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BUILDING A DISASTER RESILIENT AUSTRALIA

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Please note that some 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.

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ABOUT THE JOURNAL

The Australian Journal of Emergency Management is Australia's premier Journal in emergency management. Its format and content is developed with reference to peak emergency management organisations and the emergency management sectors—nationally and internationally. The Journal focuses on both the academic and practitioner reader and its aim is to strengthen capabilities in the sector by documenting, growing and disseminating an emergency management body of knowledge. The Journal strongly supports the role of the Australian Emergency Management Institute (AEMI) as a national centre of excellence for knowledge and skills development in the emergency management sector. Papers are published in all areas of emergency management. The Journal emphasises empirical reports but may include specialised theoretical, methodological, case study and review papers and opinion pieces. The views in this journal are not necessarily the views of the Attorney-General's Department.

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Foreword

By Scott Tilyard, Chair, Community Engagement Sub-Committee.

"It is my pleasure to introduce the November edition of the Australian Journal of Emergency Management. Deputy Secretary, National Security and Criminal Justice Group, Attorney-General's Department, Tony Sheehan wrote in the Foreword of the July edition of AJEM about the National Strategy for Disaster Resilience (NSDR) and how this will guide the work of emergency management agencies, volunteers and all levels of government."

Following the meeting of Police and Emergency Management Ministers in July, senior officials and members of the National Emergency Management Committee agreed on the need to develop a national communication strategy for the NSDR. As Chair of the Community Engagement Sub-Committee, reporting to the National Emergency Management Committee, I would like to share with you progress on this important piece of work.

Interim key messages were developed as a first step in promulgating the intent of the NSDR. The Commonwealth Attorney-General wrote to State and Territory ministerial colleagues seeking their support in using the key messages wherever possible.

A workshop was conducted late September with representation from all states and territories, private sector organisations, community groups, volunteer groups and local government. A draft communication strategy and communication plan has now been prepared for presentation to senior ministers in November.

AJEM will continue to report on the implementation of the National Strategy for Disaster Resilience (NSDR) in 2012.

In this edition, Raelene Thompson, Executive Director of the Australian Emergency Management Institute shares some of her findings from three Emergency Management Institutes she visited recently. There is also an interesting paper written by Dr Michael Eburn relating to the changes to Occupational Health and Safety laws and how they relate to volunteers. On a slightly different note, there are more stories from journalist Kate Lahey capturing the personal reflections and experiences in the devastating events of last summer.

I trust you will enjoy this edition and encourage writing to the Editor with any feedback or comments you may have.

Scott Tilyard
Deputy Commissioner of Police, Tasmania
Chair, Community Engagement Sub-Committee

Opinion: Emergency management and disaster resilience education in Australia: How does it stack up internationally?

An AJEM Interview with Raelene Thompson, Executive Director, Australian Emergency Management Institute (AEMI).

The development of AEMI as an educational *Centre of Excellence* is recognised as a vitally important step towards the growth and development of the emergency management sector in Australia.

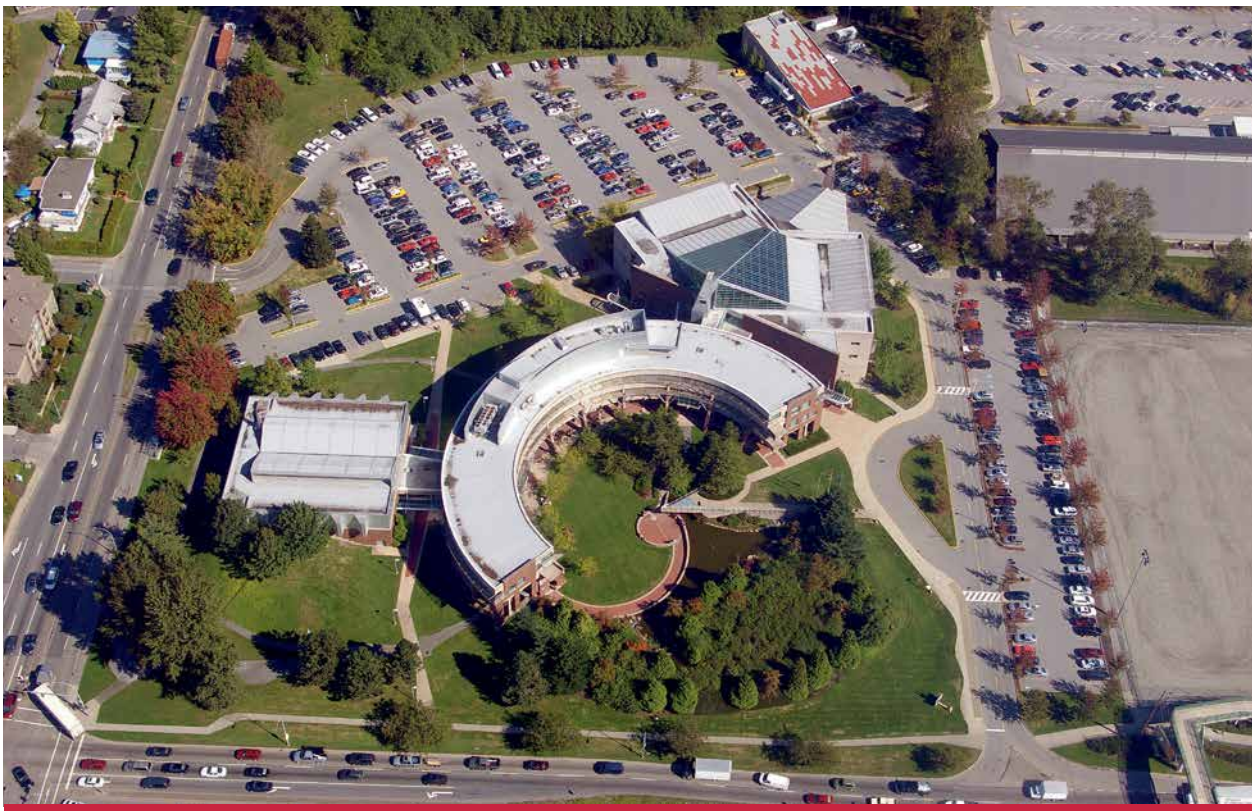
Everywhere, higher education is faced with great challenges related to financing, equity of conditions, access to studies, improved staff development, skills-based training enhancements and the preservation of quality in teaching, research and services, relevance of programs, employability of graduates and establishment of efficient international co-operative agreements.

At the same time, higher education is being challenged by new opportunities relating to technologies that will improve the ways in which knowledge can be produced, managed, disseminated, accessed and controlled.

As a consequence of these issues in education generally, the AEMI Executive Director, Raelene Thompson is on a mission to benchmark AEMI's 'excellence' efforts and provide information to assist the Institute to better understand how AEMI compares with its international counterparts. On this journey, Raelene recently visited several key international educational institutions: the Justice Institute of British Columbia in Vancouver Canada; the Cabinet Office Emergency Management College, York, England and The Asian Disaster Preparedness Center, Bangkok, Thailand. *The Australian Journal of Emergency Management* caught up with her on her return.

Canada

According to Ms Thompson, The Justice Institute of British Columbia (JIBC) is one of three institutes that run emergency management courses in Canada. JIBC



Aerial view of the JIBC, New Westminster, Vancouver, Canada.

is considered to have one of the most forwardlooking educational programs and offers an exceptional emergency management experience, including a sophisticated simulation program. Established in 1978 with a provincial mandate under the College and Institute Act, JIBC now delivers leading edge public safety and justice education and training in British Columbia, Canada and internationally. JIBC operates seven sites across the province. Ms Thompson visited the main campus in New Westminster. JIBC offers a wide range of academic and professional programs and courses that lead to graduate certificates, diplomas and bachelor degrees. "We believed it was useful to benchmark against this organisation as they are on a similar journey to AEMI, seeking to ensure quality emergency management education for students. Unlike AEMI, JIBC runs its emergency management programs as a part of a larger institution," Ms Thompson said.

"Given that JIBC is not the national provider, the sheer size of this beautiful, large, modern campus was unexpected. The general layout of the Institute was impressive and its lecture theatres were enviable. The breadth of their curriculum is impressive and the library is also exceptional," she said.

JIBC is planning further expansion in the future, including provision of accommodation at the New Westminster campus (accommodation exists at the Chilliwack campus). The JBC website is www.jibc.ca

In contrast, AEMI already has a fifty-bed residential facility that enables the added experiences of networking, debriefing and reflection. AEMI also has expansive grounds that allow in-the-field training exercises where students can be taken on 'virtual' journeys.

Whilst at JIBC, Ms Thompson learned that many of the students enrolled at JIBC come from around British Columbia but students from further afield are also attracted to the courses because of JIBC's reputation for high quality education in the emergency management field.

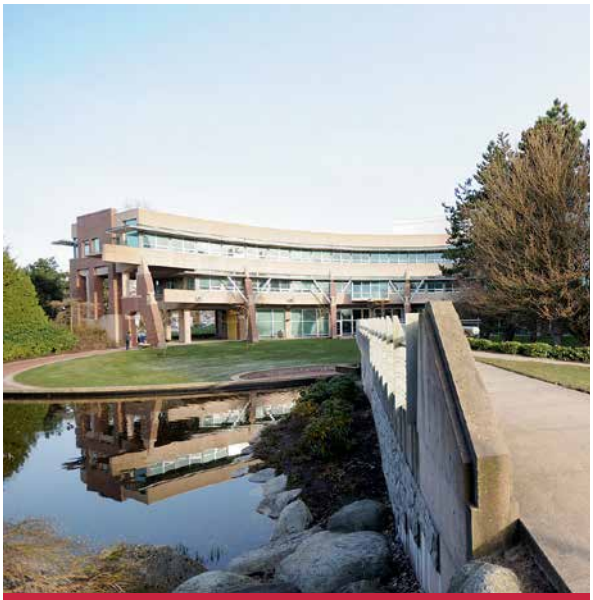
"Like AEMI, JIBC uses exercise management as part of their emergency management curriculum. One of the reasons for the visit was that I was really interested to see the JIBC purpose-built simulation centre located in a fully self-contained, separate building," she said.

The simulation centre is built around a product purchased from the UK, called the *Hydra Exercise Management System*. They have a plenary room with a number of break-out rooms that are all connected with closed-circuit television. Their computer control room runs the simulations and they insert issues into scenarios that are broadcast to computer programs in each of the break-out rooms. Their system operates using advanced computer technology.

Ms Thompson said, "JIBC are about to launch an interactive web-based exercise system and they are very keen to test in a simulation exercise with external participants. AEMI has offered to be one of their pilot 'pods' in the trial. The pilot project will assist AEMI to actively engage with JIBC's activities and build functional relationships between both organisations while we develop a broader network of colleagues." JIBC has strong relationships with appropriate government areas, ensuring they are aligned with legislative requirements. In contrast, AEMI is embedded in the Commonwealth Attorney-General's department and accordingly the Australian government policy environment.

Another area of difference is that JIBC does not keep or produce the 'doctrine' for the sector. In fact, it appears that AEMI is unique in its role as keeper and producer of the underpinning doctrine of emergency management in Australia on behalf of, and with the participation of, the sector. AEMI has recently produced the first two publications in the new Australian Emergency Management Handbook series, building on the existing Manual Series, which contains 46 manuals providing guidance to the emergency management sector. Handbook No 1 is *Disaster Health* and Handbook No 2 is *Community Recovery*.

Students training in one of the simulation suites at JIBC.



Grounds of the JIBC, Vancouver, Canada.

United Kingdom

The Cabinet Office Emergency Planning College (CO EPC) is located just outside York in the north-east of England. It was chosen for this benchmarking visit because it was considered to be the most like AEMI—it is owned by government, has been around since just after WWII and is geographically like AEMI in that it is a residential college located just outside a major city. It is situated in beautiful grounds, has impressive accommodation and hospitality services and modern training facilities. The college delivers emergency planning and crisis management training and is Government-owned but contractor-operated (GOCO) being managed by SERCO (a publicly listed company). The College offers a wide range of training courses, seminars and workshops for public and private sector clients across the UK and overseas, including real-time simulation exercises.

Ms Thompson said, "We were particularly interested in this college because it now operates on a commercial (outsourced) financial model. Given that AEMI has recently adopted a new 'fee-for-service' model for partial cost recovery for some of its units of study and other education products; it was timely to speak to SERCO about their experiences in the 18 months since they began managing the College. Like AEMI and JIBC the College is focussed on delivering an excellent education experience to its students".

During the visit, the College's strategic journey was recounted, including the successful rebuilding of accommodation facilities, to bring them up to modern standards (single rooms with en-suites) and the addition of modern training facilities. "Generously, the College invited me to experience their accommodation and hospitality services, and I must say, it was a very pleasant experience indeed!" Ms Thompson said.

In contrast, AEMI's hospitality services are also of a very high standard, with accommodation that is comfortable, but currently with shared bathrooms. Whilst the current buildings at AEMI were built in the 1970's, the technological capability of the campus is comparable to the UK College and the JIBC. Positive feedback on AEMI technology is constantly received from somewhat surprised students. For example, AEMI recently ran a workshop on social media where students were instructed not to turn off their mobile phones. During the course, participants were tweeting comments about the course using the mobile phones. The tweets appeared on-screen in front of the whole group. Their comments related to the effective use of skype feeds and the five operating screens that were being used in the lecture theatre at the time.

"Positive feedback on AEMI technology is constantly received from students. For example, AEMI recently ran a workshop on social media where students were instructed not to turn off their mobile phones. During the course, participants were tweeting comments about the course using their mobile phones. The tweets appeared on-screen in front of the whole group. Their comments related to the effective use of skype feeds and the five operating screens that were being used in the lecture theatre at the time."

CO EPC offers an impressive fifty-eight emergency management and civil protection courses. They have a strategic relationship with the prestigious Leeds University and a developing relationship with Coventry University to offer a masters-level course in emergency management. "It was interesting to note that CO EPC was on the same path as AEMI regarding aligning with other institutions. AEMI is keen to ensure it creates and maintains effective partnerships with tertiary institutions to maximise its' effectiveness and reach in delivering education to the sector ," Ms Thompson said. The CO EPC website is www.epcollege.com

"What was also evident from the Canada and UK visits was that the emergency management body of knowledge is moving globally from what was a 'practical skills development base' to a broader 'leadership principles' base," Ms Thompson said. Both JIBC and CO EPC are further advanced in their use of blended learning, with AEMI just commencing the journey.

Cabinet Office, London – resilience strategy area

An added bonus of the visit was the opportunity to visit the UK Cabinet Office to discuss the UK approach to resilience. "The UK has been on the resilience journey for a number of years and this was the opportunity to determine what might be relevant for AEMI in giving effect to the National Strategy for Disaster Resilience, recently adopted by the Council of Australian Governments (COAG). One of the most interesting strategies was the establishment of the UK Resilience website, which provides a range of resources for communities and practitioners throughout the UK," said Ms Thompson.

The Asian Centre for Disaster Preparedness (ADPC) in Bangkok, Thailand

Visiting a little closer to home, Ms Thompson visited the Asia Pacific Centre for Disaster Preparedness (ADPC), which celebrates its silver jubilee in 2011. ADPC was established in 1986 and has developed into a regional resource centre on disaster risk reduction, building capability throughout the region. According to Ms Thompson, ADPC is an operationally focussed, 'can-do' organisation. The Centre has around 100 staff and has had an ongoing relationship with AEMI over several years. Their focus on building interoperability in practice and capability across various sectors is one which AEMI shares. AEMI is examining its current international engagement strategy and wants to ensure any work it may do in the region in the future is complimentary and supportive of the wonderful work of the ADPC. The ADPC website is http://www.adpc.net

United Nations Office, Bangkok, Thailand

Whilst in Thailand, Ms Thompson talked to the United Nations about their *International Strategy for Disaster Reduction* to garner some information on the *International Day for Disaster Reduction*, an annual event and explore the sorts of messages AEMI might consider while contributing to the development of disaster resilience communication messages in Australia.

Learnings from the visits program

The most relevant reflections following the visit include:

- AEMI is indeed in a unique position in that it is a residential educational institution delivering high quality emergency management education while operating from within a government department.
- The fact that AEMI delivers education, maintains doctrine for the sector, provides broader community engagement and education products (eg schools education products) and contributes to government policy also makes AEMI unique. Keeping these elements together will undoubtedly maintain the strength of AEMI for a long time into the future.
- AEMI is heading in the right direction in terms of the Institute's desire to develop as a Centre of Excellence and this objective would be strengthened via the building of functional institutional relationships with other similar institutions worldwide.

For the future, the Executive Director's international fact-finding trip has given rise to the consideration of the the following AEMI initiatives:

- Establishment of a formal network of institutes where AEMI agree either under existing MOUs (or under new ones) to cooperate and collaborate on education product development and in practical action-oriented research.
- Possible participation with JIBC on their web-based simulation product.
- Seek the views of other like organisations regarding establishing a formal networking arrangement, inviting the key emergency management institutes of the world to come together to share information, cooperate on common issues, minimise duplication of effort and leverage off each organisation's research and development achievements.

About the interviewee

Raelene Thompson was appointed Executive Director of AEMI in September 2010.

She has over 25 years experience in the Commonwealth public service across a range of portfolios, including social security, employment and workplace relations, and heath and ageing.

She was formerly the head of the eHealth Group in the Department of Health and Ageing (DoHA). This role was responsible for the strategic direction and delivery of eHealth in Australia, working with all jurisdictions and across government.

Her previous experience also includes State Manager for DoHA in Victoria, responsible for rural health, indigenous health,aged care and general practice and in the Office of Health Protection responsible for communicable diseases surveillance.

In 2007-8 Ms Thompson was the State Manager of the Aged Care Standards and Accreditation Agency in Victoria and Tasmania.

Engaged and Resilient Communities: An overview of workshop rationale and structure

By Heather Crawley, Education Research and Training Team.

A three-day workshop was conducted from May 17-19 2011, with a focus on community engagement and resilience in the emergency management context. The workshop, funded by the Attorney General's Department under the auspices of the National Security Capability Development Division, was conducted at the Australian Emergency Management Institute at Mt Macedon, Victoria.

The drivers of the event included the following:

- The Black Saturday Victorian Bushfire Royal Commission, and other disaster inquiries, identifying the need for an increased emphasis on community engagement and resilience.
- The release of the National Strategy for Disaster Resilience in February 2011.
- The formation of the Community Engagement sub-committee of NEMC in 2010.
- The release of the ISO 31000 in 2010, emphasising the importance of stakeholder engagement in the risk management process.
- The AEMI 2009 think tank entitled 'Business as Usual or Unusual Business?' which explored issues of how to improve national capacity to respond to disasters that are increasing in scale and severity.
- Recognition that the complex, time consuming, process-oriented and resource intensive nature of emergency management creating challenges for community engagement.
- More frequent, more intense and more large-scale, longitudinal events making a lack of community engagement untenable and actively dangerous.
- The consistent research finding that community engagement leads to better outcomes.

Over sixty people representing government, non-government, private enterprise and community members, attended the workshop. The goal was to

Participants were engaged in a number of rich conversations using Socratic Circles.

A number of organisations provided visual display materials based on community engagement, strategies and events.

interrogate issues of resilience building and community engagement at all points of the disaster management cycle, and to learn from best practice in community engagement in other sectors.

Participants were presented with two 'big questions' at the outset, and they were asked to present their responses on day 3.

- If we had a magic wand and community engagement in emergency management was working perfectly, what would be different?
- Imagine we are looking back at how we arrived at this perfect engagement. What happened along the way (steps, milestones) that helped us get there?

The workshop structure attempted to model good practice in community-led engagement by requiring the smaller break out groups to be self-determining. These groups mimicked the complexities of communication and leadership in the context of community engagement in a disaster; groups had to work through issues of power and personality in the same way that a disaster-affected community might.

Participants were also asked to be a part of a series of 'rich conversations' which encouraged exploration of the issues of resilience and community engagement through listening and dialogue.

Sixteen of the participants were tasked with presenting sessions on specific issues, from which a number of papers and articles have been drawn:

- defining engagement and resilience
- engaging diverse groups
- community indicators of resilience and engagement
- social networks, behaviour and well-being: mapping community connectedness
- community engagement in other sectors in routine times
- community led engagement and resilience
- measurement and evaluation of resilience

The first paper from the workshop, in the session led by Alison Cottrell appears in this edition. Others will be published in future editions of AJEM or as occasional papers, recognisable by the origami logo.

Engaged and Resilient Communities: AEMI Workshop 17-19 May 2011

By Alison Cottrell.

