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"RENEWAL BY FIRE": PUBLIC VOTE WINNER IN THE 2014 RESILIENT AUSTRALIA AWARDS



ASSESSING SOCIAL
 MEDIA FOR EMERGENCY
 APPLICATION

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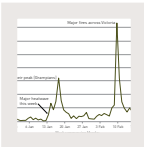


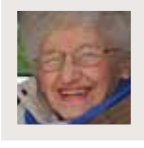
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COVER

'Renewal by Fire', winning photograph in the 2014 Resilient Australia Awards by Emma van der Moezel, depicts the burning of fuels which could be a hazard to communities in the Australian Capital Territory. The fire was a controlled hazard reduction burn by the ACT Rural Fire Service as part of the assessment of the newest fire fighters. More information about this year's national award recipients is on page 58.

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 roles of Emergency Management Australia (EMA) and 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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The Editor-in-Chief of the Journal with responsibility for the Journal's operations and policies is Mark Crossweller, Director-General, Emergency Management Australia.

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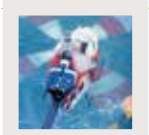
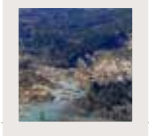
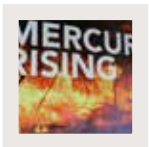
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PUBLICATION DEADLINE

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Foreword

By Chris Moraitis PSM, Secretary, Attorney-General's Department



As incoming Chair of the Australia–New Zealand Emergency Management Committee (ANZEMC), I acknowledge my predecessor, Roger Wilkins AO, for the legacy of successful work to build Australia's disaster resilience. As many would be aware, ANZEMC is a truly national strategic forum that drives the national policy agenda and supports relevant Ministers under the Council of Australian Governments (COAG). It includes representatives from First Ministers and Emergency Management policy agencies from each jurisdiction including the Commonwealth.

Its most significant initiative was undoubtedly the development of *the National Strategy for Disaster Resilience*, which was agreed by COAG in 2011. The strategy is well recognised both domestically and internationally, and represents a fundamental shift in our approach to emergency management.

Over the last four years, ANZEMC has championed the strategy and driven a significant program of work in community engagement, recovery, risk assessment and mitigation, and capability development.

The wide ranging programme of work undertaken by the ANZEMC sub-committees provides valuable insights to inform policy considerations and planning. For example, the Risk Assessment, Measurement

and Mitigation Sub-Committee has developed a nationally agreed risk assessment methodology and is currently evaluating the total economic cost of natural disasters and developing a model to evaluate mitigation projects. The Capability Development Sub-Committee is developing a decision support tool for the ongoing identification of national capability priorities for ANZEMC, and exploring better engagement with the private sector, including overseeing a project to develop coastal shipping emergency response capability. Improvements to the surge capacity of the Triple Zero emergency call service, Emergency Alert warning service, and National Fire Danger Ratings System have also helped to better support and target at-risk communities in times of emergency. The Community Engagement Sub-Committee has developed key messages and a community engagement framework to strengthen community understanding and engagement in building disaster resilience. It has worked to strengthen the attraction and retention of emergency management volunteers and is also examining how community resilience in remote indigenous communities can be enhanced. And finally, the fourth sub-committee, the Recovery Sub-Committee, has undertaken a review of the effectiveness of Commonwealth, state and territory disaster relief and recovery payments and is developing a national impact assessment model to better target recovery assistance. It is also undertaking a community recovery workforce development project.

This work is supported by the Bushfire and Natural Hazards Cooperative Research Centre (BNHCRC), which is delivering an extensive research program, linked-in with jurisdictions and academic institutions.

In 2015, the ANZEMC will focus on reviewing the National Strategy in order to better understand the progress made, and the areas on which we need to focus in the future. The Strategy will continue to provide direction for the emergency management sector on how we can build resilience at the local, state and national level.

In addition to the work being undertaken with our partners, the Attorney-General's Department is also engaged in the Productivity Commission inquiry into natural disaster funding arrangements.

The Productivity Commission's draft report, released in September 2014, outlined that effective planning and mitigation of risks is an essential task for governments, businesses and households. The report noted that governments generally overinvest in post-disaster reconstruction, and underinvest in mitigation that would limit the impact of natural disasters.

The Government is currently considering the Productivity Commission's final report, which was delivered in December 2014. It will be made public when it is tabled in Parliament, within 25 sitting days.

Looking towards the year ahead, the *Third United Nations World Conference on Disaster Risk Reduction*, to be held in Sendai Japan between 14-18 March 2015, will be a valuable opportunity to engage internationally on continuous improvements in disaster reduction.

In this issue of the *Australian Journal of Emergency Management*, I am pleased to note that a number of articles are strongly aligned with our National Strategy.

With a focus on the current theme of the International Day for Disaster Reduction on older people, this edition also examines how vulnerable and aged people in our communities can be better informed and prepared for disasters.

Also included are articles related to social media and the role it can play in emergency management and an assessment of community disaster resilience for small, high-risk communities on the Sunshine Coast in Queensland.

I hope you enjoy this issue of the *Australian Journal of Emergency Management* and wish you and your colleagues a safe summer.

Chris Moraitis PSM

Secretary, Attorney-General's Department

Emergency Management Australia Podcast

Emergency Management Australia produces podcasts covering the latest in emergency management. This includes bushfires, cyclones, earthquakes and tsunamis, as well as complex policy development or program delivery.

Content comes from the emergency management community, including interviews with everyone from the Australian Government Minister for Justice to the volunteers on the ground.

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Episode 7 – looks at Ebola and the use and misuse of drones in firefighting. Dr Gary Lum, specialist medical advisor from the Department of Health gives some insights about the Ebola virus. Richard Alder, General Manager – National Ariel Fire Fighting Centre in Victoria and Superintendent Anthony Ferguson from the New South Wales Rural Fire Service talk about the potential for the use and misuse of drones in the firefighting process.

An Australian contribution to the UNISDR World Conference and the 'Post-2015 Framework for Disaster Risk Reduction'

Nick Ireland, Save the Children, provides context to the review and recommendation role Australia is playing in the lead up to the new post-2015 international disaster risk reduction framework.

Based on international progress and developments to date, including convergence in major UN-led initiatives, 2015-16 is one of the most important periods for decision-making in the areas of development and emergency policies.

The *Millennium Development Goals* (MDGs) is an eight-point plan for meeting the needs of the world's poorest. It comes to an end next year and will be superseded by a new post-2015 plan.¹ The *Hyogo Framework for Action* (HFA), the UN-led 10-year global disaster risk reduction strategy, also ends in 2015. A new global climate agreement under the UN Framework Convention on Climate Change (UNFCCC) will be negotiated in December 2015 and, in 2016, a World Humanitarian Summit will be hosted by the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) in Istanbul with the goal 'to find new ways to tackle humanitarian needs in our fast-changing world'.² Given the convergence in timing and the challenges that have been presented within each strategy, these four mechanisms can inform one another in more explicit ways, including being sequenced in such a way to do so. But perhaps most importantly, there has been growing evidence-supported recognition that development, disasters, climate change, and emergency response are interlinked in either vicious or virtuous circles.

Thankfully, we have moved beyond the notion that disasters are exogenous. We are coming to an understanding that disasters are endogenous in as much as it is human beings and current development pathways that lead to increased human vulnerability. Of course, while hazards are often natural (earthquakes, cyclones, floods, bushfires, and so forth), how individuals, communities or nations are affected by them is directly linked to the following:

- the vulnerabilities created such as building homes or businesses in fire-prone bushlands or cyclone-exposed coasts contributing to vicious cycles, and
- the ability to foresee, plan for, and respond to them through structural and non-structural means (e.g. land-use planning, building codes, investment in early

warning systems, preparedness planning, emergency response and recovery programming), which all contribute to risk reduction and virtuous cycles.

While global processes can seem distant to emergency management in Australia, they are perhaps more interlinked than it might seem. In particular, the HFA is not a framework directed towards the developing world; it is intended for the whole world, rich and poor alike. For example, the vast majority of economic losses due to disaster in 2011 were in Japan, Thailand and New Zealand. The knock-on effects are often global. The 2011 Chao Phraya river floods in Thailand saw a tripling of the price of computer hard drives on the global market (ESCAP and UNISDR 2012).

In Australia, disaster risk reduction developments have followed HFA principles, including in the development of the *National Strategy for Disaster Resilience*. Additionally, there is a wealth of experience and expertise ranging from the institutionalisation of the State Emergency Services, the *National Emergency Risk Assessment Guidelines*, cyclone resilient building codes, bushfire early warning systems, and world-class research. This includes through the funding of the relatively new Bushfire and Natural Hazards Cooperative Research Centre (BNHCRC) and its predecessor, the Bushfire CRC. Through policy, practice and research, this makes Australia well-placed to continue to improve DRR practices nationally while contributing internationally to helping shape pathways to a resilient future.

The task of reviewing and updating the HFA is the responsibility of the UN International Strategy for Disaster Reduction (UNISDR), a UN agency established to drive global risk reduction efforts. This task is, without understatement, a huge one. The stated aim of the new framework, currently being called the 'Post-2015 Framework for Disaster Risk Reduction', is to agree on a new framework that is 'concise, focused, forward-looking and action-orientated'.³ There are two key underlying components to this work. Firstly, guiding questions centre around looking back at what has been done, what has worked and what lessons have been learnt. These policy-practice-research assessments and reviews will be published in a book alongside the

1 United Nations Economic and Social Council (ECOSOC). At: www.un.org/en/ecosoc/about/mdg.shtml.

2 World Humanitarian Summit. At: www.worldhumanitariansummit.org/.

3 United Nations General Assembly, October 2014, Post-2015 framework for disaster risk reduction, Zero draft submitted by the Co-Chairs of the Preparatory Committee. At: www.wcdrr.org/preparatory/post2015.

2015 Global Assessment Report (GAR15) and are based on reviewing progress against the HFA indicators, each linked to five Priorities for Action, that have been in place for 10 years. These papers provide recommendations for the next framework based on the scientific, policy and practice evidence collected during this period.

The second part of the HFA review looks at what needs to be done to respond to the emerging challenges of today and projecting the needs for the future. This has been guided by a series of consultations dating back to 2013 involving a cross-section of academics, practitioners and policy makers. Of course both the work looking back and the projections for the future are interlinked.

Australia is formally represented in the Post-2015 Framework for the Disaster Risk Reduction dialogue through the Attorney-General's Department with the support of the Department for Foreign Affairs and Trade, which combines overseas experience and expertise. However Australian input has and continues to be broader since academics and practitioners engage in multiple aspects of this large and complex process. This includes providing input papers to the GAR indicator review process and highlighting progress in Australia made against the HFA priorities for action (such as Dufty 2014a, b, Ronan *et al.* 2014). Australian non-government organisations (NGOs) provide input to the Australian Government consultations both individually as well as through the Australian Council for International Development, the peak body for Australian-based NGOs. In addition, Australian universities have taken lead authorship roles of policy-practice-research assessments and reviews in important HFA Priority Area Core Indicator areas through summary 'background chapters' that will accompany the GAR15 report. The BNHCRC has been named by the UN Integrated Research on Disaster Risk (IRDR) Program as the IRDR national committee for Australia. Thus, IRDR meetings in London and Paris are a prelude to the second of two post-2015 framework planning meetings at the UN in Geneva, called PrepCom2.

It is important to recognise that the establishment of the HFA has greatly contributed to progress in making individuals, communities and nations safer in a hazardous world. This includes a significant worldwide reduction in deaths in storm-related disasters (UNISDR 2011, 2012) and many other indicators of progress. It is equally important to understand that disasters continue to have significant economic impacts on rich and poor countries alike and that future projections point towards an unavoidable increase in disaster events. Therefore, against the backdrop of the many developments, the Post-2015 Framework for Disaster Risk Reduction should be welcomed but its success not taken for granted as considerable investments are still needed to keep ahead of increasing risk domestically and internationally.

Australia has the ability to punch above its weight on the global stage demonstrating significant developments in research, policy and practice. Given the nexus between DRR policy, practice and research, the Bushfire CRC, and now the BNHCRC, is an international exemplar in bringing together those in

each of these areas quite explicitly. We should continue to share such developments with others and keep our horizons broad, both for our needs domestically as we also try to contribute on the international stage.

The following section has summaries of two of the formal background papers reviewing progress towards *including disaster risks concepts into school curriculum and training programs* and *informing populations about disaster risk*. The third paper is an example of an input paper which examines the adoption of social media platforms for disaster risk reduction awareness campaigns which contributed to the finding of the paper on informing populations about disaster risk. As Australians continue to learn to co-exist with fire and the many other hazards that threaten our communities, the lessons we have learnt on public awareness and integrating DRR into curricular globally can and should assist us here with pathways for improving on our own policy, practice and research. These background papers and their associated input papers are good examples of where stocktaking on global progress toward HFA indicators provide us with an increased body of evidence which if used, can contribute towards making Australia a safer place.

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About the author

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Progress made with school curricula, education material and relevant training in disaster risk reduction and recovery concepts and practices

Professor Kevin Ronan, University of Central Queensland, summarises the findings of research into the progress of including disaster risks concepts into school curriculum and training programs.

The promise of initiatives aimed at children and youth is the subject of a Background Chapter authored by an Australian/New Zealand team (Ronan 2014), following an Input Paper from the larger research team (Ronan *et al.* 2014). The Chapter and Input Paper documented both progress and challenges related to the HFA Priority for Action 3, Core Indicator 2, being 'School curricula, education material and relevant training include disaster risk reduction and recovery concepts and practices'.

One thing that research and desk review, policy analysis and wide consultation with national and international actors confirmed clearly was that the HFA process has stimulated a tremendous amount of progress globally, including in Australia and New Zealand. For this Core Indicator specifically, documented progress has been achieved across all major areas; policy and implementation, curriculum and training, and research and evaluation. The advances documented are worth celebrating and also provide a platform for enhanced gains in the next 20 years in the post-2015 DRR framework. Examples of changes across the HFA include:

1. Well over half of reporting countries report DRR being included in their national curriculum at one or more levels (primary, secondary, university, professional programs).
2. Progress has been made on the indicator rating, currently at a 3.3 out of a possible score of 5 for the 146 countries reporting.
3. There is increased prominence of DRR curriculum and training in national policy across an increasing number of countries.
4. There is development and guidance related to curriculum frameworks e.g. Technical Guidance document (UNESCO/UNICEF 2013).
5. There is a promising development of the Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector (GADRRRES) through the development of a whole-of-school framework and related sets of indicators being:
 - Comprehensive School Safety models (GADRRRES) which is based on 3 pillars of complementary action: Pillar 1 Safe Learning Facilities; Pillar 2 School Disaster Management; Pillar 3 Risk Reduction and Resilience Education

- CSS and its 3 Pillars and a hierarchical set of proposed indicators, and
 - incorporating a strengths focus, including a resilience metaphor, to accompany a risk reduction ethos.
6. The increased proliferation of DRR in school curriculum in many countries (UNESCO/UNICEF 2012):
 - While these tend to be project-focused, they have potential through the use of, in the words of one key stakeholder consulted, 'basic project management wisdom' that moves them from project-based and time-limited to explicit steps towards longer-term, wide-reach, sustainable implementation.
 - Progress also includes a much increased number of DRR subject matter in education materials available at PreventionWeb¹.
 7. There has been an increase in research and theory, including:
 - published evaluations of CC-DRR education programs have increased 36-fold since 2000. Those that use pre-post designs have typically found positive changes in knowledge, risk perceptions, child and family interactions, and DRR/preparedness activities (as reported by both children and parents), reductions in children's disaster-related fears and other risk reduction and resilience-enhancing improvements, and
 - other developments in research and theory development have occurred through other means, including an increase in masters- and doctoral-level training programs and resultant theses produced, and through other literature, including scholarly products promoting research, practice, theory development (e.g. Ronan & Johnston 2005²).
 8. Attempts at larger scale implementation of features of DRR curricula/CSS initiatives (e.g. New Zealand, a primary school all hazards program, 'What's

1 PreventionWeb. At: www.unisdr.org/we/inform/preventionweb.

2 Volume 2 of this book is currently in the planning stages with the publisher.

the Plan, Stan?'), Turkey (DREAMS project), and attempts at larger-reach teacher training (e.g. Turkey DREAMS project, Australian Aid program-funded DRR in education programs in Laos PDR using School Disaster Management teacher training material disseminated through DVDs).

