endorsed as more likely to occur than volcanic eruptions, and b) tornadoes endorsed more than tsunami (both incorrect). The hazards perceived as most likely to cause injury were tornadoes, by over half the children, followed by earthquakes and volcanic eruptions. Most of the hazards were perceived as having better than 'a chance' (mean < 2.0) of causing injury except for floods and heavy snow storms.

A significant majority of children correctly identified that the Christchurch area does not have any active volcanoes (Table 3). However 11% of the children did perceive there to be active volcanoes in the area which accounts for volcanic eruptions not being the hazard least considered likely to affect Christchurch. Less than a quarter of the children know what the Alpine Fault is, but of those who do two-thirds are aware that Christchurch could be affect by an earthquake caused by the fault. Large earthquakes (~ Magnitude 8) occur on the central Alpine Fault at roughly on average 500 year intervals with the last event approximately 550 years ago. Shaking intensities in Christchurch generated by a central Alpine Fault event would be MMVII to MMVIII. Not only would there be direct damage caused by the event, but the activity of the nearby active faults in the Canterbury foothills and mountain areas may be increased in the following years (Christchurch Engineering Lifelines Group, 1997).

Table 2. Hazards perceived as likely to occur and likely to cause injury (likely = 1, a chance = 2, unlikely = 3)

(n = 102)	% endorsing likely to occur in future	Mean	SD	% endorsing likely to cause injury	Mean	SD
Storm with high winds	54.4	1.5	0.6	28.2	1.9	0.7
Earthquake	48.5	1.6	0.6	46.6	1.6	1.0
Grass or forest fires	48.5	1.6	0.7	33.0	1.9	0.8
Flood	19.4	2.0	0.7	24.3	2.0	0.7
Heavy snow storm	9.7	2.4	0.7	19.4	2.1	0.7
Volcanic eruption	6.8	2.7	0.6	44.7	1.8	0.8
Tornado	5.8	2.6	0.6	51.5	1.7	0.8
Large sea wave (tsunami)	5.8	2.6	0.6	37.9	1.8	0.8

Table 3. Volcano and Alpine Fault awareness

	n	% endorsing "Yes"	% endorsing "No"
Does the Christchurch area have any active volcanoes?	102	11	84
Do you know what the Alpine Fault is?	102	20	75
If yes, would an earthquake caused by the Alpine Fault affect Christchurch?	21	67	33

Hazard exposure and factual knowledge of risk mitigation and safety behaviours

Earthquakes are the hazard reported to have been experienced by the most children (Table 4). A majority also report to having been in a storm with high winds, seen a volcanic eruption on television or seen a house or building on fire. Fortunately, only a minority (<20%) have had first hand experience with a fire in their home or had their house flooded.

Table 4. Hazard exposure

Have you ever...	% endorsing "Yes"(n=102)
Had your house flooded	15
Seen a volcanic eruption – On TV	67
Seen a volcanic eruption – Live	1
Had a fire in your home	19
Seen a house or building on fire	61
Felt an earthquake	76
Been in a storm with high winds	52
Been in a storm with heavy snow falls	26

Tables 5 through 11 present the children's reported knowledge of risk mitigation and safety behaviours for floods, volcanic eruptions, earthquakes, storms with high winds, storms with heavy snowfalls and house fires. The items highlighted in dark yellow are the safety-related responses encouraged by Civil Defence and the items highlighted in light yellow are the other responses considered correct. For all hazards asked nearly three-quarters of the children knew at least one safety-related response encouraged by Civil Defence for each hazard. For volcanic eruptions and earthquakes there is a second encouraged response; these were known by 44% and 66% of children respectively. Other actions considered correct were not as well known, ranging between 20%–55% of the children choosing the action. Incorrect actions were chosen by less than 20% of the children with the exceptions of closing all windows in storms with high winds, which was selected by 71%, and finding something to hold on to when outside during an earthquake, selected by 32%. Table 12 shows that tsunami and storms with heavy snowfalls were the hazards that had a majority of the children choosing only the correct actions for (i.e. knew what to do and what not to do). A third of the children selected only the correct responses for earthquakes and house fires. Correct actions for volcanic eruptions, floods and storms with high winds were poorly known (by 17% of children or less). Only one child consistently chose the correct actions for all the hazards.

Table 5. Correct actions knowledge for floods (dark yellow are the safety-related responses encouraged by Civil Defence, light yellow are the other responses considered correct)

FLOODS	% endorsed (n=102)
Move to area higher than flood level	85
Listen to the radio	53
Stay inside and wait to be told what to do	26
Go outside and look at the rising water	0

Table 6. Correct actions knowledge for volcanic eruptions

VOLCANIC ERUPTION	% endorsed (n=102)
If building is in immediate danger, evacuate at once	83
If building is not in immediate danger, stay inside	44
Close all the windows and doors	54
Listen to the radio	55
Open all windows and doors	6
Go outside and look at the eruption	1

Table 7. Correct actions knowledge for house fires

HOUSE FIRE	% endorsed (n=102)
Leave by the shortest route	95
Close any doors that you pass through	41
Listen to the radio	12
Open all doors and windows	8
Stay inside and wait to be told what to do	3

Table 8. Correct actions knowledge for earthquakes

EARTHQUAKE	% endorsed (n=102)
Stay inside and take cover in a doorway, under beds or tables	89
Curl into a turtle shape and protect your head (Duck, cover, hold)	66
If you are outside, find a tree or something sturdy to grab on to	32
Stay right where you are and wait for it to be over	3
Run outside	1

Table 9. Correct actions knowledge for storms with high winds

STORM WITH HIGH WINDS	% endorsed (n=102)
Stay inside	79
Open window on side of house away from the wind (sheltered side)	20
Close all windows	71
Do nothing, just wait for it to be over	11
Run outside and take cover	6
Open window on side of house closest to wind (unsheltered side)	3

Table 10. Correct actions knowledge for tsunami

TSUNAMI	% endorsed (n=102)
Go at least 1km inland or 35m above sea level	92
Stay inside	18
Run outside and take cover	7
Watch for the sea wave to come	1
Go to the beach to inspect the effects of the tsunami	0

Table 11. Correct actions knowledge for storm with heavy snowfalls

STORM WITH HEAVY SNOWFALLS	% endorsed (n=102)
Stay inside and listen to the radio	74
Prepare for electrical failures	74
Run outside and play in the snow	15
Encourage your family to go driving in the snow to see how bad it is	1

Table 12. Percentages of children who chose only correct actions

HAZARD	% children choosing completely correct actions (n=102)
Tsunami	70
Storm with heavy snowfall	53
House fire	34
Earthquake	33
Volcanic eruption	17
Flood	15
Storm with high winds	9

Hazard education

Table 13 presents information on the proportions of children who participated in education programmes aimed at hazard awareness and preparedness, and follow-up behaviours of these programmes. Approximately three-quarters of the children reported participating in a hazard education programme. These programmes were generally carried out in school by Civil Defence personnel or a teacher. The majority of children reported participating in a programme before 2001 and in 2002 and with just over a quarter participating in a programme in 2003. The mean number of hazard education programmes participated in was 2.9 (SD 1.4). The majority of children have been encouraged to discuss hazards/emergencies with their parents and virtually the same proportion have discussed what they learned in the programme with their parents. Following these discussions nearly two-thirds of the parents wanted to discuss further how to be prepared.

Table 13. Information on hazard education programme participation

	% endorsed (n=102)
Participated in hazard education	75
In School	95
Outside School	22
Education by teacher	53
Education by civil defence	71
Education by other	19
Participated in education in 2003	30
Participated in education in 2002	52
Participated in education in 2001	47
Participated in education before 2001	55
Encouraged to discuss hazards with parents	59
Discussed education programme with parents	58
Parents want to discuss how to be prepared	63

Preparedness

Unsurprisingly, most of the children have participated in emergency practices at school (Table 14), as fire drills are compulsory in schools. In general, less than a third of the children have participated in emergency practices at home and know of emergency plans. Table 15 lists preparedness measures and hazard adjustment adoptions recommended by Civil Defence and the Fire Service. A majority of the children reported having key items such as torches, first aid kits, smoke detectors, a store of emergency equipment, radio and spare batteries and someone who knows how to provide first aid. Key earthquake hazard adjustments such as

strapping water heaters, latching cabinet doors, adding lips to shelves etc. are reported by the children to be less adopted (35% or less). This may be a reflection of the children's age and knowledge/awareness of such items in the home, but does reflect a trend found in surveys of older children and adults (e.g.(Johnston et al., 2001; Mileti and Darlington, 1995; Russell et al., 1995). The essential emergency kit Civil Defence encourages all households to have consists of a torch, food and water for three days, transistor radio and batteries, and a first-aid kit all stored together ready for an emergency. Less that 15% of children reported having all the requirements for an emergency kit.

Table 14. Information on preparedness plans and practices

Preparedness plans and practices	% yes responses (n=102)
Family emergency plan	37
Practice for an emergency at home	30
Practice for an emergency at school	86
Plan showing exits, assembly areas, utility switches	16
Plan where to meet or leave a message in an emergency	23
Plan for collection from school in an emergency	32

Nearly three-quarters of the children knew at least one safety-related response encouraged by Civil Defence

Table 15. Preparedness measures and hazard adjustment adoptions

PREPAREDNESS MEASURES	% endorsed (n=102)
Have a torch	85
Have a first aid kit	80
Have a smoke detector	78
Someone in family has learned to provide first aid	68
Store emergency equipment (e.g. torches, fire extinguisher, first-aid kit)	57
Have a transistor radio and spare batteries	55
Someone in family has learned how to put out fires	49
Store hazardous materials safely	44
Stockpile water and food for three days	36
Strap water heater	35
Find out if you are in an area particularly vulnerable to a natural or other kind of hazard (e.g. earthquake, flood)	34
Put strong latches on cabinet doors	31
Pick an emergency contact person outside your area	31
Have a fire extinguisher	27
Rearrange breakable household items	20
Bolt house to foundation	20
Install flexible piping to gas appliances	16
Brace house walls	13
Put spanner or wrench by gas turn-off valve	12
Add lips to shelves to keep things from sliding off	12
Arranged bracing for pile foundation	5
Have "Emergency Kit"	15

Schools Comparison

Schools in Auckland and Washington State, USA have participated in similar studies (Johnston et al., 2001; Ronan and Johnston, 2001a). Following is a comparison of the results of the three regions (Tables 16 through 24) to see how Christchurch children's awareness, preparedness and education compare to the other regions' children. Only correlated questions have been included as the survey questions varied due to the regions' different hazard environments.

Hazard exposure and factual knowledge of risk mitigation and safety behaviours

The Christchurch children generally have better knowledge of vital safety behaviours (dark yellow) than the children from the other regions. Auckland children had better knowledge of the other safety behaviours (light yellow) compared with Christchurch and Washington children. Christchurch children, however, consistently chose fewer incorrect responses than the other children.

Table 16. Correct actions knowledge for floods (dark yellow are the safety-related responses encouraged by Civil Defence, light yellow are the other responses considered correct)

FLOODS	Christchurch % (n=102)	Auckland % (n=409)	WA % (n=327)
Move to area higher than flood level	85	75	83
Listen to the radio	53	61	41
Stay inside and wait to be told what to do	26	39	18
Go outside and look at the rising water	0	10	21

Table 17. Correct actions knowledge for volcanic eruptions

VOLCANIC ERUPTION	Christchurch % (n=102)	Auckland % (n=409)	WA % (n=327)
If building is in immediate danger, evacuate at once	83	62	79
If building is not in immediate danger, stay inside	44	56	54
Close all the windows and doors	54	75	56
Listen to the radio	55	68	51
Open all windows and doors	6	5	0
Go outside and look at the eruption	1	8	29

Table 18. Correct actions knowledge for house fires

HOUSE FIRE	Christchurch % (n=102)	Auckland % (n=409)	WA % (n=327)
Leave by the shortest route	95	79	93
Close any doors that you pass through	41	50	32
Open all doors and windows	8	29	14
Stay inside and wait to be told what to do	3	12	4

Table 19. Correct actions knowledge for earthquakes

EARTHQUAKE	Christchurch % (n=102)	Auckland % (n=409)	WA % (n=327)
Stay inside and take cover in a doorway, under beds or tables	89	86	64
Curl into a turtle shape and protect your head (Duck, cover, hold)	66	58	67
Stay right where you are and wait for it to be over	3	12	20
Run outside	1	5	13

Table 20. Correct actions knowledge for storms with high winds

STORM WITH HIGH WINDS	Christchurch % (n=102)	Auckland % (n=409)	WA % (n=327)
Stay inside	79	78	78
Open window on side of house away from the wind (sheltered side)	19	37	9
Close all windows	71	58	50
Do nothing, just wait for it to be over	11	21	30
Run outside and take cover	6	7	2
Open window on side of house closest to wind (unsheltered side)	3	10	6

Table 21. Correct actions knowledge for tsunami

TSUNAMI	Christchurch % (n=102)	Auckland % (n=409)	WA % (n=327)
Go at least 1km inland or 35m above sea level	92	76	88
Stay inside	18	29	14
Run outside and take cover	7	11	0
Watch for the sea wave to come	1	5	14

Hazard education

A higher percentage of Christchurch children have participated in hazard education programmes than children from the other regions (Table 22). The majority of this education was provided by civil defence personnel, compared to a nearly equal share of CD and teachers in Auckland and primarily teachers in Washington State. More Christchurch children were encouraged to discuss hazards with their parents, and did so, compared to those from Auckland, but less than the children from Washington State. Less Christchurch parents were reported to want to discuss further how to be prepared than Washington State parents.