Dr Alison Cottrell from the Centre for Disaster Studies at James Cook University in Queensland presents some of the key issues tackled at the Australian Emergency Management Institute's Engaged and Resilient Communities Workshop. This article is the first and overarching summary, of a series of articles that will appear in future editions of the Australian Journal of Emergency Management. These articles will be identified by the origami logo that appears here.

At the outset of the workshop Dr Cottrell gave a presentation that framed participants' understanding of resilience, vulnerability, sustainability, indicators and engagement, and on the final day, she presented participants with considerations for measuring engagement and resilience success.

A full report of the workshop proceedings and the participants' conversations and responses to questions raised can be found at www.em.gov.au.

The Australian Government recently released its policy on community resilience with a focus on shared responsibility with the broader community (COAG 2011).

This policy raises some questions about how resilience is defined, and how it might be measured in the disasters context. In addition, there is an assumption embedded in the notion of shared responsibility that communities (in the broadest sense) need to be engaged in processes that foster their own resilience. Then questions arise as to how communities become engaged, and how we might assess the appropriateness and strength of that engagement. The workshop set out to address these issues with cooperation between practitioners and researchers.

The context of the workshop was around notions of community engagement and resilience. After a short briefing on the COAG community resilience policy, discussion moved on to resilience and indicators.

Vulnerability, resilience and sustainability

Resilience and related concepts are conceptualised in a number of different ways according to the different disciplines, problem contexts, scale, and objectives. For example, resilience has been defined as: resisting change (Holling,1973; Miletti, 1999; Timmerman, 1981) or bouncing back (Walker *et. al.*, 2004), or transforming (Kirmayer et al 2009; Opstal, 2007; Paton and Johnston, 2006) in response to environmental or social perturbations, or even a combination of these (Kirmayer *et. al.*, 2009; UN/ISDR, 2002). Consistent with the view that resilience is transformative and/or adaptive, resilience then is also viewed as a process, not an end state (Kirmayer *et. al.* 2009, Norris 2008).

Resilience is also intimately related to vulnerability, but rather than being seen as opposite ends of a spectrum, can be envisaged as parallel sets of indicators. Whereas vulnerability measures susceptibility, resilience draws on the strengths and capacity of people and communities. People can be both vulnerable and resilient at the same time (Buckle, 2006; Paton, 2008; Paton *et. al.*, 2001; Tobin and Whiteford, 2002). A fuller understanding of capacity for adaptation, however, requires recognition of the multiple scales at which vulnerability, resilience and adaptation might occur (Paton and Gow, 2008).

The (heuristic) scales at which adaptation appear include the individual/psychological (Barton, 2005; Kirmayer et al, 2009; Linley and Joseph, 2004), organization/institutions (Dalziell and McManus, 2004; Gibson and Tarrant, 2010; Seville et al, 2006 and 2009; Stephenson *et. al.* (2010a and 2010b), community/social (ADPC, 2004; AHPRC, 1999; Handmer and Dovers, 2007; Miletti, 1999; Paton and Gow, 2008) and social/ecological Abel, 1999; Adger, 2000; Adger, 2003; Geis, 2000; Gunderson and Holling, 2000; Klein *et. al.*, 2003; Powell, 1999). Accordingly, different measures or different forms of the same measures may apply at the different scales.

Indicators of community/ social vulnerability and resilience to hazards

As the topic of interest is resilience of communities to hazards and disasters, it needs to be defined precisely to determine how the indicator is developed. It is this construct and the definition of what contributes to resilience that drives the selection of some characteristics as indicators. The characteristic will usually have to be standardised to make it usable as an indicator.

There are diverse approaches to the development of indicators. For some, indicators are essentially quantitative comparable statistics. For others, indicators are qualitative subjective measures for moving community planning forward. Yet others see a combination of approaches as preferable. Flint and Luloff (2005) suggest a mixed methods approach to investigating vulnerability, resilience and adaptive capacity. Powell (1999) and Klein *et. al.* (2003) also view qualitative methods in a favourable light. Importantly, Powell (1999) and AHPRC (1999) suggest that qualitative methods at the local community level are what will develop more relevant understandings of change in a given context.

Indicators are not ends in themselves, but are tools that can be used to define or point to a more significant issue. The use of indicators must begin with the model or construct that is to be examined (King 2001, King and McGregor 2000).

A review of social indicators by Fenton and MacGregor (1999) showed five classes of indicators of relevance to planning and decision making:-

- *Informative indicators* (indicators used to describe the social system and the changes taking place);
- *Predictive indicators* (these indicators are informative and fit into explicit formal models of subsystems of the social system);
- *Problem-oriented indicators* (these are indicators which point particularly toward policy situations and actions on specific social problems);
- *Program evaluation indicators* (indicators used to monitor the progress and effectiveness of particular policies); and
- *Target delineation indicators* (variables describing the demographic, environmental, pathological or service provision characteristics which are useful in identifying geographical areas or population subgroups towards which policy is directed).

Indicators of resilience may fall into all of these classes, but at each level they may be used for a different purpose. Lists of vulnerability and resilience indicators (Myers et al. 2008, Kirmayer et al. 2009, Cutter *et. al.* 2003, Cutter et. al 2008, Cutter et. al 2010) may contribute to the delineation of target groups. In confronting concepts such as climate change adaptation, the indicators need to be the type that may predict future behaviour, responses and actions. Climate change is also a specific problem that requires a policy response and indicators derived from variables that point towards adaptation and change. Evaluation indicators are especially useful in disaster/event recovery phases, or longitudinal adaptive processes. Thus they must be capable of measuring change between time periods and communities, at different scales and different levels.

There are many models of resilience because the concept is context-dependent. Different models identify processes, relationships and capacities (Anderson-Berry & King 2005, Eakin and Wehbe 2009, Pearce 2005, Zhou et al. 2010). Each approach to indicators of vulnerability and resilience defines a problem or a theory or a construct about some aspect of the vulnerability/resilience concept. The approach taken then selects characteristics or variables that provide a pointer or an indicator to that issue, within the levels of scale, type and category being considered. Indicators of vulnerability to hazards and disasters are based on a construct of incapacity, while indicators of resilience are based on a construct of capacity and societal strengths. To develop combined concepts that allow a broader

Discussions on community engagement.

Table 1 Presentation details

Presenter Name	Topic	Organisation
Martin Anderson	Community-led response	Digital Media Manager, Country Fire Authority, Vic
Steve Broome	Social Networks, behaviour and well being	Director of Research, the Royal Society of the Arts, London
Dr Jim Cavaye	Engagement: experience, ideas and practical realities	Director of Cavaye Community Development, Queensland
Dr Alison Cottrell	Communities, resilience and engagement. Measuring and evaluating engagement success	Centre for Disaster Studies, School of Earth and Environmental Sciences, James Cook University, Queensland,
Carmel Daveson	Engagement in other sectors: Translating micro concerns into macro policy	Citizen, Regional Queensland
Vivienne Gardiner	Community-led preparation and mitigation	Community Safety, Fire and Emergency Services Authority, Western Australia.
Carmel Guerra	Diversity	Centre for Multicultural Youth, Melbourne
Malcolm Hackett	Community-led engagement	Chair of the Strathewen Community Renewal Association
Dare Kavanagh	Community engagement in other sectors: housing sector	Housing NSW
Anne Leadbeater	Why it matters: a context for engagement and resilience	Office of the Emergency Services Commissioner, Victoria
Tom Lowe	The role of emergency management services in helping communities adapt to change	Department of Sustainability and the Environment, Victoria
Sally McKay	Community-led recovery	National Consultant, Disaster Recovery
Stephani Roy McCallum	Unchartered Territory: building community ownership and resilience in times of crisis	Dialogue Partners, Canada
Jennie Schoof	Diversity	Volunteers Queensland
Sue West	Using community indicators	Community Indicators Victoria
Michael Tudball	Community Engagement in other sectors: Engaging community in new housing developments	Department of Planning and Community Development, Victoria

concept of resilience to be explored, such indicators require datasets that provide a wide range of societal characteristics. Cutter et al. (2010) have combined a number of indicators to develop both resilience and vulnerability indices. The resilience indices are at a national scale for the USA and deliberately avoid including environmental components. Indices at this broad scale may have utility for policy and planning at the state or national level. The Victorian Community Indicators Project (West 2009) provides an Australian perspective on the use of indicators at the state level.

Resilience was explored at the workshop through a number of themes at the community level: resilience policy and the political imperative; understanding and communicating risk; cumulative and compound events; and resilience within agencies. The overall view was that what resilience looks like differs between communities. For the development of adaptive capacity and resilience at the local level, as outlined before, the neglect of environmental factors and local perspectives is problematic. This is where community engagement figures strongly, because it is through engagement with communities that we come to know and understand how that community functions, and how resilience presents in that community.

Community engagement

Discussions on community engagement were focused around: why engagement matters; diversity issues; social networks and their role in behaviour and well being (Cottrell 2007, Rawson et al 2010); community led recovery at the three phases of preparation and mitigation, response, and recovery; engagement in other sectors; engagement techniques; the role of emergency services; and measuring and evaluating engagement success. Two aspects of community engagement were identified. There is engagement

between communities and organizations that service their needs. Guidelines for these processes exist (DSE 2011, Queensland Government 2011). There is also engagement within communities. Too often, the engagement within communities that is either manifest or latent is overlooked by agencies. An outcome of the workshop was the rich discussions about the diversity of community engagement processes, both within communities and between communities and agencies. In addition, there were discussions about the many methods for assessing community engagement. In particular, it was concluded that measures of community engagement need to be constructed with the participation of communities themselves in order for those measures to be relevant. A requirement of all methods is that who and what constitutes a particular community is well understood before community engagement can be deemed appropriate or otherwise.

The mix of the group participating in the workshop brought together disaster and emergency management professionals as well as community development and community engagement professionals and researchers. The isolation of emergency management from broader community engagement and community development activities was identified as a major issue that needs to be addressed. The final session of the workshop combined the two issues of resilience and engagement by addressing the difficult task of building community ownership and resilience in times of crisis.

The implications for emergency management practice are that community engagement is core business, it requires valued partnership relationships that are developed over time and prior to an event, a whole of community approach is required to foster adaptive, informed communities.

A fuller discussion on resilience in the context of climate change can be found in:

Cottrell, A., King, D., and Dale, A. 2011. Planning for Uncertainty: Disasters Social Resilience and Climate Change. Paper Presented in Track 20 (Climate Change, Risk, Adaptation and Planning) at the 3rd World Planning Schools Congress, Perth (WA), 4-8 July 2011.

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Adger, W.L. (2003). *Social Capital, Collective Action, and Adaptation to Climate Change. Economic Geography 79(4):387-404.*

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A day in the life of the emergency sector

By Kate Lahey

Late last year, before an extraordinary spate of natural disasters flooded, burnt and shook the region, Campbell Darby was busy already. He was occupied not just with events like the sinking of an asylum seeker vessel off Christmas Island, or forest fires in Israel, but also with the knowledge that the world was short of jute—the natural fibre, like hessian, used to produce sandbags.

As Director General of Emergency Management Australia, within the Australian Government Attorney-General's Department, Campbell Darby must turn his mind to many and varied things, sandbags among them.

While his department was offering help during a series of individual events in 2010, including an earlier Christchurch earthquake and the Pike River Mine disaster, heavy rain began to drench the east coast of Australia, generating flooding in Victoria and New South Wales.

"It [the flooding] was not particularly large, but enough to have us closely monitoring events, to have really close links with SES in Victoria and NSW, to be on the phone regularly to them to make sure they had all the support they needed," Campbell Darby says.

Then, Victorian authorities asked for help in sourcing extra sandbags, he says. But earlier in 2010, jute crops were washed out creating a shortage of bags.

"We talked to other states about their supplies, made sure we could put Victoria in contact with suppliers who had them and made sure we kept the links between the various states and territories going so if that people did have stocks of sandbags which they were happy to release, they could be given to Victoria," Campbell Darby says.

Discussions over disaster charts.

"Defence has a stock of them. We were really just making sure we knew where all these things were so we could provide that advice. We were keeping all the states and territories advised that 'this might become a critical issue for us so you need to start looking to your supplies and get extra stocks if you can'."

It might seem a small detail, but this kind of national coordination is Emergency Management Australia's (EMA) forte.

As a single entry point in and out of the Commonwealth Government, EMA provides information to different federal departments, including the Prime Minister and Cabinet, Health, Transport, Agriculture, Defence and more from an affected state.

It also works in reverse, allowing states to use a single Commonwealth contact for all their needs in a crisis. It can help anticipate which departments and agencies might be needed and when.

Among those agencies is Centrelink. In a crisis, it provides immediate financial help to victims, including grants through the Australian Disaster Recovery Payments and the Disaster Income Recovery Subsidy. The total amount paid to people by Centrelink in Disaster Recovery Payments from all recent disasters is about $1 billion dollars.

For the Queensland floods alone, between November 2010 and 17 June 2011, Centrelink paid out close to $464 million in disaster recovery payments, through almost 400,000 successful claims. It also paid $61 million in claims for the Disaster Income Recovery Subsidy, according to Centrelink information.

At the peak of the flood recovery effort there were up to 2500 Centrelink staff nationwide working on the crisis almost 10 per cent of the Centrelink workforce. They included 1300 staff taking calls from people in Queensland, NSW, Victoria, Western Australia and South Australia who had been affected by floods.

Hundreds of staff were based in recovery centres around Queensland, 30 in Victoria and some in NSW.

This was on top of Centrelink's business-

as-usual processing of tens of thousands of claims for payments such as Newstart, Age Pensions, Families and Carers.

Many Centrelink staff faced their own crises, just trying to get to work during the disasters.

According to Centrelink, one staff member who was caught in a flash flood near Ipswich put her mobile phone between her teeth as her car floated downstream and began filling with water. She managed to swim to safety.

She'd loaded all her valuables into the car, fearing her house would be washed away, and it was. So was her car. The next day, left with nothing and wearing borrowed clothes, she walked 7km to work.

Other Centrelink workers were reported to have 'hitched' rides with the SES on inflatable dinghies to get into isolated towns such as Condamine to reach residents who refused to leave their homes.

In Tasmania, staff worked nights and weekends as well as full time during the day to process flood claims and were later joined by 10 Medicare staff who received training to help process the Centrelink claims.

Centrelink also has a range of counsellors it can provide to an affected area. Social workers across NSW answered calls from people who had lost their homes, and those in south-west NSW helped answer calls for customers in Toowoomba and Rockhampton.

Centrelink's General Manager, Hank Jongen says the disasters in the first few months of this year combined to create an unprecedented event that required a response far greater than anything the agency had seen in the past.

"Unquestionably, our most important role was the rapid response on the ground and our ability to provide relief and support to people with minimal bureaucracy," Mr Jongen says.

"It boiled down to having a group of people on the ground who presented a friendly and supportive face for Government," he says.

Cyclone data analysis.

Mr Jongen says Centrelink learned from its response to the Victorian bushfires and was able to rapidly respond this year ~~h~~aving staff on the ground within hours of an alert coming through.

"Past experience also brought about the use of new technology such as the Centrelink Point of Presence (C-pop), which enabled staff in Queensland real-time access to their mainframe from anywhere, so they could process payments on the spot, even in badly affected and isolated areas," he says.

Other Commonwealth agencies EMA works with are more heavily involved before disaster strikes.

The Bureau of Meteorology provides pre-season and long-range forecasts to help authorities plan ahead. As a severe weather event draws closer, their briefings to emergency services become more frequent and more specific. Specialists, like hydrologists, are drawn in to provide more specialised advice.

Jim Davidson, the Bureau's Queensland director, says this was the fourth wet season in a row, though bigger than the previous three. It was one of the strongest La Nina events in history and another rain indicator, sea surface temperatures surrounding Australia, was at record levels.

"We first started advising emergency management authorities in September, that's when we were first getting signals that this would be an exceptional season," he says.

The Bureau predicted six cyclones would fall in the Queensland area, and it received four plus a couple of intense monsoonal lows and other cyclones nearby.

"Between August and June, the Queensland Bureau issued 1730 flood warnings, he says.

"That's by far the most ever, and 268 severe weather warnings, 429 severe storm warnings – it's been a big year all round.

"It got to the stage in some of the warning centres where the word 'record' started losing significance, because we were setting records almost every day," he says.

Mark Edwards is an engineer by background and the project leader for the engineering economics and exposure project with Geoscience Australia.

"By exposure we mean assets of value exposed to natural hazards, defining those on a national scale and how susceptible they are to a natural hazard, and what the economic implications and other metrics such as casualties are associated with that exposure," Mr Edwards says.

His team also works with specialists who can simulate a disaster, such as an earthquake, tsunami or cyclone.

"We then take the simulation of that hazard, look at what's exposed, how vulnerable it is and what it means in a risk process," he says.

Staff range from software programmers to engineers, economists and climatologists.

"If you really want to do risk, you need a really broad skill base because you need all of those elements to make as reliable as possible estimates of impact," he says.

The team used information from recent disasters to inform its impact assessments ~~-b~~ut also used their own information to predict how events might unfold.

"We had done work in the past into what we call 'city studies'. We did systematic studies of a number of cities in Australia, looking at a range of hazards," he says.

These previous studies included flood hazard and risk in south-east Queensland.

"The high risk areas in south east Queensland were already highlighted by our own work and the work of others.

"One of the things that was highlighted in the Brisbane flooding, and we saw that in our surveys, was development on land that was flood prone. We even saw, would you believe it, two-story houses inundated to the roof in that flooding. Why was development permitted in those areas?

Tsunami data analysis.

"There's a need not only to identify areas of high risk but to make sure you're not building a legacy for the future."

Mr Edwards maintains that building standards and fraught planning processes contributed to the inundation of homes, as did inappropriate building materials.

"If you think of traditional Queensland construction, the old Queenslander on high stumps was good for warmer weather and very good when it came to flooding you're actually elevated," Mr Edwards says.

"Today, flat-on-grade construction is quite common, so you're only a few hundred millimetres above ground level, so inundation is rapid."

Some modern construction materials are also more flood sensitive, he says. These include plasterboard and some glued wood products that never recover their strength after they've been wet.

"The old Queenslander with its hardwood floors and timber lined walls, was a lot less sensitive," he says.

Mr Edwards says while the event that flooded Brisbane was very rare in the way it developed, future dangers may depend on whether these events will become more common, and more severe if we fail to adapt to climate change.

Campbell Darby says some of the things EMA hopes to achieve in the future are better ways to gain data on, and understand the impact of events.

"I think there are a range of technical measures we might be able to use. There's a whole range of data sets that are available out there on demographics, on where critical infrastructure lies, on what the vulnerability of certain areas are, what the built environment is in a certain area, so that if you knew that you had a significant flood event in a particular region, you could actually probably do some modelling to say 'all right, if that's the level of the flood, we could expect x-number of houses flooded, we're going to have major infrastructure issues with power, particularly in a cyclone,' and what the impact might be on hospitals, what the impact might be on your transport nodes and lines of communications," he says.

"You might be able to identify this is an area of a highly vulnerable population because of socio-economic circumstances, or age – you might be able to get down to that. I don't think we could do it at the moment but I think future modelling and census data might start to give it a sense of those things," he says.

Campbell Darby says EMA is now reviewing the recent events and trying to build its capability to better share information and support States and Territories.

"We're working with Geoscience Australia, making sure we've got the best information to do the job we need to do. We're also trying to sort out a whole lot of financial arrangements.

"I think we've come a long way in terms of having common standards, having interoperability between states and territories, in terms of the ability to deploy and work in other states and territories. There are still a number of rub points between jurisdictions in terms of such things as licensing, training and standards and even equipment compatibility but these issues have largely been overcome, and everybody is working to remove remaining obstacles."

Information and predictions even national coordination can only help so much, and so far as people are willing to heed the warnings themselves.

Ray Canterford, the Bureau of Meteorology's Division Head of Services for Aviation, Defence, Public, Marine, Disaster Mitigation and Oceans says the last season began with an unprecedented message from the Bureau "that this was going to be extremely heavy rainfall, more tropical cyclones than average and severe flooding".

He says communities must learn how to prepare themselves to react to the warnings they are given.

"The community has to respond through well-established plans that have been put in place beforehand. Those plans should involve knowledge of evacuation areas, they should involve education to the community on what to do, they should involve self-awareness of where they are located with respect to a creek or a river or a bushfire area," Mr Canterford says.

"A resilient community is one which doesn't just rely on an event happening and then being told what to do. They already know what to do.

"You have to be aware of what your house is built to, what category of storm it can take."