Challenges ahead

The many developments to date predict future developments.³ However, promise is still yet to be realised in a number of important areas. While these represent significant challenges, progress is more likely with increased relationships and co-operation across the sector, including UN-level, NGOs, universities, national, sub-national, and local levels. Drawing together input from across sources for this GAR15 Background Chapter (Ronan 2014), three major fronts are signalled as major priorities. These are:

- Promoting integrated, participatory, experientially-based DRR/CCA curricula, within a CSS framework, engaged by and custom-fitted to local cultures and communities, delivered at scale by systematically trained and capable teachers.
- Ensuring teachers are capable of producing documented outcomes across a range of indicators including primary/ultimate outcomes (life savings, reducing injury, improved psychosocial outcomes and longer-term resilience indicators) and secondary/instrumental outcomes (resiliency indicators, risk reduction competency indicators, safe school/school disaster/risk management outcome indicators). While there are over 35 studies published [see review of first 35 studies published by Johnson *et al.* 2014 and a recent study by Webb & Ronan 2014], most, in the past 15 years that document DRR-related impacts, have been limited to short-term impacts. Research that uses time-series and prospective designs are needed.
- Moving beyond the type of time-limited demonstration/research projects typically carried out by singular universities and agencies (Johnson *et al.* 2014, reviews of international, mainly agency-based case examples by UNESCO/UNICEF 2012, larger compendium of case studies listed in Ronan 2014) to those that inculcate a longer-term vision and set of concrete mechanisms that are 'custom-fitted' to a particular country and its political, policy and local contexts. These involve bottom-up and top-down mechanisms and involve more co-operation across the policy-practice-research sectors. Ones that are capable of effectively translating evidence-supported guidelines and principles into 'on the ground' disaster-resilience education and related programs that can be progressively implemented within a crowded curriculum and policy context. Projects themselves are a vital part of this process but their utility must be considered and framed differently. For example, one way is using projects

as part of a 'piloting stage' in the context of a larger multi-actor vision, and plan, for scaled, staged, sustainable implementation.

A number of other challenges and issues are documented in the Background Chapter (Ronan 2014) in policy and implementation, DRR curriculum practice and training, and research and evaluation. The Chapter is available from the author (k.ronan@cqu.edu.au).

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About the author

Kevin R. Ronan is currently a Professorial Research Fellow in Psychology and Chair in Clinical Psychology, School of Health, Human and Social Sciences at CQUniversity Australia. He is also Chair of the Disaster Reference Group of the Australian Psychological Society. He is leading a 3-year project funded by the BNHCRC to evaluate best practice in child-centred disaster risk reduction. In addition to a focus on the prevention and preparedness phase, his practice, research and policy advocacy also includes work in the response and recovery phases, including research and on-the-ground training and practice after local disasters (e.g. Queensland floods and cyclone in 2010-11 and Bundaberg floods in 2013).

³ A well-known maxim based on much research in psychology and related areas is 'the best predictor of future behaviour is past behaviour'.

Progress made with public awareness-raising activities aimed at building both rural and urban disaster resilience

Professor John Handmer and Dr Briony Towers, RMIT, summarise the findings of research into informing populations about disaster risk.

Informing the general population about disaster risk is addressed in Priority 3, Indicator 4 of the *Hyogo Framework for Action* (HFA), which states: 'Countrywide public awareness strategy exists to stimulate a culture of disaster resilience, with outreach to urban and rural communities'. The Chapter examining this HFA indicator was drafted by an Australian team led by Dr Briony Towers, drawing on a number of input papers prepared by a wide range of people and organisations from many countries, and the global literature (Towers, Handmer & Ireland 2014).

As specified by the HFA monitoring and review process (UNISDR 2011) the key question for this indicator is: do public education campaigns for risk-prone communities and local authorities include disaster risk? There are also three means of verification by which this question is to be assessed, namely:

1. public education campaigns for enhanced awareness of risk
2. training of local government, and
3. availability of information on DRR practices at the community level.

The UNISDR (2011) defines public awareness as:

'The process of informing the general population, increasing levels of consciousness about risks and how people can act to reduce their exposure to hazards.'
UNISDR 2001

The aim of raising 'consciousness' (awareness and knowledge) is directed at the goal of reduced risk. While assessments generally focus on governments, and international organisations, given their responsibility for implementing the HFA, disaster risk is more often reduced through the actions of informed and empowered citizens (Wisner 2006).

There are four major ways the public learns about disaster risk. These are via:

- media campaigns
- participatory learning
- formal school-based interventions, and
- informal education (IFRC 2011).

Positive change worldwide

Worldwide there has been a surge in disaster risk reduction related awareness and knowledge education programs targeted to a diverse range of audiences, and there is evidence that disaster awareness has increased. Official programs are however only part of the picture and it important to keep this in mind as the formal assessment generally misses such informal efforts that could be highly effective.

This is an important achievement. However, has all this activity stimulated a 'culture of disaster resilience?' The answer to this question is not clear, but it appears that so far the effects have been limited. Any statement on progress needs qualification because the difficulty in measuring success characterises the field.

Examples of success include:

- Traditional media – the use of community radio for message dissemination, discussion and engagement, particularly in rural areas in Africa and Asia. While community radio has been emphasised, the medium can be used to engage people country-wide.
- New media – there is hugely enhanced communication between people and with crowdsourcing of information, this is generally seen as a game changer.
- Community-based DRR – has been shown to be an effective way of engaging people. The *Bangladesh National Plan for Disaster Management* pays special attention to community-based DRR including the provision of funding.
- Less formal programs – include the Californian initiated (and now global) 'Great Shakeout' campaign for earthquake preparedness aimed at increasing participation in drills, and TV DRR-themed soap operas that particularly engage women in Latin America (including the Caribbean) and Asia (IFRC 2011).
- Of the 100 reporting countries, 80 are training local governments in DRR, with communities of practice linking expertise and isolated officials to encourage good practice (FEMA 2014).

Challenges

Even though much progress has been made, a number of major challenges to achieving the HFA aims remain. Some are of long standing, while others such as that posed by social media, are emerging. A selection of five challenges is presented here.

1. The fundamental challenge has been highlighted: how to move from a relatively passive awareness and knowledge to being proactive in building resilience. This is likely to require a shift from current mainstream approaches to disaster awareness to incorporating resilience activity into mainstream development and day-to-day life. To achieve this, attention needs to go to informal and participatory learning as well as to the design of mass media programs. Even though there are many government-run hazard and disaster awareness programs, much important and relevant information needed by people and local organisations remains inaccessible. There is much rhetoric on information access, but limited action in some jurisdictions with concerns over legal liability, privacy, cost and maintenance.
2. Social inclusion in national DRR policies remains elusive with general agreement that policies are not engaging vulnerable and marginalised people in the development of disaster resilience (GNDR 2011 2015). For example, only six of 62 government statements to the Global Platform for DRR mention gender as an issue, and only 11 of 40 HFA 2013 National Progress reports discuss vulnerability and capacity by gender (Masson & Langdon 2014). Inclusion needs to extend to children and youth, in particular through child-centred DRR, to the elderly, to lower socio-economic groups, including the approximately one billion people living in informal settlements that are often located in high hazard areas, and to those with disabilities.
3. Participatory approaches are related to issues of inclusion and partnerships. Top-down approaches continue to dominate despite their limited success. Some of this effort needs shifting to partnerships between governments, communities, NGOs and faith organisations partnerships, and to harnessing existing and emerging networks. Worldwide over 80 per cent of people are religiously affiliated (Pew Research 2012).
4. The use of contemporary social media and the emergence of 'near universal connectivity between people and places, pose increasing challenges as people live, work and visit far from locations they are familiar with, and maintain strong and often day to day connections with those far away. However, the rise in global connectivity and the associated social media offer new and exciting opportunities for learning' (VINCK 2013). One challenge is that information can now flow in every direction, for example through crowdsourcing, and much can come from international sources. Even though most people are using internet and mobile technologies, many are not, and a complementary challenge is to ensure their inclusion.

5. Monitoring and evaluation are fundamental to improvement and evolution in the field. These need to deal both with the details of a program or campaign, as well as ask whether the whole approach needs fundamental change. At present there is considerable activity at the detailed level, but little looking more broadly. Closely related to the issue of evaluation and a weakness is the question of what success should look like.

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The use of social media in countrywide disaster risk reduction public awareness strategies

Neil Dufty summarises the findings of research into the adoption of social media platforms for disaster risk reduction awareness campaigns. 

ABSTRACT

Social media has been used extensively in recent disasters by emergency managers particularly to warn people and help in the co-ordination of response and recovery. However, its use in disaster prevention and preparedness is less understood. This article examines the use of social media in disaster risk reduction (DRR) awareness strategies around the world through a literature review and expert opinion. It concludes that it is generally underutilised in major DRR awareness strategies, although there are robust programs operating in some countries with high social media use.

Introduction

Social media has become part of everyday life around the world. There are numerous definitions of social media in the literature all of which acknowledge its ability to create and enable information exchange. For example, Gupta and Brooks (2013) define social media as:

'All the devices and platforms that allow users globally to virtually create and share information with each other. "Platforms" are the virtual spaces that allow users to come together, and create and share information. "Devices" are the computing technologies that enable users to access the platform.' (Gupta and Brooks 2013, p. 18)

Unlike traditional media such as newspapers, social media manages the content of the conversation or interaction in the online environment and allows for spontaneous two-way and multiple dialogue. As Keim and Noji (2011) state:

'social media rely on peer-to-peer (P2P) networks that are collaborative, decentralised and community driven. They transform people from content consumers into content producers.' (Keim & Noji 2011)

Social media include blogs, discussion forums, chat rooms, wikis, apps, YouTube, Channels, LinkedIn, Facebook, and Twitter. Also, all crowdsourcing

platforms are, by definition, social media platforms. Crowdsourcing is:

'The act of sourcing media from the crowd. It involves incentivizing users through a variety of means to provide the platform owners and others with intelligence and solutions.' (Gupta & Brooks 2013, p. 27)

Social media emerged out of the Web 2.0 revolution, which was a set of features and applications that promoted interoperability, sharing, and multiple-way communication. Social media existed before Facebook in the form of MySpace and other platforms, but greatly expanded after 2004 when Facebook was launched.

One in four people on Earth has started using some form of social media regularly (eMarketer 2013). Facebook was by far the most popular social media site as at 2013 with over 800 million users worldwide. Twitter (the fastest growing social media platform) was second with over 220 million users worldwide, then LinkedIn (100 million) and MySpace (80 million).

Social media and emergency preparedness

Social media has been used extensively in recent disasters by emergency managers, those people affected and those others wanting more information. It has been particularly used to warn people and help in the co-ordination of response and recovery.

Due to its recent emergence, social media has only had widespread use in emergency warning, response and recovery since 2010. It has played an important role during and after major disasters such as the 2010 Haiti earthquake (Yates & Paquette 2011), 2011 Queensland floods in Australia (Bruns *et al.* 2012), 2011 Christchurch earthquake in New Zealand (Bruns & Burgess 2012), 2011 Japan earthquake and tsunami (Hjorth & Kim 2011), 2012 Hurricane Sandy (Lotan 2012) and Typhoon Haiyan that hit the Philippines in 2013.

Several books have been written on the topic of social media and emergency management including by White (2012), Crowe (2012) and Gupta and Brooks (2013).

Most emergency agencies around the world now use social media alongside traditional media (e.g. newspapers, television, community meetings) to

communicate for warning, response and recovery. According to White (2012):

'Emergency management, on all levels and in all types of organizations, use social media....Each of these groups has a different set of goals and objectives where social media is leveraged as a set of solutions to fit the needs of that particular group.' (White 2012, p. 9)

Emergency managers and other interested people and organisations have banded together to form worldwide social media communities of practice to share ideas and learnings about using social media for disasters¹. Teams of emergency managers and volunteers from around the world have joined together to provide social media services during and after disasters. These teams, known as Virtual Operations Support Teams (VOSTs):

'make use of new communication technologies and social media tools so that a team of trusted agents can lend support via the internet to those on-site who may otherwise be overwhelmed by the volume of data generated during a disaster.' (Reuter 2012)

Of particular note is the use of social media in mapping to provide humanitarian rescue and relief.

'Crisis-mapping technology has emerged in the past five years as a tool to help humanitarian organizations deliver assistance to victims of civil conflicts and natural disasters. Crisis-mapping platforms display eyewitness reports submitted via e-mail, text message, and social media. The reports are then plotted on interactive maps, creating a geospatial record of events in real time.' (Meier 2013)

Social media has been extensively used for warning, response and recovery in recent disasters, however, this paper examines the current use of social media in countrywide public awareness strategies that are implemented prior to disasters for prevention and preparedness.

Methodology

The review used three methods to scope and identify current examples of countrywide DRR public awareness strategies that use social media:

1. A literature search using the internet for peer-reviewed papers, reports and appropriate websites.
2. Requests for examples sent by email to over 30 experts in social media and emergency management from around the world.
3. Requests for examples sent to the #smem (social media for emergency management) community of practice on Twitter.

The examples were analysed for their 'value' using measures such as DRR awareness messages, usage rates and ease of integration with other media.

Findings

The research identified numerous examples of social media being used in countrywide DRR awareness strategies from around the world.

Philippines (example: iCOMMIT)

There are about 30 million Facebook users and six million Twitter users in the Philippines. In late 2012, a social media campaign aimed at encouraging the public to help reduce the risks posed by disasters was launched (Romero 2012). The iCOMMIT campaign aims to raise awareness and encourage action through sharing of views on how people can build safer communities.

Indonesia (examples: Humanitarian OpenStreetMap, Build Back Better)

Of Indonesia's 240 million people, there are some 61 million internet users, many of whom access online content using mobile phones. According to Paris-based analyst group Semiocast, Indonesia was home to 29.4 million users of Twitter in July 2012, and more than two per cent of all Tweets posted across the world in June 2012 came from the Indonesian capital Jakarta. Facebook has 64 million active users in Indonesia, making it one of the largest Facebooking countries in the world (IRIN 2013).

There has been several DRR awareness campaigns conducted across Indonesia in the past few years using the large social media population.

- The Humanitarian OpenStreetMap (HOT) launched a project in Indonesia to create a free world map built entirely by volunteers with satellite technology to reduce community disaster risks.
- The *Build Back Better* campaign aimed to change behaviour by convincing householders to make informed decisions about the need for earthquake-resilient housing. The online campaign uses the internet and social media to spread the information nationally, reaching many more Indonesians in vulnerable regions across the country. (Australia-Indonesia Facility for Disaster Reduction 2012)

United States (example: Ready Campaign)

Launched in February 2003, *Ready* is a national public service advertising campaign designed to educate and empower Americans to prepare for and respond to emergencies including natural and man-made disasters. The goal of the campaign is to get the public involved and ultimately to increase the level of basic preparedness across the nation.

In recent years, *Ready* has also been disseminated through social media as well as more traditional means with a presence on Twitter, Facebook and YouTube. It also has a blog and a FEMA Social Hub where it features current relevant social media conversations.

¹ Social Media 4 Emergency Management. At: www.sm4em.org.

A related countrywide campaign is *America's PrepareAthon!*², which is a grassroots campaign for action to increase community emergency preparedness and resilience through hazard-specific drills, group discussions, and exercises, and has a strong social media presence. Throughout the year, it helps communities and individuals across the country to practise preparedness actions before an emergency strikes.

The U.S. National Preparedness Community is an online community of people who view preparedness as a shared responsibility. After signing up and creating a password account, members collaborate in online discussions with peers from different communities of practice, join regional groups, participate in national preparedness discussions, and get updates from FEMA and emergency management personnel. The community is open and free to anyone who wishes to join. When people register for *America's PrepareAthon!* and create their password, they automatically become part of the National Preparedness Community and can participate in all available on-line discussions.