Table 22. Information on hazard education programme participation across the three regions

|	Christchurch % (n=102)	Auckland % (n=409)	WA % (n=327)
Participated in hazard education	75	70	65
In School	95	n/a	97
Outside School	22	n/a	21
Education by teacher	53	49	93
Education by civil defence	71	47	9
Education by other	20	17	17
Encouraged to discuss hazards with parents	59	43	77
Discussed education programme with parents	58	29	61
Parents want to discuss how to be prepared	63	n/a	82

Preparedness

Christchurch children have reported similar to lower numbers of plans and practices than the other children. Preparedness measures could only be compared with those of Washington State Children. For every measure consistently fewer Christchurch children reported having the item.

## Table 23. Information on preparedness plans and practices across the three regions

Preparedness plans and practices	Christchurch % (n=102)	Auckland % (n=409)	WA % (n=327)
Family emergency plan	37	29	33
Practice for an emergency at home	30	26	32
Practice for an emergency at school	86	~ 80	93
Plan showing exits, assembly areas, utility switches	16	24	19
Plan where to meet or leave a message in an emergency	23	34	36
Plan for collection from school in an emergency	32	52	55

## Table 24. Comparison of preparedness measures and hazard adjustment adoptions

Preparedness measures	Christchurch % (n=102)	WA % (n=327)
Have a torch	85	94
Have a first aid kit	80	88
Have a smoke detector	78	95
Someone in family has learned to provide first aid	68	75
Have a transistor radio and spare batteries	55	73
Someone in family has learned how to put out fires	50	62
Store hazardous materials safely	44	48
Stockpile water and food for three days	36	48
Strap water heater	35	36
Find out if you are in an area particularly vulnerable to a natural or other kind of hazard (e.g. earthquake, flood)	34	46
Put strong latches on cabinet doors	31	19
Pick an emergency contact person outside your area	31	38
Have a fire extinguisher	27	80
Rearrange breakable household items	20	25
Bolt house to foundation	20	33
Install flexible piping to gas appliances	16	20
Put spanner or wrench by gas turn-off valve	12	24
Add lips to shelves to keep things from sliding off	12	13
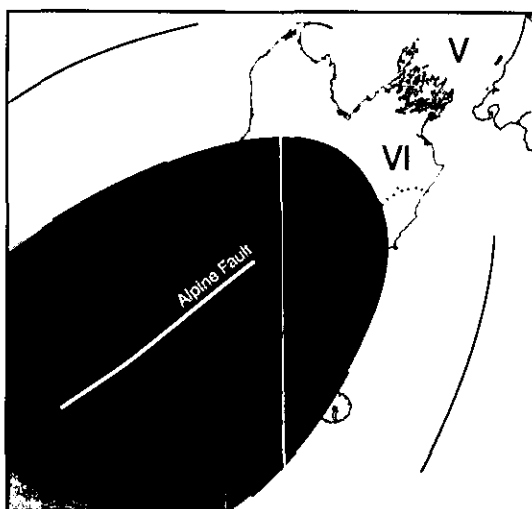
Source: Geological and Nuclear Sciences New Zealand
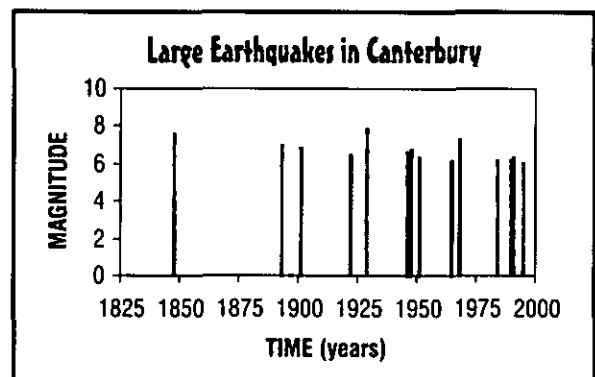
Source: Geological and Nuclear Sciences New Zealand
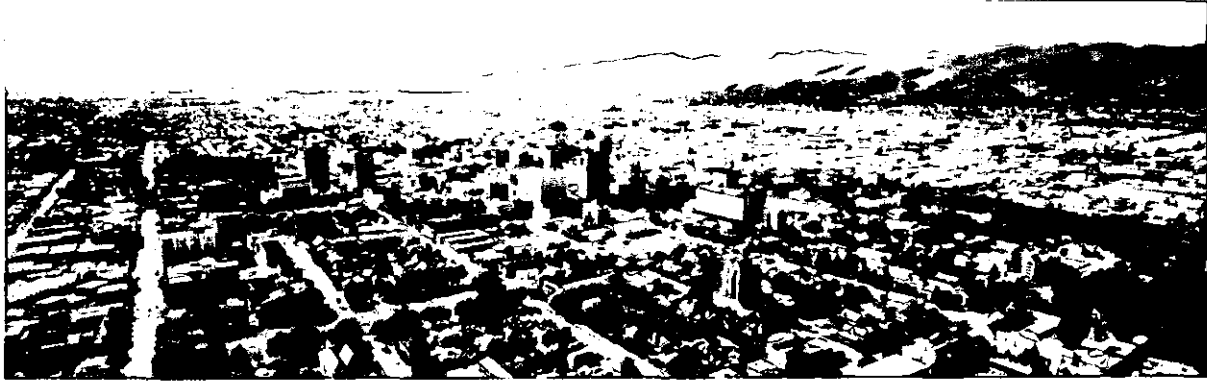
Awareness of the Alpine Fault and the impact of an event greatly needs to be increased

Summary

The findings from this survey highlight the need for continuing hazards education a) to increase understanding of the hazard types and impacts the Christchurch community could face and b) to improve household preparation. The children's awareness of hazards impacting Christchurch was fairly accurate; however, the awareness of the risk from storms with heavy snow falls and tsunami was very poor. Awareness of the Alpine Fault and the impact of an event greatly needs to be increased considering the level of threat posed to Christchurch and the 'overdue' nature of an earthquake generated along the central Alpine Fault. Vital safety behaviours were well known by the children, with other safety behaviours not as well known. However, incorrect behaviours were rarely chosen, indicating that overall the children generally have a good knowledge of safety behaviours. A significant majority of the children have participated in a hazard education programme, generally at school conducted by Civil Defence personnel. Preparedness plans and practices were reported to be poorly adopted by the children's household. Only emergency practices at school had a majority of children participating. Torches, first aid kits and smoke detectors were the principal preparedness measures reported to have been adopted by the children's families. Less than one fifth of children reported having an emergency kit prepared. Compared to children who have participated in similar studies in Auckland and Washington State, Christchurch children generally have better knowledge of safety behaviours and a greater number have participated in education programmes, but fewer children report having preparedness plans, practices and measures.

Improvement in Christchurch might simply involve adjusting the content and delivery of education programmes. It has been found in other research that an emergency management focused programme that emphasises children's interactions with their parents can increase home preparedness (Ronan & Johnston 2001, 2003). For example, providing children with homework to fill out a home preparedness checklist might be one avenue to translate increased knowledge into useful actions.

References

Allen, R.D., Rosse, W. Children's response to exposure to traumatic events. Quick Response Report #103, Natural Hazard Centre, Boulder Colorado.

Christchurch Engineering Lifelines Group. Risks & Realities: a multi-disciplinary approach to the vulnerability of lifelines to natural hazards, pp. 312, Centre for Advanced Engineering, University of Canterbury, Christchurch, 1997.

Christchurch Engineering Lifelines Group, 1997. Risks & realities: a multi-disciplinary approach to the vulnerability of lifelines to natural hazards, University of Canterbury Centre for Advanced Engineering, Christchurch.

Crawford, I. et al., 1990. A Multimedia-Based Approach to Increasing Communication and the Level of AIDS Knowledge Within Families. Journal of Community Psychology, 18: 361–373.

Deering, C.G., 2000. A Cognitive Developmental Approach to Understanding How Children Cope With Disasters. Journal of Child and Adolescent Psychiatric Nursing, 13(1): 7–16.

Johnston, D. and Benton, K., 1998. Volcanic hazard perceptions in Inglewood, New Zealand. The Australian Journal of Disaster and Trauma Studies, 2.

Johnston, D., Driedger, C., Houghton, B., Ronan, K. and Paton, D., 2001. Children's risk perceptions and preparedness: a hazard assessment in four communities around Mount Rainier, USA—preliminary results. 2001/02, Institute of Geological and Nuclear Sciences, Lower Hutt.

Johnston, D. and Houghton, B., 1995. Secondary School Children's Perceptions of Natural Hazards in the Central North Island, New Zealand. New Zealand Journal of Geography, 99: 18-26.

McDevitt, M. and Chaffee, S., 2000. Closing Gaps in Political Communication and Knowledge. Communication Research, 27(3): 259–292.

Mileti, D.S. and Darlington, J.D., 1995. Societal Response to Revised Earthquake Probabilities in the San Francisco Bay

Area. International Journal of Mass Emergencies and Disasters, 13(2): 119–145.

Muris, P., Steerneman, P., Merckelbach, H. and Meesters, C., 1996. The role of parental fearfulness and modeling in children's fear. Behaviour Research and Therapy, 34(3): 265268.

Ronan, K. and Johnston, D., 2001a. School children's risk perceptions and preparedness: A hazards education survey. Australasian Journal of Disaster and Trauma Studies.

Ronan, K.R. and Johnston, D., 2001b. Correlates of Hazard Education Programs for Youth. Risk Analysis, 21(6): 1055–1063.

Ronan, K.R. and Johnston, D., 2003. Hazards Education for Youth: A Quasi-Experimental Investigation. Risk Analysis, 23(5): 1009–1020.

Russell, L.A., Goltz, J.D. and Bourque, L.B., 1995. Preparedness and Hazard Mitigation Actions Before and After Two Earthquakes. Environment and Behavior, 27(6): 744–770.

Saphir, M.N. and Chaffee, S., 2002. Adolescents' Contributions to Family Communication Patterns. Human Communication Research, 28(1): 86–108.

Authors

Kirsten Finnis, University of Otago, Dunedin, New Zealand

Sarah Standring, Cobham Intermediate School, Christchurch, New Zealand

David Johnston, Institute of Geological & Nuclear Sciences, Lower Hutt, New Zealand

Kevin Ronan Massey University, Palmerston North, New Zealand

Correspondence to kirstenfinnis@paradise.net.nz or d.johnston@gns.cri.nz

A knowledge management infrastructure for the NSW Fire Brigades

by Anne Pickles

Introduction

A key corporate goal of the NSW Fire Brigades (NSWFB) is using information to learn and improve our service. The NSWFB is an information rich organisation, but at present lacks effective means for sharing information across the organisation, or with other organisations. The NSWFB's Information Management and Technology Strategy has a vision for the NSWFB of:

> an efficient, effective, integrated information and knowledge sharing framework.

One of the strategies for achieving this vision is the development of a knowledge management infrastructure, for which the NSWFB is currently developing a business case. This paper will outline the components of the project and discuss how the introduction of the systems of knowledge management infrastructure can be used to move the NSWFB towards a knowledge management culture.

Background

Over the past decade or so, the NSWFB has come to realise that information is an important and valuable asset, to be considered alongside human, physical and financial assets. The increasingly complex social, technological and legislative environment in which we work, the need to work in partnership with other organisations and increasing external scrutiny have required the NSWFB to leverage its information assets to meet the new challenges and keep pace with the speed of change.