Similarly, NSW Fire and Rescue Chief Superintendent John Denny, who has been involved in Urban Search and Rescue Taskforces since they began in NSW, worked in both the Queensland floods and the aftermath of the Christchurch earthquake. He says the real heroes of those events were the local communities in those areas who responded first.

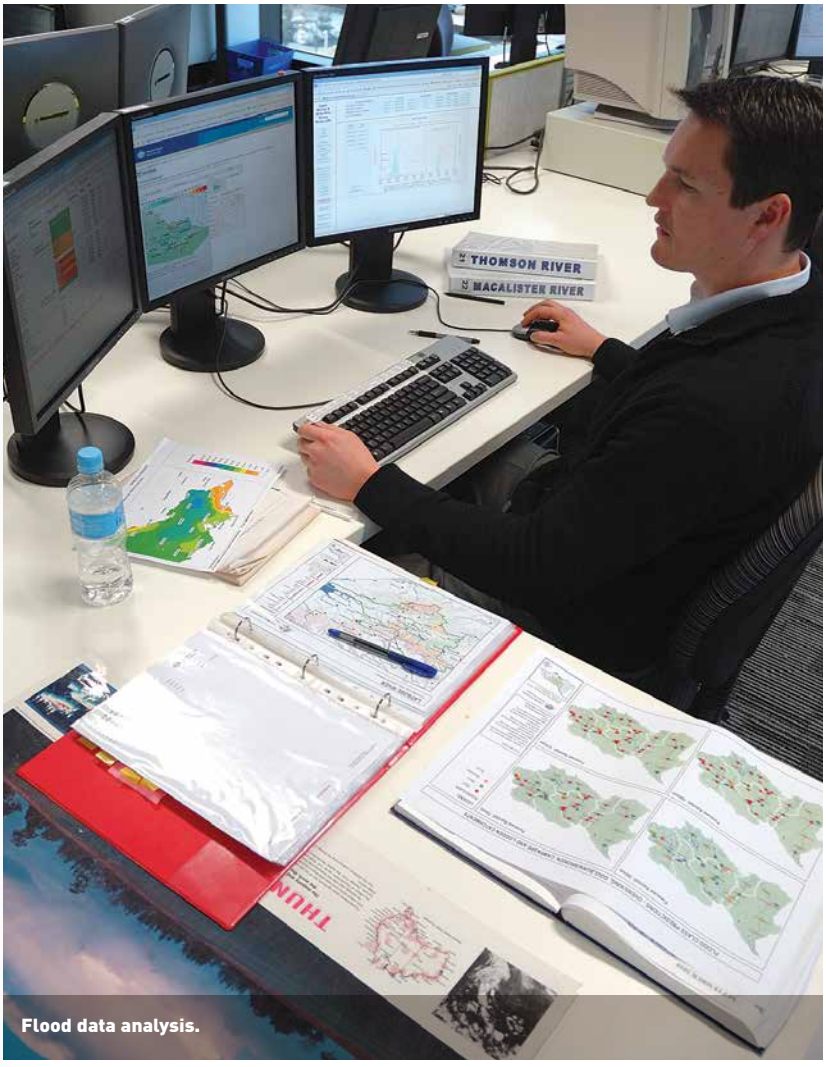
The immediate and ongoing response by local people is extremely important, he says, not just in potentially saving lives but in ensuring they have control of their recovery processes and develop greater resilience to future events. "In parts of America they have Community Emergency Response Teams (CERTs) based on the fact that when bad things happen you're not going to get a fire engine to every house or an ambulance to every patient, so they train people to survive and operate in the absence of professional emergency response," Mr Denny says.

Some similar programs operate in certain areas in Australia, including bushfire prone areas of NSW, but could be expanded, he says.

"What it does is builds social capital so at the end of the day, whether a fire's coming or not, they know ~~as~~ a consequence of the community fire unit program ~~in~~ number 15 of their street lives an old lady who's going to require some assistance in an evacuation. So the community actually bonds and knows their vulnerability and responds to that, whether it be a bushfire or flood, or whatever. Building that social responsibility in small clusters is absolutely critical".

About the author

Kate Lahey is a senior journalist, commissioned by the Attorney-General's Department. Kate has been tasked with interviewing key Australian Government representatives and community members to share their stories on responding to the natural hazard events earlier this year. This November edition features three more stories with more to come in the next edition.



Flood data analysis.

Innovative plans move community to higher ground

By Kate Lahey

As he looked over the devastated town of Grantham for the first time, Lockyer Valley Mayor Steve Jones was horrified. Then he began thinking about the future.

"If you're ever going to make a change," he thought, "now's the time to do it".

The torrent on January 10 killed at least 22 people in the Lockyer Valley, and Grantham was among the communities that bore the brunt.

Cr Jones wasn't in Grantham when the flood came, he arrived that evening. Within about 24 hours, he'd set his mind on a plan.

His idea was as simple as it was radical: to move the town to higher ground to prevent the place becoming a ghost town, and attract new residents. His fellow councillors unanimously backed it, and it quickly won the support of the Queensland Government.

The idea hasn't grabbed everyone in the community, but enough households have registered their interest that work has already started on shifting them uphill in a unique land swap arrangement.

The council bought 935 acres of grazing land overlooking the area, then subdivided it to reflect the sizes of existing blocks down below. It will swap one new block for one old block.

This is where the State Government was able to help—it knocked down years of planning hurdles to get the project moving now.

The council will try to sell the lower

lying land to farmers, or put it to a community use.

Cr Jones says the idea is not so much about preparing for another similar event—because that seems extremely unlikely—but ensuring the community emerges stronger from the floods.

"The immediate things that flashed up in my mind were: people are not going to get finance to rebuild, because what financial institution will finance a loan to build in a place where this has happened? And secondly they're going to have trouble getting flood insurance in the future," he says.

"It was really important, I thought, that we start to consider options before we start the rebuild.

"I talked to my own council first, and my own council were very supportive of the idea—it's very much out of the square, it's a big project to start talking about these sorts of things."

He says there were several principles he outlined from the start, and is determined to stick to. Foremost of those is that for the scheme to work, it must be voluntary.

"If you try to do things with compulsion, they won't get community support and they won't work," Cr Jones says.

"And, the idea of the land swap in my mind was quite clearly: we would offer people a better piece of land that's worth more money and gives them more collateral. It's a safe block of land, they can lie in bed at night when it rains and not be worried. But, more importantly, I think, it preserves the nature of the town.

"Most towns where there's serious natural disasters often become ghost towns, everyone leaves. We didn't want that to happen. It's really important that people stay and it's really important that the (population) numbers grow," Cr Jones says.

"We realised right from day one it's going to cost a huge amount of money, they (councillors) were not daunted by that, they backed me 100 per cent on that."

Stage one is expected to cost the council $25 million, and includes the undisclosed cost of purchasing the land from a local farming family. The council will use its own reserves and is considering also borrowing some money if it can get a concessional rate.

"We're happy to put that money out. We want to get those people up there safely and all settled down and under control. As we move along, we want to develop further land and we'll sell some of those blocks off to bring new families in," Cr Jones says.

"If we could get another 100 families to come and live in Grantham in a really nice estate, with nice sporting facilities, it'd really lift the whole profile of Grantham and people would love the place they're living in. This estate's on top of a ridge, it looks out over all the farming land, it really is a nice outlook."

Residents who take up the offer will need to find their own way to pay for

their new house to be built, either through insurance, donation or their own funds.

"We know that the maximum we could handle in stage one is about 80 lots because a lot of them are still waiting on insurance," Cr Jones says.

"Until they get the answers from their insurers they don't know what their circumstances are. Insurance companies may tell them they'll only pay if they rebuild on that site. There are about 80 possibilities in the first round and we've got 60 of those signed up already."

The council involved the community in its plan early on, and hired a consultant from Brisbane to help with that process.

"We held three or four community meetings and we said 'ok, this is what we'd like to do, we're prepared to do it, we need your vision on how you'd like this to happen and what you'd like – size of blocks and that sort of thing," Cr Jones says.

"So the community itself actually had about a 90 per cent input into what we're doing. It was just the idea we put up, and they put the meat on the bones."

About 120 families in the area are eligible for the deal. Cr Jones says one of the reasons he is so passionate about the project is he feels Australian communities sometimes fail to learn enough from their natural disasters – and often rebuild in the same spot.

"We go on with millions of dollars in inquiries and most times we're no better off than when we started. This is a case where you put money in and at least the people are safe, they can get insurance (for the new property) and they can get on with their lives."

He expects there will be some who choose to stay where they are, and for legitimate reason.

"We're not trying to force them. You might have someone who's got a very good quality brick house on a slab that's on the periphery of the damaged area. It might have only $100,000 damage.

"The fact it wasn't severely damaged this time means it probably won't be next time – so those people will remain. But I think over a long period, you'll find a lot of people will move up there."

At the time of writing the council was continuing to hold public meetings on the scheme every Wednesday night.

Beyond Grantham, councils in every state and territory of Australia are grappling with the aftermath of the extraordinary spate of natural disasters the country has had in recent months. As the closest level of government to the people, they must now repair their communities.

Genia McCaffery, the president of the Australian Local Government Association, says there is much to be proud of in recent events, and—as in any disaster—much to be learned.

Strong local leadership has steered communities well, she says, and this can only be possible with a great deal of trust.

"Leadership isn't about just responding to a particular incident. What leadership is about is having a long established track record with your community, so when you're there saying 'this is what you should do' people recognise you, they know you and they have trust in you," she says.

"That kind of proven track record, I think, is critical. Then, being able to give people clear directions about the

Mayor Steve Jones, in front of community information about the Lockyer Valley land swap.

next steps they should take. We saw that very much with Anna Bligh, where she was constantly communicating to people about what was happening, what to prepare for, giving warnings and then guidance."

Ms McCaffery says more and more councils are now developing disaster response plans, and most of those in vulnerable areas have them already.

"Those plans identify staff, resources and priority actions for when or if a disaster strikes. Councils are also using more social mapping to better understand their communities," she says.

"To me the first step of your disaster management plan is getting a good understanding of your community, particularly its vulnerabilities and strengths, and a clear history of your community and the specific hazards it's faced, flood or fire," Cr McCaffery says.

"It's understanding the make-up of your population, particularly the presence of aged or non-English speaking groups, and then understanding what the strength of community relationships is, particularly volunteer and community groups.

"That social mapping is a critical part of doing good disaster planning. There's a lot of work being done there. I think a lot of the effective response in Queensland was because the councils had a good understanding of their community profile."

Ms McCaffery believes the new National Strategy for Disaster Resilience, which COAG adopted in February, will be useful in further boosting resilience.

"Measures to do this include identifying priority hazards, and putting in place solid land use planning to avoid potential hazards, she says.

"Then, ensuring clear and effective communication with individuals and households within the community, and developing good continuity planning by business and government.

But local government also needs all the help it can get in preparing its communities," she argues.

"There are a number of really good partnership programs like the Regional Flood Mitigation Program, the Bushfire Mitigation Program and the Natural Disaster Mitigation Program—all of these recognise that councils don't have the resources to tackle them alone. That it makes good sense, in every sense, economic, social and environmental to spend significant amounts of money on mitigating prior, rather than spending huge amounts of money later," Ms McCaffery says.

"For every $1 you spend on good mitigation work, it's saving $2 on post recovery expenditure," she says.

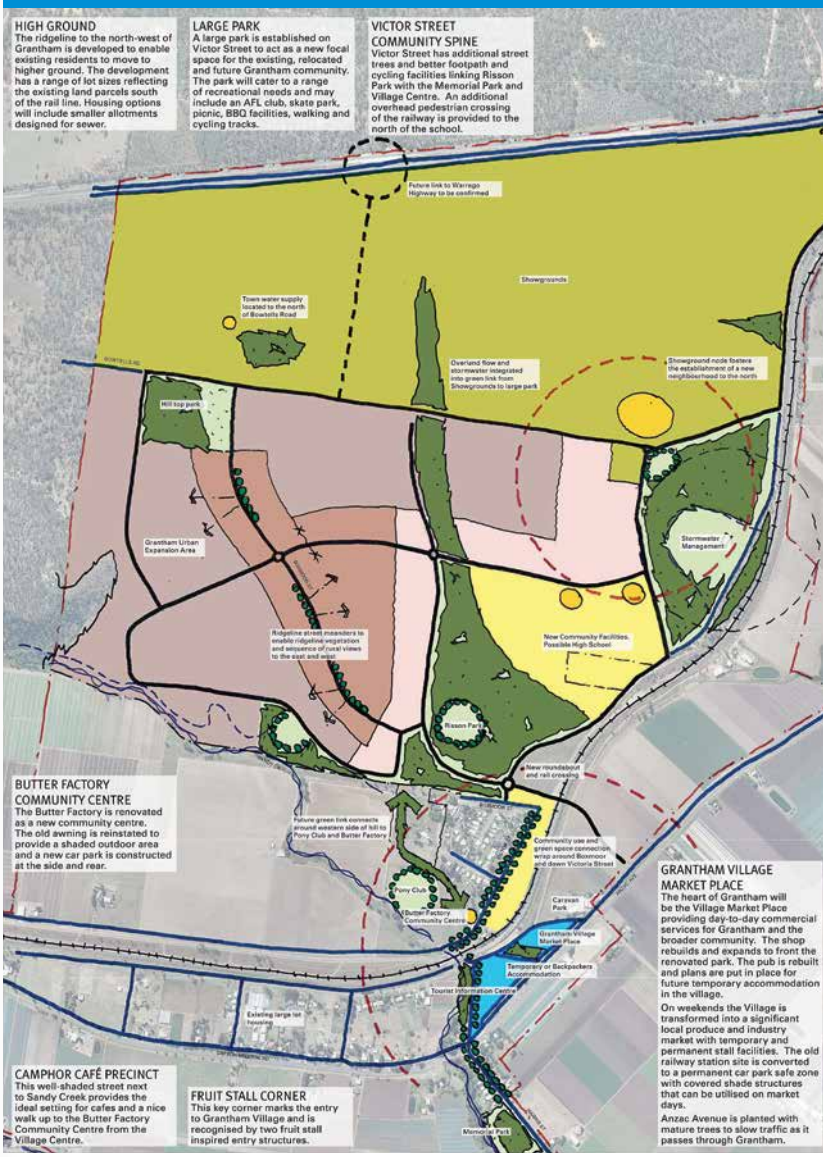
The Queensland Government has estimated the damage bill from the floods and Cyclone Yasi at $6.8 billion. Some of that will be met under the Natural Disaster Relief and Recovery Arrangements, in which the Commonwealth funds up to 75 per cent of eligible costs.

"There is a recognition across the country that local government does not have the financial resources to do this work on its own, but it's probably the most effective level of government to deliver this infrastructure – so this is an area where we really do need to be adequately funded by the federal government, to put these mitigation works in place," Ms McCaffery says.

"I think one of the things we certainly saw in Queensland was the value of effective mitigation and education. Significant damage was avoided in many Queensland towns because they had spent the money to build flood levees to protect those towns.

"Over the years, many councils have been frustrated by the planning process, when the controls they try

Grantham reconstruction 2011



Construction work on land swap land.

to implement are challenged in court by developers, or overruled by state governments," Ms McCaffery says.

"All levels of government must recognise the need for good land use planning and cooperate to stick to a set of agreed rules. This would minimise the damage caused by natural disasters.

"There are also others who must bear a large share of responsibility for disaster planning—the general public," she says.

"We're talking a lot about what government can do, but I think one of the things we need to be pushing really strongly is that to actually help communities understand the risk and the limits of what government can actually do and the importance of people taking responsibility to prepare for disasters by having their own plan, by preparing their own property," Ms McCaffery says.

"This is critical obviously in bushfire areas. Communities should also be

encouraged to have insurance where appropriate and where available.

"It's not just about the government fixing things, it's about individuals being better placed to deal with what we recognise is going to be an increased incidence of these kinds of occurrences," she says.

Cr Jones says the small town of Withcott, in the Lockyer Valley is a good example of this kind of resilience. It was damaged by floods, but no lives were lost.

"When this hit our shire, 20 out of our 23 communities were almost devastated. And it's impossible for a council the size of ours (350 staff) to help everybody," Cr Jones says.

"In Withcott, despite the fact the devastation was huge, and the service stations were knocked down, we didn't have to have a single works crew go to Withcott for seven weeks – the community just did everything. They're that sort of place, they don't muck around," he says.

Cr Jones said it was important for councils to harness those feelings in a community and trust people to lead their own response.

The people of the tiny town of Strathewen, north-east of Melbourne, suffered immeasurably in the Black Saturday bushfires in 2009, but if any number can help describe their loss it's this: 27 people died, in a town of 300.

Those who remained felt abandoned by authorities, says Malcolm Hackett, a retired school principal who continues to live in his converted dairy shed because his house was destroyed.

"Rather than be defeated, the people of Strathewen mustered themselves into an incorporated legal entity, so they could attract and manage their own donated funds, and take charge of their own recovery—this attitude of the town is historic", Mr Hackett says.

"There are a few reasons people come out here. I think one of them is to be a little bit isolated, a bit more independent and further from the forces of control," Mr Hackett says.

"I think it's a trait of the area. The local school was built 100 years ago by locals… the local hall was community owned and built, and in fact it still is.

"Sometimes that attitude can breed a sense of negativity—that no one cares about Strathewen.

"But it's probably more true to say it's people here saying 'oh well, we'd better organise ourselves' that's what they've always done before," he says.

The Strathewen Community Renewal Association is made up of people who've lived in the town all their lives, and others who've moved there more recently, with particular skills. There's a lawyer, people heavily involved with the community, a company secretary, someone with a lot of experience in local government—and Mr Hackett, who is among those who understand the sometimes-glacial pace of bureaucracy, and how to speed things up.

If Strathewen felt abandoned during the fires, it is perhaps with good reason. The Victorian Bushfire Royal Commission found that although a warning had been drafted for the town that afternoon, the CFA never released it.

"There was a sense that Strathewen had been ignored," Mr Hackett said.

In the aftermath, authorities seemed more focused on other towns, especially Kinglake and Marysville – and they received a lot of media coverage, he said.

"There was a growing sense of people saying 'not only did they not know about us, they don't care about us now'.

"There was a sense that we needed to correct this imbalance. Those of us who knew government well, and how bureaucracies work – and there was a sense that everyone was rushing around trying to help, but that we'd just get swept aside or rolled over by all this good will and decision making coming from other places," he says.

Within a few weeks, a group formed.

"The idea of an incorporated association, something with legal standing, just came almost automatically. We knew that in some places there were advisory groups, but we wanted more than that. We wanted to be able to say that the group represented Strathewen, that it was a legitimate voice," Mr Hackett says.

It also took control of funds being donated to Strathewen.

"Not being afraid of government and knowing how it operates, I think has made a huge difference to us. We've been able to manage lots of those anger issues that arise in lots of places because we've been able to say to people, 'it's all right, we'll try it this way, or go that way – there are lots of ways to skin a cat'," he says.

The association has since won the Volunteer category, in the Australian Safer Communities Awards, sponsored by the commonwealth Attorney-General's Department.

Mr Hackett said part of the association has also helped to bridge a gulf between residents and the local council, Nillumbik. They have also produced documents advising communities and government.

Cr Jones says his community has drawn support from some of the bushfire-affected towns in Victoria.

"They've been very good, they've been very supportive, they've come and spoken to us," Mr Hackett says.

"I'm actually going to make time to go down to Victoria and have a look at their circumstances – where they are two years later. And I'm certainly going to talk to them about what we have done.

"What we've done here is something really new, it's outside the square and probably pretty game but I would really like this model to be looked at right across Australia when large scale disasters happen because I think within in two or three years we'll find our community will be so much stronger, so much more advanced than if we hadn't done it," Mr Hackett says.

Cr Jones is confident his plan will work. "I'm 100 per cent, mate. I have been from day one. I think with these things you've just got to make them work and it's going twice as good as I thought it would," he says.

Mid-west Gasgoyne region resilience—the silver lining to WA Monsoon low

By Kate Lahey

Tim Dalwood thought he knew what he was in for. For about a week, he watched as a monsoonal low made its way across the Indian Ocean from below Java towards the coast of Western Australia.

He knew, as a district manager of the state's Fire and Emergency Services Authority, the destruction this sort of weather pattern could bring. He also took regular updates from the Bureau of Meteorology. Based on the bureau's advice, this had the real potential to be a large cyclone.

A month earlier, he had issued a warning to his community of what even at that stage looked like being an early and busy cyclone season. He encouraged people to prepare themselves and their homes.

As they watched the low making its way towards them in December last year, Mr Dalwood and his team planned for the worst, by determining what they would need to do if the low turned into a cyclone: what staffing levels were required, and which assets and resources they could use. They decided they would need the help of a lot of SES members, people with chainsaws, clean-up crews and bobcats and trucks to take away the debris.