United Kingdom (examples: Flood Group UK, Flood Awareness Wales)

With about 5.4 million properties in the UK at risk of flooding, there are several countrywide DRR awareness strategies relating to flooding. Flood Group UK is a Facebook page established essentially for people who have been flooded or are at risk of being flooded. It contains information to help them prepare for and recover from a flood. It is also a place where they can share their experiences of flooding.

One in six properties in Wales is at risk of flooding. The Environment Agency's *Flood Awareness Wales* campaign encourages communities to develop community flood plans and individuals to prepare flood kits. People can ascertain their flood risks via the *Flood Awareness Wales* website. Latest news about the campaign is disseminated through social media including Twitter and Facebook. People can also sign up for Flood Alerts on Facebook.

Australia (example: Victoria Summer Fire Campaign)

In Australia most of the DRR awareness campaigns are delivered by state and territory emergency agencies. There are some excellent examples of government and non-government organisations programs that include social media such as *Get Ready Queensland* (Queensland Government) and *Harden Up* (Green Cross Australia). Some programs such as *FloodSafe* and *StormSafe* are used across several jurisdictions.

The Victorian Government implements a state-wide Summer Fire Campaign that commences in November and finishes in February or March each year depending on the length of the fire season. The campaign includes the use of digital information channels (the

FireReady app and VicEmergency website), social media (Twitter/Facebook) and advertisements on TV, radio, newspapers and digital channels encouraging people to leave early if fire threatens. The campaign is co-ordinated by the Department of Justice on behalf of several agencies including the Country Fire Authority (CFA), Victoria Police, Department of Environment and Primary Industries, Victoria State Emergency Service, and the Metropolitan Fire Brigade.

Messages are rolled out through social media channels. There are 367 000 people who receive campaign messages by following the CFA Facebook page and Twitter feed. Messages are also delivered via the social media channels of Victorian Government departments and agencies as well as campaign partners including the Australian Football League Players Association, Melbourne Heart soccer club, Cricket Victoria and the Melbourne Renegades T20 team, as well as cross-denominational religious organisations. An indication of the interest in fires is found in Figure 1 that shows the number of total social media posts related to fire across the 2013-14 fire season in Victoria.

Summary of findings

From these case studies and other examples located, the following observations are made in terms of the nature and value of countrywide DRR public awareness strategies that use social media:

- Other than the case studies noted, there were numerous government agencies and non-government organisations using Facebook and Twitter (as part of countrywide DRR public awareness strategies) to encourage people to develop an emergency plan for preparedness. Some also gave practical advice on preparing an emergency kit.
- As shown in the case studies, social media was either used as the sole method of dissemination (e.g. iCOMMIT) or in conjunction with traditional media.
- Social media was used for DRR public awareness strategies across a range of hazards including tsunamis, earthquakes, flood, bushfires/wildfires and for cross-hazard disaster resilience.
- Social media was used understandably in those countries with high internet and social media usage rates such as the Philippines, Indonesia, United States, United Kingdom and Australia. There were several major countrywide DRR public awareness strategies identified, particularly in African and South American countries, that did not use social media (possibly due to relatively low social media usage rates).

Several of the experts responded to research requests saying they believed there is far more interest and activity by emergency agencies in the use of social media in response and recovery, than in DRR. They supported the need for more effort in using social media across all components of the disaster cycle.

² A detailed article on *America's PrepareAthon!* was published in the *Australian Journal of Emergency Management*, vol 29, no. 4, pp. 52-52.

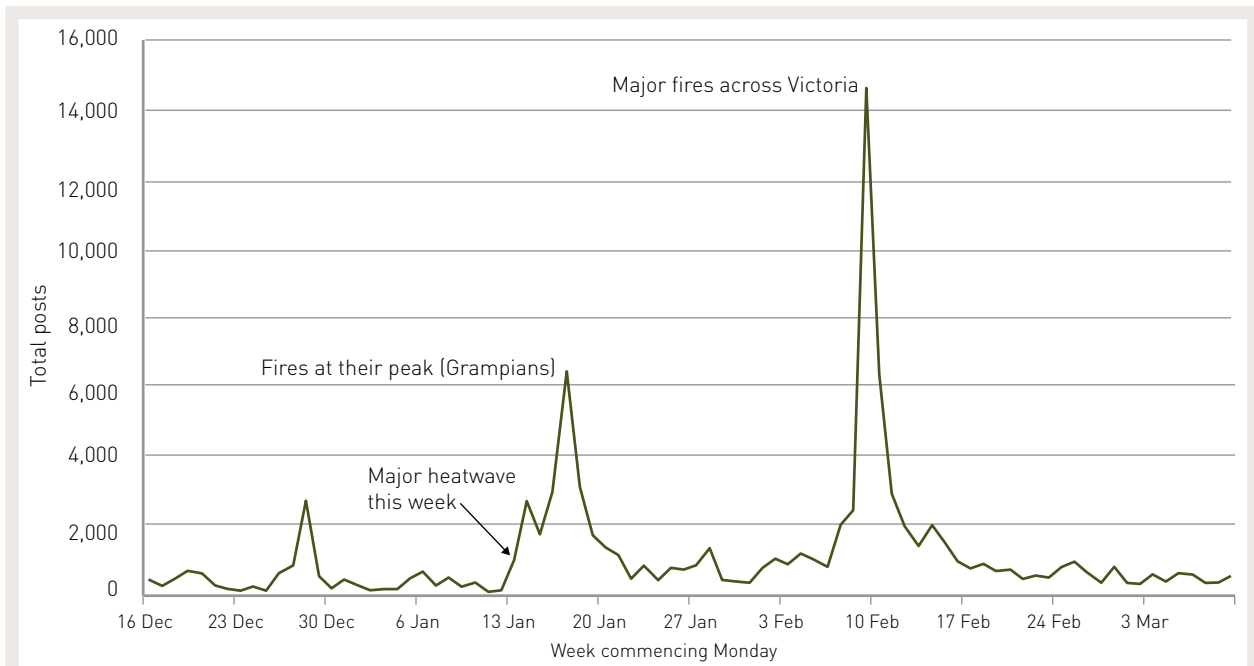


Figure 1: Social media posts on the topic of fire over 2013-14 Victoria, Australia fire season.

Discussion

There are some issues emanating from this research that warrant discussion. Also, it is pertinent to assess the potential value of social media in countrywide DRR public awareness strategies.

DRR messages versus warning messages

A few of the experts contacted raised the issue of potential conflict between DRR campaign messages and warning messages for those hazards that have a warning lead time. For example, a DRR bushfire/wildfire campaign message may be to 'leave and live' (i.e. evacuate early). However the warning message during a fire may be to shelter-in-place, as evacuation routes had already been cut off. This issue should be managed by emergency agencies and clearly communicated to potentially impacted communities.

It should be noted that misinformation and control of messaging by emergency agencies when using social media (Lindsay 2011) was viewed by the experts as much less of an issue with DRR campaigns than it is in emergency response and relief.

Evaluation

It was difficult to gauge the 'value' of social media in countrywide DRR public awareness strategies due to lack of data. However, it appears that:

- Social media guided people to websites that have high usage rates and resulted in individual, family and community emergency or action plans being developed.
- There was considerable approval of the use of DRR social media sites (e.g. the number of likes for the Flood Group UK Facebook page).

- Apps (e.g. Victoria's FireReady) appear to be popular forms of social media to prepare for disasters and for warnings.
- Social media may be a key warning communication method in an early warning system, particularly if there is a short warning time (e.g. Indonesia's Twitter Early Warning System).

Most of the experts who provided information concurred that although there is some formative and summative evaluation of social media use (e.g. usage) conducted, there is generally a lack of overall evaluation frameworks and processes in this emerging use of social media.

Social media is starting to be evaluated in response and recovery. As Westbrook *et al.* (2012) note:

'The community, volunteer organizations, and news organizations are currently embracing social media, but emergency management (EM) is slow to adopt and implement it on a full scale. One can understand this hesitation, given the lack of guidance and quality assurance. As EM officials and agencies begin to implement social media, several questions need to be answered such as:

- *How do you know a social media strategy is working?*
- *What is considered social media success?*
- *Does it work better than past methods of communication and information sharing?'* (Westbrook *et al.* 2012, p. 2)

They add that:

'The full potential of continually utilizing social media can only be realized with ongoing formal studies and field studies evaluating over time series efforts. Social media is continuously changing. Constant updates to

the technologies along with user preferences force us to remain current in our usage and study approach. (Westbrook et al. 2012, p. 9)

It is critical that the use of social media be evaluated across the whole of the disaster cycle.

Conclusion

This research found widespread use of social media in countrywide DRR public awareness strategies around the world, particularly since 2010. It identified examples from several countries and across hazards. It observed that social media was most intensively used in those countries with high social media usage rates such as Indonesia and the Philippines.

It appears that social media is 'underutilised' in countrywide DRR public awareness strategies and a greater understanding of its potential and benefits is required. This includes appreciation of the range of social media platforms and devices, co-ordination of social media across the disaster cycle, and the benefits of social media in forming communities of practice and in disaster resilience learning.

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Social architecture considerations in assessing social media for emergency information management applications

Dr Asif Qumer Gill, University of Technology, Sydney, takes a social architecture approach to assessing the viability of social media channels for emergency situations. 

ABSTRACT

The emergency management industry is showing a significant interest in the adoption of social media for sourcing and disseminating crisis information. The emergency management industry needs to identify social architecture concerns when considering the adoption of a specific social media technology. Social architecture describes the properties and environment of a social system such as the 'emergency management system'. This paper identifies a set of 21 social architecture concerns based on recent qualitative research. This set of social architecture concerns can be used as a criteria list to assess the effectiveness of social media platforms for emergency information management applications.

Introduction

Information and communication technology plays an important role in emergency management (Royal Commission Report 2011). A poor emergency information management system could have an adverse impact on emergency management activities and general welfare of the community. Traditional emergency information management systems come under pressure in the rapidly changing human and technologically dominated landscape (Gill & Bunker 2012). The emergency management industry is showing a significant interest in the adoption of emerging social media technology. The emerging social media technology can be used and integrated with traditional emergency information management systems for disseminating disaster information (American Red Cross 2011, White 2011, Eustace & Alam 2012). Social media can also be used for sourcing real-time crisis information and intelligence (Gupta & Brooks 2013). Despite these potential benefits, the emergency management industry should proceed with great caution when considering the adoption of a specific social media platform for emergency information management.

There are a number of social media tools (e.g. Twitter, Facebook), however the challenge is how best to adopt these tools. Emergency management is an integrated multi-dimensional social system (Foster 2013). A social system can be described by using a social architecture lens (Gill *et al.* 2014, Gill 2013b). The emergency management sector should identify social architecture concerns that need to be addressed by the social media technology. The question is how are social architecture concerns best identified. This paper presents a set of social architecture concerns that can be used as a guide for identifying the context of social media adoption for emergency information management applications.

Social architecture

Social architecture is a part of the overall enterprise architecture. Enterprise architecture is a strategic discipline that describes the overall structure and behaviour of an enterprise in terms of its business, information, social, and IT architectures. A social architecture (based on ISO/IEC 42010) can be defined as the 'fundamental concepts or properties of a social system in its environment embodied in its elements, relationships, and in the principles of its design and evolution' (Gill 2013b). A social architecture lens can be used to describe the structure and behaviour of a human-centred social system (e.g. formal and informal communities of people), which emerges to share information and opinions by using conversational or social media tools (Safko & Brake 2010). There are a number of social media technologies that claim to support the social architecture of a social system. However, before jumping on the bandwagon of social media technology, we need to capture and understand the contemporary social architecture concerns (see Figure 1).

In order to address this important question a social architecture concern template that contains 21 concern categories is presented. The use of such a template ensures the important social architecture concerns are not overlooked when assessing a social media technology for emergency information management.

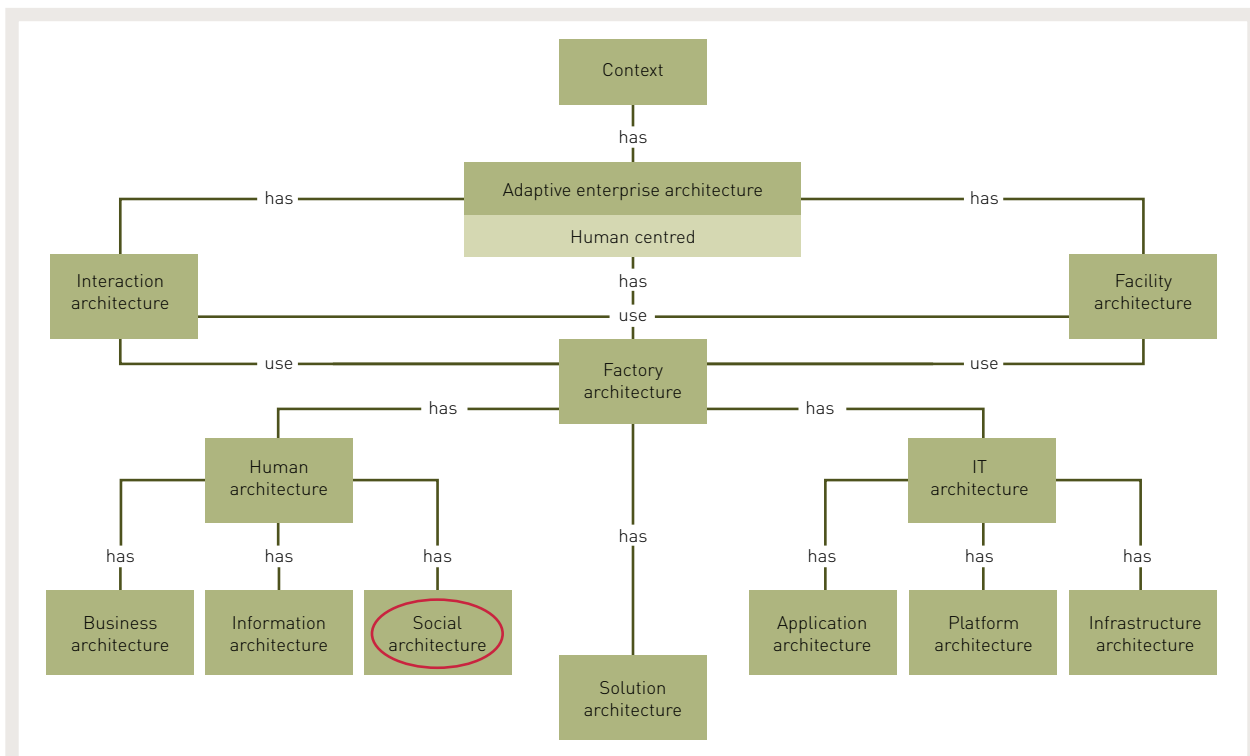


Figure 1: Social architecture in the overall context of enterprise architecture. (Copyright Asif Q. Gill)

Research design

The 21 social architecture concerns are based on an extensive literature review and disaster case studies. The social architecture concerns that arose are:

- Agility (Qumer & Henderson-Sellers 2008, Gill 2013a)
- Auditability (Vogel *et al.* 2011)
- Availability (Birmingham 2011)
- Integration (Starbird & Palen 2011)
- Interoperability (Starbird & Stamberger 2010)
- Localization (*The Advertiser* 2011)
- Mailing (Timson 2012)
- Management (Gill & Bunker 2012, Bunz 2010, Royal Commission Report 2011)
- Performance (NSW SES Report 2011)
- Privacy (Gill & Bunker 2012)
- Reliability (Gill & Bunker 2012)
- Resilience (COAG 2011)
- Reporting (Eeles 2005)
- Right Information (Royal Commission Report 2011)
- Right People (*The Advertiser* 2011)
- Right Time (Starbird & Palen 2011)
- Security (Price 2008)
- Scalability (Starbird & Palen 2011)
- Supportability (Eeles 2005)
- Usability (*The Advertiser* 2011)
- Metering (Gill & Bunker 2012)

This review was conducted within the overall context of design research (Hevner *et al.* 2004). Design research is a method that is concerned with the design and development of novel artefacts or templates that aim to solve practical problems. The identified 21 social architecture concerns are configured into a 'Social Architecture Concern Template' (see Table 1). These 21 concerns will be further investigated for developing and evaluating a comprehensive 'Social Reference Architecture' for emergency information management. The Social Reference Architecture will be used to achieve the following outcomes:

- assess and understand the potential impact of new and emerging social technologies for the effective and timely dissemination of risk information communication and warnings
- assess and understand the effectiveness of current warning mechanisms
- develop best practice approaches to guide the design of resilient and agile information architecture for creating and disseminating warnings, and
- develop social technology adoption roadmaps for emergency information management.