Increasingly, employees are seeking better access to accurate, reliable and timely information to do their jobs effectively. The telecommunications and information technology infrastructure has improved greatly, but in many areas access to information has not improved as fast. This is reflected in employee surveys which highlight communication and access to information as important areas of dissatisfaction. Information managers in the NSWFB increasingly see lack of knowledge management tools as a major impediment to improving services and productivity.
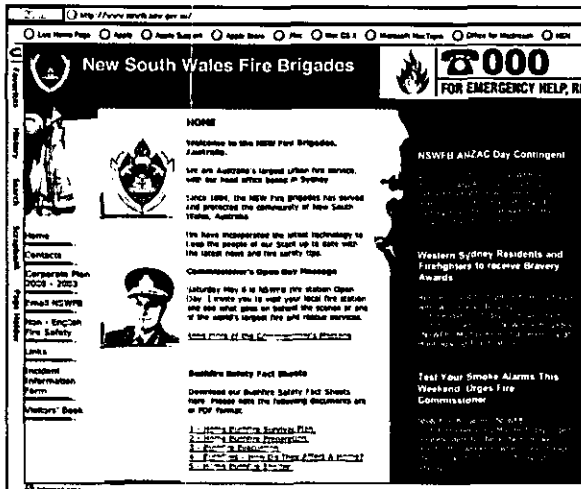
The NSWFB has conducted a review of its records management functions to assess compliance with the State Records Act 1998 and has also reviewed its management of personal information under the *Personal Information and Privacy Protection Act 1998*. In the past year, much work has also been done on analysing user needs for document management and for content management for the NSWFB's Intranet. Another important area of work is the Operational Information Service which is developing business systems tailored to the work of front line firefighters.

The outcome of this research has been a recognition of the need for the NSWFB to build a knowledge management infrastructure, based on integrated records, document and content management systems and including improved data management and workflow tools.

The knowledge management infrastructure project

The NSWFB is currently developing a business case for a knowledge management infrastructure project that will:

1. establish the intranet as the delivery vehicle for information dissemination by:
   - setting up the required network infrastructure,
   - implementing a content management system for publishing, managing and accessing web content in accordance with best practice and Australian and NSW Government standards
   - implementing portal or other technology to provide access to major business applications and enable functions such as employee self service and e-procurement;
2. leverage the intranet delivery vehicles to manage the delivery of information to internet and extranet sites, giving the NSWFB greater capacity for e-commerce, online delivery of community safety and distance learning programs and establishing

The internet can be an effective delivery vehicle for information dissemination

a platform for shared service delivery with other agencies;

3. develop security systems, workflow processes and other shared business processes that are necessary to achieve productivity gains and share information across the NSWFB;

4. ensure that NSWFB electronic information systems meet the requirements of the State Records Act and other information management legislation by:

   - determining systems requirements for the management of electronic information as records,

   - developing comprehensive software acquisition and development standards and approval processes to address records management and privacy functionality,

   - upgrading the NSWFB's records management system,

   - incorporating records management functionality into NSWFB business systems, including document and content management systems;

5. improve the management of mission critical documentation across the NSWFB by:

   - developing document management standards and processes to a level that will support ISO 9000 quality management certification of NSWFB business processes and meet legal and records management requirements,

   - implementing a document management system that is integrated with the records management system and the content management system, and

   - providing access to the wealth of information held in technical and mission critical documents across the NSWFB.

6. ensure that the NSWFB has appropriate systems and processes in place to manage information security in accordance with NSW Government information security guidelines, while maintaining sufficient flexibility to adapt to changing risk environments.

Knowledge management benefits

The implementation of a knowledge management infrastructure as outlined above will obviously have great benefits for NSWFB records managers, document managers, information managers, technical writers, web content managers and online application developers. They will be intimately involved in the project and their needs for compliance and efficiency will form core requirements.

Important as these outcomes are, most of the return on investment will come from the spread of knowledge management capabilities beyond these key information managers to staff across the organisation. At the moment, knowledge management is not perceived as an integral part of the work of most employees (although many of them probably do more of this than they realise!). Records are seen as the responsibility of the records staff and, as the actual records are currently almost entirely on paper, filing is not integrated into work practices. Document management is an esoteric discipline practiced in a few specialist units. Content management is the domain of the webmaster.

A key aim of the knowledge management infrastructure project will be to introduce systems that are integrated with work practices, making compliance with the various laws and standards almost a byproduct of the system, transparent to the normal user.

For example, if when you save a word processing document the system gets you to save it into a record, then record keeping becomes a byproduct of your work. Efficiencies can then be achieved by giving all the other people who need to use that document access to that record in the system, so you will no longer need to send copies of documents to people through the email system. Information entered once can be stored in one location and used many times.

I think it is fair to say that almost all NSWFB information managers wish to increase access to their information systems, to disseminate the information in them more widely and to devolve information creation and management to information users. The information needs of the NSWFB are getting too complex to have all information management channelled through a few managers. We must increase the capabilities of users to manage their own information by giving them the tools and training to do so. The information manager will increasingly become a facilitator and a coordinator, designing the systems, training the users, and managing the technical bits in the background like numbering systems, data management, taxonomies, thesauri and software upgrades.

We must increase the capabilities of people to manage their own information by giving them the tools and training to do so

Towards a knowledge management culture

The rest of this paper is speculative in nature, as we are too early in this project to predict exact outcomes, particularly where cultural change is concerned.

Communication in the NSWFB is currently a very top down process. Executive management issues various publications distributed to everyone in the organisation, and quantities of memorandums directed to their chain of command. While feedback is theoretically encouraged, historic cultural forces tend to limit feedback from firefighters in fire stations. However, pilot projects and the limited availability of some communication tools have begun to show different ways of doing things that could be built on within the knowledge management infrastructure.

As an example, fire station crews are encouraged to send stories about incidents into Head Office for publication in the NSWFB's magazine Fire News. Very few stories are received. However, when a fire station gets to run its own website, the crews often regularly update the site with stories of incidents soon after they happen. With a good content management system, it should be possible to give every station the capability to develop its own website, including incident stories, and, if we get the metadata right, to index these stories chronologically and by incident type so that firefighters can browse for stories in which they are interested. Storytelling is an important method for passing on experiential learning and this could be a good way to make explicit a lot of the implicit firefighting knowledge and use it to feed back into training and standard operational guidelines.

From here, we can go on to develop communities of practice within the NSWFB. As noted before, most NSWFB publications are sent to everyone in the organisation. Budget constraints on publication and distribution, along with the difficulty of identifying diverse audiences, have precluded the development of tailored information resources. The knowledge management infrastructure should provide the opportunity for communities of practice to define themselves, perhaps around discussion boards, or from employees with shared access to records and data sets, working cooperatively across regions and divisions. Examples that spring to mind are firefighters involved in rescue, or hazardous materials response, or interagency Urban Search and Rescue Teams, or juvenile firesetters, or high rise building fire safety, or historic fire engines, or working with Aboriginal communities, or equipment design, or occupational health and safety.

The devolution of responsibility for such communities from central controllers such as the webmaster to trained members of the community of practice, who will have the responsibility for moderating discussions and aligning practice with standards, will empower those members and allow them to become change leaders. Active members of these communities will be a resource from which to draw members of project teams, barriers of distance and shiftwork being reduced by access to records, documents and data previously only available to day shift workers in central offices.

A knowledge management infrastructure could become a significant tool for building trust and confidence across the NSWFB. At the moment, the varying levels of access to information create divisions between the information rich (senior officers and administrative staff) and the information poor (operational firefighters). This is exacerbated by the fact that the information poor generally spend a lot of time providing the data (ie doing paperwork or data entry), the information from which is often only available to the information rich. It is an aim of the NSWFB that the people who provide data should have access to information relevant to them that is generated from that data. For example, firefighters are required to submit an incident report for every incident. In return, they should have routine access to analyses of incidents in their area or region. The ongoing development of applications for routine processes such as incident reporting, personnel management and procurement should lead to higher quality data upon which to base decisions.

Access to the records system and key documentation should reduce uncertainty across the NSWFB. There is currently a large number of reports that are theoretically available to all staff but are actually restricted to staff with access to the paper records, which does not usually include fire station crews. Even line managers often only have limited access to basic organisational information.

A knowledge management infrastructure will give the NSWFB improved capability and capacity

The result is a flourishing unofficial grapevine which often carries wildly inaccurate data very efficiently across the organisation and breeds distrust in management. This is exacerbated by the current situation where firefighters are outside the records management system and cannot monitor the progress of reports or requests that they send in to management or administrative areas. If staff have the capability to access data and source documents to and track the progress of their own communications, it should reduce uncertainty across the organisation and lead to more informed debate on key issues. It may also make management more accountable for communicating with their staff.

The combination of access to high quality data, increased trust and a reduction in uncertainty should then allow the NSWFB to start using knowledge management to increase its capability to provide tailored services to the community at a local level. Local station crews could have the capability to analyse risks to their community and develop local risk management strategies, while managing their staffing, budget and resources. These local strategies would fit within wider organisational strategies, with feedback both up and down on trends, priorities and resources. Success stories and lessons would be shared across the organisation through communities of practice.

In addition, it is intended to build into the knowledge management infrastructure a platform for shared service delivery with other agencies, such as other emergency services. The NSWFB is involved in many cooperative arrangements to provide services to the community. For example, Bushfire Management Committees, Local and District Emergency Management Committees, the Fire Services Joint Standing Committee and cooperative

arrangements with NSW Health, the Department of Housing, the Department of Community Services, Juvenile Justice, Aboriginal Affairs and Local Government. There are major projects underway with other agencies to develop and share geographic information systems. An extranet could provide agencies we work with and the community we serve with access to Mutual Aid Agreements, Memorandums of Understanding, Disaster Plans and Fire District Boundary data. An extranet could also be used to facilitate our commercial dealings with contractors and the suppliers of goods and services to the NSWFB.

Conclusion

The introduction of a knowledge management infrastructure will give the NSWFB the tools to move towards a knowledge management culture. The NSWFB is fully aware that the introduction of new technology and systems will not, in itself, lead to cultural change, but the building of capability across the NSWFB is an important step in the process.

As capability and capacity grows, so to will the capability of staff to drive change from all levels of the organisation and I expect a shift from change driven from top down to more emergent forms of change, driven by local needs but leading to a ever better fit between the NSWFB and the community it serves.

Author
Anne Pickles BA, Grad Dip Lib Sci KCAE is Information Coordinator, NSW Fire Brigades

®

Cyclone awareness amongst Backpackers in Northern Australia

Wouter Hoogenraad, Ronald van Eden & David King

Vulnerability to natural hazards is a central concern of emergency management. Most articles published in this journal in recent years have been concerned with aspects of vulnerability and communities. As Handmer (2003) has expressed it "we are all vulnerable", but we are not homogenous (Marsh & Buckle 2001). Mitigation of hazard impact and vulnerability through education and awareness raising has had to treat communities and population groups as separate targets for information (Anderson-Berry 2003). Backpackers are one such identifiable group within the tourists and visitors to the cyclone prone north of Australia. Some recent disasters, such as the Childers hostel fire and highly publicised accidents involving backpackers have underscored their vulnerability. They are part of a wider group of independent travellers, including four wheel drivers, caravanners and the "grey nomads", the elderly long distance caravan and campervan travellers.

Independent travellers and tourists are superficially more vulnerable to natural hazards because they travel outside formally organised tours or groups, they stay in cheaper or more remote accommodation and are usually travelling into new places of which they know relatively little. Backpackers as a group are generally perceived as young people who travel light, prefer budget accommodation and avoid structured travel and activities (Pearce 1990). They seek adventure and new experiences and are inevitably risk takers. As many travel to northern Australia throughout the year, including the wet season, it is important to understand more about them to be able to target their vulnerability and reduce their risk from natural hazards.

Young researchers with the Centre for Disaster Studies in Cairns carried out two studies of backpackers in 2000 and 2003. The need for such research had emerged during the 1990's as longitudinal studies of cyclone awareness and preparedness in the Northern Beaches suburbs of Cairns, carried out by Anderson-

Berry (2003) and the centre, showed disturbing gaps in peoples' knowledge about cyclones. Findings from these studies concluded the importance of targeting different demographic, social and cultural groups within the communities. Tourists are an important part of the non-residential population of Cairns. The backpacker studies were initiated by the fortuitous arrival of young overseas students looking for minor research projects, Elke Kuehlbrandt from Germany and the two joint authors of this article, from . The Netherlands. As the first study in 2000 was carried out during the dry season, the second survey replicated the original during the cyclone season of 2003. Together the two surveys gave a picture of the characteristics of backpackers as well as their general knowledge and experience about tropical cyclones, and their perceptions of risk. The second survey also enabled an analysis of differences in perception of cyclones by those who were visiting in the dry season, as opposed to those who were in Cairns and the Daintree at a time of year when cyclones were a real risk. Both surveys also contacted backpacker providers and administered simple questionnaires on their role in cyclone education. The 2000 survey interviewed 158 backpackers in Cairns, while in 2003 220 were surveyed in Cairns and at Cape Tribulation in the Daintree region about 120 kilometres north of Cairns.

Backpacker characteristics

The backpackers tend to be young well-educated people with 85% of the respondents coming from the United Kingdom and the rest of Europe. Almost three-quarters of the backpackers considered their competency level of English fluent, because many had English as their first language. However, over 90% of the backpackers who didn't have English as their first language considered their competency level as adequate to fluent. At such competency levels they should be able to understand cyclone safety information and warnings.