But the cyclone never formed. Instead, when the low hit Western Australia in mid December, it dumped a year's worth of rain in about a day, 300mm. The mean December rainfall for the region is about 5mm.

"We were waiting for it to turn into a

cyclone, as they normally do. This was totally different," Mr Dalwood says.

Mr Dalwood says he and his team had considered contingency plans, and whether the low could cause a flood.

It started to rain on the Thursday night, December 16 and by Saturday night, the area around Carnarvon on the mid-west coast was completely inundated.

"On the Saturday morning we realised there were going to be severe issues," Mr Dalwood says.

"We had a conversation with the Bureau and from there we decided to escalate what we were doing. We deployed from the Geraldton regional office into Carnarvon and we basically started to prepare from there. We had an incident management team set up, we had our mitigation work on the go, we ensured all our levees were strengthened and we enforced our contingency plans. We had evacuation plans, we opened up the relocation centres, we had all of those ready to go."

The people needing shelter came thick and fast, he says.

"From there came a myriad of other issues, like feeding people and bedding people, finding blankets—all these things that you plan for, but it's very difficult to keep three or four or five-hundred blankets on standby, or 300 mattresses."

Help came from all quarters, especially from the Department of Child Protection who had stockpiles of bedding flown up from Perth. Local church groups also rallied to provide whatever was still needed.

"Obviously you change things as things unfold," Mr Dalwood says.

"With a flood, different to a cyclonic wind event, of course, we're talking evacuations, relocations, inundation of water, isolation and not a lot is done on the ground because obviously you can't get to it. So you're talking flood boats and helicopters."

The people in Carnarvon are no strangers to flooding, in fact, the town is protected by a surge wall. But this was different.

The Bureau first issued a flood watch alert for the Gascoyne catchment area on the Wednesday, saying the low could bring 150 – 200mm of rain within 72 hours.

From Friday night, the Gascoyne River started to rise and the alert was upgraded to a flood warning the next day. River levels then rose to some of their highest on record.

The floods wiped out vegetable crops and fruit plantations, and at least 2000 cattle drowned. In describing the event, the Bureau noted that pastoral livelihoods were destroyed in the area, as they went from drought to flood in just 24 hours. The total damage bill from the deluge has been estimated at $100 million.

Mr Dalwood says it is impossible for him to compare the rain and floods of December last year with any work he has done in the past.

"The magnitude of what it is, it's the biggest recorded event that the mid-west Gascoyne has ever had," he says.

About 180 people were housed at the relocation centre and Mr Dalwood says there were about 100 more outside in the car park, in caravans.

"There were 2000 or so people who went through recovery centre doors. Looking for support and information."

Typical household flood damage.

Outside the town, roads were cut off everywhere, meaning about 70 sheep and cattle stations, as well as indigenous communities, were isolated.

FESA, with the Department of Agriculture, and others compiled lists of stations, who owned them and how many people were there, whether they were isolated, and what their basic needs were, Mr Dalwood says

Phones were down so helicopters were used to fly into the stations to get the information.

"Telstra came back online very quickly with mobile network coverage, which was great. Some of them (on the stations) had wireless internet, which was even better. We would communicate with these people, on a roster, every day. From there, we were designing and preparing resupply routes and lists of what their basic needs were."

Some people were sleeping on woolpacks on the ground in the shed because their houses had been washed away. They were supplied with swags and camp stretchers. All the stations received food, water and medical supplies if they needed them.

This resupply operation continued for 100 days while the roads remained impassable, Mr Dalwood says.

"We had half-dozen people working purely on resupply. That was their focus, to make sure all those isolated communities weren't forgotten.

"Once the initial flood had passed, there was that much work for them to do, most of them stayed because of that. There was a lot of cattle they had to put down, there was a lot of clean-up work."

It was also Christmas. Mr Dalwood says this made the FESA task even more difficult.

"We're talking about deploying personnel. To drag people out of their family environments at Christmas was the hardest part. A lot of people are on holidays or on leave, there's a shortage of staff, all the volunteers that you normally rely on ~~it~~'s very hard to say look, I know it's Christmas but you need to leave Geraldton and fly up to Carnarvon for a week.

Aerial shot of the flooding in the mid-west Gasgoyne region.

Aerial shot of the flooding of farming areas in the mid-west Gasgoyne region.

"They all stood up and said 'yes, yes mate, not a problem, I'm there'. The community really did rally from the whole mid-west region, we had people from everywhere. Volunteers came from Perth, from Bunbury, from Albany, everywhere. All over Christmas."

The flood was not the only natural disaster testing Western Australia over the summer months. Severe thunderstorms also buffeted the west and its driest winter on record led to bushfires at Lake Clifton in January and in the Perth Hills in February. In March, more flooding swamped the north of the state, in the Kimberley. Floodwaters at Warmun, in the east Kimberley, caused so much damage the town was left uninhabitable. Hundreds of people were evacuated to Kununurra. A large section of the community's art collection was destroyed, about 800 paintings. The centre supports about 75 indigenous artists. The gallery has since received a $30,000 federal grant to help it recover, on top of the $8 million provided to the community as a whole.

As disasters tend to do, the Kimberley floods also brought people closer.

When the remote community school of Bayulu was cut off by floodwaters, eight teachers were airlifted in from their homes in nearby Fitzroy Crossing. They slept on swags in classrooms for a week to keep the school open.

But much of this has been overshadowed, at least in the minds of other Australians, by the Queensland floods. And, despite the several major disasters in the west, no lives were lost.

Mr Dalwood, who is responsible for operations in the mid-west Gascoyne region, says he learnt a lot from the experience and that the Carnarvon community is recovering. "The crops are back in the ground, they've replaced all the top soil that was lost, Shires have been working hard replacing and fixing all the roads that were damaged."

"Individually everybody learns lessons as the disaster unfolds, and throughout this disaster, we all learnt personal lessons."

Emergency management: Seismology to minimise aircraft crash location search time

By Nadine Alavès, University of Glasgow.

ABSTRACT

The survival probability for an occupant of an aircraft after a crash is closely related to the time needed by the search and rescue teams to find the location of the wreckage. Consequently, efficient means of searches are paramount for the emergency management in charge of such occurrences. In this paper the different issues associated with the location of a missing aircraft are examined. Subsequently, seismology is presented as an alternative to minimise the search time of the location of an aircraft crash.

Introduction

Uruguayan air force flight 571 was flying from Montevideo, Uruguay to Santiago, Chile when it crashed in the Andes at an altitude of13,800 ft. Amongst the 45 occupants of the aircraft12 died during the crash. The aeronautical searches were stopped after eight days without having found the aircraft. Seventy two days later the world learned that there were some survivors - 2 passengers trekked across the Andes to search for rescue. Amongst the 33 survivors of the crash only16 were still alive by that time.

Forty years have passed since this event. So the question is would the aircraft immediately be found if the same accident happened today or would it take a similar amount of time to locate it?

The subject of this paper is the need for a new tool in the field of the aeronautical search and rescue operations to ensure that emergency management teams can minimise the search time of an aircraft crash location.

This paper first examines the aeronautical search operations starting with a brief overview of the regulations. Based on the past events in the world the different techniques and technologies are explored followed by an analysis of the duration of search operations.

The paper finally exposes why seismology should be taken into consideration by emergency teams to fulfil their commitments towards survivors of an aeronautical event. The principles of seismology are explained and their applications to airport operations are shown through an experiment conducted at Prestwick international airport, in Scotland. Finally, one past event is used to demonstrate the usefulness of seismology.

Search and rescue regulations

The signatory states of the "Chicago Convention" must take the necessary steps to ensure that aircraft in an emergency situation can be assisted by search and rescue (SAR) services (International Civil Aviation Organization 2006). To fulfil this commitment, each contracting states under ICAO regulations (International Civil Aviation Organization 2004) defines at least one SAR area within the limits of its territory. Each SAR area needs an adequate number of SAR units equipped with an appropriate number of fixed-wing aircraft and/or helicopters capable to cover the entire surface of the area. Then, an Aeronautical Rescue Coordination Centre (ARCC) is established within each SAR area to initiate and coordinate SAR units.

For example, Australia has set up a National Search and Rescue Council in1999 responsible for the coordination of the Australian SAR operations at the following levels: Commonwealth, State and territory (National Search and Rescue Council 2004). Furthermore, the Australian government has designated the Australian Maritime Safety Authority (AMSA) to be the agency responsible for the provision of the necessary SAR services (Australian Maritime Safety Authority1990) within the entire SAR area that covers Australian mainland, the surrounding Islands, the sectors of the seas surrounding Australia and part of Antarctica (National Search and Rescue Manual 2011). The ARCC, located in Canberra, under the authority of AMSA coordinates and activates the different air units in Australia (National Search and Rescue manual 2011).

Aeronautical search techniques

When an aircraft fails to report at a compulsory navigation point and radio communication is not maintained, search and rescue operations are initiated. ICAO (2004) has defined three levels of emergency: level one – uncertainty, level two – alert and level three – distress. It is only when the level three is reached that the SAR units are activated. Then, it is the responsibility of the RCC to determine a "possibility area", usually too large to be searched and further to narrow it to delineate a "probability area" (National Search and Rescue manual 2011). It takes a long time to do so, up to two hours sometimes (Bureau d'Enquêtes et d'Analyses1993).

When a "probability area" is defined SAR helicopters and aircraft start searching for the location of the missing aircraft using different standard aeronautical search patterns jointly recommended by the International Maritime Organisation (IMO) and ICAO (International Maritime Organization and International Civil Aviation Organization 2007). The most commonly used pattern called the track line consists of flying along the missing aircraft track between its last reported position and the position where the next report was due. This technique was used by a USAF C-141 to locate Air New-Zealand missing DC10 in Antarctica in1979, but the wreckage was found only after a twelve hour search (US Navy1979).

Considering that of course each search operation has its own particularities and therefore may require a different amount of time, the previous examples however highlight the point that search operations using traditional methods can be very lengthy – in fact too lengthy for the survivors of an aircraft accident.

Emergency locator transmitter

In the1970's the idea of having an emergency beacon on board of each aircraft to shorten the search time for a missing aircraft was proposed. Since, the carriage of an Emergency Locator Transmitter (ELT) by all aircraft is mandatory (International Civil Aviation Organization 2001). This equipment is either manually or automatically activated upon impact. But, do passengers know that this emergency device is on board an aircraft and where it is located and how to use it, certainly not.

The ELT is mainly composed of a remote control in the cockpit, a main unit in the rear top fuselage and an antenna on top of the rear fuselage, all connected by cables. If one of these components is damaged the ELT cannot transmit a signal (Cameroon Civil Aviation Authority 2010). Moreover, even if all the components are not damaged, the antenna may relay an intermittent signal. In 2005, the Nord-Flyg Cessna 208 wreckage was discovered upside down with the ELT antenna pointing towards the ground nearby Helsinki airport runway end, resulting in a weak signal transmission (Accident Investigation Board Finland 2005).

Furthermore, the Emergency Locator Transmitter operates only if a certain amount of G-forces versus the time is recorded (ELTA 2011): a short time impact with a high value of G-forces or a long time impact with a low value of G-forces. In 2009, Gol Transportes Aereos Boeing B737-700 aircraft short time impact and low G-forces were not sufficient to activate the ELT, when it crashed in the Amazonian forest in Brazil (Centro de Investigação e Prevenção de Acidentes Aeronáuticos 2008).

Consequently, it can be said that the Emergency Locator Transmitter has not demonstrated yet that emergency teams can entirely rely on it to reduce the search operations after an aircraft crash.

Cospas-Sarsat satellites system

The Cosmicheskava Sistyema Poiska Avariynich Sudov – Search and Rescue Satellite Aided Tracking (Cospas-Sarsat) satellites system was set up in the early 80s. Each satellite uses its on-board SAR equipment to detect and transmit ELT signals. Ground receiving stations, called Local User Terminal (LUT), transmit distress signals received by SAR satellites to Mission Control Centres (MCC) that process it to ARCC. The constellation of satellites comprises 6 Low Earth Orbit SAR satellites (LEOSAR) in polar orbits and 5 Geostationary SAR satellites (GEOSAR).

LEOSAR satellites do not cover Earth continuously. Instead, they have a field of view of a continent size, around 6,000 kilometres wide. Fifty minutes could be necessary for a distress beacon first to be seen by a satellite, then to have the signal stored on its board before to be downloaded to the nearest LUT. Then, the location of the beacon is made using Doppler techniques (Cospas-Sarsat 2011). More than fifty minutes elapsed between the activation of Nord-Flyg Cessna 208 ELT in Finland and the determination of a wreckage location by the system. But, the aircraft was already found by the search team (Accident Investigation Board Finland 2005).

GEOSAR satellites do not use Doppler techniques to determine the location of a beacon, as they are located above the Equator and on the same Earth position all the time. Instead, the beacon must be equipped with a navigation system, such as the Global Positioning System (GPS). If not, the LEOSAR satellites will need to be used. Also, those satellites cover only the regions located from the Equator up to the 60° Latitude but not up to the higher latitudes (Cospas-Sarsat 2011).

Therefore, anyone can understand that the Cospas-Sarsat is not reliable all the time leaving the SAR teams with no other option that to use the aeronautical search techniques.

Search operations duration

Nobody can tell after an aircraft crash how long the search operations will last. The duration depends mainly on the same following factors.

1. Radar availability at arrival airport

Remote areas still exist all over the planet. Small airports operate airstrips with no radar facilities in these locations. In this case, the latest information concerning an aircraft is not available leading to searches of more than one day ((National Transportation Safety Committee 2009; Department of Transport Accident Investigation Commission 2009).

Airports with no radar facilities can also be located in non-remote areas, leading again to several hours of search (Aeronautica Civil de la Republica de Colombia1996; Spanish Civil Aviation Accident Commission1981).

Radars give the latest known data related to a missing aircraft. But, it takes a long time to extract and to analyse the data, at least 40 minutes or even more (Transport Accident Investigation Commission1997; Bureau d'Enquêtes et d'Analyses1993).

In fact, radar data even if available immediately will only help to delineate a search area (Bureau d'Enquêtes et d'Analyses1993) but will never give the precise location of an aircraft accident.

2. Emergency Locator Transmitter operations

Aircraft are equipped with an emergency locator transmitter to shorten the finding of their wreckage after an accident. Sometimes the equipment is destroyed or damaged during the occurrence (Bureau d'Enquêtes et d'Analyses1993; Cameroon Civil Aviation Authority 2010).

Also, many aircraft in the world still carry the old generation of ELT using the121.5 MHz frequency. But, since February 2009, the Cospas-Sarsat satellites system no longer processes the distress signals transmitted on that frequency. As a result some aircraft accident locations need at least a day of search before a SAR helicopter or aircraft overflying the area will find the wreckage ((Department of Transport Accident Investigation Commission 2009).

Last, even if the ELT is activated the search area to be covered will be of1260 sq. km for the old beacon generation and of13 sq. km for the new one (Defence Research and Development Canada 2009). The latest is better but it may still take some time to be searched.

3. Altitude of occurrence

Searches at an altitude above 5,000 feet will usually be the longest one, up to several days (National Transportation Safety Committee 2009) as for Merpati Nusantara Airlines missing De Havilland DHC-6 in Papua.

Therefore, it is obvious that the search for an aircraft accident in the mountain would be most of the time longer than one in the lowlands.

4. Weather during search operations

Emergency teams encountered snow showers during the12 hours search of Air New Zealand DC10 in Antartica (US Navy1979). Air Inter Airbus A320 in the Vosges Mountain in France (Bureau d' Enquêtes et d'Analyses1993) and Vnukovo Airlines Tupolev154 in Spitsbergen in Norway (Aircraft Accident Investigation Board Norway1999) wreckages were difficult to find because of the prevailing fog conditions.

Hence, it can be seen from these few examples how meteorology can have a big impact on search operations.

5. Wreckage location

Dense rain forest, swamp are some elements that can lengthen search operations (Centro de Investigação e Prevenção de Acidentes Aeronáuticos 2008; Cameroon Civil Aviation Authority 2010). The search of Air New Zealand DC10 in Antarctica took a long time because the aircraft was on one of Mount Erebus slopes covered by ice. A white painted aircraft on a white ground in a mountain is not easy to find (Transport Accident investigation Commission1980).

Thus, the wreckage location has a great influence on the searches duration.

6. Search operations duration conclusion

The different elements that have an influence on the search operations duration have been explained. It can be very well understood why some missing aircraft searches are so lengthy and why a new tool is needed.

Seismology principles

Seismology is usually considered as the science that explores both the constitution of the Earth's interior and the earthquakes. It studies all the vibrations recorded on and in the Earth (Doyle1995, p.1).

Seismographs deployed all over the Planet detect all those vibrations. They are composed of a seismometer to measure the ground motion, of an amplifier to amplify the signals and of a recorder to record all the data (Udías1999, pp. 404-410).

Seismometers are made of pendulums that move vertically or horizontally depending on the motion detected. These movements are conventionally called "Z" for the vertical component and "North-South" and "East-West" for the horizontal component (Bullen & Bolt1985, pp. 201-205).

Seismograms are those documents on which the different components of the seismic waves generated by the ground motions are written.

Seismic waves shown on the seismograms are of three different types: P-waves (Primary waves), S-waves (Secondary waves) both travelling through the internal structure of the Earth and the surface waves. P-waves travel faster than S-waves which in turn travel faster than surface waves. Because they travel faster P-waves arrive first at seismic stations followed respectively by S-waves and surface waves.

P-waves and S-waves average speeds are known. Consequently, the time difference between both waves gives the distance from a seismograph to an event. By triangulation that is by using the records of different seismographs, the location of an event can be determined (Davison1921, p.159).

Application to airport operations

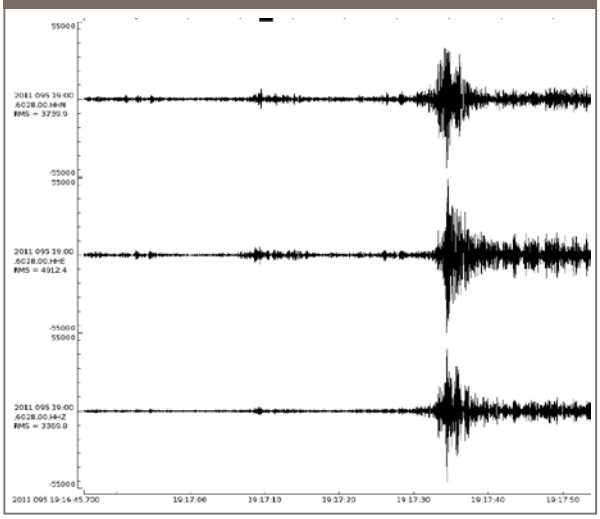
To answer to the question – can seismic equipment record aircraft crashes? It is first necessary to answer to the following question – can seismographs record an aircraft normal landing at an airport?

For this purpose we conducted an experiment at Prestwick international airport, west of Scotland during a day. The airport is composed of two runways that intersect at right angle at their ends. Three GURALP CMG-6TDs seismographs, loaned by the National Environmental Research Council (NERC) in the UK, were buried at the following positions (Figure1): -seismograph n°1 on the left hand side of runway 03 touchdown marking zone and 90 meters away from the runway centreline, -seismograph n°2 on the right hand side of runway 31 touchdown zone and135 meters away from the runway centreline, -seismograph n°3 on the left hand side of runway13 touchdown zone and123 meters away from the runway centreline.

Cargolux Boeing B747-400 landed at19.18' UTC according to the air traffic control. All the three components of the seismograph n°2 clearly show the aircraft landing around19.17'.35'' UTC (Figure 2). The runway 31 was in use at that time.

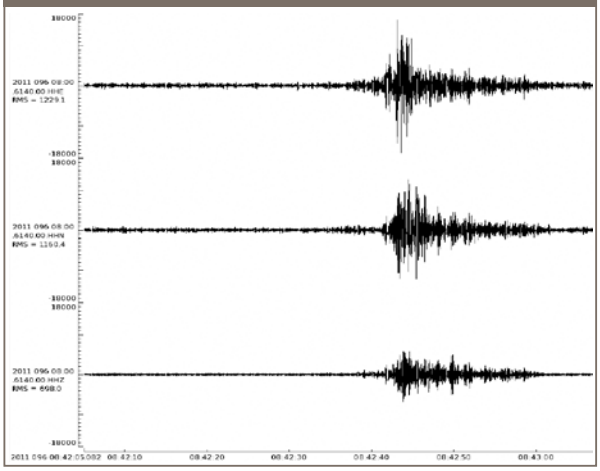
FIGURE 1. Map of Prestwick airport showing the location of the seismographs.