Social architecture concern template

Table 1 lists the 21 social architecture concerns and the criteria by which assessment takes place. The template provides a set of concerns and related assessment criteria questions that can be used by agencies for assessing the social media technology capabilities in the context of emergency information management.

Table 1: Social Architecture Concern Template.

Item	Concern	Assessment criteria
1	Agility	Does it support dynamic emergency information communication needs?
2	Auditability	Does it allow accessing and inspecting the communication logs?
3	Availability	Does it support specific system availability needs?
4	Integration	Does it allow integrating with existing emergency management information systems?
5	Interoperability	Does it support information interoperability needs?
6	Localisation	Does it support information localisation needs?
7	Mailing	Does it support email communication?
8	Management	Does it support social media management practices?
9	Performance	Does it support context specific system performance needs?
10	Privacy	Does it allow control of access to crisis information?
11	Reliability	Does it support a reliable information management and sharing environment?
12	Resilience	Does it operate well under stress and adapt and recover from a failure or disaster state?
13	Reporting	Does it allow generation of reports?
14	Right Information	Does it allow assessment of information accuracy?
15	Right People	Does it allow assessment of source and destination accuracy?
16	Right Time	Does it allow assessment of the trustworthiness of the information?
17	Security	Does it offer the capacity to handle security breaches?
18	Scalability	Does it offer the capacity to scale-up and scale-down to meet contextual communication needs?
19	Supportability	Is it testable, adaptable, maintainable, compatible, and configurable to a specific context?
20	Usability	Is it easy to use?
21	Metering	Does it allow the monitoring and measurement of social media use?

Agility

Social media platforms (e.g. Twitter or Facebook) may provide the ability to accommodate diverse and changing emergency management information communication needs in the context of disaster prevention and management.

Auditability

Social media platforms may provide emergency management stakeholders access to inspect communication history logs to resolve any conflicts and to meet information audit and compliance requirements.

Availability

Agency personnel and community members may not be able to access and post information if social media channels are shut down due to the loss of internet connection or some other reason. Emergency management stakeholders should be able to access social media platforms and related crisis information (e.g. posted via social media websites) without interruptions.

Integration

Social media platforms should integrate with existing emergency information management systems. Integration between social media platforms and emergency information management systems can be achieved via API or Web Service calls.

Interoperability

Interoperability refers to the need for information sharing between the social media platforms and existing, traditional emergency information management systems. Social media platforms and emergency information management systems should be able to exchange information.

Localisation

Australia is a multicultural nation where people have diverse backgrounds and speak different languages. Therefore, emergency information management systems should support different community groups and provide multi-language support. Use of social media platforms should allow agencies to source, translate and distribute emergency information in multiple languages.

Mailing

Social media platform channels should enable users to send and receive emails in addition to real-time posting of crisis information via tweets or Facebook messages.

Management

We need to clearly define strategies, policies and processes for monitoring, managing, and governing emergency information. For instance, attention should be given to the location and terms of the social media providers who may be subject to different regulations (e.g. USA Patriot Act).

Performance

Performance refers to the scalability of the social media platform to increase its capacity to operate effectively during an emergency situation. The social media platform response can be measured in terms of time units (e.g. usually in seconds), which is critical for timely crisis information communication.

Privacy

Social media platforms should allow emergency management stakeholders to manage access and control to crisis information (e.g. posted via social media websites). This refers to the need to understand critical questions such as: Who owns the information posted on social media (emergency management stakeholders or social media providers)? Who has the right to grant permission and share information via social media platforms?

Reliability

Social media provides a public cloud-based shared information management platform, which can be used by different agencies and individuals around the world. Reliability refers to the capacity of the social media host to assure that the information related to one situation is not mixed with the information related to an entirely different one.

Resilience

Social media platforms may stop working. Resilience is the ability of social media platform to operate well under stress, and to adapt and recover quickly from a failure or disaster state.

Reporting

Social media platforms should allow agencies to run reports on their information. Agencies should be able to use the reporting capability of the social media platform to gather emergency intelligence.

Right information

Community members can publish incorrect information and spread rumors via social media platforms. Social media platforms should provide the capability to detect maliciously generated information. Additional resources for monitoring, updating, correcting and preventing the posting of incorrect information on social media platforms must be considered.

Right people

It is critical that information is coming *from* the right people and that it is being communicated *to* the right people via social media platforms. Maintaining trustworthy communication channels is particularly important during times of emergency.

Right time

The sourcing, translation, and distribution of large volumes of unstructured social media data may delay communication. The value of social media information is to get the right information from the right people and then quickly communicate it to the right people (with access to or using social media) at the right time to support effective decision-making during an emergency.

Security

Security refers to the capability of social media platforms to handle security breaches. Security threats include malware (e.g. a malicious software), group attacks (e.g. manipulating the social media accounts of agencies), and distributed denial-of-service attacks (e.g. flooding a social media channel with repeated postings). Security-related concerns must be identified and addressed when using social media platforms for emergency information management.

Scalability

Social media platforms should have the ability to scale-up and scale-down in response to changing contextual information communication needs. For instance, Twitter is a social media platform that allows sending a message of only (maximum) 140 characters. This means that any message more than 140 characters cannot be sent via Twitter. Short messages can be posted on the social media platforms, and detailed information linked to the short Twitter message can be posted on the emergency information websites. It is important to note here that social media platforms and emergency information websites are subject to problems or crashes.

Supportability

Supportability refers to the extent to which a social media platform can be tested, adapted, maintained, is compatible, and is configurable. These characteristics can be used to assess social media platforms for use in emergency situations.

Usability

Usability refers to the user interface of the social media platform. Social media use is generally associated with young people, however its effective use, particularly in times of emergency response, has extended its penetration to other age groups. It is important to understand the adoption of social media platforms in the broader context of the population.

Metering

Metering refers to the capability to track and measure the use of social media platforms during emergency management activities. This would highlight the use of

social media platforms for informing communities and sourcing intelligence during emergencies.

Discussion

The assessment criteria questions listed in the social architecture concern template can be used to guide the assessment of social media tools for emergency management applications. Emergency managers and communicators, based on their own experience and knowledge, may add additional social media assessment criteria questions to better address the individual situation. The social architecture concern template does not provide an exhaustive list of concerns. What it does provide is a baseline from which the value of the use of social media channels can be assessed.

Conclusion

This paper presented a social architecture concern template. This template provides insights into the important socio-technical information needs of agencies and individuals that must be addressed when considering adopting social media platforms. The social architecture concern template aims to reduce uncertainties and can be used as a guide by agencies and communities in systematically assessing a specific social media channel for emergency information management. In summary, social media platforms are just another system that can be integrated with existing emergency information management systems for sourcing and sharing emergency information.

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The future of social media use during emergencies in Australia:

insights from the 2014 Australian and New Zealand Disaster and Emergency Management Conference social media workshop

Dr Olga Anikeeva, Dr Malinda Steenkamp and Professor Paul Arbon, Flinders University, detail insights from a recent workshop into social media use and consider three emerging themes.

ABSTRACT

Social media is becoming an important source of information during disasters and other emergency events. In recent years, both in Australia and internationally, an increasing number of people have turned to social media, both to find relevant and up-to-date information and to voice their concerns and experiences of emergency events. Similarly, emergency services and response agencies have been using social media platforms, primarily for the purpose of communicating updates and other essential material to their respective networks. This paper discusses insights from a workshop that was conducted at the 2014 Australian and New Zealand Disaster and Emergency Management Conference, during which participants discussed the current strengths and limitations of social media use in the context of emergencies, the future of social media use and the associated barriers and enablers.

Introduction

People are increasingly using social media during emergency events, such as bushfires, storms and floods (Bird, Ling & Hayes 2012, Cheong & Cheong 2011, CSIRO 2014, American Red Cross 2012, Latonero & Shklovski 2011). Information appears on platforms such as Twitter and Facebook in real time, frequently preceding traditional channels such as television and radio (American Red Cross 2012). Both in Australia and internationally, social media has been widely used to disseminate essential information and updates during emergency events. During the 2010-2011 floods in Queensland, New South Wales and Victoria, Twitter was used by emergency services, politicians, social media volunteers, traditional media reporters and community organisations to disseminate information to the affected communities (Cheong & Cheong 2011). One notable example is the use of Twitter and Facebook by Queensland Police when information and updates

about the situation were provided to the community, sometimes as frequently as every few minutes. The platforms were used to control and respond to the spread of rumours and misinformation (Queensland Police 2013). An important advantage was that Queensland Police established their social media presence and strategy *before* the occurrence of the disaster, which ensured that clear processes for disseminating information and addressing rumours and misleading posts were in place and staff were familiar with the processes. This ensured that Queensland Police maintained their Twitter and Facebook presence throughout the disaster and were able to reach and respond to individuals who did not have access to traditional media channels due to power outages and water damage (Queensland Police 2013). Similarly, Brisbane City Council was able to effectively use social media platforms to disseminate information to their already well-established networks of followers. The Council's dedicated social media resources and commitment to engaging in an open dialog with community members ensured that information was disseminated and evaluated in a timely fashion and questions and concerns were responded to, increasing community confidence (Australian Centre of Excellence for Local Government 2011, Whitelaw & Henson 2014). Community-initiated Facebook groups were also established during this time, which gained an instant following from affected residents and their family and friends. These groups routinely posted information sourced from agencies such as the State Emergency Service and the Bureau of Meteorology to provide a comprehensive collection of updates to followers. Furthermore, group members used the platform to post eyewitness information, questions, requests for help and advice, thus establishing support networks within the affected communities and facilitating community engagement and involvement in providing assistance (Bird, Ling & Hayes 2012).

Internationally, people are increasingly relying on social media during emergency events. A survey conducted by the American Red Cross found that mobile applications and social media are the fourth most popular way for Americans to obtain information during an emergency, following television, radio and online news. Social media is also widely used during emergencies as a source of emotional support and a method of obtaining information and advice about staying safe.

Furthermore, Americans are increasingly expecting emergency agencies to monitor social media platforms (three quarters of survey respondents expected a response within three hours of posting a request for help on an organisation’s social media page) (American Red Cross 2012). The 2013 attack on Westgate Mall in Nairobi, Kenya illustrates the importance of social media during emergency events. Within moments of the attack, information and photographs were posted to social networks such as Facebook and Twitter, providing details of the location of the attack and the number of casualties (Mohammed 2013). While some early posts contained inaccurate information, such as incorrect locations and nature of the emergency, the community of social media users corrected misleading information, which ensured rapid correction of potentially misleading claims. The use of social media during this event enabled real-time dissemination of updates and warnings, instructing people to stay away from the mall and its surrounding area (Mohammed 2013). The warnings were supported with eyewitness accounts and photographs, which enabled the reliability of incoming information to be assessed by traditional media outlets and other organisations.

The Westgate Mall example illustrates that social media is not only an important tool that can facilitate the dissemination of information by emergency services agencies to communities; it can also alert these organisations to developing disasters and emergency events. Tools exist that enable more efficient analysis of incoming information and provide details on GPS coordinates, number of people affected and the assistance required. An example is the Emergency Situation Awareness tool developed by the CSIRO, which is designed to detect unusual activity on Twitter feeds and alert response agencies when an emergency or disaster is being broadcast and discussed online (Cheong & Cheong 2011). Despite the availability of such technologies, many emergency

organisations have been slow to adopt and engage with social media. For this reason, a workshop at the 2014 Australian and New Zealand Disaster and Emergency Management conference provided a forum to discuss the current role of social media in the disaster and emergency sphere.

Social media workshop

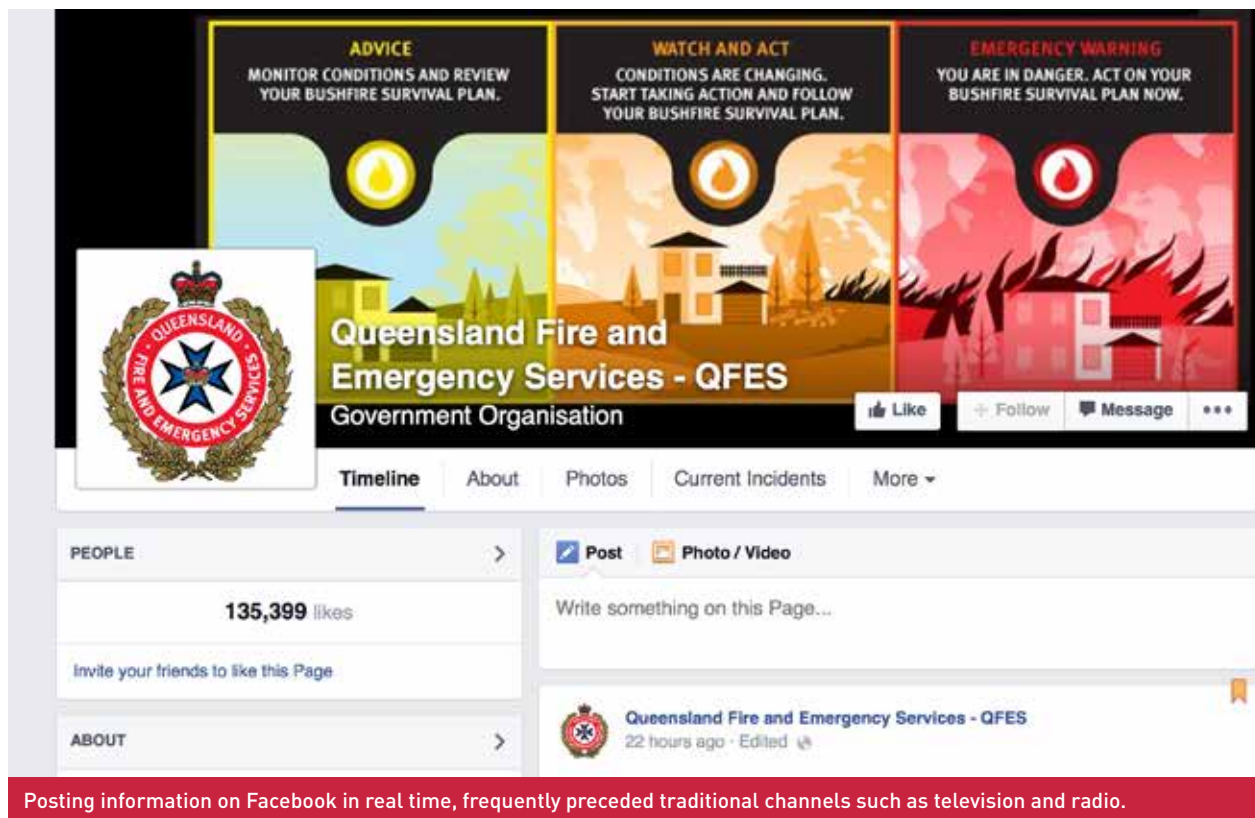
The workshop brought together 21 participants from a range of backgrounds, including emergency services, academia and information technology. The main objective of the workshop was to discuss the current state and future development of social media in the emergency management field, highlight current media platforms and barriers to effective use of social media platforms, and suggest improvements and strategies for enabling the use of these technologies by both emergency services personnel and the public. This article outlines the three key themes that were discussed during the workshop.