For the majority of the respondents the main purpose for visiting Australia was holiday, followed by a combination of working and holiday. As people on holiday are in a pleasure-seeking mood, they tend to ignore the risk, and show a low level of natural disaster awareness (Murphy & Bayley 1989). However, one of

the backpackers stated that when Exmouth was severely impacted by cyclone Vance on March 22nd 1999 not only the local residents but also the backpackers present at that time helped in the post disaster clean up.

Almost all of the backpackers were travelling alone, or in a small informal group. Only one respondent was travelling in an organized group, where tour guides mainly provide information for the trip. Backpackers have to search for information about their trip themselves. On the other hand, backpackers that are travelling alone are rather more vulnerable to the hazards of cyclones than small informal groups. This is caused by the sense of responsibility and protective behaviour towards the other members of the group. Most of these small informal groups of backpackers formed during the journey in Australia, but respondents suggested these groups formed and reformed as people went off in different directions, so that a whole trip was not necessarily completed with just one group. Both studies showed that backpackers use a variety of forms of transport, but the majority in 2003 travelled mainly by bus which is a relatively open and insecure form of transport. The group provides mutual security and companionship, but as far as cyclone vulnerability is concerned it must increase safety through the sharing of knowledge and a multiplication of information absorption.

For most backpackers the length of stay in Australia varied between 2 weeks and 4 months. Only 15% of the respondents stayed between 10 and 12 months. Both studies found that the length of stay in Cairns was between 1 and 14 days, but although most leave Cairns within 14 days, they tend to continue their trip through the cyclone prone areas of the north.

Aerial shot of a cyclone off the eastern coast of Australia

Sources of information

The majority of the backpackers sought information about Australia before they started their trip. The kind of information they searched for was varied, but the three main subjects were places of interest, accommodation and trips. The respondents used different information sources to gather this information; but the preferred sources were guidebooks and the Internet. The guidebooks were the most popular source of information of backpackers before and during their trip, with The Lonely Planet being used by more than half of the backpackers. The Internet was used as information source mainly before rather than during the trip. Word of mouth and tour agents were also important sources of information during the trip.

General knowledge and awareness of cyclones

Most of the backpackers had never lived in an area where a cyclone could occur, and only a third of them had ever travelled to a cyclone prone area. Therefore the general knowledge of cyclones amongst backpackers was expected to be low. However, almost three-quarters of them were aware that some parts of Australia are affected by tropical cyclones, and more than half of the respondents also knew or had a general idea which areas of Australia are affected by tropical cyclones. Even though most of the backpackers were aware that Australia is affected by tropical cyclones, only 30% of the backpackers got information about cyclones during their trip through Australia. An even smaller proportion of the respondents found information about cyclones before their trip started. As a consequence, it is likely that most of the backpackers had only a very general knowledge about cyclones. The two main sources of cyclone information during the trip of the respondents were word of mouth and the television. The information found about cyclones in Australia was moderate to very useful and in general considered to be enough, so consequently most of the respondents didn't search for any more cyclone information.

Despite backpackers' perception of the adequacy of their cyclone knowledge it was generally very low. The more specific the knowledge that was required to answer questions about cyclones, the fewer respondents gave a correct answer. Almost half of the respondents were at least partially correct about when the cyclone season occurs in Cairns. Both studies asked which is the most destructive category 1 or 5, and recorded half of the respondent's answers as correct and the other half almost evenly divided between an incorrect answer and do not know. Even fewer participants were able to provide at least a partially correct description of a storm surge, with the majority of the backpackers not knowing what a storm surge is. Most of the respondents knew that a cyclone could cause severe damage or severe

building damage, but many thought that that cyclones are a rare occurrence in Cairns.

The first backpacker study in 2000 suggested that many people were likely to go to local residents to get the most up to date information about cyclones, while the second study in 2003 recorded that the majority of the participants would consult the Internet for this information. As the Cairns community has also demonstrated a low perception of risk towards cyclone hazards (Anderson-Berry 2003), the fact that more backpackers would consult the Internet instead of local residents to gather the most up to date information about cyclones is probably a good development. Almost all of the respondents either didn't know if there was cyclone safety information available at their accommodation or said this information wasn't available at all. A basic conclusion from both backpacker studies is that the general knowledge and awareness about cyclones is not significantly different either during or outside the cyclone season. Visiting the north during the cyclone season had not prompted any special preparation or anticipation of the risk.

Attitude and concern about cyclones

The attitude of backpackers towards the preparedness of hostels concerning cyclones is low, as most of them are not influenced by this factor in their choice of accommodation. There is no significant difference between the first study outside the cyclone season and the 2003 study, within the cyclone season. This is an interesting result as approximately 20% of the respondents of the previous study stated that the preparedness of accommodation for cyclones would only influence their choice of accommodation in the cyclone season. As half of the respondents in the 2003 study were aware that they were in the cyclone season at the time of being interviewed, one would have expected them to be more interested in the preparedness of the accommodation providers. Only one respondent planned his/her trip to Cairns with the cyclone season in mind. Generally backpackers are not planning their trips with any consideration of the cyclone season.

If a cyclone were heading for the coast of Cairns, most of the backpackers had some idea of what to do, and would ask for information. Two other options that backpackers indicated as actions in case of a cyclone were either to evacuate or to shelter. They did not have one particular idea of what to do in the event of a cyclone, but nevertheless all three of these options are plausible.

The internet can be an effective delivery vehicle for information dissemination to backpackers

Use of the Internet

One of the main aims of the project was to determine how and where backpackers acquire information about the tropical cyclone risk. More than 95% of the backpackers used the Internet during their trip. The majority spent less than three hours a week on the Internet, and the two most popular places to use the Internet were at their accommodation and in Internet cafés. The respondents used the Internet mainly for emailing, whereas other purposes were planning the trip and checking for news. Thus the Internet was used for communication rather than as a source of information.

It is remarkable that visitors at all of the accommodation providers seldom asked for information about cyclones. This endorses the view that backpackers are not searching in an active way for cyclone information. The majority of the accommodation providers used conventional information modes to inform their guests about cyclones, like pamphlets and brochures. In the two surveys accommodation providers stated a willingness to put out cyclone information, but actual evidence of this information was patchy. Most of the providers thought that an Internet site is the best mode to provide information about cyclones to backpackers, although in a sense that is absolving themselves of responsibility to their clients. During the cyclone season some accommodation providers used the Internet to get information about cyclones as well as television and the weather fax of the Bureau of Meteorology. Most of the providers had an emergency safety plan, with at least an emergency manager, as well as plans for securing business records and emergency supplies of water and food.

Recommendations from Backpackers Surveys

Because backpackers were not interested in complex detailed cyclone information, the cyclone information should be provided in a visual attractive and easy-reference mode specially directed to backpackers. A pamphlet could cover the most important topics about cyclones in a distinct manner. The interests and behaviour of the backpackers have to be taken into consideration at the stage of designing specific cyclone information.

Both the accommodation providers and backpackers considered the Internet was the best way to provide information about cyclones. However, the backpackers need to be made aware of the Internet sites about cyclone information. These could be referred to by pamphlets and brochures.

Because the respondents often used guidebooks, a chapter with cyclone information could be implemented in the guidebooks to improve the knowledge of cyclones. There is also an opportunity for implementation in backpacker-designed magazines, like the TNT Magazine. Since the main reports (Hoogenraad & van Eden 2003, Kuehlbrandt 2000) have been presented to Cairns City Council and made available through the website, Lonely Planet Guides have approached the Council, and the Centre for Disaster Studies to prepare cyclone specific information for their guides.

There are many brochures with cyclone information produced by government departments, but the information transfer to backpackers has to be improved, because they have a low initiative for gathering cyclone related information. The accommodation providers are the most visited locations for backpackers; therefore it is important that the providers supply information brochures and pamphlets to visitors. Because not all the accommodation providers were willing to provide information, the possibility of the council enforcing information provision could be investigated. Other recommended locations to provide information to tourists are the airport, shopping malls and buses. Not all the staff of the backpacker accommodation had knowledge of their own emergency safety plans; nevertheless it is important that all the employees understand these plans, and safety procedures.

Conclusion

Awareness of tropical cyclones was high amongst the backpackers, in the sense that most of them knew Australia could be affected by cyclones and that they could cause severe damage. However, the general factual knowledge about cyclones was low. In spite of their general awareness, the behaviour of the backpackers was not influenced by the dangers of cyclones. For example,

Cyclone information could be disseminated in guide books

the cyclone safety preparedness of an accommodation provider only influenced a small proportion of the respondents. Although the opinions about how to act in case of a cyclone were varied, all of them were plausible. Almost every backpacker had an approximate idea of what to do in case of an emergency. In this area of preparedness there was no significant difference between the surveys during and outside the cyclone season.

One of the most interesting findings is that the majority of the backpackers travel in small informal groups, mainly by bus. Because backpackers are not travelling in an organized group they have to gather the information about the trip themselves. The advantage of travelling in a group is that groups are less vulnerable to natural disasters than single travellers. The most popular information sources before and during the trip were guidebooks. Before the backpackers come to Australia, they also used the Internet often as information source. However, many respondents admitted they did not find much information about cyclones before and during their staying in Australia.

Most of the backpackers used the Internet during their stay in Australia email and news. While they had not used it for information about cyclones, nearly every respondent would search for the most up-to-date cyclone information on the Internet. Accommodation providers also thought that the Internet was the most useful mode of providing information about cyclones to backpackers. At half of the accommodation providers there was no cyclone information available for visitors

Even in outback wilderness areas backpackers may find themselves threatened or isolated by the passage of a cyclone.

and only half of the them were willing to provide cyclone information to visitors. Most of the providers had an emergency plan with regards to cyclone safety, but amazingly some did not know the content of those plans.

The Lonely Planet contained information about cyclones, but this information was only about facts of some cyclones that hit Australia in the past. Some government departments and Cairns City Council provide cyclone brochures with clear safety information, but the distribution of those brochures is inadequate. As backpackers have a low interest in gathering cyclone related information, responsibility falls on the government and accommodation providers for the information transfer.

As backpackers are not likely to search in an active way for cyclone information the cyclone information provided should be in a mode directed towards them. If an Internet site is designed to inform backpackers about cyclones this should be referred to it in pamphlets and brochures, because backpackers mainly use the Internet for email. Targeted awareness that is related to the behaviour of this particular well educated group of visitors will improve their safety without reducing the adventure and excitement that seek during their time in Australia.

References

Anderson-Berry, Linda. 2003. "Community Vulnerability to Tropical Cyclones: Cairns, 1996–2000". *Natural Hazards.* Vol. 30 No.2. p 209–232

Handmer, John. 2003. "We are all vulnerable". *Australian Journal of Emergency Management.* Vol 18 No.3

Hoogenraad, Wouter & van Eden, Ronald. 2003. Edited by King, David. *Tropical cyclone awareness and preparedness amongst backpackers and accommodation providers in Cairns, Queensland, Australia.* JCU Centre for Disaster Studies, Cairns

http://www.tesag.jcu.edu.au/CDS/Pages/Report.htm

Kuehlbrandt, Elke. 2000. *Tropical Cyclone Awareness and Preparedness amongst Backpacker Accommodation Providers and Backpackers in Cairns.* Centre for Disaster Studies, James Cook University, Townsville.

http://www.tesag.jcu.edu.au/CDS/Pages/Report.htm

Marsh, Graham & Buckle, Philip. 2001. "Community: the concept of community in the risk and emergency management context" *Australian Journal of Emergency Management.* Vol 16 No.1

Murphy, P.E. and Bayley, R. 1989. "Tourism and disaster planning". *The Geographical Review,* 79, pp. 36–46

Pearce, P.L. 1990. *The backpacker phenomenon; Preliminary answers to basic questions.* James Cook University, Townsville

Note: The full reports of the backpacker studies are located on the Centre for Disaster Studies website at http://www.tesag.jcu.edu.au/CDS/index.shtml

Book Review

Stallings, R.A. (ed). 2002. *Methods of Disaster Research.*
International Research Committee on Disasters: U.S. 524pp.

**Book Review: Heidi Ellemor,
Emergency Management
Australia.**

Methods of Disaster Research is
a much needed volume that will
provide both new and experienced
disaster researchers with insight into
the particular challenges of
conducting disaster research.
The volume includes a refreshing
combination of thoughtful
commentary from some of the
world's leading specialists in disaster
research as well as researchers
newer to the field. Importantly,
it provides insight into key
methodological challenges, as well
as grounded advice on the
implementation of the research
process and particular research
methods in the disaster context.