FIGURE 2. Seismograph n°2, from top to bottom North-South, East-West and Vertical components, filtered to 10.000-15.000 Hz, time in seconds, Y axis in counts (-55000 to 55000), displaying Cargolux Boeing B747-400 landing.



To further illustrate the application of seismology to aircraft normal landings, the records of Ryanair Boeing B737-800 by the seismograph n°3 are used. The touchdown can be seen perfectly around 08.42'45'' UTC on each component seismogram where on the other hand the air traffic control data gives the official landing time at 08.43' UTC (Figure 3). The runway13 was in use at that time.

FIGURE 3. Seismograph n°3, from top to bottom East-West, North-South, and Vertical components, filtered to 10.000-15.000 Hz, time in seconds, Y axis in counts (-18000 to 18000), displaying Ryanair Boeing B737-800 landing.



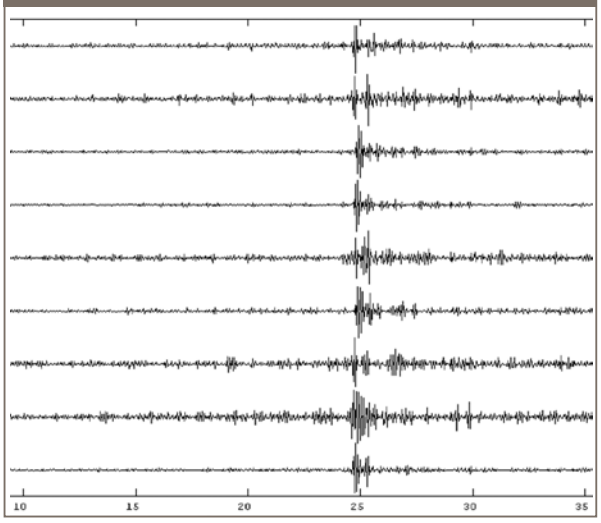
Application to aircraft crashes

Knowing that aircraft normal landings could be recorded by a seismograph, the next step was to find an example from a past event.

Vnukovo airlines Tupolev TU-154M crashed into the Operafjellet Mountain near Longyear airport on Svalbard Island in Norway on the 29 August1996. The time of the occurrence was determined by the aircraft investigation board using the seismic data at 08.22'.23'' (Aircraft Accident Investigation Board Norway1999).

At least nine seismographs have recorded the occurrence. The impact can be seen very clearly around 08.22'.24'' on each seismograms of the different seismographs vertical components (Figure 8). The investigation report accident time has been corrected by the distance between the event location and the different seismographs.

FIGURE 4. From top to bottom seismograms of seismographs SPA0, SPA1, SPA2, SPA3, SPB1, SPB2, SPB3, SPB4, SPB5, vertical component, filtered 10.000-15.000 Hz, time in seconds, displaying Vnukovo airlines Tupolev impact.



Conclusion

Despite having set up appropriate search and rescue services that comply with the international regulations, countries in the world cannot ensure that their emergency management teams have the adequate tools in their hands to fulfil their commitment towards survivors of an aeronautical event.

In fact, the traditional search techniques using search and rescue aircraft and helicopters are too lengthy while emergency locator transmitters and the Cospas-Sarsat satellites system are not100% reliable.

Also, while search operations could sometimes be short, different external factors, such as the altitude, the location or the weather can have an important impact and lengthen searches to days.

On the other hand, seismographs not only can record ground motion generated by earthquakes or volcano eruptions but also by a normal aircraft touchdown or by an aircraft crash.

Consequently, the principle of seismology that is the location of an event by triangulation could also be applied towards the location of a missing aircraft.

Therefore, emergency senior management could take into consideration seismology as an additional tool to shorten to its minimum the duration of search operations, thus enhancing the survival probability of aircraft crashes survivors.

Acknowledgments

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A Case Study from the National Disaster Management Institute in the Republic of Korea

By Komal Aryal and Olivia Dobson, Northumbria University, UK.

ABSTRACT

In the context of growing vulnerability to climatic hazards in Asia, the Republic of Korea's (RoK) National Emergency Management Agency (NEMA) hosted the Fourth Bi-annual Ministerial Conference on Disaster Risk Reduction in October 2010. The resulting Roadmap and Action Plan for the period to 2015 detailed a strategy for dealing with known and unknown nature-related risks in the countries of Asia and the Pacific. As part of the RoK's commitment to delivering this vision for a safer Asia, Korea's National Disaster Management Institute, a division of NEMA, has begun hosting international education and training programmes for governmental officials and civilians from other Asian countries. This article reports on a recent visit to the NDMI campus in Cheonan with details of the comprehensive training and education facilities offered by the centre and the wide variety of programmes, targeting both natural hazards and civil defence, which have been developed to cater for both governmental and civilian needs. The NDMI is a testament to RoK's commitment to the Roadmap and Action Plan and to its resolve to improve not only institutional knowledge at the government level, but also community awareness and response capacity. The international programmes hosted by the Institute are currently funded by the Korea International Cooperation Agency (KOICA) but this limits the quantity and scope of what can be offered. Recent interest from international donors in funding international education programmes has raised awareness of the potential resource the Institute could offer to the international community if greater priority is given to the disaster risk reduction agenda at the governmental and donor level.

Introduction

The Republic of Korea's vision for a safer Asia

Asian cities are becoming increasingly vulnerable to climatic hazards (ISET/ISET Nepal, 2008; IDS, 2009). This growing number of climatic hazards is impacting negatively on livelihoods, ecosystems and ecology and is affecting self-adaptive capacities and resilience-building efforts in most parts of Asia. There is an urgent need to harness multi-agency commitments and transparent humanitarian efforts to avoid the vulnerabilities which could arise as a result of climatic disasters, in order to facilitate sustainable development in Asia.

In this context, the Republic of Korea's (RoK) vision is for a safer Asia. To that end, RoK's National Emergency Management Agency (NEMA) hosted the Fourth Biennial Ministerial Conference on Disaster Risk Reduction (AMCDRR) in October 2010. The theme of the conference was 'Disaster Risk Reduction through Climate Change Adaptation' and it was organised in partnership with United Nations International Strategy for Disaster Reduction (UNISDR), the Global Facility for Disaster Reduction and Recovery of the World Bank (GFDRR) and the Australian Government's Agency for International Development (AusAID). Prime Ministers, ministers, senior government officials, academics and humanitarian workers from 69 nations gathered in the city of Incheon to agree on a five year strategy for dealing with known and unknown nature-related risks in the countries of Asia and the Pacific. More than 900 delegates participated in the event (NEMA/UNISDR, 2010).

At the Conference, government delegates representing more than 55 countries from Asia and the Pacific approved a five-year Roadmap ('Incheon REMAP') and Action Plan to establish climate resilient disaster risk management systems in all countries by 2015 through participatory discussion.

Many international donor agencies and sub-regional agencies are committed to implementing activities in line with the Roadmap and Action Plan. As part of RoK's contribution to accelerating the delivery of a 'Safer Asia' agenda, its National Disaster Management Institute (NDMI), a department of NEMA, has begun hosting

The AMCDRR, Incheon, October 2010.

international education and training activities for government and non-government agencies from Asia and the Pacific region.

The National Disaster Management Institute (NDMI)

As in most developed countries, RoK first approached disaster management through the civil defence sector with the establishment of the Central Civil Defence Academy (CCDA) in 1986 by the then Ministry of Home Affairs (MOHA) (NDMI, 2008). The CCDA was then reorganised as the Civil Defence Training Division (CDTD) in April 1994. In May 1997, the Korean Government founded the National Institute for Disaster Prevention (NIDP) to support a research-led training programme to bolster its disaster management capabilities and understanding (NDMI, 2008).

After the events of September 11th 2001, RoK revisited its national emergency management system and in June 2004, NEMA was established to take responsibility for natural disasters and emergency response (MOPAS, 2011). In March 2006, NEMA established the NDMI as a key education and training facility for public bodies and private citizens alike to raise the overall level of disaster preparedness in the RoK. As well as its teaching responsibilities, NDMI also oversees the NIDP which ensures that the latest disaster research findings inform its programmes. The main vision of NDMI is to promote and integrate disaster and safety education in government and non-government communities through interactive learning. To this end, it offers a wide range of training and education courses at the national and international level, and also pursues a research and development agenda with a focus on disaster management policy review, the production of teaching materials and technological development (NDMI, 2008). Given NEMA's mandate for emergency response and disaster management, the Institute concentrates on both natural disaster awareness and civil defence protection requirements.

Approach

This paper reports on a recent visit to the National Disaster Management Institute's complex located near the western city of Cheonan. The purpose of the visit was to get a flavour of the work being performed by NDMI in light of the Korean government's AMCDRR commitment to fostering both national and international disaster resilience.

Findings and discussion

The Campus

The Institute is situated in the countryside around fifteen minutes' drive from Cheonan. Cheonan is just over an hour's train ride from Seoul and can be reached by train from the furthest parts of the country within 4 hours. Set against a verdant green hillside, NDMI shares its campus with the National Fire Service Academy. Together they host an extensive spread of facilities within their 26 hectare site. A tree-lined driveway leads to the large main building, which has a vista back across the hillside and over the centre's playing fields. Set back into the rising ground behind the main frontage are guest dormitories, a canteen-style dining room, a patio area and numerous training buildings. Further down the hill, the practical training facilities are located including NDMI's Safety Experience Centre, the Fire Academy's

outdoor activity and practice areas, a large sports complex for the use of trainees and a conference centre with a capacity of over a hundred.

The facilities

The Institute is home to the Planning and Cooperation and Education and Operation Divisions of the NDMI, with the NIDP managing the Disaster Research and Management Divisions in offices in Seoul. The focus at the campus is very much on training and learning, with five resident professors handling a full time schedule of teaching and course development.

The Planning and Cooperation Division is responsible for supporting and managing the operation of the Institute and its general affairs, as well as overseeing the online learning courses the Institute offers and the international education programmes and their funding.

The Education and Operation Division is responsible for national courses, including programme design and advertisement, and for education planning and the development of training techniques.

As well as offices for these divisions, the main building houses an impressive array of modern and well equipped lecture theatres and classrooms for delivering the theoretical components of the courses. Each room is furnished with a computer linked projector, variable lighting for teaching purposes, ergonomic chairs and plenty of desk space for each trainee. Some of the larger theatres are tiered to provide maximum viewing potential. Typical classrooms hold around 40 trainees, but the larger lecture theatres can comfortably accommodate 120. It is evident that considerable care has been taken to provide an environment that encourages learning: the classrooms are contemporary and provide a professional atmosphere for educating.

For those seeking further knowledge, an exhibition of emergency defence equipment has been set up in the foyer of the main building, complete with a comprehensive written commentary on usage and deployment of the apparatus.

A separate structure behind the main building houses the National Disaster Management System (NDMS) Information Centre. Another impressively equipped facility, its purpose is to provide training for all government officials on the procedures and operation of the System so that they gain an understanding of how NEMA's Disaster Status Control Centre (based in the central government complex in Seoul) processes the information it receives from reporting authorities when a disaster occurs.

The two classrooms in the NDMS centre each have positions for up to 76 trainees, each station furnished with a computer to allow trainees to follow and trial the information processing techniques and procedures taught on the courses.

The training is mandatory for local government officials who are responsible for operating the System in their district. The overall aim is that officials come away equipped with the knowledge of how to report disaster information correctly to NEMA's Control Centre using the System's procedures in the event of a hazard occurring. NDMS training is a component of several of the NDMI courses and approximately 1000 government officials have been trained to date (NDMI, 2011). The RoK's NDMS is considered successful and has been exported for use in several countries including Indonesia and Paraguay.

The NDMS building also houses eight discussion rooms designed specifically for group work exercises, which form an essential component of all of the courses that

The NDMI and National Fire Service Academy campus.

A classroom in the NDMS Information Centre.

NDMI runs. As with the teaching rooms in the main building, each room is well equipped and appealing to those who want to learn, with a large whiteboard for brainstorming ideas, a computer terminal and a conference style table to facilitate group working and the preparation of presentations. This style of learning is encouraged by NDMI to allow trainees to demonstrate and consolidate what they have learned, and often an element of competition is introduced to the group work portion of the classes to encourage high standards.

Opposite the NDMS building is the Disaster Information Centre which was built in 2006 as an additional information source for trainees on previous disasters in the RoK. It is designed with interactive features for all ages, including touch screen monitors, a small movie theatre and a reference library. Although this facility is still under development, it represents another dimension of the Institute's focus on learning and information sharing.

The appropriately named Safety Experience Centre (SEC) is a short walk down the hill from the main complex. This is where the practical training classes occur on-site. This light and airy facility houses classrooms for the introduction of the practical subject areas and innovative Experience Areas for applied teaching activities (Figure 1).

The outdoor areas at the SEC are complemented by covered tiered seating stands for open air demonstrations and teaching. Unsurprisingly, the SEC is reportedly particularly popular with school groups.

The Institute also has a number of off-site locations for demonstrating examples of natural hazard management schemes. The Coastal Erosion Management Facility is a site in Busan city where the local government has extended the beach away from the built form edge so that coastal zones are protected from tidal surges. Classes at this site include discussion of various approaches to preventing and managing coastal erosion issues. The Landslide and Slope Hazard Prevention Facility is a site near the cities of Gumi and Busan where several construction methods and other practices have been implemented to prevent landslip from occurring, including the positioning of seismic sensors inside the hills to provide a ground instability early warning system for residents living in the area.

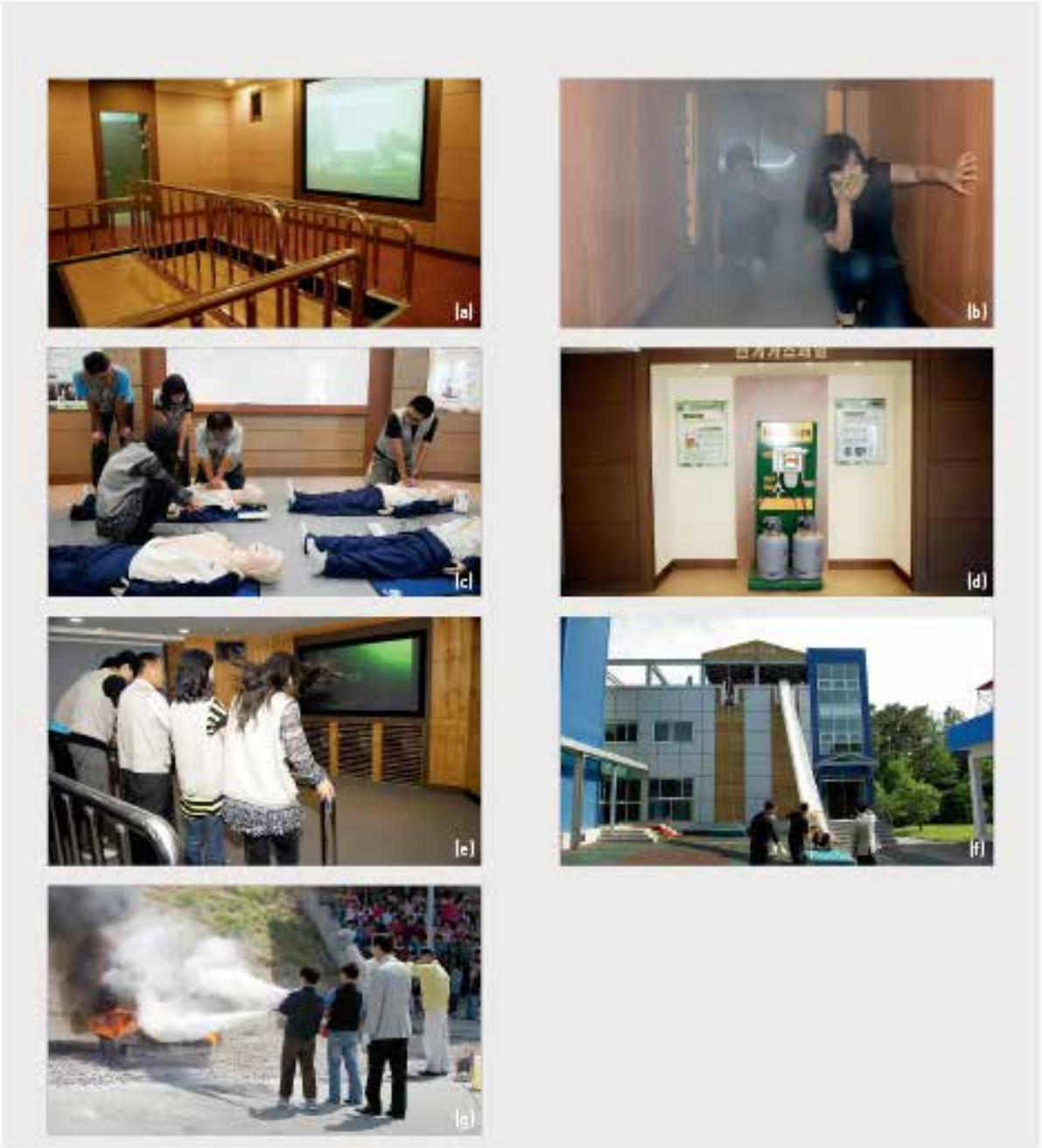
All in all, it is an impressive set up. The attractive location and well-presented grounds aside, the facilities available to the teaching staff are wide-ranging and allow for coverage of a considerable array of topics related to disaster and emergency management, as can be seen from the types of programmes offered.

Programmes

The Institute's academic year starts in late February/ early March, with the first semester finishing in late July and the second semester running from early September to December. This academic year the Institute is offering 82 different types of course. Some courses are repeated throughout the year, resulting in a total of 325 courses scheduled to run this year for 16,110 trainees.

Given the AMCDRR's resolution to build not only institutional but also community resilience, the NDMI runs courses for both government officials and employees and also civilians and community groups. Course length ranges from occasional intensive courses of 8 weeks for specialists that include field trips and training abroad, to five day sessions for government workers; and two day classes for citizens.

FIGURE 1. Activity areas at the Safety Experience Centre.



(a) The Earthquake Experience Room, where trainees stand on a movable plate, hold on to a waist-high railing and watch a video detailing the extent of damage and destruction associated with each rising measurement on the Richter scale, whilst simultaneously experiencing the associated magnitude of the quake through the movement of the plate.

(b) The Smoke Experience Room, which is actually a series of corridors and obstacles that trainees must negotiate in pitch darkness whilst imitation smoke is pumped into the space.

(c) Life Emergency Experience Room, equipped with dolls for teaching CPR and other first aid measures.

(d) The Electricity and Gas Experience Room for training on how to use these energy sources safely and how to act during a gas or electricity emergency.

(e) The Wind Tunnel, where wind speeds of up to 30m/s can be experienced.

(f) The Air Safety Mat, Descending Lifeline and Relief Tunnel Experience Tower located in the outdoor courtyard to give practical experience of evacuation measures which may be used for high buildings. Trainees are given a practical demonstration and then helped to complete the activities themselves.

(g) The Fire Pit, located in the side courtyard, for demonstrating and practising the use of fire extinguishers.

Source: NDMI (2008)

The courses are differentiated into five types: civil defense; natural disaster management; civilian education; online; and international. Some of the courses offered are detailed in Figure 2 below.

Community groups are able to get involved in NDMI training through membership with the Community Emergency Response Team (CERT) system. Each local government authority has a CERT unit which is responsible for contacting and networking with community leaders, community groups and local volunteer organisations. Through membership with a local CERT unit, these groups are able to apply to attend the Citizen Training course. The local government pays for their bed and board at the centre and, as the Institute is a public body, the training is free. NDMI runs a specific programme for citizens that is tailored to provide education on the hazard types they are most likely to experience.

School groups of all ages are also welcome at the NDMI. The NDMI website provides a portal for schools to apply for places (up to 20 per group) for a safety experience course. This is a largely practical course for students aimed at raising awareness and familiarity of how to act during an emergency. Courses for teachers and school officials are also run during the school vacation period so that schools are able to integrate disaster education into their curriculum for students.

The main aim of the civilian courses is to familiarise members of the public with the activities and procedures which they may encounter in a real crisis situation, the benefits of which are almost indefinable for community members and emergency responders alike: experiencing a safety mat jump even once in a controlled environment will undoubtedly make a jump in an actual emergency somewhat less overwhelming, if no less daunting.