1. The current state and future of social media use in the context of emergencies

Participants overwhelmingly agreed that social media use will become increasingly popular in the near future and the public will expect emergency services and response agencies to have and maintain an active social media presence. A number of participants commented that different social media platforms are likely to attract particular user groups and be more suited for certain purposes. For example, it was agreed that Twitter is best suited for broadcasting frequent updates and is particularly useful for those wanting to use social media to access up-to-date information. On the other hand, Facebook is well-suited to establishing online communities where users can share their own experiences, ask for help and provide assistance where



Brisbane City Council was able to effectively use social media platforms to disseminate information to their already well-established networks of followers.



Posting information on Facebook in real time, frequently preceded traditional channels such as television and radio.

needed. For this reason, participants suggested that emergency organisations would need to establish a presence across all major social media platforms. Participants agreed that it is likely that maintaining a strong social media presence will require dedicated staff and resources, with some suggesting that larger organisations may need to establish social media units or departments. Some participants expressed concern about the potential financial ramifications of employing additional staff and purchasing essential equipment required to maintain an active social media presence.

Participants also commented that the channels the public rely on to obtain information about unfolding emergency events are changing. While television, radio and telephone hotlines were previously the most trusted and widely used means of accessing accurate information, it was suggested that the formation of social media networks will contribute to a shift towards increasing reliance on eyewitness accounts and reports provided by other users. However, some population sub-groups, such as the elderly and unemployed, may be less likely to have access to mobile phone and online communications. Therefore, emergency communications need to be tailored to individual communities and reflect their unique population composition and characteristics (Boon 2014). Participants questioned how the accuracy and reliability of information can be assessed on social media, with some suggesting that new, rapid methods of moderation, validation and verification need to be established and used to limit the amount of misinformation or deliberately misleading reports. A closely related concept was the development and refinement of technologies that enable organisations to efficiently sort through the vast amount of incoming

information to extract the key messages and filter out unnecessary 'noise'.

Finally, a number of participants suggested that increased use of social media is likely to contribute to greater community interaction, by enabling community members to comment on, contribute to and provide feedback to emergency services and response agencies about their plans and actions. Social media can contribute to greater feelings of connectedness among residents and their local emergency services and can lead to the establishment of a stronger and more inclusive community voice. However, consideration must be given to the extent to which various community members are likely to participate in discussions. It is likely that some individuals, such as the elderly, those with low English proficiency or low socio-economic status, may be underrepresented in community social media networks and discussions.

Twitter: suited to broadcasting frequent updates

Facebook: suited to establishing online communities

2. Current and future possibilities and opportunities for social media use in the emergency context

Participants agreed that the expansion of social media use within organisations needs to be supported by a national strategy to guide the development of plans and policies, support long-term objectives and



increase organisational commitment. A national social media strategy for organisations may address current resistance to social media use in some settings, which some participants believed may in part be explained by generational differences in attitudes towards social media uptake. Participants stated that it is important to identify and support social media champions within organisations in order to drive change, which may be easier to achieve with a national strategy that encourages social media uptake.

Participants also commented on the opportunity to create a more diverse community of social media users. Many agreed that social media uptake is lower among certain population sub-groups, such as older individuals. Methods of encouraging participation by demonstrating benefits and making the platforms relevant to various population sub-groups need to be developed. One example during the workshop was the expanding use of health technologies, such as blood pressure monitors, that are compatible with smartphone applications and allow users to track changes over time and set goals and reminders. Such targeted technologies are likely to encourage greater use among older individuals. Similar tactics could be employed to demonstrate the utility of social media platforms for this group, such as greater social connectedness and increased participation in community discussions. Importantly, barriers to social media use, such as cost or lack of time need identification and addressing to ensure a diverse population of social media users.

A number of participants commented on the possibilities that stem from increasing use of GPS

technology that provide tailored, location-based information to be delivered to target groups. This technology allows organisations to send warnings, alerts and other critical updates to individuals in specific physical locations, thus increasing the information relevance.

3. Current enablers and barriers to effective use of social media in the emergency context

During the final part of the workshop, participants were asked to identify factors that facilitate or hinder the effective implementation and use of social media by emergency services organisations and the general public. One of the key barriers identified was the lack of dedicated staff and additional resources required to establish and maintain a strong social media presence. Participants commented that the majority of organisations lack dedicated social media staff and the responsibility of maintaining the organisation's social media presence (whether through an organisation's own social media account or by active participation in existing social media networks) is given to those with a special interest in this technology, who then must find time for social media responsibilities around their primary job.

Another potential barrier is the possibility of network failure during emergency or disaster events, particularly in remote areas with poor network coverage. Participants suggested that this barrier may be overcome by developing technologies that enable individual mobile phones to link to each other to ensure coverage is not lost and people are able to access

social networks to receive critical updates when they are needed most.

One key advantage of social media platforms discussed was that they tend to be more robust than standard websites and less likely to fail during periods of high traffic, which may occur during emergency events. The capability of social networking platforms to effectively deal with high volume traffic in a cost-effective way means that critical information and updates can potentially be disseminated to large numbers of people and their networks.

Participants also considered the potential consequences of incorrect or deliberately misleading information being broadcast via social media channels. They identified a lack of clarity with respect to who would be held responsible for any consequences arising from such misinformation. In particular, participants felt this might be a deterrent for organisations to maintain a social media presence if they are held responsible for false information posted by others that they fail to rapidly evaluate and remove from their social media profiles. Participants suggested the need for clear policies and guidelines to protect organisations.

It was agreed that dedicated social media training could help organisations to see the merit in establishing and maintaining a social media presence. Participants suggested best-practice local and international examples could be used for training purposes. They believed that this would reduce the amount of trial-and-error that frequently accompanies social media adoption in the absence of dedicated guidance and training, which can act as a deterrent for organisations, particularly those that are under-resourced.

Participants considered that engaging volunteers in social media roles could address the financial and resource barriers to adoption of social media. It was suggested that after receiving initial training and guidance in appropriate social media use, volunteers could play a key role in monitoring social media platforms, posting updates and engaging with the wider community. This approach could potentially have the additional benefit of attracting a greater number of volunteers with a particular interest in social media and community engagement.

Conclusion

Social media platforms are powerful two-way tools that can be used to rapidly disseminate information and expose developing emergencies through ongoing monitoring of social media feeds. Despite the advantages and examples of effective use both locally and internationally, many organisations have been reluctant to adopt these technologies and maintain an active social media presence. The workshop highlighted important enablers and barriers to social media use within emergency and response agencies. Clear guidelines, adequate training, engagement of volunteers in social media roles, ongoing support and

strategies for dealing with rumours and misinformation are likely to encourage greater uptake of these platforms in the emergency and disaster sphere.

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What do older people's life experiences tell us about emergency preparedness?

Victoria Cornell, University of Adelaide, explores what being prepared for an emergency means to older people. 

ABSTRACT

Relatively little research has been undertaken with specific regard to older people and disasters, yet disaster researchers often classify older people as a 'vulnerable' group. Of the research that has been undertaken, the majority consider the opinion and perspective of aged care service providers, not older people themselves. In addition, most of the research is concerned with the response and recovery phases of emergency events, not preparedness. This article discusses research which engaged older people directly, seeking to understand what being prepared for an emergency means for them, and whether their life experiences have influenced this understanding. The study found that, for older people who participated, being prepared for an emergency is not a one-off tangible activity—it is a process, built upon throughout their lives, and a feeling of comfort and security in their world.

Introduction

Although little research has been undertaken with specific regard to older people and disasters (Ngo 2001), disaster researchers often classify older people as a 'vulnerable' group. However, it is not advancing age alone that makes people vulnerable. Vulnerabilities are generally due to the issues associated with the advancing age, such as 'impaired physical mobility, diminished sensory awareness, pre-existing health conditions, and social and economic constraints' (Fernandez *et al.* 2002, p. 69). This may well be accurate, but these issues are not specific to older people and may also be relevant to the non-aged.

Recent events and discussions that have taken place during disaster management planning and exercising, have triggered consideration into the way older people are engaged in disaster management processes (Cornell, Cusack & Arbon 2012). Older people are sometimes considered to be a challenge with respect

to disaster planning due to their perceived reluctance to prepare and evacuate (Paek *et al.* 2010, Loke, Lai & Fung 2012, Morrow 2007). Most disaster research concerning older people 'has focused on displacement and relocation as a consequence of a...disaster' (Marshall & Mathews 2010, p. 80), i.e. the response and recovery phases. Little research has been undertaken on older people and preparedness for emergency events.

There is even less research on preparedness of older people living in their own homes or on agencies that provide care to older people in their homes (Laditka *et al.* 2008). Discussion thus far largely considers the development of checklists that are assumed will help older people prepare for emergencies, rather than what might influence their decision to prepare. Therefore, this study engaged older people directly to explore what being prepared means to them and what shapes this understanding.

Method

The study took a qualitative, interpretive approach as the aim was to explore and understand whether people's life experiences have influenced their perception of preparedness and what it means to be prepared for an emergency event. People make decisions with regard to preparing for emergencies based on the context of their own lives and experiences. As Peek and Mileti (2002) discussed in their review of how the definition of a disaster has changed over the decades:

'Even though opinions differ, a common element that can be detected in almost all definitions is that disasters and the losses that result from them are the consequence of the interaction between the natural, social, and constructed environments...' Peek & Mileti 2002, p. 512

Eleven older people took part in semi-structured interviews. All resided in their own homes, in the greater Adelaide area, and received formalised (provided by an aged care service provider), low-level in-home care such as assistance with shopping or housework. The 11 participants ranged in age from 77 to 90 years, and comprised eight women and three men. All were of Anglo-Australian heritage – nine were born in Australia, two in England. Ten of the 11

participants were or had been married, while one woman had never been married. Of the ten who were or had been married all the men were still married; one of the women was still married, and one divorced; and the five remaining women were widowed. The participants came from a range of professional and socio-economic backgrounds. Predominantly, they were financially secure, some even calling themselves 'financially comfy'.

The in-depth interviews and small sample size reflect qualitative methods that allow for the generation of thick descriptions. The interviews explored the variety of emergency events experienced during the participants' lives, how those events may have changed them, the meaning drawn from the events, and the subsequent influence of their experiences on the way they prepare, or perhaps choose not to prepare, for emergency events.

The interviews were audio recorded and, on average, lasted an hour and a half. Participants were assigned pseudonyms, which are used in this paper.

Results

Data analysis followed van Manen's three-stage thematic analysis process, during which the transcripts were read in their entirety several times, to identify:

- key words and phrases that reflected the experience of the participants and their behaviours with respect to being prepared (wholistic phase), and
- statements or phrases that helped in representing meaning about being prepared for emergency events (selective phase).

Finally, identifying what the key words and statements revealed about being prepared for an emergency event was uncovered (line by line phase). Three themes were identified.

1. Understanding my world

The 'understanding my world' theme provided shape and context to the participants' lives. It outlined the events they had experienced and how they felt about themselves at this stage in their lives, and started to unravel the meaning of being prepared. The emergency events that the participants wished to discuss were nominated by them; they were not asked if they had experienced specific event types. The events were wide-ranging and included natural hazard events, human-induced events and (for the time in which they occurred) socially unacceptable events such as teenage pregnancies. Imogen, for example, talked about when she fell pregnant as an unmarried 16-year-old. Even though the father was the man who would become her husband on his return from service in World War II, the matter was very distressing to her parents, socially, and:

'The day after my mother found out, I was in a home... I was told that he [the father of the baby] didn't want anything to do with me, and he was told the same.'
Imogen

Those working in the professional world of emergency management, while espousing the 'all hazards' approach, often confine their thinking to a set range of events; traditionally considering natural hazard events, and man-induced events such as chemical leaks, terrorism and major transport accidents. This theme emphasised that older people—with experience of many, varied events—have a much broader view. They recognise that experience, strength and understanding can be gathered from many aspects of their lives, both the big events and the small.

The temporal and private nature of events was highlighted by the participants' stories. For some, the event was internalised and less significant to, or noticed by, others. Importantly, an event may not have a clear beginning and certainly may not have an end; it may continue to be a feature of every day experience, such as living without a loved one after their death, or giving up a child for adoption.

The participants acknowledged that their physical health was not as strong as it once was, and this did not worry them. Rather than dwell on activities they could no longer do, they either adapted previous activities, or found new ways to enjoy their world. While participants were conscious that reduced physical strength has implications for being prepared for, and also reacting to, an emergency, they did not feel vulnerable.

The participants felt mentally prepared to deal with any type of emergency. They felt that mental strength was more important than physical strength. This feeling of mental strength is a positive finding. These older people were not mentally fragile and in fact felt stronger due to the events they have lived through.

2. Shrinking my world

The 'shrinking my world' theme was noticeable in the participants' smaller social world, reduced contact with others, and reduced geographical area in which they engaged. While the participants appreciated that a shrinking social world has implications in terms of emergencies (recognising that strong social resources, including good friends and a strong community spirit, are critical supports in times of an emergency) they did



Close proximity to friends and family was acknowledged as a valuable support.

not feel negative or vulnerable. They enjoyed genuine friendships and the freedom to do what they please, with whom they please. Frances, for example, was happy with a smaller social world, saying that her ideal is to have friends close by in case of an emergency, but to:

'...have your own house. So you could go and visit whenever you wanted to...that...suits me fine but be able to still have time to myself. Because I like company, but I like my own company.' Frances'

The participants displayed shrinking thinking in terms of their considerations of being prepared for emergencies. When considering their lives, the varied events they had experienced, and what those events meant to them, the participants had a narrow view. Despite discussing a range of experiences that had occurred during their lives, and drawing on experiences gained, the participants' views of events that they might consider preparing for now was narrow, sticking to fairly 'traditional events' from their lived worlds. At this stage in their lives, their main concern is a health-related emergency, such as a fall in the home, or a more severe issue such as a heart attack or stroke. They did not consider other health issues such as extreme heat.

3. Acceptance of my world

Finally, in the 'acceptance of my world' theme, the participants accepted greater dependence on others. This was not seen as negative and was often a release. They did not feel that dependence implied helplessness. Indeed, acceptance of greater dependence showed a sophisticated type of control being exercised by the participants.

Several of the participants had lived in the Adelaide Hills region on semi-rural blocks with lots of vegetation, which required considerable bushfire prevention measures. They were aware they were no longer able to manage their properties and decided to move to a retirement village setting where gardening and bushfire prevention was the responsibility of the management. When talking of his family home, for example, Brian said:

'... just to walk up and down was becoming difficult, and I certainly couldn't handle cleaning out the gutters and so on any more...' Brian'

One notable exception to accepting greater dependence was when it was seen as a direct corollary to



The ability to drive provides a sense of independence.

independence, for example relying on others as a result of giving up driving a vehicle. The mere thought of having to give up driving was also a major concern for some in terms of their own general independence and sense of loss and also in terms of broader ramifications—the possible need to reorganise their lives and what being unable to drive might mean for the future. Art, for example, when talking about the fact that he might one day have to give up driving, said:

'That would be a catastrophe...really. I do think about that...and I don't quite know what I'd do. Furthermore, my wife is absolutely dependent upon me.' Art'

The participants felt lucky to have lived long and fulfilled lives. They were not concerned with their reducing future life, were not overly worried about preparing for what might come, were accepting that they may die soon, and confirmed that death held no fear for them.

Discussion and conclusions

This research brings an ontological view of what it means to be prepared, having explored the lives of 11 older people, finding that being prepared for an emergency is not about a one-off activity such as completing a checklist. Being prepared is a process. It is about living and learning, which allows a feeling of mental preparedness and ability to cope.

The study also shows that a variety of event types influence behaviour and help build a feeling of being prepared. It allowed participants to define the emergency event and include the incremental effects of events over a lifetime. Several participants said that an accumulation of smaller experiences enabled them to feel prepared and able to cope.