Methods of Disaster Research is borne
of the breadth and depth of disaster
research in the United States, with
numbers of disaster researchers,
levels of research funding and an
institutional history of dedicated
disaster research centres that differs
markedly from the disaster research
context in Australia. Despite, and
perhaps because of these
differences, the volume offers much
of relevance for individual
researchers and the collective field
of disaster research in Australia.

The volume contains 16 chapters,
divided into four sections.
Following on from a thought
provoking introductory chapter on
the question of uniqueness and
disaster research methods by
Stallings, the first section considers
the *context* of disaster research. This
section includes a reprint (with new
preface) of Killian's 1956 paper of
surprising contemporary relevance
"An introduction to methodological
problems of field studies in
disasters" and a chapter by

Quarantelli on the development of
the Disaster Research Centre and its
role in field studies of organised
behaviour in the crisis period of
disasters. In the final chapter in
this section, Drabek provides
valuable insight to the opportunities
posed by disaster research, and the
art of posing interesting and
problem-focused questions and
implementing alternative research
methods.
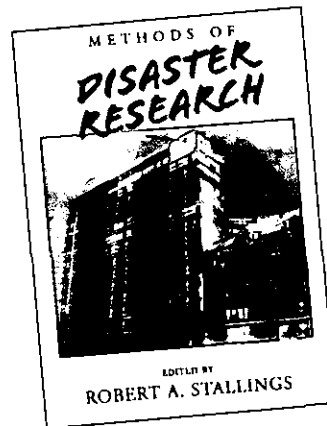
The second part of the volume
(continuities), provides
commentaries on particular research
specialties and methods including
survey research (Bourque, Shoaf
and Nguyen), qualitative research
methods (Phillips), the economics
of natural disasters (Yezer), cross-
national and comparative disaster
research (Peacock), media studies
(Lombardi) and historical
approaches to disaster research
(Scanlon).

Particular challenges and *prospects*
for the field are contained in Part 3
of the volume through discussions
of electronic media and the
globalisation of data collection
(Dombrowsky), the use of
geographic information systems in
disaster research (Dash) disaster
research issues in the developing
world (Khondker) and
a consideration of social change and
the practice of disaster fieldwork

(Tierney). Part 4 *(postscript)* rounds
off the volume with reflections on
the role of public-private
partnerships in disaster research
(Davidson). The *appendix* (Part 5)
contains a useful annotated index of
internet resources compiled by
Butler that will prove useful at least
in the shorter term.

Above all, Drabek's statements
about disaster research methods for
the future stand out—that is to
always start with an interesting and
problem focused question; to select
or develop methods required to
pursue the question posed, and to
"always keep in mind the real
promise of disaster research—to
prevent or ameliorate human
suffering" (p153). As he notes,
research is fundamental in
developing new theories and testing
and revising old notions, "[b]ut
insights for practitioners must also
be produced as we join other
disciplines in the professionalisation
of emergency management" (p153).
Importantly, this theme is
emphasised throughout the volume,
for example in Tierney's
(chapter 15) discussion of recent
trends towards better integration of
research and practice and
Khondker's (chapter 14) emphasis
on the ongoing and parallel
importance of education and
research in the training of disaster
professionals.

Overall, this is an important
volume. Whilst providing useful
advice on the application of disaster
research methods, *Methods of
Disaster Research* offers thoughtful
commentary on trends in disaster
research and disaster management
more generally. It is a volume that
will be of much interest to new and
established researchers and it will
prove useful in the professional
training of disaster managers.

Notes from the Field

by Jo Laurence

You've seen the post card—waving palm trees, lush greenery, clear blue water, and colourful tropical fish that come right up to meet you. This was Niue to a T, until it was struck by Tropical Cyclone Heta in January 2004.

Cutting a destructive arc through the Pacific from January 4th to 7th, TC Heta caused damage to Samoa, American Samoa, Tonga, and Tokelau, but in Niue it was regarded as the worst cyclone in living memory.

At first when I heard this phrase I was sceptical. The worst 'anything' in living memory makes a great headline for the media. Also the emotional impact of a past destructive event often begins to fade with time. But when I arrived on the island it was clear this was no exaggeration. I didn't need to hear the stories of the local islanders' experiences, all I had to do was look around.

Everywhere around the capital of Alofi buildings were crushed and debris was scattered about. Some buildings seemed to have been just sucked up off the ground and washed away, all that remained was the foundations. One man I spoke to said the waves were like the tentacles of a giant octopus that just wrapped around the houses and pulled them back into the sea.

Around 200 homes were lost, many businesses and significantly, the hospital was completely demolished. There were two deaths and numbers of people with injuries including broken bones. The people of Niue were in dire straits.

200 homes might not sound like much, but Niue is the smallest independent country in the world,

and has a tiny population of 1400. All communications around and outside the island were cut, fuel tanks were damaged and fuel was low, crops were destroyed, people homeless, asbestos roofing was broken up and scattered around, and without a hospital, there was no way to provide basic health care or care for those injured in the cyclone.

Though Niue's own people began clean up and repairs immediately, it was clear that this level of devastation would be more than they could cope with by themselves. Australia, New Zealand, France and

the Cook Islands were all keen to assist. As Niue is a New Zealand protectorate, New Zealand took the lead, but Australia was requested to provide medical assistance. (Niue also has strong ties to Australia, with a population of Niueans living in Australia that is many times larger than that at home.)

The day after a request was received, an Australian Defence Force (ADF) C130 Hercules was on its way with an army medical team consisting of 17 medical and support personnel, and myself. As an Emergency Management Australia Liaison Officer with year round responsibility for providing support to the Disaster Management Offices in the Pacific Islands, I accompanied the Australian medical team to Niue. My role was to assist with the initial integration and set up of the service and to provide much needed communication for the Australian Government, as local and international communication systems were still unavailable.

The medical team was very gratefully received on the island and did much to boost the morale of the people. Apart from the service provided, it was a symbol of the fact that people in the outside world cared about what was happening there. The clinic was set up in record time and the level of care, professionalism and willingness of the staff to be of help impressed both the local Niueans and the international visitors who were helping with the relief effort. By the second day, a mobile health unit was making its way around the villages, ensuring that everyone had the care they needed and providing medication and advice on the smaller ailments, like colds

and abrasions, that many people were suffering.

Much as the ADF were impressive, so were many of the local responders. Everywhere people were working to clear debris and rebuild damaged houses. With the assistance of Australia, New Zealand, France, the Cook Islands and a number of NGOs (notably the New Zealand Red Cross), a range of relief assistance has now been provided and the Niuean Government, with the help of New Zealand has embarked on the recovery and reconstruction phase. The effects of TC Heta will be felt

for many years to come though, particularly through the loss of the reefs which were almost completely swept away by the storm. The reefs were the main tourist attraction, bringing divers to the island.

When I first went to Niue I was impressed by the beauty of its scenery, the tropical fish, the corals, the whales. Though the greenery is now brown from salt spray, the palm trees are down, the fish and corals gone in most places, I am confident in the resilience of Niue's people. They have also impressed me, not only by their warmth and friendliness, but also by the courage with which they are rebuilding. They have already restored much of their infrastructure and I am sure that, given time and some assistance from their neighbours, Niue will again be a quiet paradise.

Let us help you put your story into words

The Australian Journal of Emergency Management editorial advisory committee aims to ensure the Journal remains relevant to all individuals.

To further develop the emergency management body of knowledge in Australia EMA encourages contributions in AJEM from all areas of emergency management not just academics or researchers. There is a wealth of knowledge that could be shared with readers of AJEM, however there may be some reluctance to commit to paper because of a lack of time or uncertainty about writing skills. AJEM has therefore made it easier for all to contribute their stories and/or comments.

AJEM now has a team of professional writers to help develop your story. They will amend drafts or simply interview you over the phone and write an article that may be published in the Journal.

Readership survey thank you

EMA recently conducted a readership survey amongst readers of the Australian Journal of Emergency Management.

We are pleased to announce that we received an unprecedented response to the survey with 30 per cent return of useable responses.

Thank you to all of the readers who responded so promptly to our survey.

We will publish a summary of the responses in a future edition of AJEM.

Do education strategies sink and communities swim? Evaluation of the Woronora preparedness strategy five years on

Steven Molino – Principal - Molino Stewart Pty Ltd
Jessica Huybrechs – Environmental Scientist Pty Ltd

Flood awareness education has been advocated by a variety of emergency services, government agencies and researchers, in Australia and overseas. However, there has been little hard evidence that pre-event education improves flood awareness, flood preparedness and damage reduction. Emergency Management Australia awarded Molino Stewart a grant to evaluate a recent flood preparedness program in the Woronora Valley, a narrow coastal floodplain in the Sutherland Shire in Sydney.

Implementation of the Woronora Flood Preparedness Program began in 1999. The program used standard and innovative techniques to communicate key flood preparedness messages to 500 flood-affected properties, including use of colour coding and property specific flood labels.

An evaluation framework was designed which established quantifiable evaluation criteria for assessing its effectiveness. In this study only performance against the pre-flood criteria were possible because there had been no floods since program implementation.

A telephone survey of 100 flood-affected residents assessed whether residents were aware of flooding in their community, had received and retained the various flood messages and were prepared for a flood. Sutherland Shire Council and State Emergency Service records were used to evaluated effectiveness against other criteria and some field work was undertaken to verify results.

The investigations found that:

Permanent signage:

- Was designed to deliver messages to 85% of residents
- Messages were received by 91% of residents
- At least one message was retained by 66% of residents.

A household kit that was personally delivered to residents by the SES between 1999 and 2002 was:

- Delivered to 69% of residents
- Received by 72% of residents delivered to

- Retained by 24% of those delivered to
- Had the most detailed information about what to do

A label placed in the electricity meter box by the SES with specific information on how that property would be affected by flooding was:

- Delivered to 69% of residents
- Received by 63% of residents
- Retained by 100% delivered to
- Had the most specific information about which floods affect the house

A brochure mailed out in 2003 was:

- Delivered to 100% of residents
- Received by 40% of residents
- Retained by 20% of residents

There was limited baseline information to assess the contribution the preparedness strategy made to community flood awareness and preparedness. The following could be determined:

Awareness:

- 95% recall receiving information about flooding (20% pre-program)
- 90% believe they live in a flood prone area
- 45% believe their house is at risk of being flooded
- 37% know their house risk or know where to get that information

Preparedness:

- 80% believe being prepared reduces personal risk
- 62% believe being prepared reduces property risk
- 82% know at least one appropriate response
- 56% are prepared to self evacuate
- 51% know to call SES for more info (44% pre-program)
- 25% have detailed response guides (i.e. the brochures or household kit)
- 4% have prepared flood emergency response kits

The survey demonstrates that:

- A well designed strategy can significantly increase awareness
- Good quality baseline information should be gathered before designing and implementing a communication strategy so that the effectiveness of the strategy can be measured.

It has also provided useful information on the effectiveness and longevity of particular communication tools.

EMA Update

Emergency Management Australia provides national leadership in the development of measures to reduce risk to communities and manage the consequences of disasters. EMA Update keeps AJEM readers abreast of the courses and activities that assist in this aim.

KNOWLEDGE MANAGEMENT & BUSINESS

Community Awareness Activities

Acceptance of an invitation from the New South Wales State Emergency Service (NSW SES) resulted in EMA's Manager Community Awareness Program visiting primary and secondary schools in outback New South Wales in early March. The purpose of the trip was to experience first hand the methods used by NSW SES in educating school aged children about natural hazards specific to their region as well as introducing them to the SES. Two schools and a preschool in the township of Brewarrina were visited. The children met members of the SES, watched videos, created their own emergency scenarios and finished the session with a visit from the SES mascot Paddy Platypus.

It was a great opportunity to strengthen the relationship between EMA and the NSW SES.

For further information contact Cate Moore
Phone 03 54 21 5296; email cate.moore@ema.gov.au

EMA hosts Australasian Libraries in the Emergency Sector (ALIES) 2004 Workshop

ALIES is a cooperative network of libraries which supports the information requirements of the Australasian emergency management community by promoting and facilitating the sharing of information across the diverse member agencies within Australia and New Zealand.

The workshop was held from 5–8 April, 2004 at Emergency Management Australia's Institute, Mt. Macedon, Victoria. The theme of the workshop was "Visioning and Viability" and the aim was to consolidate ALIES into a stronger network whilst encouraging innovation and co-operation in Australasian emergency sector libraries and information centres.

The workshop successfully achieved a number of outcomes including:

- Convening of the inaugural AGM at which the ALIES title was changed from Services to Sector to reflect the broader emergency management community focus. The ALIES Charter was presented and ratified by all members; and the Executive, Planning and WebIP committees were elected.
- Receiving the unanimous agreement of all members to participate in the AusDIN network and also to seek out new members from all aspects of the emergency management community to form a stronger, more representative network.