Of course, the Institute also plays an important role in providing training for government officials at all levels from various Ministries and departments on a variety of subject areas depending on their requirements. Depending on their position, officials are required to obtain a certain number of course credits from NDMI programmes as part of their professional development. Every October, the Education and Operation Division issues information packs and posts on its website the coming year's course schedule so that local governments can choose which to enrol on. The local government authority pays for bed and board whilst its employees are at the centre and the training is free.

The variety of courses the Institute offers is impressive. Courses are tailored to the seniority and existing knowledge levels of those attending, so that all are catered for according to their needs. The staff-members of the Institute are committed to providing a high standard of educational experience for those that visit and were openly enthusiastic in describing the work which the Institute is doing.

As may be expected, quality control is also viewed as very important. Course material and trainee feedback are assessed annually by the Education and Operations Division and the resident professors so that courses

The Vietnamese delegation on a field trip.

Visiting the Meteorological Office.

can be assessed for quality and revised where necessary.

Whilst NDMI and the Fire Academy run their courses separately, their location on the same campus means that specialists from both departments are available to teach seminars or practical sessions to groups whenever necessary. Similarly, external specialists and guest lecturers are commissioned to teach elements of some courses to provide a high standard of education. This broadens the range of expertise and learning opportunities for those attending courses at either centre.

Despite the expansive array of course types and training facilities already offered by the Institute, NDMI is striving for more. It is trying to create a legally mandated, nationally coordinated volunteer civil defence association to oversee the existing regional volunteer corps. It hopes to eventually reach a force of 30,000 members and NDMI has made a budget request for funding to train 15,000 civilian volunteers in the next academic year. It is also championing a proposed national law that will require that officials charged with emergency response duties to come to the centre at Cheonan for additional training in core aspects. The purpose is to ensure that they are training to the highest level.

Research and development achievements are also important to the NDMI and recent achievements include the development of automated technologies for disaster damage assessment and mountain watershed run-off control. In addition, NDMI is identifying criteria for establishing a high-performance integrated spill control strategy (NDMI, 2008).

Raising the NDMI's international profile

NDMI has been hosting international courses since 2008. Each July, NMDI submits a proposal for international courses on a variety of topics to the Korea International Cooperation Agency (KOICA). KOICA decides which courses to fund based on the priorities for international aid set out by Central Government. KOICA typically funds about three international courses per year and once these are confirmed in annual budgets, KOICA distributes the proposed course material to countries identified for funding who are able to choose programmes which focus on their specific needs.

For the period 2011-2013, NDMI has organised a KOICA-funded Climate Change Adaptation (CCA) training programme for government and non-government officials, including journalists, from eight SAARC (South Asian Association for Regional Cooperation) countries: Afghanistan, Bangladesh, Bhutan, India, The Maldives, Nepal, Pakistan, and Sri Lanka*. A total of sixty participants will be trained at the Institute over the course of the three year programme.

The international component of the Institute's programme is perhaps the most important for fulfilling Korea's Safer Asia aspiration: NDMI's persistence with its international programmes despite funding limitations is evidence of Korea's commitment to this policy.

Although funding has historically come from KOICA, recently other international agencies have expressed an interest in funding courses for Asian countries at NDMI. A recent example is an eight day training programme on Integrated Disaster Risk Reduction and Climate Change Adaptation organised for officials from the Government of Vietnam, jointly funded by the World Bank (Vietnam) and NDMI. The programme was held between 20th – 27th June 2011. The main objective of the training

Figure 2. A selection of the courses offered by NDMI.

was to distribute evidence-based knowledge sharing in the subject area. Experts and professors from NDMI introduced various DRR and CCA related topics such as:

- Disaster management policy at central and local government levels;
- Interactive safety exercises at the Safety Experience Centre;
- Early Warning Systems based on the Korean National Disaster Management System (NDMS), including an off-site field trip to observe the Cellular Phone Broadcasting System (CBS) and Digital Multi-Media Broadcasting (DMB) systems which NEMA operates;
- Multiple off-site field trips to observe adaptation measures implemented for slope stability, coastal erosion and tidal flooding;
- Central Disaster Status Control Centre (vulnerability, risk and emergency response monitoring);
- Meteorological Data Generation and Analysis

Conclusions

In terms of the Republic of Korea's commitment to disaster resilience-building, the NDMI is testament to its resolve to improve not only institutional knowledge at the government level, but also community awareness and response capacity. Its international programme clearly shows a genuine willingness to assist with the development of resilience in other countries in Asia and as such it should be praised for its efforts in this sector, in line with the objectives of the Incheon Roadmap and Action Plan.

The setup at the NDMI lends itself to those looking to obtain disaster management education from a comprehensive facility run by a dedicated team of professionals that is easily accessible to those flying into Seoul. However, at present it is a resource that perhaps the rest of Asia does not know enough about. With greater priority given to the disaster risk reduction agenda at the governmental and international donor level, the potential which the NDMI offers for risk reduction to the international community could be maximised to the advantage of all.

** Interested parties from SAARC countries are advised to contact their local KOICA office or the Republic of Korea embassy.*

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Changes to occupational health and safety laws and the impact on volunteers in the emergency services

By Michael Eburn, Australian National University.

ABSTRACT

The states and territories have agreed to enact new, nationally consistent workplace health and safety laws. These new laws are based on the Model Work Health and Safety Bill and will come into effect on 1 January 2010. This article compares the position under the Model Act with the current legal position to identify the implications for volunteers in the Australian emergency services. It is argued that the new law will reinforce the message that Australia's emergency service volunteers provide an important and professional service. The new law should not impede volunteers but should facilitate their work both at home and inter-state.

On the first of January 2012, the Australian states and territories are scheduled to implement new, national occupational health and safety laws. These laws will be modelled on the Model Work Health and Safety Bill published by Work Safe Australia ('the Model Act').[1]

A significant feature of the new legislation is the inclusion of volunteers into the definition of 'worker'. Volunteers are already included in the definition of 'worker' in the Australian Capital Territory, the Northern Territory and Queensland[2] so the changes will be of most significance in the other States.

This article will compare the position under the Model Act with the current legal position to identify the implications for volunteers in the Australian emergency services. This is not a comprehensive review of the legislation but is limited to an analysis of the key provisions that may impact on emergency service volunteers. Naturally this article cannot be considered as a substitute for legal advice to deal with specific situations and issues.

Duties owed to volunteers

Current law

The application of occupational health and safety law to volunteers varies across the Australian states and territories. In New South Wales an employer '... must ensure the health, safety and welfare at work of all the employees ...'[3] (which does not include volunteers) as well as anyone else who is at the' place of work' (which would include volunteers).[4] Place of work means 'premises where people work' as 'an employee or self-employed person.'[5] This leads to uncertainty if a local incident is being managed entirely by volunteers.

It is arguable that the site of emergency service operations is the place of work of the Service, the Commissioner and/or regional staff.[6] If that is correct then the service and its paid officers have legal obligations to take steps to ensure the safety of everyone at their workplace, including volunteers. That does not mean that the SES Region Controller or RFS Fire Control Officer must turn out to every response as it would not be reasonably practicable for them to do so, but they may still have an obligation to do what is reasonably practicable to ensure safety. Ensuring safety may involve ensuring that suitably qualified and competent volunteers are in a position to take control of operations, that procedures and processes are in place to ensure safety, that people are adequately trained and that the units or brigades under their direction have a culture where safety measures are taken seriously.

It is, however, also arguable that where the only responders are volunteers then there is no one at the site who is working as an employee or self-employed person and so the area is not a 'place of work'. If

1. See Work Health and Safety Bill 2011 (Cth); Work Health and Safety Bill 2011 (ACT); Work Health and Safety Bill 2011 (Qld); Occupational Safety and Health Amendment Bill 2010 (WA); Work Health and Safety Act 2011 (NSW).
2. Work Safety Act 2008 (ACT) s 9; Workplace Health and Safety Act 2007 (NT) s 4; Workplace Health and Safety Act 1995 (Qld) s 11.
3. Occupational Health and Safety Act 2000 (NSW) s 8(1).
4. Ibid s 8(2).
5. Ibid s 4.
6. State Emergency Service Act 1989 (NSW) ss 11 and 16; Rural Fires Act 1997 (NSW) ss 12 and 37.

that is correct then the New South Wales emergency services would not be bound by the *Occupational Health and Safety Act* to take steps to ensure the safety of the volunteers.

The position is similar in Tasmania where an employer must ensure that the health and safety of any person, including a volunteer, is not 'adversely affected as a result of the work carried on at a workplace';[7] that is 'any premises or place ... where an employee, contractor or self-employed person is or was employed or engaged ... '[8] As in New South Wales a place where only volunteers are responding is, arguably, not a workplace and therefore outside the operation of the Act.

In the Australian Capital and Northern Territories there is a duty upon the employer to ensure health and safety at the workplace.[9] Work is not defined but, in those jurisdictions the definition of 'worker' includes a volunteer[10] so wherever a volunteer is performing his or her duties must be a workplace.

In South Australia and Queensland an employer must ensure the safety of any person who may be affected by the employer's work.[11] A volunteer, even if not at a workplace, will be affected by the acts and omissions of the organisation they volunteer for and so there is a duty to take steps to ensure the volunteer's wellbeing is protected.

In Victoria and Western Australia the employer must ensure that non-employees are not exposed to risks to health and safety 'from the conduct of the undertaking of the employer'.[12] As the emergency services are an employer and the site of operations is part of their undertaking, they would have an obligation to ensure that their volunteers are not exposed to undue risks to health and safety.

It is important to note that the application of the relevant occupational health and safety legislation is unrelated to the application of compensation schemes for injury. All the states and territories have in place schemes to ensure volunteer emergency service personnel are compensated for personal injury and property losses that they suffer in the course of their volunteering.[13] These provisions apply regardless of whether or not the health and safety provisions apply. The impact of the health and safety provisions is to enforce the obligation to undertake prescribed risk management procedures with criminal, rather than civil penalties.

The Model Act

In order to make it clear that everyone should be protected from risks to their health and safety, the Model Act no longer refers to employers and employees. Under the Model Act the duty to ensure health and safety is imposed upon any '... person conducting a business or undertaking'.[14] 'Person' includes a corporation.[15] The person conducting the undertaking will have to ensure that workers and others are not put at risk whilst at work or as a result of the conduct of that undertaking.[16] The emergency services are conducting an undertaking so they must ensure that their operations do not expose anyone to unreasonable risks to health and safety. The obligation does not depend on whether or not the person exposed to the risk is a paid employee but whether they are exposed to a risk due to a relevant business or undertaking.[17]

Further, in the Model Act a worker is:

a. an employee; or

b. a contractor or subcontractor; or

c. an employee of a contractor or subcontractor; or

d. an employee of a labour hire company who has been assigned to work in the person's business or undertaking; or

e. an outworker; or

f. an apprentice or trainee; or

g. a student gaining work experience; or

h. a volunteer; or

i. a person of a prescribed class.[18]

This duty to protect workers, including volunteers, applies when they are 'at work in the business or undertaking'.[19] 'At work' is not defined but given the definition of 'worker', a volunteer performing

7. Workplace Health and Safety Act 1995 (Tas) s 9(3).

8. Ibid s 3.

9. Work Safety Act 2008 (ACT) s 21(3)(a) (defined as a place 'where work is or is to be carried out' s 12); Workplace Health and Safety Act 2007 (NT) s 56.

10. Work Safety Act 2008 (ACT) s 9; Workplace Health and Safety Act 2007 (NT) s 4.

11. Occupational Health, Safety and Welfare Act 1986 (SA) s 22; Workplace Health and Safety Act 1995 (Qld) s 28.

12. Occupational Health and Safety Act 2004 (Vic) s 23; Occupational Health and Safety Act 1984 (WA) s 21.

13. See for example: Workers Compensation (Bush Fire, Emergency and Rescue Services) Act 1987 (NSW); Disasters Act 1982 (NT); Public Safety Preservation Act 1986 (Qld); Disaster Management Act 2003 (Qld); Workers Rehabilitation and Compensation (Claims and Registration) Regulations 1999 (SA); Emergency Management Act 2006 (Tas); Emergency Management Act 1986 (Vic); Country Fire Authority Act 1958 (Vic); Victoria State Emergency Service Act 2005 (Vic); Bushfires Act 1954 (WA).

14. Safe Work Australia, Model Work Health and Safety Bill (Commonwealth of Australia, 2011) s 19.

15. See for example Interpretation Act 1987 (NSW) s 21; see also Robin Stewart-Crompton, Stephanie Mayman and Barry Sherriff, National Review into Model Occupational Health and Safety Laws –First Report to the Workplace Relations Ministers' Council (Commonwealth of Australia, 2008) [6.56].

16. Safe Work Australia, above n 14, s 19.

17. Stewart-Crompton et al, above n 15, [6.46]-[6.55].

18. Safe Work Australia, above n 14, s 9 (emphasis added).

19. Ibid s 19(1).

their duties is performing work in the business or undertaking and is, therefore, 'at work'.

Duties owed by volunteers

Current law

Under current law, volunteers may not have any obligations under occupational health and safety legislation. In all jurisdictions employees have a duty to take reasonable care of their own, and other's safety[20] but, as noted above, in most jurisdictions the term employee does not extend to volunteers.

The Model Act

Under the Model Act, volunteers will not only be owed a duty of care, but they will be obliged to exercise due care in the performance of their duties. Workers, including volunteers, must:

a. take reasonable care for their own health and safety;

b. take reasonable care that they do not adversely affect the health and safety of any other person;

c. comply, so far as they are reasonably able, with any reasonable instruction that is given by their organisation to ensure compliance with the Act; and

d. co-operate with any reasonable policy or procedure relating to workplace health and safety.[21]

Penalties

Failure to meet obligations under the new Act can have significant penalties. The range of penalties depends upon whether:

1. The defendant is an individual, an officer of the organisation or a corporate entity (including a corporate entity that represents the Crown or is a public authority[22] which would include all the statutory emergency service organisations);
2. Whether the breach of duty exposes someone to a risk of death or serious injury, or only to a less than serious injury; and
3. The mental state of the accused that is whether they intended or realised that by their action they would expose someone to risk of death or injury or whether their actions were inadvertent.

The penalties are the maximum penalties. It is always open to a court to impose a penalty less than the maximum.

Criminal negligence, that is a failure to take reasonable steps to ensure health and safety, it is not the same as civil negligence. Civil negligence requires proof that the defendant failed to take 'reasonable care'. Criminal negligence requires proof that the accused's failure was 'such a great falling short of the standard of care, which a reasonable man in their position would have exercised, as to merit criminal punishment'.[24] This criminal standard may be summarised in the phrase 'gross negligence'. Whether conduct meets that description is a matter for judgement in each case but it is the case that a criminal prosecution requires the court to be satisfied, beyond reasonable doubt, that the accused's conduct demonstrates something more than civil negligence.

When bringing a prosecution it is not sufficient for the prosecution to simply allege that some conduct exposed another to a risk to health and safety, or to show that there was an actual workplace injury. The burden is on the prosecution to show, beyond reasonable doubt, that there was something that the defendant should have done, or should not have done, and that the alternative conduct was both reasonably practicable and would have been effective in reducing or eliminating the risk. Mere proof of injury does not prove a breach of the Act.[25]

Even if there has been a breach of the Act, it is not essential or required that the authorities launch a prosecution. The Model Act provides for a number of other options short of criminal prosecution including the service of 'improvement notices' requiring a rectification or modification of practice and procedure and a power to accept undertakings to improve work place health and safety.[26]

In the context of penalties, the word 'officer' does not refer to the system of rank employed in the emergency services. An 'officer' of a corporation, the Crown or a public authority is a 'person who makes, or participates in making, decisions that affect the whole, or a substantial part' of the 'undertaking'.[27] The Commissioner or Chief Officer easily falls within the definition of an officer, as will some subordinate officers but exactly how far down the chain of command that responsibility will fall is not clear. The decisions of senior executive will affect the whole of the organisation, but it will be a question to be answered in later court proceedings whether regional or local staff affect a 'substantial' part of the organisation.

20. Work Safety Act 2008 (ACT) s 27; Workplace Health and Safety Act 1997 (NT) s 59; Occupational Health and Safety Act 2000 (NSW) s 20; Workplace Health and Safety Act 1995 (Qld) s 36; Occupational Health, Safety and Welfare Act 1986 (SA) s 21; Workplace Health and Safety Act 1995 (Tas) s 16; Occupational Health and Safety Act 2004 (Vic) s 25; Occupational Health and Safety Act 1984 (WA) s 20.

21. Safe Work Australia, above n 14, s 28.

22. Ibid ss 245 and 249.

23. Ibid ss 31-33.

24. Stewart-Crompton et al, above n 15, [9.21].

25. Kirk v WorkCover [2010] HCA 1.

26. Safe Work Australia, above n 14, ss 90-102; 191-194; 216-222.

27. Ibid ss 247 and 252.

Table 1 maximum penalties under the Model Act:[23]

Offence	Description	Individual	Officer	Corporation
Category 3	Failure to comply with an OHS duty.	$50 000	$100 000	$500 000
Category 2	Failure to comply with an OHS duty that exposes a person to a risk of death or serious injury or illness.	$150 000	$300 000	$1 500 000
Category 1	Reckless conduct that exposes a person to a risk of death or serious injury or illness.	$300 000 or five years imprisonment or both.	$600 000 or five years imprisonment or both.	$3 000 000

An officer is required to exercise due diligence to ensure that their organisation meets its obligations. 'Due diligence' means taking reasonable steps to:

a. acquire and keep up-to-date knowledge of work health and safety matters,

b. ensure that they have a full and proper understanding of the nature of the operations of the Service and the risks and hazards that are associated with its work.

c. ensure that the Service has appropriate resources and processes to eliminate or minimise risks

d. ensure that the Service has appropriate processes for receiving and considering information about incidents, hazards and risks and responds, in a timely way, to that information, and

e. ensure that the Service has, and implements, processes for complying with its work place health and safety obligations and

f. monitor and verify that the relevant resources and processes are in fact applied and followed.[28]

This provision will be of particular importance in jurisdictions where the emergency services are managed by a Board of Management[29] and where persons appointed to the Board may have no prior involvement in the organisation. These provisions require members of the Board to be proactive in learning about the processes of the organisation, how it works, what it does and what can be done to ensure health and safety. Directors cannot be passive and merely take the word of the Chair or a written report on its face value.

Where the services are managed by a Commissioner or other Chief Officer, and there is no 'Board' equivalent, then officers such as the various Directors should exercise due diligence even if the extent of their power is to bring a matter to the attention of the Commissioner rather than have it discussed at a Board meeting.

Volunteers may also be members of a relevant governing board and therefore 'officers'. In order not to discourage volunteers from taking on key leadership roles, volunteer officers cannot be prosecuted for failing to exercise due diligence or otherwise failing to fulfil the duties of an 'officer'.[30]

Should volunteers be worried?

There are many benefits, and few costs, for volunteers in the new law.

First volunteers should be reassured that the law will be consistent across Australia. As noted above, the application of health and safety laws does not impact upon a right to compensation but it may be of some reassurance to know that they have equal protection under the criminal law regardless of the jurisdiction that they are in.

For volunteers that travel interstate to assist with the response to floods, fires and other emergencies the introduction of consistent legislation will mean that they are not faced with a variety of legal obligations and rights. Volunteers and the emergency services they volunteer for can be reassured that the risk management processes that they have adopted in their home jurisdiction will be sufficient to meet obligations in the jurisdiction in which they are working. This should reassure volunteers that if they apply the processes and training they are familiar with, they will be meeting their legal obligations in all Australian jurisdictions.

Changes to work place health and safety laws will however, open a new, potential liability for emergency service volunteers. Once the Model law is in force then volunteers will have occupational health and safety

28. Ibid s 27.

29. See Country Fire Authority Act 1958 (Vic) s 7; Victoria State Emergency Service Act 2005 (Vic) s 9; Fire and Emergency Services Authority of Western Australia Act 1998 (WA) s 6; Fire and Emergency Services Act 2005 (SA) s 10.

30. Safe Work Australia, above n 14, s 34.

31. [2006] NSWIRComm 356.

32. (Unreported, Melbourne Magistrates Court, Couzens P, 25 November 2009) <http://www1.worksafe.vic.gov.au/vwa/vwa097-002.nsf/content/LSID161018> accessed 12 July 2011.

duties and could be prosecuted for failing to meet those duties. Whether they will, or will not, be prosecuted will always depend on the particular circumstances.