This research also highlights that while older people might not define themselves as 'being prepared' in terms of traditional emergency management assessments, they do not feel vulnerable. They accept their limitations but feel confident they can cope. Given their lack of engagement to date, this is a key finding as it has implications for how older people may (and should) be engaged in the future. They should not be approached as a 'vulnerable' group as such; rather a group that has some specific needs and has a wealth of positive attributes in terms of knowledge, experience and sense of community. While the older people in this study might not define themselves as being prepared they certainly consider themselves to be resilient, in terms of being able to withstand and recover from an event that may occur.

In allowing the participants to self-define the emergency events they discussed, events that from a professional 'disaster management sector' perspective might not be considered to influence preparedness were raised. This has implications for the development of preparedness messaging and education and concurs with Graham's (2011, p. 20) suggestion that 'The most effective messages are relevant to all hazards and meaningful on a day to day basis, while also effective in an emergency'. This statement was with

respect to disaster recovery, but there are parallels for preparedness. By being too specific about 'being prepared for a bushfire', the opportunity to engage with people about being prepared for emergency events generally may be lost.

At this stage in their lives being prepared for specific emergency events is less important to the participants. They are confident of their resilience and their ability to cope. Designing preparedness materials for older people based on specific hazard types, therefore, may serve little purpose. Ensuring older people are secure, safe and feel mentally strong is important.

For the older people who took part in this study, being prepared is principally a mental state of being. In accepting their advancing years and deteriorating physical ability, the participants gained comfort in knowing that their life experiences, including emergencies, have left them feeling comfortable and strong enough mentally to deal with any potential future emergency.

This research has implications in terms of developing well-informed emergency preparedness and resilience policy and practice. By understanding what influences older people living in the community to prepare for emergency events, indeed, understanding that for this group of older participants being prepared is less important than being resilient, appropriate policies and processes can be developed; rather than making assumptions about what this target group wants or needs.

Possible limitations

While the number of participants interviewed was small, and one could argue how far the findings can be generalised, the small number of participants was specifically chosen in order to carry out in-depth, semi-structured interviews to gain rich data. It is acknowledged that 11 older people cannot be representative of all older people.

Some caution must also be taken when considering the applicability of the findings into the future. Older people in the future will have lived their lives in different ways to the older people who were interviewed in this study and may therefore have different beliefs and expectations.

The older people who participated in this study came from similar cultural backgrounds, i.e. Anglo-Australian. This may have been partly influenced by the selection criteria for the research – older people receiving a formal care service. Hurley and colleagues (2013) found that:

'the use of formal services is lower among migrant groups with the most consistently documented barriers including lack of interpreter services, cultural resistance due to preference for family care, lack of awareness of services and the cultural insensitivity of 'front-line' staff.' Hurley et al. 2013, p. 141

Future research could seek the views of older people from indigenous Australian backgrounds and culturally and linguistically diverse backgrounds, to see whether

cultural diversity leads to differing views and feelings on being prepared.

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The Vulnerable People in Emergencies Policy: hiding vulnerable people in plain sight

Don Garlick, Ballarat Health Services, examines the origins of the Victorian vulnerable persons recommendation and the development of a public service policy designed to implement it. 

ABSTRACT

The 2009 Victorian Bushfires Royal Commission (hereafter identified as the Commission) noted that a particular group of community members, known collectively as 'vulnerable people', were overrepresented in the mortality figures. One of the Commission's recommendations was the development and maintenance of a list of vulnerable persons living in the community. This paper examines the origins of the vulnerable resident list recommendation, the development of the public service policy designed to implement it.

Introduction

Following the 2009 Black Saturday bushfires it was recognised by the Commission that young people, older adults, and people with impaired health were inequitably affected by the fires (Handmer, O'Neil & Killalea 2010, Teague, McLeod & Pascoe 2010). These findings replicated earlier studies which demonstrated that individuals with social vulnerability characteristics suffered disproportionately negative outcomes (O'Keefe, Westgate & Wisner 1976, Krusel & Petris 1992, Fjord 2010, Renne, Sanchez & Litman 2011, Flanagan *et al.* 2011, Fordham, *et al.* 2013). Informed in part by the successful implementation of a locally developed plan that resulted in the evacuation of a group of vulnerable people in Marysville, the Commissioners recommended that all vulnerable people be identified and assisted during emergency evacuations. Recommendation three of the Commission's final report stated:

'The State establish mechanisms for helping municipal councils to undertake local planning that tailors bushfire safety options to the needs of individual communities. In doing this planning, councils should:

- *Compile and maintain a list of vulnerable residents who need tailored advice of a recommendation to evacuate and provide this list to local police and anyone else with pre-arranged responsibility for helping vulnerable residents evacuate.'*

[Teague *et al.* 2010, vol. II, p. 58]

The intent of the Commission's recommendation was that emergency management agencies directly engage with vulnerable people and develop a sense of shared responsibility for emergency evacuation planning that would result in a mutual understanding of how vulnerable people would be assisted in an emergency evacuation (Teague *et al.* 2010). The vulnerable resident list, or vulnerable persons register as it was later called, epitomised the ideal of shared responsibility between emergency management agencies and communities enshrined in documents such as the *National Disaster Resilience Strategy*¹.

Definitions of vulnerability

Vulnerability is contextual. An individual's overall vulnerability to any particular situation sits somewhere within a continuum related to a mixture of fixed and temporary influences. These influences include geographically located risks, infrastructure hazards, and socially located liabilities (Mechanic & Tanner 2007). Social vulnerability theory identifies a range of personal and social characteristics such as age, gender, ethnicity and debility for example, that lead to inequitable outcomes for some members of the community when impacted by disasters (Weichselgartner 2001, Zakour & Harrell 2003, Renne, Sanchez & Litman 2011, Khunwishit & McEntire 2012, Fordham *et al.* 2013, Hosseini *et al.* 2014). Issues such as unstable financial viability, lack of home ownership or inadequate accommodation and an inability to afford insurance are also recognised as social vulnerabilities that contribute to a lack of capacity for individuals to free up resources to manage disaster impacts (Paton, Smith & Johnson 2005, Flanagan *et al.* 2011, Boon 2013). For some individuals their vulnerabilities overwhelm their ability to prepare for, recognise, and safely respond to an emergency.

Framed exclusively within the context of bushfire, the Commission's recommendation identified that certain individuals were more socially vulnerable to negative consequences.

1 At: www.em.gov.au/Documents/1National%20Strategy%20for%20Disaster%20Resilience%20-%20pdf.PDF.

Some authors question the use of broad social vulnerability criteria (Paton & Johnston 2001, De Marchi & Scolobig 2012), and the circular reasoning that accompanies its application. For example, poverty and lack of education as social vulnerability categories fail to recognise individual capabilities and automatically relegates people with these characteristics to dependence or victim roles (Fernandez *et al.* 2002, Cornell, Cusack & Arbon 2012). However, disaster mortality and morbidity statistics are often stated using general categories such as age and gender, giving the community a view of disasters that are framed in simple terms (Krusel & Petris 1992, Cordner, Woodford & Bassed 2011). In the same way officially convened boards of enquiries into disasters use broad definitions of social vulnerability when examining issues and handing down their findings (Teague *et al.* 2010, Comrie 2011). The value in using simplistic criteria is that eliminating complexity assists policy and decision-makers to reduce ambiguity, thereby simplifying their task when developing plans and procedures to manage the implications of complex problems (Clarke 1999). The Commission, using the generic term 'vulnerable' to describe social vulnerability, identified the basic categories of age and debility as the primary characteristics of vulnerability affecting residents who were impacted by the fires. Vulnerable persons were identified by the Commission as persons older than 70, younger than 12, and/or suffering from an acute or chronic debility (Teague *et al.* 2010). Issues related to other natural or man-made hazards or social vulnerabilities were not addressed in the recommendation.

The Vulnerable People in Emergencies Policy

Following the publication of the Commission's interim report in late 2009, some Victorian public service agencies were tasked by the State Government with the responsibility of implementing the various recommendations. For the vulnerable resident list recommendation, the agencies tasked were the Victorian Department of Human Services and the Department of Health (collectively known as DHHS) through its shared Emergency Management Branch service. To implement the recommendation, DHHS directed a number of its agencies (funded to provide personal care services to clients in the community) to be responsible for identifying vulnerable persons and provide emergency evacuation planning support or provide their names to local municipalities by directly registering them onto the state wide Vulnerable Persons Register (via the municipal emergency management database known as MECC Central).

Through a number of iterations from late 2009, the Vulnerable People in Emergencies (VPE) Policy (Health & Human Services Emergency Management 2012) moved away from a bushfire centric to an All Hazards approach, reshaped the Commission's definition of vulnerability and significantly reduced the scope of the Commission's recommendation. In doing so the VPE

policy failed to facilitate direct engagement between vulnerable people and emergency services and instead directed home health and care program staff to provide vulnerable clients with emergency evacuation planning and support.

Managing the scope of the VPE policy

According to the 2011 Census (Australian Bureau of Statistics 2013) the number of Victorians who fall within the Victorian Bushfires Royal Commission's definition of vulnerability is staggeringly large. There were 302 146 people over the age of 70 years, 800 423 people under the age of 12 years, and 255 496 people identified as needing assistance for core activities (people with a significant disability). The number of vulnerable people identified by the age criteria alone in Victoria is over one million. The VPE policy authors clearly had an overwhelming task to manage with limited resources.

As with any project one method to manage potentially unrealistic goals is to redefine the requirements to make the task manageable. In the case of the VPE policy the authors were assisted by a number of inherent limitations. In its first iteration the VPE policy removed younger persons from the definition of vulnerability. It was assumed that, in most cases, younger people would be under the direction or care of adults and therefore did not require an individual plan. In much the same way vulnerable people living in congregate care facilities would be under the care of staff and so did not need to be on a register; municipalities were directed to hold lists of these facilities. The Commission's recommendation related to bushfire hazard so only the municipalities that reside within the jurisdiction of the Country Fire Authority were included, thereby excluding metropolitan residents (Teague *et al.* 2010). The policy also limits the potential pool of vulnerable persons by stating that the registers '...are not being publicly promoted' (Health & Human Services Emergency Management 2012 p. 7). As an organisation DHHS could only direct its own funded agencies to carry out its mandates. This meant that the only people assessed for vulnerability were clients in a funded community care program.

Having identified a specific but large group of vulnerable individuals the Commissioners anticipated that agencies tasked with managing the implications of the recommendation might consider the scope of the task unmanageable. In response they clearly stated what was expected:

'The Commission did not specifically consider the level and the types of assistance such people might require or who should provide that assistance. These variables are likely to differ depending on personal circumstances, but at a minimum this group of people would need tailored advice of a recommendation to evacuate. They might well need physical assistance to evacuate and a place to go. If this is the case, local agencies would need to do much more substantial planning.' (Teague *et al.* vol. II, p. 50)

Nowhere in the final report do the Commissioners provide any direction or discussion that would support limiting the recommendation to subsets of the people they identified as vulnerable.

VPE definition of vulnerability

The VPE policy definition of a vulnerable person is:

'someone living in the community who is: frail, and/or physically or cognitively impaired; and unable to comprehend warnings and directions and/or respond to emergency situations.' (Health & Human Services Emergency Management 2012, p. 3)

Importantly the VPE policy added that a vulnerable person is also someone who 'cannot identify personal or community support networks to help them in an emergency' (Health & Human Services Emergency Management 2012, p. 3). The VPE policy removes the following personal characteristics from its definition of vulnerability for the purposes of the policy:

- persons residing in metropolitan Melbourne
- persons living in congregate care facilities such as nursing homes
- persons younger than 12 as an independent variable
- persons who do not receive home care assistance from funded health or home care agencies
- persons who can comprehend warnings
- persons who can identify a social contact who would assist them in an emergency, and
- persons who have a personal emergency evacuation plan.

This means that to be placed on the Vulnerable Persons Register, a person has to live within the Country Fire Authority area of responsibility, receive home based care assistance from a DHHS funded agency, be older than seventy and/or disabled, be incapable of planning, unable to understand warnings and be completely socially isolated. At the time of writing there were less than 1 350 persons listed on the Vulnerable Persons Register for the entire state of Victoria (information accessed via MECC Central database).

Responsibility sharing

Responsibility sharing in this context is a phrase understood by Australian emergency management agencies, political bodies and policy makers to describe how various agencies and the community divide up responsibility to plan for and respond to disasters (McLennan & Handmer 2012a, 2012b). The Commission paid special attention to the concept of responsibility sharing when developing their recommendations. For recommendation three, the Commissioners specifically stated the responsibilities that were assigned to councils and emergency services to provide tailored evacuation advice and, if needed, assist the evacuation of vulnerable individuals.

McLennan & Handmer (2012a, 2012b) identified that emergency management agencies and government policy makers had encouraged increased community self-reliance over the past two decades as a way to compensate for rising public expectations in the face of natural disasters. The Commissioners specifically addressed the self-reliance paradigm, recommending that all parties (government, emergency management agencies, communities and individuals) needed to contribute to disaster planning and response rather than emergency management agencies and policy makers simply expecting community members to be solely responsible for their own arrangements. This view was made explicit when the Commissioners noted that 'shared responsibility does not mean equal responsibility' (Teague *et al.* 2010, vol. II, p. 352) indicating the need for increased engagement by government and emergency management agencies. Recommendation three was based on the assertion that emergency evacuation planning was to be shared between vulnerable people and emergency services. In practice the VPE policy fails to directly engage vulnerable people with emergency services. Personnel from DHHS funded agencies rather than emergency management professionals identify and register vulnerable individuals or provide planning support which is limited to distributing generic printed planning materials due to a lack of any emergency management expertise.

Conclusion

By placing the responsibility for the implementation of the vulnerable people recommendation with DHHS the Victorian state government inadvertently ensured that the Commission's intent could never be realistically achieved. DHHS had no ability to direct the activities of emergency management agencies or municipalities; it only had its own programs and agencies that it could utilise. By expecting DHHS-funded agency personnel to expertly support emergency planning and through devices such as limiting scope, redefining vulnerability and failing to facilitate direct connection to emergency services, the VPE policy completely subverts the intent of the Commission's recommendation. The VPE policy purports to provide emergency evacuation planning support and lists of local vulnerable residents who need tailored emergency evacuation advice. What it actually delivers is the distribution of generic planning materials by home health and care workers and a diminutive list of marginally independent, generally older, socially isolated adults.

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Research of this type informs the work related to vulnerable communities. Other articles in this area are welcome.

An assessment of community disaster resilience for small, high-risk communities on the Sunshine Coast, Qld

Dr Lila Singh-Peterson, Professor Paul Salmon and Dr Natassia Goode, University of the Sunshine Coast, and Mr John Gallina, Sunshine Coast Council, apply the Community Disaster Resilience Scorecard to five small Sunshine Coast communities. 

ABSTRACT

Building and enhancing disaster resilience is a key goal for communities as the intensity and frequency of extreme weather events continues to escalate. An assessment of a community's level of resilience and the identification of associated strengths and weaknesses is, therefore, valuable information when planning, co-ordinating and directing strategies and resources. Despite the challenges in applying the assessment method referred to as the Community Disaster Resilience Scorecard, the process of undertaking the assessment has drawn out some key areas of focus for Sunshine Coast communities. This paper presents the results of the application of the Scorecard and contextualises these findings with the qualitative narrative that was captured at the time of the assessments. In this way, it is proposed that the predominant benefit of applying the Scorecard for these communities has centred on its participatory methodology. In particular, application of the Scorecard was instrumental in guiding the communities through a series of useful discussions about their level of risk, vulnerabilities, resources and capacities.

Introduction

Disaster resilience has been positioned as a key strategic goal for governments, non-government organisations, communities and individuals in Australia. In 2010, the Council of Australian Governments (COAG) adopted a whole-of-nation resilience approach to disaster management. The *National Strategy for Disaster Resilience* (Australian Government 2011) broadly outlines how Australia should aim to achieve this vision, emphasising the role of society as a whole in shaping a resilient future.