- Producing a draft strategic plan for ALIES which can be used by member agencies to guide and instruct the strategic planning for their own libraries.
- Providing the opportunity for members to be exposed to knowledge management activities within the sector and also participate in informal presentations by ALIES members who shared their practical experiences with their peers.

For further information contact Linda Hansen
Phone 03 54 21 5224; email linda.hansen@ema.gov.au

Australian Disaster Information Network (AusDIN).

The second meeting of the AusDIN Steering Committee took place in Canberra on 31st March 2004. The question of a name change was decided with AusDIN being the preferred name and the Steering Committee to be henceforth known as the AusDIN Working Group. The meeting was the first since the release of the COAG Report – *"Natural Disasters in Australia – Reforming mitigation, relief and recovery arrangements"*, the inaugural meetings of the reconstituted AEMC, now chaired by the Secretary AGD, the augmented Australasian Police Minister's Council (APMC), and the National Counter-Terrorism Committee (NCTC).

These changes were discussed within the context of the role of AusDIN as a subset of AEMC. The meeting was concerned with setting directions under the new arrangements. Other areas discussed were the AEMC-ANZLIC partnership and the need to develop some areas of endeavour for AusDIN. The meeting accepted the proposal by EMA to develop a map of all the players in the Australian emergency management environment. This project is to start immediately with EMA providing the Project Manager and AusDIN Working Group being the Project Management Committee.

The next meeting is scheduled for early August 2004 at EMA's new offices at the University of Canberra Innovation Centre.

KNOWLEDGE MANAGEMENT & BUSINESS CONTINUED

The next meeting of the AusDIN Portal Group is scheduled for mid-May 2004 and will further progress the development of the AusDIN Portal.

EMA Knowledge Networks

The EMA website recorded 487,000 hits and 28,000 visits for the month of March 2004. 9000 visits, about 30% of all visits, were from the US. There were 649 visits from Western Europe and 382 from Asia. Around 40% of all visits to the EMA websites come from overseas. These statistics indicate the EMA websites play a major role in presenting Australian emergency management to the world. Ongoing development of the websites will soon provide better linkages downwards to the States and Territories and Emergency Services websites and EMA are developing projects to provide language translations for key areas of the websites to increase our relevance in Asia and the Pacific.

ALGA-EMA emergency management resources for local government

Knowledge Management is currently working with other Groups in EMA and with the Australian Local Government Association to develop resources for Emergency Planning aimed specifically at local government needs. These resources would be aimed at supporting the Prime Minister's commitment to ALGA for closer cooperation on emergency management planning including relationships to national security and counter terrorism issues.

EMA Disasters Database

Stage 2 of the EMA Disasters Database is now live on the web accessible from the EMA website and is due for minor modifications and updates shortly. The next stage will be to instigate development of the Database as a national disasters database network and support from jurisdictions and other stakeholders is currently being sought to provide linkages and sharing of disasters data with other existing Australian databases as well as better integration with the CRED EM-Dat International Disasters Database.

For further information contact: John Laurie
email: john.laurie@ema.gov.au tel: 03 54 21 5280

EDUCATION & TRAINING

Advanced Diploma in Public Safety (Emergency Management)

Consultation with stakeholders in the latter half of 2003 identified considerable demand for the revised Advanced Diploma of Public Safety (Emergency Management). EMA is planning to pilot the Advanced Diploma in 2005 with a group of 25 people. It is proposed that the program (6 core and 5 elective units) will be delivered over a 2 year period, requiring 6 weeks attendance at the EMA Institute together with work based projects to demonstrate competence and assist with the transfer of learning. The nationally recognised Advanced Diploma will replace the non-accredited Emergency Management Officers Professional Development Program. More information will be posted on the Institute website and available to nominating authorities in the second half of 2004 (www.ema.gov.au)

Graduate Certificate in Emergency Management

Delivery of this program started in May 2004. Articulation arrangements are in place with RMIT and Charles Sturt universities and negotiations are continuing with other tertiary institutions. This four module Graduate Certificate is delivered over a 2 year period with a total of 4 weeks residential study at EMA Mt. Macedon and extensive off campus research. Information regarding the second intake will be posted on the Institute's website and be available to state and territory nominating authorities in the second half of 2004 (www.ema.gov.au).

Quality and Consistency in Assessment

In April/May 2004 EMA auspiced a series of workshops aimed at increasing the quality and consistency of assessment of emergency management competency standards. The workshops highlighted the issues involved in assessing competency standards in the higher levels of the Australian Qualifications Framework and in high risk industries such as public safety. Opportunities for maintaining networks were discussed. A report on the workshops will be available on the EMA website in July 2004 (www.ema.gov.au)

EDUCATION & TRAINING CONTINUED

Emergency Planning

After a significant national consultation program, the development of a new competency standard *Undertake Emergency Planning* is almost completed. A training program is being developed to support achievement of the competency, with the pilot course to be conducted at Mount Macedon starting 1 June 2004. For further information contact the course manager Cathy Phelps

(03 5421 5229) or Barry Dean (03 5421 5275).
At the same time, we conducted a review and major rewrite of the Australian Emergency Manual (AEM) *Emergency Planning*. It should be published before the end of 2004.

For further details, contact Barry Dean (03 5421 5275) or Cate Moore (03 5421 5296).

DEVELOPMENT

Emergency Management Volunteers Summit 2005

Planning is well underway for the *Emergency Management Volunteers Summit 2005* to be held 6–7 April 2005 at the National Convention Centre in Canberra. The Steering Committee, established to assist with planning for the Summit, met again on 26 May 2004. The Tender Evaluation Report for the appointment of a Summit Coordinator has been signed off by DGEMA. The successful tenderer is Conference Logistics and contract negotiations were conducted with them on Friday 23 April. EMA has written to the Attorney-General requesting he invite the Governor-General to open the Summit. Expressions of Interest are being sought from graphic design companies for the design of Summit promotional material.

Regular updates on the Summit will be provided through the AJEM.

For further information contact: Justine Rixon,
Assistant Director Development Projects,
phone: 02 6256 4612 email: justine.rixon@ema.gov.au

Emergency Management 'Volunteers in Action' Photographic Competition

During 2002 EMA conducted a photographic competition to recognise emergency management volunteers in action. To recognise the work and value of volunteers in Australia's emergency management and service organisations EMA is conducting another nation-wide photographic competition in 2004 with prizes being awarded at the *Emergency Management Volunteers Summit 2004* to be held 6 to 7 April 2005 in Canberra. Details are provided on the inside back cover of this issue of AJEM.

For further information contact: Justine Rixon,
Assistant Director Development Projects,
phone: 02 6256 4612, email: justine.rixon@ema.gov.au

2004 Australian Safer Communities Awards

The Australian Safer Communities Awards recognise best practice and innovation by organisations and individuals that help to build safer communities across Australia. The Awards work on two levels, State and Territory winners are decided first and become finalists for the national awards.

To date, the State and Territory brochures containing information and entry forms have been designed and printed copies have been dispatched to State and Territory coordinators. The brochures have also been uploaded onto EMA's website.

Entries are encouraged for projects undertaken between January 2003 and the end of April 2004. The closing date for entries is 20 August 2004. State and Territory winners are expected to be announced in September 2004 and the National Awards will be announced on 10 November 2004 at a ceremony in Parliament House, Canberra.

For more information, please contact Li Peng Monroe or Alastair Wilson, phone: 02 6256 4610 or 6256 4630, email: lipeng.monroe@ema.gov.au or alastair.wilson@ema.gov.au or visit the website: www.ema.gov.au

PLANNING & OPERATIONS

Multi-Jurisdictional Counter-Terrorism Exercise Mercury 04

EMA participated in the multi-jurisdictional counter-terrorism exercise (Mercury 04 during March 2004. The exercise, billed as the largest of its kind yet held in Australia, was designed to test Australia's counter-terrorism arrangements and involved police and emergency service organisations from four States & Territories, as well as a number of Australian Government departments.

EMA played an active part in the exercise with the National Emergency Management Coordination Centre (NEMCC) activated during the deployment phase of the exercise to monitor events and to coordinate requests for Australian Government assistance. In addition, EMA liaison staff were deployed to the Protective Security Coordination Centre (PSCC) Watch Office to provide the NEMCC with timely information received by participating agencies. A number of EMA staff also deployed as umpires and observers.

A feature of EMA's involvement in the exercise was the two consequence management focused Specialist Incident Task Force meetings held the exercise and chaired by the Director General of EMA, David Templeman. The meetings provided an opportunity for agencies involved in managing the consequences of the acts of terrorism in the exercise scenario to share information and collaborate on inter-jurisdictional and inter-sector planning, response and recovery.

For further information contact Trevor Jenner,
Acting Assistant Director Emergency Coordination,
phone: 02 6256 4626, email: Trevor.Jenner@ema.gov.au

Emergency Services Sector Infrastructure Assurance Advisory Group (IAAG)

An Emergency Services Sector Infrastructure Assurance Advisory Group (IAAG) has been established under the aegis of the national Trusted Information Sharing Network (TISN) to facilitate the sharing of generic security threat and vulnerability information within the emergency services sector.

A meeting, sponsored by EMA, was conducted in Melbourne on 10 March 04 to discuss the structure and composition of the group and to consider its forward work program. The meeting was attended by emergency services and emergency management representatives from States and Territories, emergency services peak bodies, the Australian Red Cross and relevant Australian Government representatives.

The approach adopted by the meeting was that, in the first instance, the IAAG should confine its scope to consideration of the emergency services sector as an element of the national critical infrastructure and to defer consideration of the broader issue of emergency management. It was appreciated that at some later date it may be appropriate to form an Expert Advisory Group (EAG) to address the provision of emergency management advice

The general outcomes of the March meeting were that the IAAG confirmed its membership and Terms of Reference and jurisdictions agreed to provide progress reports in relation to work carried out to date to ensure continuity of delivery by emergency services. This information would be shared with other jurisdictions at the next meeting of the IAAG scheduled for 28 May 2004 in Melbourne.

For further information contact: David Morton,
Assistant Director Civil Defence and National Support,
phone: 02 6256 4617, email david.morton@ema.gov.au

CONFERENCE DIARY

INTERNATIONAL

June

2–3 June

Location: Melville, New York—Long Island/
New York City

Title: Emergency Management Conference
Emergency Preparedness Planning:
Public/Private Initiatives

Details: This conference will focus on public and
private sector emergency preparedness, and
will showcase emergency preparedness and
planning initiatives that stress the importance
of coordination and cooperation. Hurricane
preparedness will be a central theme.

Enquiries: For more information contact Catherine
Lowenski, State Emergency Management
Office, 1220 Washington Avenue Suite 101,
Building 22, Albany, NY 12226-2251;
(518) 457-9986;
Email: catherine.lowenski@semo.state.ny.us;
http://www.linycemconference.com/.

Sponsors: Long Island Power Authority, New York State
Emergency Management Office, New York City
Office of Emergency Management, Nassau
County Office of Emergency Management,
and Suffolk County Office of Emergency
Management

3–4 June

Location: Bangkok, Thailand

Title: The Media and Climate: Building Partnerships
Workshop

Details: This workshop aims to strengthen and sustain
partnerships between the media and climate
communities in Southeast Asia to foster
accurate and effective communication about
the nature and implications of climate
variability and change.

Enquiries: Workshop details can be obtained from Lolita
Bildan, ADCP, P.O.Box 4, Klong Luang,
Pathumthani 12120, Thailand;
tel:(66-2) 516-5900-10;
Email: lolita@adpc.net;
http://www.adpc.net.

Sponsor: Asian Disaster Preparedness Center (ADCP)

10 June

Location: Christchurch, New Zealand

Title: Risk Communication Workshop

Details: In today's world, good business doesn't leave
anything to chance. Most organisations are
attuned to risk and its management and risk
communication is an integral part of effective
risk management. If you are a senior
manager, risk manager or PR/communication
manager, risk communication is vital to your
role. The Centre for Advanced Engineering
(CAE) is providing a rare opportunity for you
to learn from some of the best in this field. In
a series of three half-day workshops, they will
show you how effective risk communication
will improve the way you manage risk. At the
end of the workshop you will understand:
how effective risk communication affects your
organisation's relationships with key
stakeholders; how good risk communication
can preserve your reputation; why risk
communication is different to other forms of
communication; how you can minimise the
impact of possible crises through effective risk
communication.

Enquiries: For more information, please go to
http://www.caenz.com/risk/workshop/RiskCom
m.html, or call us on +61 3 364 2478. The
website has a downloadable flyer and offers
a registration/enquiry facility.