In *WorkCover v NSW Fire Brigades*[31] there was no effort to prosecute individual fire fighters. There the failure was a failure to adequately train and resource the fire fighters to deal with the situation of a grain silo fire. In *Worksafe v Victoria SES*[32] the issue was not about the conduct of volunteers or staff but the failure of the SES to issue appropriate instructions and safety equipment. In *Cahill v NSW Police*[33] a police radio technician was working at the front of a police truck when a police officer, as a joke, activated the siren. The impact was permanent damage to the victim's hearing and his ultimate retirement on medical grounds. Even in that case it was the NSW Police, rather than the individual who activated the siren, that was prosecuted for failing, amongst other things, to ensure staff knew of the dangers of turning on the siren in those circumstances. Although volunteers are already included in the definition of employee of worker in the Australian Capital Territory, the Northern Territory and Queensland[34] the author has been unable to find any reported case where a volunteer has been prosecuted for breaching his or her health and safety obligations.

Even now, where volunteers are not included as 'workers' and therefore cannot be prosecuted for breaching the relevant occupational health and safety Act, they could be prosecuted if they committed offences under other legislation. Offences such as assault, recklessly causing injury and in the most extreme cases, negligent manslaughter are possible if the facts warrant such a prosecution.

The result is the new laws open, in theory, a new area of personal liability for emergency services volunteers but their potential application should not cause concern. It is unlikely that they will be applied to individuals as the responsibility for managing health and safety and for ensuring everyone, including volunteers, act properly with regard to safety rests with the organisation rather than individuals. The circumstances where prosecutions could take place is likely to be in the sort of circumstances where prosecutions could now take place, albeit based on different legislation.

Volunteers who are thoughtful about safety and think about the welfare of their colleagues and their community should not be worried about this legislation. It will not open the floodgates of personal liability and will not see volunteers prosecuted or held personally to blame for any and every unfortunate outcome. The emergency services are engaged in inherently hazardous activities and that must be considered when determining what is 'reasonable care' and what is 'reasonably practicable'.

Volunteers who do not think about safety or about the welfare of their colleagues and their community should not be in the emergency services. For them there may be a risk of prosecution because the person they put at risk '... should not be any less protected by the law in relation to health and safety simply by reason that the person making key decisions is a volunteer.'[35] It is assumed that such persons are rare and should be managed by the service's internal procedures long before a prosecution takes place.

Conclusion

The introduction of uniform workplace health and safety law based on the Model *Workplace Health and Safety Act* will bring the legal position of volunteers in New South Wales, South Australia, Tasmania, Victoria and Western Australia into line with their colleagues in the Australian Capital and Northern Territories and Queensland. The new law should not cause concern for volunteers in the Australian emergency services. The uniform law will ensure that volunteers are entitled to legal protection and the services for which they volunteer are required to take the same care for their safety as they take for the safety of the paid staff.

Volunteers will be reassured that steps they take to meet their own health and safety obligations will be sufficient to meet their legal obligations wherever they are in Australia.

Although there will be a legal option to prosecute individual volunteers who fail to take reasonable steps to protect their own safety, or the safety of others, the reality is that prosecutions will be unlikely. Even without these laws volunteers could be criminally responsible for gross failure to take reasonable care for safety and that remains the case. The reality is that volunteers who act with consideration for their safety and the safety of others, and apply the training and procedures of their service, will face no greater risk of legal liability under this law than they do under the current law.

Australia's emergency service volunteers provide an important and professional service. The new work health and safety legislation will reinforce that message by showing that volunteers are entitled to protection by law, and equally the community that depends upon them should not expect shortcuts on safety. The new law should not impede volunteers but should facilitate their work both at home and inter-state.

About the author

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33. [2005] NSWIRComm 33.

34. Work Safety Act 2008 (ACT) s 9; Workplace Health and Safety Act 2007 (NT) s 4; Workplace Health and Safety Act 1995 (Qld) s 11.

35. Robin Stewart-Crompton, Stephanie Mayman and Barry Sherriff, National Review into Model Occupational Health and Safety Laws –Second Report to the Workplace Relations Ministers' Council (Commonwealth of Australia, 2009) [23.145].

Mental health response for World Youth Day: the Sydney experience

By Katrina Hasleton, Garry Stevens and Penelope Burns, NSW Department of Health and University of Western Sydney.

ABSTRACT

World Youth Day is the largest youth festival in the world and the most recent of these mass gatherings was held in Madrid from August 15-21 2011. While there is comprehensive information regarding the medical management of such events, documented information is lacking regarding their mental health service needs and preparedness. Data from the Sydney event (WYD08) showed that mental health presentations featured in both hospital and on-site medical unit service provision, although at significantly lower rates than for physical health presentations. A range of 'protective' factors including climate, location and pre/intra event mental health advice are likely to have contributed to this outcome. Lessons learned from WYD08 regarding this risk group can be applied to similar large scale events where a significant lead time is available.

Introduction

The Sydney World Youth Day Catholic Festival in July 2008 event attracted 223,000 registered pilgrims, including 113,000 domestic attendees and 110,000 international visitors from 170 nations; making WYD08 the largest event ever hosted in Australia.[1,2] An estimated 400,000 people attended the final mass, and over 500,000 viewed the Papal "boat-a-cade" and motorcade held in central Sydney.[2] Pilgrims were accommodated in a variety of settings including homestay, school and church halls and gymnasiums and at Sydney Olympic Park.

Important variables affecting medical presentations at mass gatherings include weather, event type, age, crowd mood and density, and event duration.[3] While there is now comprehensive information regarding medical and public health management of WYD events and other religious mass gatherings,[3-7] there remains a paucity of documented information regarding mental health needs and response requirements for such events. Given that an estimated one million pilgrims attended the recent World Youth Day 2011 in Madrid, an event marked by heatwave conditions[8] this continues to represent an important gap in our event preparedness knowledge.

The aim of this paper is to assist future preparedness by 1) detailing the mental health planning and response elements of a World Youth Day event; WYD08 and 2) examining indicative data of mental health presentations and their management during such an event.

Mental health planning and preparation

Senior NSW Health mental health officers worked with health and emergency service personnel in the eighteen months leading up to World Youth Day and joined the WYD08 Health Steering Committee, convened by the State Health Services Functional Area Coordinator (HSFAC).

Risk Assessment

A background literature search was conducted regarding mental health needs relating to religious mass gatherings, and related health needs and preparedness. There is evidence that higher temperatures and major changes in temperature are associated with increases in range of medical presentations.[3] This can be heightened when there is lack of access to water or people deliberately restrict fluid intake due to a lack of toileting facilities or for other reasons.[9,10] However, little specific information could be found regarding mental health needs and service presentations in these contexts. Useful information was gathered through communication with senior public health officials involved in the planning for WYD02 in Toronto. The experience in Toronto indicated that significant impacts on mental health services may be associated with this event. These are thought to have resulted, in part, from hot weather conditions, large crowds, pressure on available facilities (toilets, rubbish collection etc.) and the nature of the event itself, which resulted in some attendees feeling overwhelmed. (Dr Bonnie Henry, British Columbia Centre for Disease Control).

Papal "boat-a-cade". Water transport formed part of the Pope's journey to the final mass.

Heat related illness did not feature in Sydney because WYD08 occurred during winter. Cold conditions were anticipated for the estimated 300,000 pilgrims who would take part in the overnight vigil ('sleepout') prior to the final mass and significant preparation was undertaken for this. The long distances people would need to travel to Australia, notably from Europe and North America and the limited social support that might be available, were considered to be potential risk factors. However, it is also possible that those most vulnerable to mental health problems were less likely to attend due to such factors.

At the individual level, specific concerns were raised regarding potential presentations of so-called 'Jerusalem syndrome', a spectrum of conditions characterised by the development or exacerbation of religious delusions in vulnerable individuals during such events. Such conditions were first documented and treated in Jerusalem in the early 1980's and most commonly affect out-of-region individuals on religious pilgrimages.[11]

Concerns were also raised regarding the potential emergence of crowd anxiety phenomena or 'epidemic hysteria'. Typically, such episodes are triggered within groups by sudden exposure to an anxiety-causing agent, such as an innocuous gas or food-poisoning rumours. Terrorism-related themes have also increased since the September 11 attacks, including fears associated with chemical and biological agents.[12] While there are no known associations with religious festivals per se, there is some evidence that younger people may be more susceptible to such phenomena.[13] To address this, a section on mass hysteria was prepared for the WYD08 Health Risk Assessment and information prepared for field workers. This reinforced the need for; surveillance/ intelligence gathering about possible misinformation or perceptions regarding 'ambiguous' events; crowd control systems and procedures, and clear and frequently updated information and reassurance from authority figures, to address concerns early and forestall any outbreak of anxiety or panic.

FIGURE 1. Mental health information for accommodation supervisors.

WYDCA

MENTAL HEALTH

Background: Some people may feel overwhelmed at times due to the impact of the events that will be occurring during WYD08. It is important to understand that increased levels of stress and anxiety are not uncommon and not a sign of personal weakness.

People who use the support of family, friends, church or other support organizations are generally found to recover well from stressful situations. However, there are times when extra support may be needed.

KEY ACTIONS

When to get extra help:

Call the HAC **(or '000' in an emergency)** if a Pilgrim appears to be experiencing any of the following:

- Extreme Distress,
- Fearfulness
- Agitation
- Extremely withdrawn, apathetic, or "shut down"
- Thoughts of harm to themselves or others
- Persistent sleeplessness and lack of appetite

It is better to tell someone even if you are unsure if there is a problem

Positive ways of providing support:

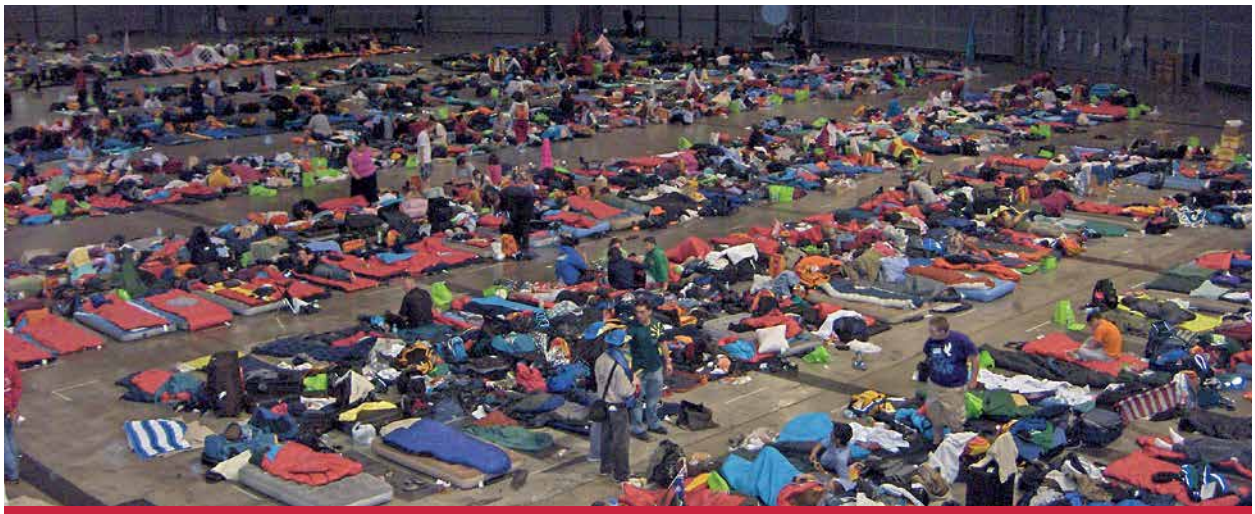
- Provide calm reassurance and comfort
- Practical tasks – focus on tackling jobs that need to be done
- Connect the person with their social supports, family group, church group
- Mental Health services are available 24 hours per day during this event via a special **Mental Health Helpline**. The HAC will put you in touch with Mental Health support if needed.

WHO TO CONTACT if you are concerned about the mental health of a Pilgrim:
Emergency: 000
Non emergency: HAC 8396-5035

New South Wales Government
World Youth Day Coordination Authority

Service planning and resource development

Mental Health planning was well integrated with the rest of the Health and Emergency Response system. Mental Health services at state and Area levels worked closely with other major stakeholders, including close liaison with the then Department of Community Services, which has responsibility for coordinating welfare and personal support services in a disaster.



Pilgrim accommodation at Sydney Olympic Park.

At service level, Area Mental Health Directors planned for an increase in demand on services and the impact of road closures and major events on staff and service provision. Risk management plans were developed that focussed on issues of clinical care, patient safety and management, and the health workforce. In the weeks leading up to and during the event regular teleconferences were convened with mental health directors across NSW to share information and discuss concerns.

Health and safety tips were included in electronic newsletters that were sent to registered pilgrims in the weeks prior to their arrival. This included advice to bring regular medications and prescriptions and, where indicated, a letter from a treating health professional. Health information packs were also developed for supervisors of accommodation sites (see Figure 1). These included a mental health section containing advice on what to expect and suggestions for providing support and assistance, and information about the ambulance Health Access Coordination (HAC) telephone service which was expanded to provide health advice tailored to group leaders and supervisors.

In addition the Disaster Mental Health Helpline was activated for use as a mental health triage and referral system. Staff from the HAC service could put callers in touch with the Mental Health Helpline if required. The HAC line processed 325 calls during WYD08 which greatly assisted early identification of health problems.

As part of event preparedness, an operational assumption was that mental health presentations during WYD08 would include acute stress reactions, somatic complaints, post traumatic symptoms, first-onset psychosis and other conditions with psychotic features and/or exacerbations of pre-existing conditions

Information was prepared to assist medical staff at On-site Medical Units (OMUs) to assess, manage and refer people presenting with mental health problems such as these. This information was developed to be compatible with existing medical protocols and included mental health management principles (see Figure 2). For more serious presentations, clear pathways to inpatient or Emergency Department care were identified, along with the option of emergency mental health care at specialist mental health facilities.

FIGURE 2. Mental health management principles for medical staff

1. Mental health issues arising at WYD events will be managed by consultation with local mental health services or with the State Mental Health Controller or her delegate. Mental health consultation will be available to On-site Medical Units (OMU) by telephone at all times.
2. If a person appears to present significant risk to self or others or to be experiencing symptoms of mental illness they are to be medically assessed at an OMU to determine the interventions required, which may include transport to the nearest designated Emergency Department (ED).
3. If further mental health intervention is not required, the person should be advised to return to their planned activities in the company of a friend, relative or group leader.
4. If there is an influx of mental health presentations to the OMU or if on site mental health consultation is considered to be necessary, mental health personnel will be provided to work with medical staff at the OMU. This will be arranged via consultation with the State Mental Health Controller.

Command, control and coordination

The NSW Health disaster arrangements are set out in NSW HEALTHPLAN (v3.5 December 2009), a supporting plan to the State Disaster Plan (DISPLAN). NSW Healthplan incorporates the five major contributing health service components; Ambulance, Medical services, Public Health, Mental Health and Health information. For each of these components, a controller is designated, reporting to the State Health Services

Functional Area Coordinator (State HSFAC). The Mental Health Controller works closely with other elements of the health response and in close collaboration with relevant government and community response agencies.

In the event of a disaster, under NSW HEALTHPLAN, the State Mental Health Controller is responsible for coordinating the mental health resources that are needed in response to the event as well as ensuring that core mental health services are maintained. During WYD08, the status of NSW HEALTHPLAN was elevated to Standby, in anticipation of impacts across the whole health and emergency system. The Health Services Disaster Control Centre was established, which coordinated the whole-of-health response and liaised with event organisers and other emergency response agencies.

The primary reporting mechanism involved twice daily reports from Area Directors of Mental Health (Area Mental Health Controllers under HEALTHPLAN) to the Mental Health Controller and the Area HSFAC. These were forwarded to the HSDCC and incorporated into twice daily situation reports which detailed the wider health response.

Clinical care pathways

The Area Mental Health Services ran on a 'business as usual' basis with contingency plans in place should there be a significant increase in community demand.

At event sites mental health consultation was available to OMU staff via a single telephone line directed to a mental health clinician. If the decision was made that a patient required further assessment/treatment, ambulance transport to an appropriate Emergency Department could then be arranged. Medical officers at OMU's could also refer non urgent cases to community follow-up.

In the event of a critical incident or an increase in mental health presentations the Mental Health Controller could be contacted to arrange for mental health staff to rapidly attend and work alongside physical health staff at OMU's. Mental health staff were available on standby for such contingencies.

The 24 hour NSW Mental Health Helpline was activated for WYD08 with the number given to the HAC and other responding agencies for assistance with mental health issues as required. This 1800 number is established for use during large scale special events and in response to major incidents or disasters. Mental health professionals briefed for the event provided psychological first aid, risk assessments and referral to mental health services as required.

WYD08 mental health triage/assessment forms were stored in each OMU for documentation of mental health presentations and inclusion in patient medical record files. These forms were designed for the brief recording of presenting problems, relevant history, relevant support and contacts, risk assessment and arrangements for follow up.

The NSW Mental Health Controller participated in daily teleconferences convened by the State HSFAC during WYD08 and was responsible for coordinating the provision of mental health staff to assist at OMUs and advice regarding crowd management issues.

Mental and physical health presentations during WYD08

Physical health presentations

According to data collected by the NSW Health Emergency Management Unit during the event, On-Site Medical Units at major events treated 465 Pilgrims. Approximately 80% of presentations were treated and discharged with 11% requiring transfer to hospital.[6] In addition, there were 508 Pilgrim presentations to Emergency Departments with 84 admissions during the period when major events were occurring.[14] An overnight clinic at Sydney Olympic Park, where 14,000 Pilgrims were accommodated, treated 79 Pilgrims. Two influenza clinics established at this site treated a total of 419 people.[14] Plans were in place to manage expected outbreaks of infectious disease and hypothermia. Re-warming centres were established and pre-event advice given to pilgrims to prepare for winter conditions.[4]

FIGURE 3. Primary medical presentations during WYD08.

On-Site Medical Units[6,14]

- 465 pilgrims treated
- 11% required transfer to hospital
- 419 pilgrims presented at two separate influenza clinics

Emergency Departments[4,14]

- 508 pilgrims treated
- 84 admissions to hospital (17%)
- Pilgrim ED presentations: less acute with less chance of admission than non-pilgrims
- Most common presentations: asthma, infection and lower limb sprain
- Male-to-female ratio: 1:1.7

Mental health presentations

Mental health presentation and response data relating to WYD attendees was captured prospectively and collated daily through Emergency Departments and OMUs in field locations via daily situation reports.

Twenty mental health presentations were reported during WYD08 via these sources (see Table 1).[15] Eleven pilgrims presented to EDs resulting in seven admissions. Nine presented to OMUs with a range of mental health problems, six of which were anxiety related and three with psychotic features. Assessments indicated that all of the OMU presentations involved individuals who had a pre-existing mental health condition. Whilst a small number overall, this does indicate that pre-existing conditions are a risk factor for event-related presentations.

Preparation of an On-site Medical Unit.

In comparative terms, there was a relatively low rate of presenting mental health problems. The medical utilisation rate (MUR) of WYD08 mental health presentations was substantially lower than that of primary medical presentations; at a ratio of approximately 47:1 (see Table 1).

Lessons learned: mental health preparation for future events

Cool but temperate weather; long distances from major source countries; positive crowd mood and highly organised support and accommodation sites were probably all factors contributing to the relatively low number of mental health presentations observed during WYD08. Similarly, the extremely low rate of drug and alcohol related presentation was also a likely 'protective' factor regarding this outcome.[4] Overall, this outcome was in keeping with findings from other religious mass gatherings in other countries.[3] The purpose and demographic features of WYD08 mean that extrapolation of its findings to other events must be done with some caution. There is also considerable variation within WYD events themselves, notably in total crowd numbers and weather conditions.[5,8] However despite these limitations, the current findings provide a useful reference point for the planning of similar events.

Experience has shown that key components of a successful mental health response include i) its comprehensive alignment within the health response, ii) planning to support the continuation of core business throughout the event and iii) working closely with welfare and recovery agencies, and service networks at local levels. Consistent representation at community and interagency meetings helps to allay anxiety about

Table 1. Mental Health presentations and dispositions of WYD08 participants.

Type	Dispositions	Number/Rate
ED Dispositions:	Hospital admission	7
	Referred Community Mental Health (CMH) and GP	1
	Discharge to self-care and supported accommodation	3
	Emergency Department: total presentations	11
OMU Dispositions:	Transfer to tertiary hospital	1
	Referral to G.P.	4
	Referral to CMH and G.P.	1
	Assessed / left before follow-up completed	2
	Self directed to supported accommodation	1
	Onsite Medical Units: total presentations	9
ED/OMU Medical Utilisation	Rate: (registered pilgrims)	223,000
	Mental Health	MUR= 0.9 / 10,000 attendees
	Primary Medical	MUR= 44 / 10,000 attendees[6,14]

potential mental health impacts and strengthens relationships of trust and lines of communication. Much of this work occurs during 'peace time' i.e. as part of an ongoing service planning and event preparation.