Government and non-government organisations at various geographic scales share a need to monitor

a community's ability to prepare, mitigate, respond and recover from disasters, in order to identify vulnerabilities and strengths. These assessments provide opportunities to enact alternative plans or locate alternative resources if required (O'Jenkins 2011). As such, several tools have been developed to assess the disaster resilience of communities (Shaw *et al.* 2010, Cutter *et al.* 2010, Cohen *et al.* 2013). To date there has been limited evaluation of these tools and it is not clear how valid they are for communities of different sizes and cultures. Similarly, a community scoring well on an assessment of resilience has not been shown to recover from disasters quicker or easier than a community receiving a lower score. In this regard, an assessment of resilience by any of the assessment tools is still a conceptual exercise.

Participatory methods of community development have been widely promoted by both academic and governmental epistemic communities (Arnstein 1969, Paton 2006, Australian Government 2014) to facilitate social learning and social change at the local scale. In viewing community resilience as a transformative and adaptive process (Chandler 2012), dimensions of adaptive capacity, self-organisation and self-securing agency emerge (Walker & Salt 2006, Frazier *et al.* 2013). It is therefore appropriate that methods of assessing a community's disaster resilience be placed at the local scale, enabling local actors to build and enhance their own resilience. This is in keeping with the climate change adaptation literature, which emphasises that a more integrated view of climate change-related impacts, vulnerabilities and opportunities consists of responses to place-based impacts (Rodima-Taylor *et al.* 2012). This approach is cognisant of local cultural practices, local knowledge and the divergent interests or values within a community (Romero-Lankao 2007, Vugteveen *et al.* 2010, Eriksen & Brown 2011), emphasising the role of local community members in determining these responses. Others consider that levels of resilience vary across a community therefore a local scale assessment that considers place-specific characteristics in addition to spatial dependencies with other places and regions is the most appropriate spatial unit for assessment tools (Cutter *et al.* 2008, Frazier *et al.* 2010). For these reasons, it is clear that an assessment of disaster resilience is appropriately undertaken at the local scale with the participation of local actors.

It is from this perspective that this assessment of five small rural communities on the Sunshine Coast as they apply the Community Disaster Resilience Scorecard Toolkit (see Arbon 2014), herein referred to as the Scorecard, is presented. The Scorecard was chosen principally for its participatory methodology that facilitates a local community to undertake its own assessment.

The Community Disaster Resilience Scorecard

The primary aim of the Scorecard is to support community-based assessments of resilience to all hazards using a participatory methodology. The Scorecard is based upon the premise that all communities possess to 'some extent, sets of physical, organisational and social capital, which are put into practise in the advent and recovery phase of a disaster' (Arbon *et al.* 2012, p. 11). The Scorecard was piloted in four communities across Australia in both metropolitan and rural areas, some of which have experienced recent natural disasters (Arbon *et al.* 2012). This study adds to this sample by providing a small, rural community focus. Each of the Scorecard's four components of community resilience is measured via a set of three to six indicators. Each indicator is assessed using a five-point scale. Points are awarded to each ranking so that a cumulative score for each component of resilience and a final score for all components can be calculated (see Table 1). Three ratings are assigned based on the score, which are:

- Red-zone – indicates that the community has weaknesses in that component and that priority should be given to enhancing capacity in this area of resilience.
- Caution – suggests that attention is warranted to monitor and strengthen a community's disaster resilience in that area.
- Green zone – identifies that a community has strength in the associated area of community resilience.

Method

Five sub-group communities were initially invited to participate in the research project. Each of the communities had formed a Local Disaster Management Sub-group which was facilitated and supported by the Sunshine Coast Regional Council prior to the commencement of this study. The process described by the Scorecard developers involves assembling a representative working party of between 10 to 15 members to meet three times over a period of four to six weeks (Torrens Research Institute 2012). While all of the sub-groups which were approached expressed an interest in participating in the project, all except one felt that requesting more than one meeting with community members was unrealistic. None of the sub-groups were confident that they could bring a dozen volunteers together to complete such a project.

An alternative process was determined in consultation with the sub-group leaders to ensure maximum participation. One of the sub-groups could still not assemble team members to participate and did not continue with the research project. Another community joined one of the existing sub-groups and completed their own assessment concurrently.

The five participating communities were Kin Kin, Mooloolah Valley, Conondale, Crystal Waters and Cooran. In 2011, the five communities consisted of between 694 and 3 263 people. Kin Kin and Conondale have the smallest populations of 694 and 799 people respectively (ABS 2011). As reported in both the 2006 and 2011 census compilation, all of the communities have a median population age older than the Queensland and Australian averages. The rate of population increase between these census periods has been 6–7.5 per cent, which was significantly less than the Queensland growth rate. All of the participating communities reflect a more mature, smaller and settled population in comparison to the Queensland average. Additionally, the ABS statistics showed there is more 'disadvantage' in each of the towns with higher rates of unemployment and lower household incomes than both the Queensland and Australian averages, however there are greater rates of home ownership (ABS 2011).

Following an initial meeting with the research team, each sub-group nominated a research leader who liaised with the research team to distribute an information letter and the Scorecard indicators to the relevant members within their community. The participants were required to read the Scorecard and assess their community's resilience individually. They were then required to attend one sub-group meeting and collectively work through the Scorecard to arrive at a group assessment of their community's disaster resilience. The group assessment was based on consensus where more than 75 per cent of the participants agreed on the outcome. In situations where there were less than three people, all were required to agree on a ranking.

As noted, the process adopted here is different to that prescribed by the Scorecard developers in regard to



Involving community members in the determination of risk and emergency preparedness is part of the resilience assessment process.

the proposed number of participants and meetings. Between two and seven people were present at each of the sub-group's meetings, which were held in the early evenings with most participants attending after work. The average duration of the meetings spanned from one to three hours, with the average time being just over two hours. In contrast to the stipulations by the Scorecard developers, only one of the sub-groups felt that their community was fully represented by the participants. The other groups considered that rescheduling the meeting would not result in better representation. The lead author attended each meeting and manually recorded notes of the ensuing discussion. These notes were then combined with each sub-group's assessment and are presented in this article.

Results

Overall, the findings show that the community sub-group results were within the Scorecard 'caution' zone meaning that further investigation and monitoring is warranted to identify strategies to enhance the sub-group community's disaster resilience. There is however, a substantial difference in the scores which may be indicative of the participants' levels of knowledge of emergency management processes; or it may actually be indicative of each community's diverse levels of disaster resilience, as intended. In discussing the results of the Scorecard all the participants felt that the final results were relatively accurate. Table 1 presents the sub-group scores for each indicator and the cumulative score of each of the key components. Review of this table with the actual Scorecard's rankings provides a clearer picture of each sub-group's responses.

Section 1: How connected are the members of your community?

The communities that scored the lowest in this section were those with the highest participation levels of the sub-groups. The highest score for this section of the Scorecard was returned by Crystal Waters. This community has a unique community-orientated governance system, in which all residents are members of a body corporate and are required to participate in issues of governance.

Although all of the groups commented on how important connectedness is for enhancing disaster resilience, there were several alignment issues with the actual indicators. Some of the indicators were appropriate for larger communities in which cultural separation and language difficulties are more obvious. Despite these limitations, the sub-groups did discuss the current level of connectedness within their community. Some of the sub-groups discussed the separation between new residents moving into the area and those of the existing community. Many of the newer residents, particularly in Mooloolah Valley, commuted to Brisbane or elsewhere to work and were perceived by the sub-group to participate less in the local community.

In general, all of the sub-groups were concerned with communication systems as all had experienced power disruptions (for up to five days), and normally had patchy mobile reception or no reception at all. The reliance on internet and telephone modes of communication during an emergency or disaster was considered by the sub-groups to be inappropriate. Few members of the community were known to have satellite phones. Other communication options, such as community noticeboards, had been considered but safe access remained problematic.

Section 2: What is the level of risk and vulnerability in your community?

Overall, these scores attracted a 'caution' rating from the Scorecard. As most of the communities refer to themselves as dormitory towns, where most people work outside of the town, many participants were concerned that if there was an emergency or disaster, there would not be help at hand. Similarly, many participants from across the sub-groups expressed concerns for new home builders who had gained development approval to build in flood-affected areas or in high bushfire-risk areas without understanding the risk of their new surroundings. The perception of many participants was that buildings were being approved in inappropriate areas.

The sub-groups that did the best in this section were those with members from volunteer emergency services groups. For example, the *Local Action Plan*, developed by the Queensland Fire and Rescue Service (QFRS) provides detailed information about risks and vulnerabilities within the Sunshine Coast communities. Accordingly, sub-groups with QFRS membership had a greater understanding of localised risks, and responses, as such they performed best in this section.

Section 3: What procedures support community disaster planning, response and recovery?

This section of the Scorecard highlights an area of apparent weakness for all of the sub-groups. Scores ranged from four to 12 out of a possible 15 points, with all communities, apart from Kin Kin, achieving a red-zone rating. Notably, two representatives from Kin Kin were involved in the QFRS and drew heavily from the *Local Action Plan* when responding to the Scorecard. Some of the indicators were found to be useful for highlighting deficiencies within the communities. For example, the post-disaster event assessment information was an area that three of the sub-groups stated they had not considered, but acknowledged that it is important this information be brought into subsequent planning cycles, highlighting the need to record reflections in order to learn from past experiences.

Within these indicators there is not the opportunity to capture the institutional policies or programs being developed by stakeholders at other geographic or governance levels. These policies or programs can effect local community resilience across scales

Table 1: The participating sub-group’s scores and rating (red zone, caution or green zone).

Indicator	Town (no. people in attendance)					
	Mooloolah Valley (2)	Kin Kin (3)	Cooran (7)	Conondale (6)	Crystal Waters (4)	Average
1. How connected are the members of your community? (rating)	12 (caution)	11.5 (caution)	9 (red)	8 (red)	16 (caution)	11.3 (caution)
What proportion of your population is engaged with organisations?	1	1.5	1	1	3	1.5
Do members of the community have access to a range of communication systems that allow information to flow during an emergency?	3	2	2	2	3	2.4
What is the level of communication between local governing body and population?	3	3	3	1	3	2.6
What is the relationship of your community with the larger region?	3	3	2	3	3	2.8
What is the degree of connectedness across community groups?	2	2	1	1	4	2
2. What is the level of risk and vulnerability in your community? (rating)	18.5 (caution)	24.5 (caution)	18 (caution)	21 (caution)	24 (caution)	23.15 (caution)
What are the known risks of all identified hazards in your community?	2	4	2	1	3	2.4
What are the trends in relative size of the permanent resident population and the daily population?	2.5	2	2	5	5	3.3
What is the rate of the resident population change in the last 5 years?	2	4	2	3	4	3
What proportion of the population has the capacity to independently move to safety?	4	2	5	5	5	4.2
What proportion of the resident population prefers communication in a language other than English?	5	5	5	5	5	5
Has the transient population (e.g., tourists, transient workers) been included in planning for response and recovery?	1	3	2	2	2	2
What is the risk that your community could be isolated during an emergency event?	2	4.5	n/a	n/a	n/a	3.25
3. What procedures support community disaster planning, response and recovery? (rating)	4 (red)	12 (caution)	5.5 (red)	6 (red)	6.5 (red)	6.8 (red)
To what extent and level are households within the community engaged in planning for disaster response and recovery?	1	3	2	3	2	2.2
Are there planned activities to reach the entire community about all-hazards resilience?	1	5	1.5	1	1	1.9
Does the community actually meet requirements for disaster readiness?	1	2	1	1	2	1.4
Do post-disaster event assessments change expectations or plans?	1	2	1	1	1.5	1.3
4. What emergency planning, response and recovery resources are available in your community? (rating)	11 (red)	17 (caution)	12 (caution)	13 (caution)	17 (caution)	14 (caution)
How comprehensive is the local infrastructure emergency protection plan?	2	2	3	3	3	2.6
What proportion of population with skills useful in emergency response/recovery can be mobilised if needed?	2	1	1	1	4	1.8
To what extent are all educational institutions engaged in emergency preparedness education?	1	4	2	2	2	2.2
How are available medical and public health services included in emergency planning?	1	1	1	1	1	1
Are readily accessible locations available as evacuation or recovery centres and included in resilience strategy?	2	5	2	2	3	2.8
What is the level of food/water/fuel readily availability in the community?	3	4	3	4	4	3.6
TOTAL SCORE (rating)	45.5 (caution)	65 (caution)	44.5 (caution)	48 (caution)	63.5 (caution)	55.25 (caution)



Floods engulf the Country Life Pub at Kin Kin in 2009.



The Kin Kin General Store is a communication hub for the community.

potentially impeding or strengthening scale-specific autonomy or adaptive capacity. Currently, each of the sub-groups identified that they were not informed of policies or programs developed for their community that could have a significant impact on their ability to enhance their resilience.

It also became apparent that there was a large number of informal arrangements operating within communities that support planning and preparedness activities. For example, in several of the sub-group communities it is the role of the school bus driver to monitor creek and river levels in order to determine when it is time to collect children from nearby schools. Similarly, the local store has a large role in preparedness and recovery operations by communicating updates on events and providing basic services and goods. Several communities have assisted the store owners to access generators during emergency events, recognising the importance of the communication hub, and access to key services provided by the store. These arrangements emphasise the importance of place-based strategies to prepare, respond and recover from extreme weather events.

Section 4: What emergency planning, response and recovery resources are available in your community?

Four out of the five communities gained a caution rating for this section of the Scorecard with one community scoring a 'red-zone' rating. This section required diverse knowledge of state government and service provider practices and policies. None of the participating sub-groups had considered, or were able to obtain, the relevant information required to support

the application of the Scorecard. For example, all of the sub-groups considered the educational indicator to be important. However, in Queensland schools, the level of education about emergency preparedness is determined by each school independently (Queensland Education Department, 18 November 2013). None of the participants had been personally involved in these activities, or were aware of them. A similar discussion ensued about the medical services and hospital emergency planning indicator, as this would involve obtaining information from multiple organisations across the region. Although these were perceived as important indicators, accessing the appropriate data for these smaller communities was problematic. This highlights the absolute dependence of the small communities on adequate regional and state-level planning, in regard to hospitals and education.

Another finding that emerged from this section of the Scorecard relates to the level of household resilience evident in many of the smaller communities. Many of the participants were relatively independent in providing critical services for themselves (e.g. water tanks, food production, gas cooktops and generators). As all of the sub-groups were affected by flooding almost annually, the general sentiment was that people knew how to 'do floods' and that the concern was centred on the effect of other emergencies for new residents who did not have experience in dealing with these extreme weather events.

Conclusion

The objective of this study was to present an assessment of the level of resilience of high risk, small rural communities to emergencies and disasters, and to determine whether there is sufficient information in the public domain to apply the Scorecard appropriately. In regard to issues of concern, the analysis revealed weaknesses in each sub-group's level of knowledge of procedures that support community disaster planning, response and recovery (Section 3), and their inability to acquire the required data to undertake the assessment. In particular, complementary policies and processes that occur at a state government level or by key service providers were unknown to the participating sub-group members. These discussions also revealed a rich network of informal, place-specific local responses to emergencies and disasters. In general, each community displayed a good level of knowledge in regard to their risk and vulnerabilities, which may be attributed to the membership of QFRS volunteers. Similarly, other strengths relate to the communities' involvement and understanding of the emergency planning, response and recovery resources within their community.

In order for smaller communities to make use of and benefit from the Scorecard an extensive data compilation is required to be provided to the participating communities. As illustrated, it is unrealistic to expect communities to undertake their own extensive data gathering. It is apparent there are numerous sector-specific sub-plans and action plans developed by government, business and humanitarian

community groups that consider elements of disaster resilience that impact on a community's resilience. Providing communities with these key pieces of information, in addition to a localised household survey, would transition the results of the survey from a perception-based estimate of a few members of the community, to a more reliable assessment of resilience. Additionally, an efficient provisioning of information could support social learning within the community and re-align the community's perception of what services and support they can realistically expect from emergency services providers during an emergency. Furthermore, a focus on communication and public education for new residents and concern over new development approvals were some of the key issues that all of the sub-groups discussed while undertaking the Scorecard assessment.