17 June

Location: Christchurch, New Zealand

Title: Risk Communication Workshop

Details: In today's world, good business doesn't leave
anything to chance. Most organisations are
attuned to risk and its management and risk
communication is an integral part of effective
risk management. If you are a senior manager,
risk manager or PR/communication manager,
risk communication is vital to your role. The
Centre for Advanced Engineering (CAE) is
providing a rare opportunity for you to learn
from some of the best in this field. In a series of
three half-day workshops, they will show you
how effective risk communication will improve
the way you manage risk. At the end of the
workshop you will understand: how effective
risk communication affects your organisation's
relationships with key stakeholders; how good
risk communication can preserve your
reputation; why risk communication is different
to other forms of communication; how you can
minimise the impact of possible crises through
effective risk communication.

Enquiries: For more information, please go to
http://www.caenz.com/risk/workshop/RiskCom
m.html, or call us on +61 3 364 2478. The
website has a downloadable flyer and offers
a registration/enquiry facility.

20–23 June

Location: Toronto, Canada

Title: 14th World Conference on Disaster
Management.

Details: The conference will address issues common to
all aspects of disasters and emergency
management.
Abstracts are due December 12, 2003.

Enquiries:	For detailed information contact CCEP, 1005 Skyview Drive, Suite 323, Burlington, Ontario L7P 5B1 Canada; (905) 331 2552; http://www.wcdm.org. WCDM features exciting outdoor demos by Toronto's CBRN & HUSAR teams and by Vanguard Response Systems. Indoor displays include Ontario's Emergency Medical Assistance Team (EMAT) – a new portable hospital. Learn when and how it can be used in your community.
Sponsor:	Canadian Center for Emergency Preparedness (CCEP)

21–25 June

Location:	Baltimore, Maryland
Title:	The 1st International CLIVAR (Climate Variability and Predictability) Science Conference
Details:	The international CLIVAR program, under the auspices of the World Climate Research Program (WCRP), focuses on describing and understanding variability and change of the physical climate system on time scales from months to centuries and beyond. This conference will focus on CLIVAR's successes and future challenges. These include consideration of the broader climate research environment and how best to contribute the knowledge, products, and information brought about by CLIVAR to those who could best use it in decision and policy making.
Enquiries:	Registration information and additional details may be obtained from the Conference Secretariat, UCAR/JOSS/PSO, 3300 Mitchell Lane, Room 1112, Boulder CO 80301; (303) 497-8667; http://www.clivar2004.org/.
Sponsor:	CLIVAR.

24–25 June

Location:	Newcastle upon Tyne, United Kingdom
Title:	2nd Annual Conference: Risk Management (ETR2A).
Details:	This conference brings together business, the public sector, and academia to address issues surrounding business, telecommunications, and public life in preparing for and responding to emergencies.
Enquiries:	Abstract guidelines and conference information is available from the ETR2A Conference Office, Benchmark Communications, 63 Westgate Road, Newcastle upon Tyne, NE1 1SG, UK; tel: 0191 241 4523; http://www.etr2a.org/.
Sponsors:	European Telecommunications Resilience and Recovery Association, Northeast Development Agency and Northumbria University.

24 June

Location:	4 Rio de Janeiro, Brazil
Title:	IX International Symposium on Landslides.
Details:	Practicing and consulting engineers, geologists, researchers, construction managers, government officials, product suppliers, and others are invited to attend and present their recent experiences and

	developments in the field of landslide hazards.
Enquiries:	Detailed information is available by contacting Secretariat 9 ISL-Rio 2004, Programa de Engenharia Civil COPPE-UFRJ, P.O. Box 68506, CEP 21.945-970, Rio de Janeiro RJ Brazil; tel: 55 21 562-7200; Email: 9isl@geotec.coppe.ufrj.br; http://www.quattri.com.br/isl/interior.html.
Sponosrs:	International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE), International Society of Engineering Geology (IAEG), and International Society of Rock Mechanics (ISRM).

28–30 June

Location:	Orlando, Florida
Title:	The 2004 Government Symposium on Information Sharing and Homeland Security.
Details:	This symposium will identify the challenges with integrating information and intelligence, and will focus on solutions using case studies and best practices from Chicago, New York, Florida, and California. The intent of this conference is to find solutions that help to close the gaps existing between federal agencies and those found between the federal level and the state and local level.
Enquiries:	For more information contact National Conference Services, Inc. (NCSI), 6440-C Dobbin Road, Columbia, MD 21045; (888) 603-8899; http://federalevents.com/ishs/.
Sponsor:	Government Emerging Technology Alliance (GETA).

July

6–9 July

Location:	Osaka, Japan
Title:	Smart Structures Technology and Earthquake Engineering
Details:	Earthquake engineering has undergone a transformation from discipline-oriented investigations to centre and network-based efforts that rely on cross-cutting solutions. This symposium is dedicated to facilitating that shift.
Enquiries:	Further information is available from Ma Hua, Osaka University, Osaka Japan; Email: mahua@arch.eng.osaka-u.ac.jp; http://www.nees.org/info/SE041119.pdf.
Sponsors:	Japan Society for the Promotion of Science, the National Science Foundation, and the Asia-Pacific Network of Earthquake Engineering Research.

12–13 July

Location:	Hawkes Bay, New Zealand
Title:	Recovery Symposium
Details:	As part of the 4R's approach to Civil Defence and Emergency Management (CDEM) comprising Reduction, Readiness, Response and Recovery, the Ministry of Civil Defence & Emergency Management is committed to

the development of concepts, processes, plans and capability for the fourth R of Recovery. As part of this focus, the Ministry is organising a New Zealand Recovery Symposium from 12–13 July 2004. The Symposium will focus on five key aspects of recovery: economic; reconstruction; environmental; psychosocial; and community. A session will also be provided on the professional development aspects of recovery.

Enquiries: Further details on the symposium will be made available on the Ministry website: www.civildefence.govt.nz . For further information, contact: sarah.norman@dia.govt.nz

12–15 July
Location: Vienna, Austria

Title: Third European Conference on Structural Control (3ECSC).

Details: This conference will foster interactions among the community of researchers contributing to structural control among the European research and professional community. Cross-fertilization between different scientific disciplines and professions is encouraged.

Enquiries: More information is available from Susanne Halbkram, VCE, Hadikgasse 60, A-1140 Vienna, Austria; tel: 43-1-894-60-21, ext. 144; Email: halbkram@vce.at; http://www.samco.org/3ecsc/index.htm.

Sponsor: Vienna Consulting Engineers (VCE)

20–22 July
Location: Miami Beach Florida

Title: America's Fire Expo 2004.

Details: This conference is directed toward those involved with fire protection systems and equipment, special hazards, chemical and hazardous material storage and handling, building fire protection, life safety and electrical installations.

Enquiries: For more information contact ROC Exhibitions, Inc., 1963 University Lane, Lisle, IL 60532; (630) 271-8210; Email: fire@rocexhibitions.com; http://www.nfpa.org.

Sponsor: National Fire Protection Association (NFPA).

26–27 July
Location: Karlsruhe, Germany

Title: Disasters and Society: From Hazard Assessment to Risk Reduction

Details: This conference will provide a forum to present and discuss research results in the following areas: understanding and modeling hazards, hazard and risk assessment, forecasting and early warning, information and communication, disaster management, and risk reduction in industrialized societies.

Enquiries: For more information contact Karlsruhe University, Kaiserstrasse 12, D-76 131 Karlsruhe, Germany; Email: disasterandsociety@uka.de;

http://www.disasterandsociety.uni-karlsruhe.de/default-en.html.

Sponsor: University of Karlsruhe Program in Natural Disasters, Collaborative Research Center, and Center for Disaster Management and Risk Reduction Technology.

26–28 July
Location: Albuquerque, New Mexico

Title: Joint Specialty Conference on Probabilistic Mechanics and Structural Reliability

Details: Probabilistic mechanics and reliability analysis are valuable and powerful tools in many engineering disciplines. As uncertainties in design parameters and behaviours are increasingly considered in the design of engineering systems, both applied and basic research in the area of stochastic mechanics will continue to grow. This conference will bring together researchers and scientists from around the world. Engineers, researchers, and scientists involved in reliability of structural, mechanical, marine, aerospace, geotechnical, and environmental systems are invited to participate.

Enquiries: Conference details are available from Steve Wojtkiewicz, Sandia National Laboratories, P.O. Box 5800, MS0847, Albuquerque, NM 87185;(505) 284-5482; Email: sfwojtk@sandia.gov; http://www.esc.sandia.gov/PMCconferenceinfo.html.

Sponsors: American Society of Civil Engineers (ASCE), the Structural Engineering Institute (SEI), and the Geo-Institute.

27–31 July
Location: Los Angles, California

Title: Geo-Trans 2004

Details: This conference will focus on geotechnical engineering for transportation projects such as bridges, tunnels, underground structures, rail and highway corridors, and systems engineering. Seismic design, risk assessment, geographic information systems, and retaining structures are among the topics to be presented.

Enquiries: Complete information is available from ASCE, 1801 Alexander Bell Drive, Reston, VA 20191; (703) 295-6350; Email: conf@asce.org; http://www.asce.org/conferences/geotrans04/.

Sponsor: Geo-Institute of the American Society of Civil Engineers (ASCE).

August

1–6 August
Location: Vancouver, British Columbia, Canada

Title: 13th World Conference on Earthquake Engineering (13WCEE)

Details: Refer to: http://www.13wcee.com/, or http://venuewest.com/13wcee

Enquiries: Contact: 13th WCEE Secretariat, c/o Venue West Conference Services Ltd., #645-375

	Water Street, Vancouver, British Columbia V6B 5C6, Canada; (604) 681-5226; fax: (604) 681-2503; Email: congress@venuewest.com.
Sponsor:	Canadian Association for Earthquake Engineering.

10–11 August

Location:	Baycourt, Tauranga, New Zealand
Title:	6th New Zealand Natural Hazards Management Conference 2004
Enquiries:	For further information email: d.tilyard@gns.cri.nz or visit http://www.gns.cri.nz/news/conferences/hazmanconf04.html

10–12 August

Location:	Honolulu, Hawaii
Title:	Gender Equality and Disaster Risk Reduction Workshop
Details:	This will be an action-oriented meeting for women and men working toward gender equity in all dimensions of disaster risk and response. This international meeting of practitioners, policy makers, planners, academics, activists and community members will focus on practical and feasible strategies for gendering the risk reduction agenda.
Enquiries:	Information is available from Elaine Enarson, 33174 Bergen Mountain Road, Evergreen, CO 80439; (303) 670-1834; Email: genderdisaster@yahoo.com; http://www.ssri.hawaii.edu/research/GDWwebsite/index.html.
Sponsors:	US Agency for International Development (USAID) Office of Foreign Disaster Assistance, the US Department of Agriculture, the International Strategy for Disaster Reduction, the University of Hawaii, and members of the Gender and Disaster Network.

15–20 August

Location:	Glasgow, Scotland
Title:	30th Congress of the International Geographical Union: One Earth, Many Worlds.
Details:	The extensive and varied program includes topics of special interest to hazards researchers, including: desertification, coastal systems geomorphology, changing demographics, health and environment, population, flooding, and more.
Enquiries:	Registration information can be obtained from Meeting Makers, Jordanhill Campus, 76 Southbrae Drive, Glasgow G13 1PP, Scotland, UK; tel: +44 (0) 141 434 1500; Email: igc2004@meetingmakers.co.uk; http://www.meetingmakers.co.uk/igc-uk2004/index.html.

15–22 August

Location:	Florence, Italy
Title:	32nd International Geological Congress (IGC)
Enquiries:	For a conference circular, Email: 32igc@32igc.org; or contact: Chiara

---

	Manetti, Universita degli Studi di Firenze, Dipartimento di Scienze della Terra, Via La Pira, 4 50121 Firenze, Italy; tel/fax: +39 055 2382146; Email: cmanetti@geo.unifi.it; WWW: http://www.iugs.org/iugs/news/igc32-02.htm. Note: The 32nd IGC includes a Topical Symposium on "Natural Hazards and Mitigation of Geological Risks"; for more information, contact Tina Nunziata, Email: conunzia@unina.it, or Attia El-Sayed, Email: elsayedat@mans.edu.eg. There will also be a session on "Geological Data and Seismic Hazard Maps"; for details, see http://www.bghrc.com/Geolhaz/Syposium/info.htm, or contact Ioannis Papanikolaou, Email: i.papanikolaou@ucl.ac.uk.

20–28 August

Location:	Florence, Italy
Title:	The 32nd Session of the International Geological Congress
Details:	The conference has been designed as a forum for a broad debate of the most significant advances in the geological sciences, as well as to promote discussion of the congress theme: "from the Mediterranean area toward a global geological renaissance—geology, natural hazards and cultural heritage.
Enquiries:	For more details, contact Chiara Manetti, Borgo Albizi, 28, 50121 Firenze, Italy; tel: +39 055 2382146; Email: casaitalia@geo.unifi.it; http://www.32igc.org/default1.htm.
Sponsors:	International Union of Geological Sciences (IUGS), and various member countries of the Mediterranean Consortium.