Clear, consistent and frequent communication across NSW mental health services and with key elements of the health response were a critical element of the mental health response during WYD08. The specific reporting lines and feedback structures were effective and generally operated as expected. Overall, the inclusion of mental health in health and emergency planning meetings from 18 months prior to WYD08 strengthened its ongoing role in strategic planning for disasters and major events.

Specific initiatives will require further refinement for events of this kind. The Mental Health Helpline and telephone consultancy received very few contacts during WYD08. This may have been due to the specific nature of the event, its high level of background support and possibly the effectiveness of the general health line (HAC) in fielding and directing those with health issues at an early stage. Despite low usage, the Helpline provides an identifiable and centralised point for mental health assessment and referral and should be considered for future events. Similarly, the Mental Health Triage/Assessment form for use at OMUs were underutilised and may require further incorporation with physical data at future events.

WYD08 resulted in very little impact on mental health services with a relatively small number of presentations and no disruption to the overall health system. Importantly, this event provided a good opportunity to assess mental health needs and strengthen operational partnerships with Health and emergency response agencies, in readiness for future major events.

Acknowledgments

The authors wish to thank the Director and staff of the New South Wales Health Emergency Management Unit.

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Australian Government
Attorney-General's Department
Australian Emergency Management Institute

Updating the Australian Emergency Management Handbook/Manual Series

The Australian Emergency Management Institute (AEMI) has developed two new Australian Emergency Management Handbooks – Disaster Health and Community Recovery. These are the first two handbooks in the recently retitled Australian Emergency Management Handbook Series.

The Series has been expanded to improve the alignment with the Council of Australian Governments (COAG) National Strategy for Disaster Resilience (NSDR).

These two Handbooks were developed by national consultative processes involving a range of State and Territory support service agencies and were sponsored by the Attorney-General's Department.

The 'Disaster Health Handbook' updates the previous 'Disaster Medicine Manual' (1999) offering a more comprehensive health approach by incorporating a broader perspective on the disaster health field. A number of case studies have been included to highlight some of the key points.

It should be noted that the Disaster Health Handbook was jointly written by the Attorney-General's Department in cooperation with the Department of Health and Ageing.

The 'Community Recovery Handbook' provides a comprehensive guide to community recovery in Australia and is intended for use by planners, managers and those involved in working with communities to design and deliver recovery processes, services, programs and activities.

Practitioners from any and every field involved in delivering services to the community in non-disaster times may suddenly find themselves recovery workers post-disaster. This handbook provides concepts, knowledge and resources that can increase practitioner confidence, autonomy and innovation. It provides shared grounding in key concepts, theories and practice frameworks in evidence in Australia. Communication of the commonalities and features of particular systems and practices will hopefully enable Australia's communities to better recover after disaster.

Details of the AEMH & M Series are available at www.ema.gov.au

Please note that from January 2012 this website url will change to www.em.gov.au

Australian Emergency Management Handbook Series (2011)

Handbook 1 Disaster Health

Handbook 2 Community Recovery

Please see the information following on these recently published (October 2011) Handbooks.

Australian Emergency Manual Series Principles and Reference (1996-2011)

Manual 2 Australian Emergency Management Arrangements

Manual 3 Australian Emergency Management Glossary

Manual 4 Australian Emergency Management Terms Thesaurus

Manual 18 Community and Personal Support Services

Manual 29 Community Development in Recovery from Disaster

Manual 15 Community Emergency Planning

Manual 27 Disaster Loss Assessment Guidelines

Manual 9 Disaster Medicine – now Disaster Health Handbook 1

Manual 28 Economic and Financial Aspects of Disaster Recovery

Manual 8 Emergency Catering

Manual 1 Emergency Management Concepts and Principles

Manual 23 Emergency Management Planning for Floods Affected by Dams

Manual 5 Emergency Risk Management—Applications Guide

Manual 43 Emergency Planning

Manual 11 Evacuation Planning

Manual 20 Flood Preparedness

Manual 22 Flood Response

Manual 21 Flood Warning

Manual 44 Guidelines for Emergency Management in Culturally and Linguistically Diverse Communities

Manual 25 Guidelines for Psychological Services: Emergency Managers Guide

Manual 26 Guidelines for Psychological Services: Mental Health Practitioners Guide

Manual 45 Guidelines for the Development of Community Education, Awareness and Education Programs

Manual 13 Health Aspects of Chemical, Biological and Radiological Hazards

Manual 6 Implementing Emergency Risk Management—A facilitators guide to working with committees and communities

Manual 42 Managing Exercises

Manual 19 Managing the Floodplain

Manual 17 Multi-Agency Incident Management

Manual 31 Operations Centre Management

Manual 7 Planning Safer Communities—Land Use Planning for Natural Hazards

Manual 14 Post Disaster Survey and Assessment

Manual 10 Recovery – now Community Recovery Handbook 1

Manual 24 Reducing the Community Impact of Landslides

Manual 12 Safe and Healthy Mass Gatherings

Manual 41 Small Group Training Management

Manual 46 Tsunami

Manual 16 Urban Search and Rescue—Capability Guidelines for Structural Collapse

Skills for emergency services personnel series (1989)

Manual 38 Communications

Manual 39 Flood Rescue Boat Operation

Manual 37 Four Wheel Drive Vehicle Operation

Manual 35 General and Disaster Rescue

Manual 33 Land Search Operations (refer to website http://natsar.amsa.gov.au/Manuals/index.asp.)

Manual 32 Leadership

Manual 36 Map Reading and Navigation

Manual 34 Road Rescue

Manual 30 Storm and Water Damage Operations

Manual 40 Vertical Rescue

Handbook 1 - Disaster Health

This edition of the previously named Disaster Medicine Manual has been significantly revised to reflect current thinking about the health aspects of disasters in Australia. It has been designed as a starting point for those interested in disaster health and presents the Australian Government's perspective on disaster health nationally.

A key change to the manual is the new title of "Australian Emergency Management Handbook Disaster Health – Building a disaster resilient Australia". This represents the whole-of-health focus that goes into the prevention of, preparedness for, response to and recovery from disasters in Australia.

The previous title of Disaster Medicine Manual linked with the many clinically orientated aspects of the earlier editions, focused attention on the more medical aspects of disasters, and in particular emphasised the role of doctors and nurses in the response to disasters. It is hoped this new edition of the Handbook has a more comprehensive health approach and incorporates a broader perspective on the disaster health field.

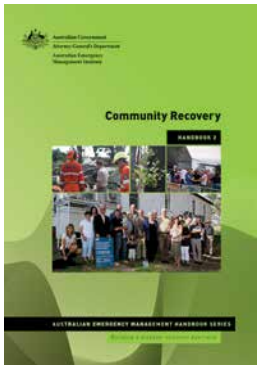
A further strategy of the new Handbook is to refer readers to authoritative resources and relevant sources of additional information whenever possible. Earlier editions have suffered because changes in the field of disaster health occur rapidly, thereby dating the Handbook's contents. It is hoped that by directing readers to appropriate sources it is more likely they can access up-to-date information.

An extensive literature review formed the basis for much of this revised edition's contents. It is important for health policy to be evidence-based wherever possible and the inclusion of references from recent peer-reviewed journals supports the contents of this manual.

A number of case studies have been included in this new edition of the Handbook, using real-life examples to highlight some of the key points from the text. The focusing of disaster health theory around examples from the community will help to set the discussions in their proper context.

Finally, this Handbook was developed in consultation with Australian experts in the field of disaster health, including representatives from each state and territory. With this wealth of experience and variety of viewpoints, a balanced and comprehensive introduction to the subject of disaster health has been developed.

Handbook 2 - Community Recovery



This handbook provides a comprehensive guide to community recovery in Australia. It is intended for use by planners, managers and those involved in working with communities to design and deliver recovery processes, services, programs and activities.

The first edition of this handbook, the Australian Emergency Manual Recovery, was developed in 1996 by a steering committee that represented the range of professions and government and non-government organisations responsible for recovery management and service delivery throughout Australia. The steering committee involved in this third revision, *Australian Emergency Management Handbook Community Recovery – Building a disaster resilient Australia* was supported by the Attorney-General's Department. Over the past decade, many structural changes have occurred in the governance systems and policy development arenas of emergency management and recovery management. Australia wide, recovery management has been incorporated into the Public Safety Training Package, a competency-based qualification, as well as further professional development courses.

The term recovery worker is a generic description. Practitioners from any and every field involved in delivering services to the community in non-disaster times may become recovery workers post-disaster. The issues confronted by individuals and communities, and the knowledge and skills needed to navigate the post-disaster community environment, are considerable. There is a need for shared understandings that can aid discourse among practitioners, policy makers and administrators. Communication of the commonalities and features of particular systems and practices will hopefully enable Australia's communities to better recover after disasters.

Some goals of this handbook are:

- to provide shared grounding in key concepts, theories and practice frameworks in evidence in Australia
- to contribute towards a common language to enable sector-wide discourse
- to provide concepts, knowledge and resources that can increase practitioner confidence, autonomy, innovation, critique and reflective practice.

Many of the essential components of the original publications have been incorporated into this handbook, which has been updated in terms of policy, procedures and professional practice developments. It also addresses community resilience and sustainability considerations. This handbook therefore includes expanded and updated chapters, in particular on community-led recovery, operationalising community recovery and the inclusion of the natural environment.

'Connect!' Workshop

By Katrina Beard, Education Research and Training Team.

Recent disaster events in Australia and internationally have demonstrated the importance of social media, not only in delivering vital information to the community during emergency events but in building relationships during preparedness and recovery.

In 2009, AEMI identified the use of social media in emergency management as a priority for our research agenda and started planning a workshop on social media for early 2011.

During the planning phase of the workshop, the devastating New Zealand earthquakes, the 2010/11 flooding in Queensland and Victoria, and Cyclone Yasi in far north Queensland emphasised the increasing importance of social media for connecting people in disaster events.

In February 2011, the Ministerial Council for Police and Emergency Management – Emergency Management (MCPEM-EM) held an extraordinary meeting to discuss priorities for building the nation's resilience in light of the unprecedented number, severity and scale of natural disaster events over summer.

MCPEM-EM agreed to eleven priorities including:

- convene a forum to consider new and emerging technologies that could be harnessed to assist with preparedness, response and recovery to natural disasters, with an initial focus on floods, and
- give particular attention to the emerging role of social media, as part of the work on communicating with and educating people about risks under the COAG National Strategy for Disaster Resilience (2011).

Workshop participants

The Connect! Workshop was ideally placed to bring people together to share their experiences and to offer a wide perspective on what happened, what worked and in some instances the critical challenges of using new media in disaster events. Presenters included representatives from:

Queensland Police Service

- Cyclone Yasi citizen-driven Facebook page
- Volunteering Queensland
- Green Cross Australia

St John Ambulance

- CFA Victoria
- Bushfire Connect Ushahidi Project
- OESC Victoria

University of Western Sydney

- Yammer Inc
- Telstra
- Attorney General's Dept - NSCDD

During the workshop a live Twitter feed, displayed behind the speakers, ran hot with comments, ideas, and quotes while workshop presentations were Live Streamed on the website.

Emergent themes

Collaboration

A major emphasis during the workshop was social media as a two-way medium. Once an agency starts using social media tools, they will be inviting a dialogue with their communities. For agencies the real challenge will be to move beyond seeing social media as another broadcast tool to recognising that social media invites the community to be partners and collaborators.

Openness

As information is available so rapidly from a wider range of sources, official sources have lost their ability to control information about disaster events. If the speed and granularity of information available from official sources isn't meeting community expectations, they will seek information elsewhere. Agencies will need to either learn to utilise more rapid communications or lose their ability to inform the public.

Empowerment

The rise of digital volunteers, the willingness of communities to share information with the emergency services (and the media), the public use of social networks to self-organise assistance to affected communities, and the ability of communities to help themselves with the use of good, current and local information are driven by access to social media.

Summary

Lively discussions about the potential and challenges of social media in emergency management had most participants agreeing that, while there are certainly risks for organisations, the potential for better engagement, better intelligence, stronger relationships and enhanced disaster resilience, make social media a vital tool across the sector.

Australian Government
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2011 National Emergency Management Volunteers Summit

'The future is in our hands'

The third National Emergency Management Volunteers Summit was held in Canberra on 30 and 31 May 2011. The event was hosted by the Attorney-General's Department, in partnership with the Australian Emergency Management Volunteer Forum, and with the support of the Australian Taxation Office. Approximately four hundred emergency management volunteers, managers and leaders from across Australia attended to collaborate, share experiences, develop strategies and, importantly, to recognise the contribution of emergency management volunteers to Australian communities.

The theme was 'The Future is in our Hands' and concepts explored were Partnerships, Experiences and Solutions. This Summit coincided with the tenth anniversary of the United Nations' International Year of Volunteers and offered an exceptional networking opportunity for delegates, particularly those from remote areas of Australia.

In recognition that many volunteers may have been unable to attend, social networking tools were used throughout the Summit to facilitate online participation. Dedicated pages on Facebook and Twitter provided users with an opportunity to follow the program online, to communicate and share information with others, and to build networks both locally and nationally. This was a first in the history of the Summit, and achieved over 15,000 post views on Facebook and reached over 17,000 people with 658 tweets.

The Summit was officially opened by Her Excellency the Honourable Ms Quentin Bryce AC, Governor-General of the Commonwealth of Australia. The Australian Attorney-General, the Hon Robert McClelland MP, followed and formally commenced proceedings. Keynote speakers explored the past and current state of the sector, identified challenges and suggested strategies for the future.

A volunteer panel discussion saw six representatives from different organisations share their personal volunteering experiences. A similar opportunity was extended to all participants during nine interactive breakout discussions, held concurrently on both days of the Summit. Drawing on personal experiences and

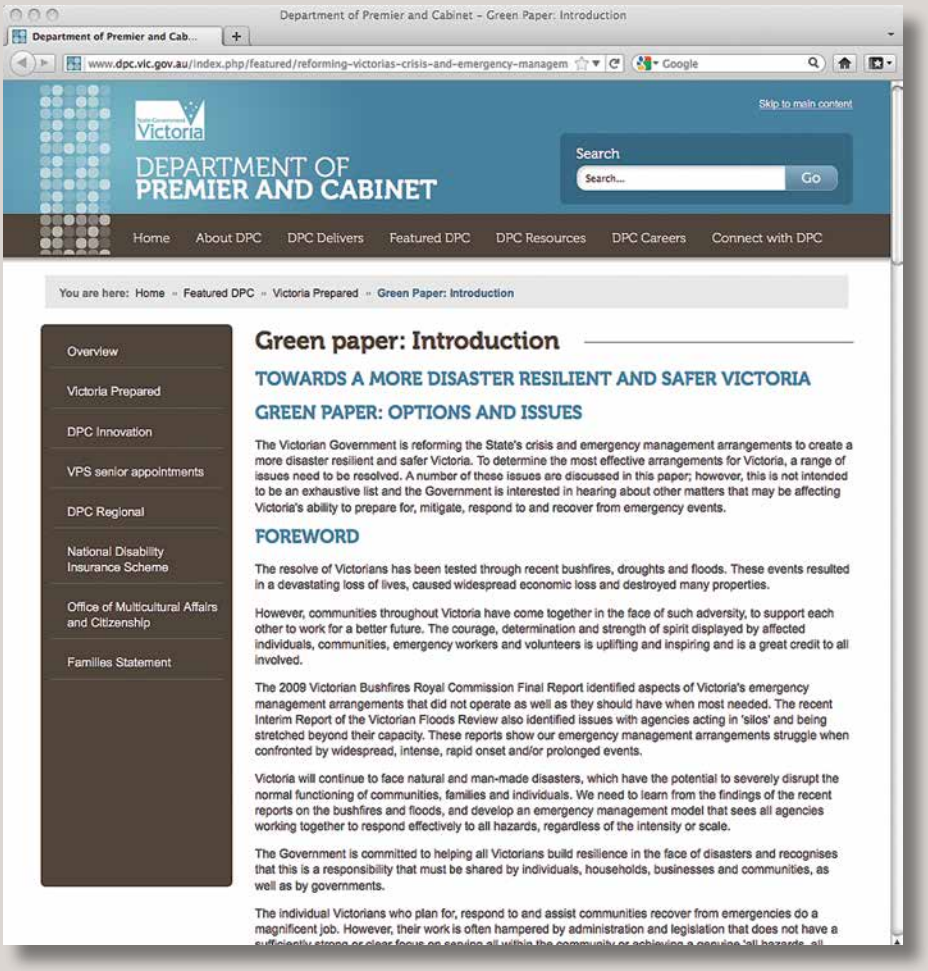
ideas, groups discussed key issues within the sector and debated how to build a stronger emergency management volunteer movement into the future.

As a result of the breakout discussions, key recommendations around the issues of time, cost, recognition, training, people, research, and the role of the Australian Emergency Management Volunteer Forum (AEMVF) were developed. The recommendations will assist individuals, volunteer organisations and agencies, and governments, in building a stronger emergency management volunteer sector and, ultimately, a more resilient Australia.

The Attorney-General's Department would like to particularly thank the AEMVF, the South Australia Fire and Emergency Services Commission and the Department of Community Safety Queensland, for their contributions towards this important event.

A copy of the summary and transcript reports, including recommendations, can be viewed at www.ema.gov.au/volunteers

Interesting Websites:



Towards a More Disaster Resilient and Safer Victoria

Victoria's emergency services are among the best in the world, but like many places, Victoria will continue to face significant emergency risks. Victoria needs a modern 'all-hazards' (both natural and man-made) emergency management system to better prepare Victorians for the future.

As a consequence, The Victorian Government has developed a green paper entitled Towards a More Disaster Resilient and Safer Victoria and it is interested in your views on how Victoria can better prevent, mitigate, respond to and recover from emergencies.

You can share your opinion on the questions and options contained in the Victorian Government's green paper located at this URL:

http://www.dpc.vic.gov.au/index.php/featured/reforming-victorias-crisis-and-emergency-management-framework/green-paper-introduction

Australian Government
Attorney-General's Department
Australian Emergency Management Institute

Pictorial community safety action guides

Building resilient communities

Six pictorial action guides have been developed for culturally and linguistically diverse communities.

Each guide depicts a different hazard and shows through images and clear messages how best to be prepared and act to minimise any adverse effects.

In support of the National Strategy for Disaster Resilience, the guides aim to raise awareness of natural hazards that may occur in Australia and present the information in a meaningful format for those who speak English as a second language.

They are available on the Emergency Management in Australia website, www.ema.gov.au.

Storm Flood Earthquake Cyclone Lightning Heatwave

Project Red

The Centre for Multicultural Youth conducted a consultation with young people from refugee and migrant backgrounds to discuss emergency management volunteering – their awareness and understanding of the roles; interest in, barriers to and opportunities for active participation.

A report is available from the Emergency Management in Australia website, www.ema.gov.au

For further information email: communities@ag.gov.au

Australian Government

Attorney-General's Department

Australian Emergency Management Institute

Australian Emergency Management Institute

The Australian Emergency Management Institute (AEMI) is a Centre of Excellence for education, research and training in the emergency management sector. In support of the COAG National Strategy for Disaster Resilience, 2011 AEMI:

- provides education and training.
- undertakes applied research.
- conducts strategic activities resilience.
- promotes community awareness and resilience.

Advanced Diploma Public Safety v8 Units of Study (AEMI)

- Work in an emergency management context and Build and maintain community relationships
- Develop and use political nous
- Facilitate emergency risk assessment and determine treatment options
- Facilitate emergency planning processes
- Coordinate resources for a multi-agency incident
- Develop and maintain business continuity plans
- Manage recovery functions and services
- Design and manage activities which exercise elements of emergency management
- Establish and review the business continuity management framework and strategies
- Develop and organise public safety awareness programs
- Establish and manage a recovery centre

Upcoming Units of Study

Develop and use political nous 10-12 January 2012

The development and use of political nous assists in navigation and success within the political environment of the public sector. This Unit includes identifying the political terrain, evaluating the political environment, forming alliances, and bargaining and negotiating to achieve outcomes.

Facilitate emergency planning processes 6-9 February 2012

This unit covers the competencies required to collaboratively facilitate the development of new, and the revision of existing, emergency plans by organisations such as: local government; emergency services or government agencies and departments; event organisers; managers of utilities, critical infrastructure or high occupancy buildings; private sector and industries.

For more information on these units of study, and other workshops please visit our website

For further information visit www.ema.gov.au/aemi

email aemi@ag.gov.au or phone 03 5421 5100