31 August–2 September

Location:	London, England
Title:	Mitigating Volcanic Crises: Practical Solutions for the 21st Century
Details:	This three-day conference will address practical strategies for responding to volcanic crises. Sessions will combine scientific, social and management criteria to identify new methods for making short-term forecasts of eruptions and of types of volcanic hazards, communicating the hazard to non-specialists, and designing appropriate response plans, from defense measures to evacuation.
Enquiries:	Conference information is available from the Benfield Hazard Research Center, Department of Earth Sciences, UCL, 136 Gower Street (Lewis Building), London, WC1E 6BT UK; tel: +44 (0)20 7679 3449/3637 http://www.benfieldhrc.org/SiteRoot/activities/events/chris_2004.htm.
Sponsor:	University College, London

Australia—Brisbane
July

5–9 July

Location:	Brisbane, Australia
Title:	International Conference on Storms
Details:	This conference is multi-disciplinary. It adopts an end-to-end approach, from storms science through risk assessment, and forecasting, to disaster mitigation and response. It will deal with storms of all kinds including severe thunderstorms and frontal wind storms, tropical cyclones, frontal and cyclonic storms of higher latitudes. Topics include storm rainfall and flooding, and storms at sea. Key presentations will be provided by internationally recognised speakers.
Enquiries:	For further information visit the conference website http://www.stormsconf.org.au/
Sponsors:	The Australian Meteorological and Oceanographic Society, co-sponsors are the World Meteorological Organisation, Commonwealth Bureau of Meteorology (Australia), Emergency Management Australia, Queensland Emergency Services—Counter Disaster and Rescue Services, the American Meteorological Society and the Meteorological Society of New Zealand.

Australia—Melbourne
June

2–4 June

Location:	Melbourne, Australia
Title:	10th National Conference on Volunteering evolution: Evolution, Devolution, or Revolution?
Details:	Volunteering Australia will be hosting the 10th National Conference on Volunteering at the Hilton on the Park, East Melbourne from 2–4 June 2004. The deadline for abstracts has now passed and the program is currently being developed.
Enquiries:	The registration brochure is expected to be available by late February / early March, and will contain full details, including cost. To go on the mailing list to receive a registration brochure, email The Conference Organiser on info@conorg.com.au

August

### 17–18 AUGUST

Location:	Melbourne Convention Centre, Australia
Title:	Vulnerable Communities and Emergencies Emergency Management Conference 2004
Details:	The Emergency Management Conference (EMC), now in its 4 year, has become one of Australia's pre-eminent annual emergency services forums. It brings together emergency management professionals from ESOs, local, state and federal governments, community groups and industry. Papers will be presented by Australian and international emergency management professionals, local, state and federal governments and authorities, academics and research organisations, community and special interest groups, aviation and transport industry, heavy and hazardous materials industries and other interested parties.
Enquiries:	CALL FOR PAPERS: Contact the secretariat- C/ High Profile Exhibitions Pty Ltd Tel: (03) 9533 1000 Fax: (03) 9533 1035 Email: info@hpe.com.au
Sponsor:	The Emergency Services Foundation
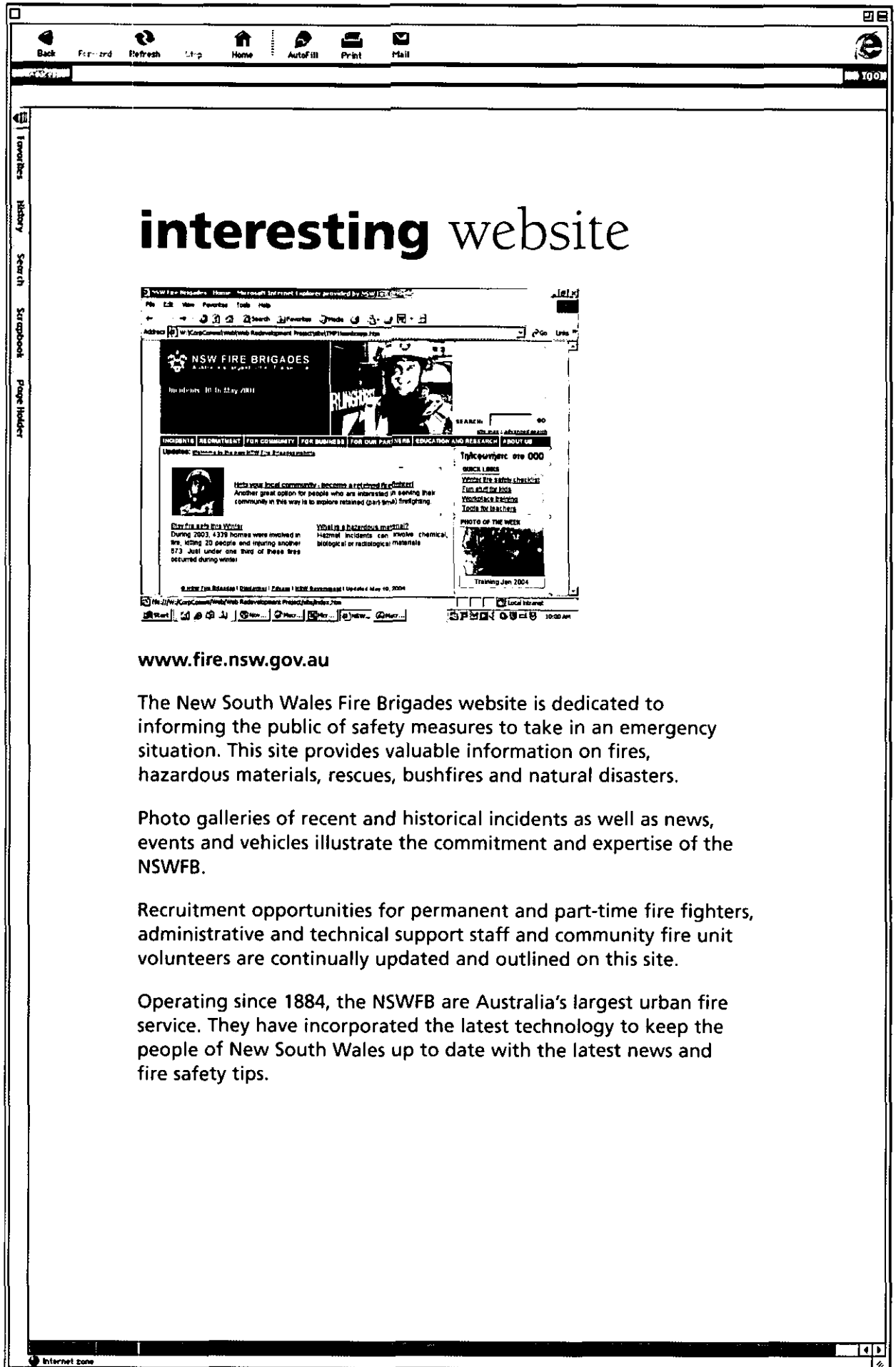
interesting website

www.fire.nsw.gov.au

The New South Wales Fire Brigades website is dedicated to informing the public of safety measures to take in an emergency situation. This site provides valuable information on fires, hazardous materials, rescues, bushfires and natural disasters.

Photo galleries of recent and historical incidents as well as news, events and vehicles illustrate the commitment and expertise of the NSWFB.

Recruitment opportunities for permanent and part-time fire fighters, administrative and technical support staff and community fire unit volunteers are continually updated and outlined on this site.

Operating since 1884, the NSWFB are Australia's largest urban fire service. They have incorporated the latest technology to keep the people of New South Wales up to date with the latest news and fire safety tips.

Photo Competition

EMA 'safer sustainable communities'

**EMERGENCY SERVICE VOLUNTEERS IN ACTION**

Do you take photographs of emergency service volunteers doing what they love to do?

Emergency Management Australia will be conducting another Photographic Competition to recognise the work and value of emergency service volunteers and their organisations.

Start collecting your best images now to enter into this unique Volunteers In Action photo competition.

It will be open to both amateur and professional photographers in two separate streams, with prizes in each category. The professionals can be freelance, with a media organisation or paid by an emergency service organisation. The amateur photographers can be freelance or with an emergency service organisation.

PERIOD OF IMAGE: July 2003 – January 2005. Winners will be announced and their entries displayed, at the Emergency Management Volunteers Summit 2005, to be held in Canberra, 6–7 April 2005.
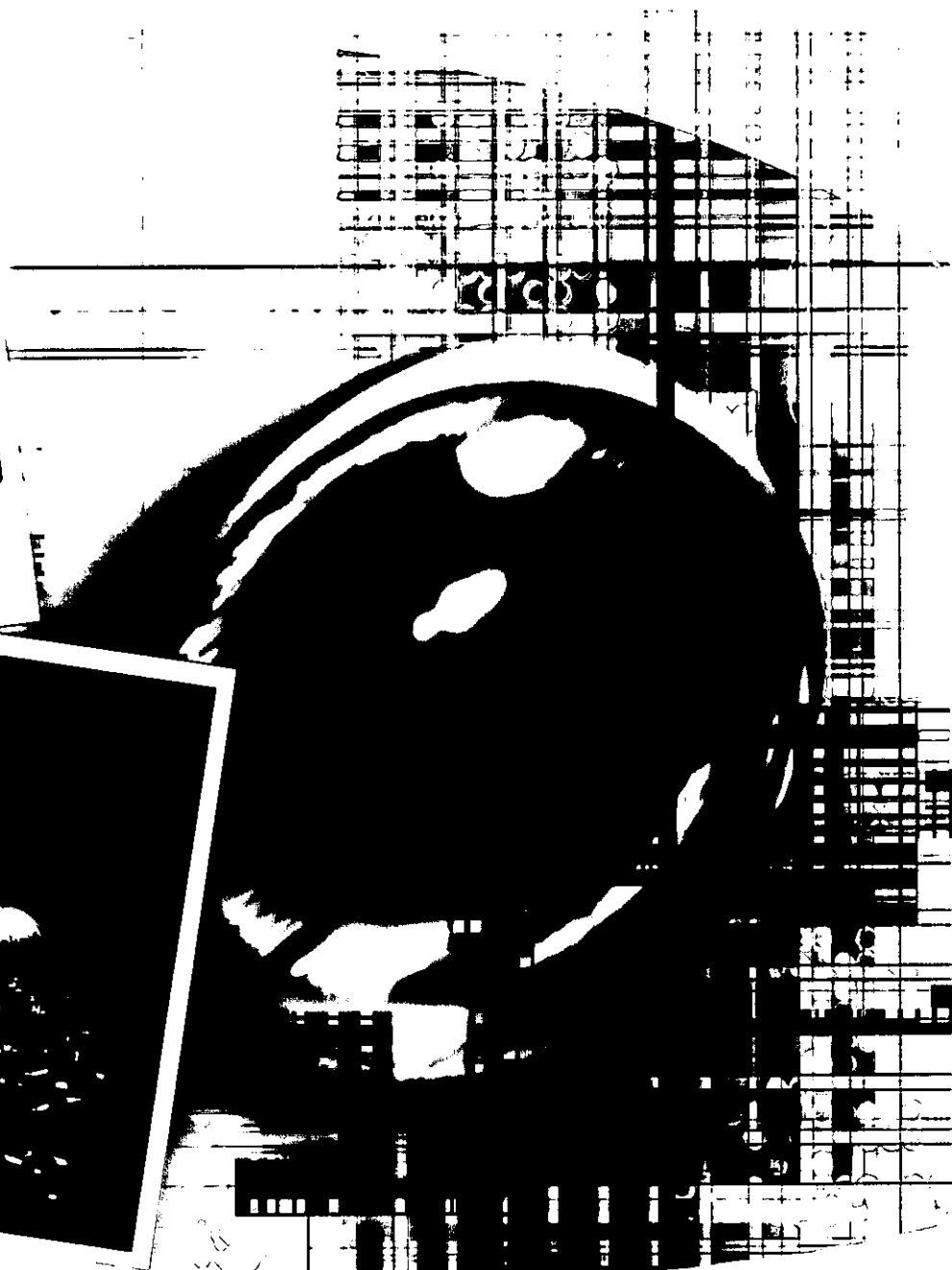
Further information on the Photographic Competition and the Volunteers Summit will be provided in future editions of the Australian Journal of Emergency Management and is available on the EMA website www.ema.gov.au

Can you be an
AUSTRALIAN SAFER COMMUNITIES AWARDS
WINNER?

2004 AUSTRALIAN SAFER COMMUNITIES AWARDS

inate for the 2004 Awards in your State or Territory NOW.

The Australian Safer Communities Awards recognise people and organisations for best practice and innovation in emergency management.

For more information visit:

www.ema.gov.au

You can also download an entry form
Entries close Friday 20 August 2004.

"safer sustainable communities"