In conclusion, there is no doubt that the Scorecard represents a step forward in engaging communities to coalesce local knowledge and skills in preparing for emergencies and disasters at the scale in which responses are enacted. Further, this study demonstrates that the participating communities were supportive of the idea of assessing their resilience and the active involvement of government in directing and supporting communities to build their capacity. Despite this, the inescapable conclusion is that the Scorecard could not be applied in the manner in which it was originally designed, and that there are a number of indicators that are not suited to small rural communities. However, the Scorecard was successful in stimulating discussion and knowledge-sharing about topics relevant to the local disaster management sub-groups.

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Tsunami: The Ultimate Guide

Sarah Anderson, Public Safety Project Coordinator, Surf Life Saving Australia

Surf Life Saving Australia (SLSA) has been recognised nationally at the 2014 Resilient Australia Awards in Canberra for the online resource *Tsunami: The Ultimate Guide*. The resource was produced in collaboration with the Australian Tsunami Advisory Group (ATAG) and achieved a Highly Commended Award in the Projects of National Significance category.

SLSA President Graham Ford said 'This is a proud achievement for Surf Life Saving Australia. To be recognised nationally among so many high calibre and worthy projects is a credit to the hard work put in by the team at SLSA. Our key focus is always to create a safer environment for all Australians.'

Low-frequency, high-impact threat

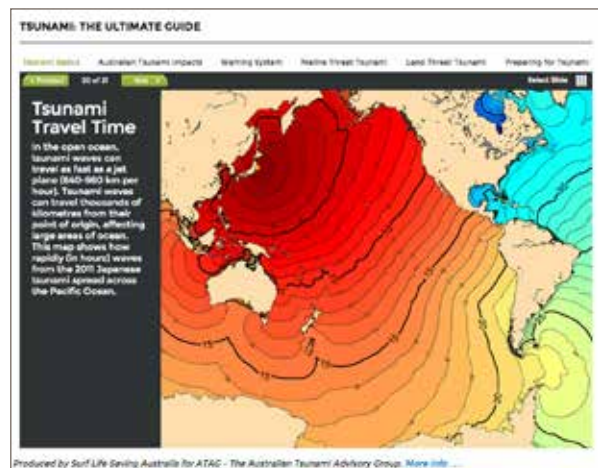
Australia experiences a tsunami once every four years, on average. According to the Bureau of Meteorology, there have been more than 50 tsunami events in Australia since 1788. Many people aren't aware that Australia experiences tsunami events. In fact, we are regularly affected by marine threat tsunami, which can cause dangerous rips, waves and strong currents.

ATAG faces a challenge to educate the public about the low-frequency, high-impact tsunami threat, the warning system, and where to find accurate information. This task is complicated by the Pacific Tsunami Warning Centre in Hawaii (which also provides advice following tsunamigenic events) listing countries that may be affected including Australia. Their messages may not align with the Joint Australian Tsunami Warning Centre (JATWC) warnings. This has led to past confusion in the public and media.

Reaching school children

The prime periods when Australians seek information about tsunami are during a tsunami event or while at school. Reaching school children represents a significant opportunity to raise awareness of tsunami in Australia.

There is a lot of information about tsunami available on the internet but there wasn't a single authoritative



guide, particularly not with an Australian focus. ATAG determined the best way to reach the school audience was via an online interactive resource that is aligned to the curriculum. Teachers can incorporate this online content into their lessons or children can explore it independently. The result is *Tsunami: The Ultimate Guide*, which is available from the Australian Emergency Management Institute's Knowledge Hub.¹

The guide provides comprehensive information in logical sequence and promotes JATWC as the definitive source for warnings in Australia. It empowers readers to understand tsunami risks and warnings, and

¹ Knowledge Hub at: www.emknowledge.gov.au/connect/tsunami-the-ultimate-guide/#/



educates them about how to act during a tsunami. It provides nationally consistent messages ensuring Australians access warnings from the correct source during tsunami events.

Content and curriculum

The resource aligns to the national geography curriculum (year 6, 8 and senior secondary) and science curriculum (year 6, 9 and senior secondary). It is designed to give students and teachers all the information about tsunami they need in a one-stop shop. Extending beyond tsunami, the guide delves into the Earth's structure, plate tectonics, earthquakes, and volcanoes.

It is conveniently arranged into six chapters:

- *Tsunami Basics* - Earth's structure, plate tectonics, earthquakes and volcanoes, the Pacific Ring of Fire, tsunami causes, and tsunami in action.
- *Australian Tsunami Threats* - risk zones, tsunami models, and past tsunami events.
- *Warning System* - Joint Australian Tsunami Warning Centre, detecting, evaluating and monitoring tsunami, what happens when there's a tsunami, and warning levels.
- *Marine Threat Tsunami* - marine tsunami warning and what to do and a case study: 2010 Chile/Hawaii tsunami.
- *Land Threat Tsunami* - land threat tsunami warning and what to do and a case study: 2011 Japan tsunami.
- *Preparing for Tsunami* - tsunami signs, warning levels, what to do in a tsunami, travelling overseas, and a case study: 2004 Indian Ocean tsunami.

Design and functionality

Tsunami: The Ultimate Guide presents authoritative and engaging information in a highly visual manner with an emphasis on videos, animations, maps and graphics. People don't generally use the internet to read long text documents, so the design focuses on visual elements to tell the tsunami story and limits the text to small, accessible pieces.



The guide is easy to navigate with intuitive functionality. Interactive slideshows allow users to make connections between different images and themes. Timelines of tsunami case studies provide multiple points of entry to the information.

Videos and imagery are the best way to show how tsunami events occur, how they move and their impact when they reach land. Animations and live footage capture the motion of a tsunami from its creation, the movement of waves across the ocean, the devastating impact where a tsunami hits land as well as how the warning system works. The resource includes news reports and interviews with tsunami experts who explain how they monitor tsunami events and manage the warning system, and survivors who share their experience of being caught in tsunami events and the often life-changing lessons they learnt.

Tsunami: The Ultimate Guide is an ideal teaching resource. A school kit and curriculum-mapping document are available on the Disaster Resilience Education for Schools website: <https://schools.aemi.edu.au/>.

A tool for emergency services

The visual focus of the design ensures the material is appropriate for school children and adults alike. The content can be reviewed in its online format and each element (photos, videos, maps, graphics and illustrations) is downloadable for individuals and organisations to use free-of-charge. It's an excellent tool for emergency management personnel working in the community. It provides nationally-consistent materials to support state and territory emergency services involved in the delivery of community education activities.

In addition to the Resilient Australia Award, the response from the emergency management sector has been extremely positive. It has been promoted by the United Nations via their Office for Disaster Risk Reduction that featured the resource on Twitter, Facebook and on the PreventionWeb network.

This innovative, attractive and high-quality resource is available online at www.emknowledge.gov.au/connect/tsunami-the-ultimate-guide/#/.

Search and rescue in Australia

Senior Sergeant Jim Whitehead, Queensland State Search and Rescue, explains the work of the organisation.



Australian search and rescue region.

The search and rescue system in Australia has returned an average of 2000 people per year¹ to their families who might have otherwise perished on the seas, in the mountains, or in the deserts. This represents a saving to the Australian economy of about \$10 billion annually in the earning and spending capacity of these people (COBP 2012). This article briefly outlines the story behind the current search and rescue system used in Australia and identifies the authorities responsible for both maintaining the system and using it on a daily basis throughout the country.

Search and rescue (SAR) is not normally associated with disaster or emergency management although they are similar bedfellows. The most obvious difference is the scale of events. Search and rescue normally

involves a small number of missing people whereas an emergency or disaster can affect a community or a nation. Another less obvious difference is that the SAR system is used 'in anger' every day of the year with an average of five incidents occurring daily (National SAR Council Report 2013).

Search and rescue is the search for and provision of life saving assistance to people in distress and imminent danger of loss of life (*National Search & Rescue Manual 2014*²).

Australian SAR arrangements provide a specialist search and rescue capability in conjunction with government, quasi-government and volunteer organisations. The current system covers locations as varied as the outback deserts, remote marine areas, and urban situations. In a country as vast and diverse as Australia it is not surprising that each SAR incident will be different from the previous.

Search and rescue does not generally extend to a missing person's dog, cat or other pets. It also does not include the salvage or saving of property unless the act of lifesaving is indivisible from it. An example may be a rescue of people from a disabled vessel that may have rolled in dangerous seas but is still afloat. It may be safer to tow the entire vessel with crew to safety than attempt a vessel-to-vessel transfer in poor sea conditions.

The International Civil Aviation Organization (ICAO)³ was established in 1947 and implemented as a result of the Convention on International Civil Aviation of 1944. The SAR component of this organisation is the Chicago Convention, of which Australia is a Council Member State and one of the original signatories. Australia is considered a State of Chief Importance with respect to this convention.

Another specialised autonomous organisation is the International Maritime Organization (IMO)⁴ that was established in 1949. The SAR component is the International Convention for the Saving of Life at Sea (SOLAS) 1974, of which Australia was, again, an original

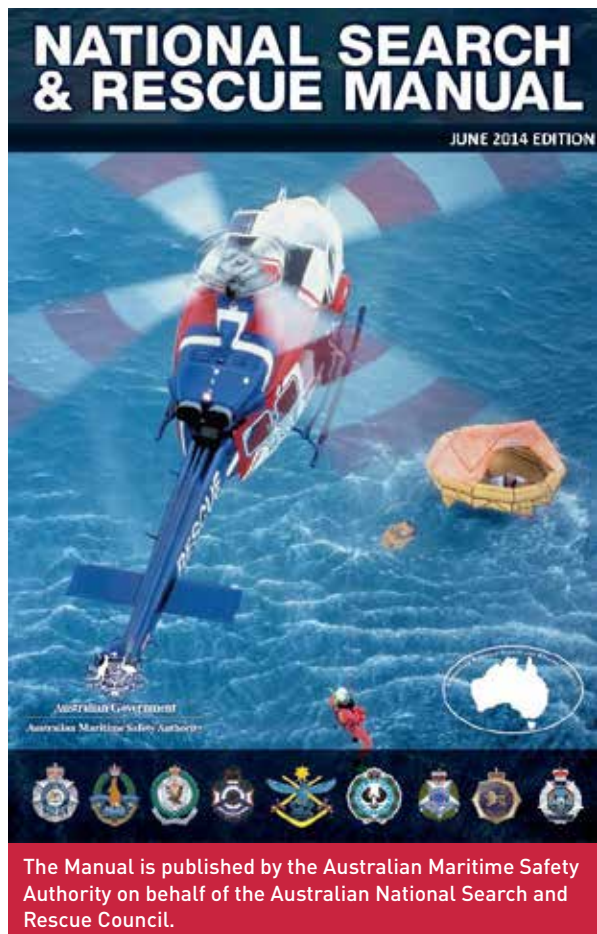
1 AMSA Annual Report, Nat SAR Council State reports.

2 *National Search & Rescue Manual 2014*. At: <http://natsar.amsa.gov.au/natsar-manual.asp>.

3 ICAO website. At: www.icao.int/Pages/default.aspx.

4 IMO website. At: www.imo.org/Pages/home.aspx.

signatory. The third convention is the International Convention on Maritime Search and Rescue 1979 covering the eastern Indian and western Pacific oceans. Both the ICAO and IMO work closely with other organisations to provide leadership for search and rescue globally.



Over the previous two centuries each Australian state and territory has developed their own SAR practices. Much of this has occurred on an *ad hoc* basis with whatever resources were available at the time. After the signing of the mentioned conventions there was a gradual movement in SAR towards unification that led to the 1976 formation of a national conference to ensure consistency in procedures across the Australian search and rescue region. In 1999 this conference officially gained the title of the National Search and Rescue Council and was given the role of formulating, discussing and ratifying national search and rescue policies. The Council's profile was boosted by the 2004 *Intergovernmental Agreement on National Search and Rescue Response Arrangement (IGA)* that was signed by the Australian Government Ministers for transport and justice and the State/Territory Ministers for Police. This agreement was updated and re-signed in 2012 (National SAR Manual 2014). As a result of these agreements the Council provides management and co-ordination leadership on a national level for SAR

policy and co-operative arrangements between the various SAR authorities. The Council also maintains the National SAR manuals on behalf of the nation.

The SAR authorities that were initially recognised by the Council were the:

- Maritime Rescue Coordination Centre
- Air Services Rescue Coordination Centres (Brisbane and Melbourne)
- Australian Army
- Royal Australian Navy
- Royal Australian Air Force
- State/Territory Police services

In 1997 the Maritime Rescue Coordination Centre merged with the two Air Services Rescue Coordination Centres to form Australian Search and Rescue (AusSAR), a part of the Australian Maritime Safety Authority. AusSAR has now been changed to the more formal Joint Rescue Coordination Centre (JRCC). In a similar move the three arms of the defence force are now co-ordinated from a central location known as HQJOC (Headquarters, Joint Operations Centre). Thus, only three SAR authorities are recognised today.

The following are the individual responsibilities of each of the three authorities:

1. JRCC: International civil aircraft, manned space vehicles and aircraft on the Civil Aviation Safety Authority (CASA) and Recreational Aviation Australia (RA-Aus) Registers, unidentified beacons and persons on or from vessels at sea with Police.
2. Australian Defence Force: Australian Defence Force and foreign military personnel, aircraft, ships, submarines and vehicles.
3. State/Territory Police: Persons on or from vessels at sea with the JRCC, people and vehicles on land, people and vessels on inland waterways, non-military vessels within the limits of the ports of the relevant state/territory, and aircraft not included in the CASA and RA-Aus registers including ultra lights, hang gliders and para-gliders. Police also provide assistance to the JRCC with marine and land assets and co-ordination as required.

On the surface it appears that the division of responsibility is cut and dried, but over recent years there has been a slow movement towards having the best placed authority initially co-ordinating the incident until the actual responsible authority can take over. Having the closest responder attend an incident makes for a faster response and a better recovery rate.

The original National SAR Manual (NatSARM) was developed in the 1980s based on the *International Aeronautical and Maritime Search and Rescue Manual*. This manual is a collaboration between the IMO and ICAO and deals with aviation and marine SAR as the name suggests. This is regarded as world's best practice and the manual is used by most countries for SAR purposes. The NatSARM has undergone a number

of rewrites and had been amended numerous times until the 2009 Inquest into the sinking of the *Malu Sara* in the Torres Straits. This initiated a review and updating of its contents (Inquest findings into sinking of 'Malu Sara' 2009).

While aerial and marine search and rescue are covered extensively in the IAMSAR and NatSARM manuals, land search and rescue was included in a small but comprehensively broad publication titled *Land Search Operations* issued by Emergency Management Australia (EMA) in 1990. From the inception land SAR was primarily the responsibility of the State/Territory Police, as had been the case historically throughout Australia's past.

In 2001 moves were made to standardise land SAR within Australia, followed in 2003 by the forming of a working group to write a national land manual for SAR. In 2007 the aging *Land Search Operations Manual* was ceded from EMA to the Council. In 2008 the *National Land Search Operations Manual* was written and adopted by the Council, becoming the standard for all land SAR operations within Australia from 2009.

While the SAR authorities are very capable, they alone cannot undertake search and rescue to the high level at which it is currently achieved. There is a vast number of government, quasi-government and volunteer organisations that contribute man hours and resources to SAR operations nationwide. These include:

- State Emergency Services
- State Marine Volunteer Rescue Groups such as the Australian Volunteer Coast Guard and Volunteer Marine Rescue
- Surf Life Saving Australia
- State and community helicopter providers
- Fire and rescue services
- Ambulance services
- Bush walking clubs
- Bureau of Meteorology
- Air Services Australia
- Australian Maritime Safety Authority
- Australian Communications and Media Authority

Access to resources is very much dependent on where in Australia the search and rescue incident is and where it is being co-ordinated from. Resources range from dedicated SAR aircraft, community helicopters, volunteer personnel and police.

The last important component of the Australian SAR system is the beacon detection capability. The most common are the Electronic Position Indicating Radio Beacon (EPIRB) used mainly at sea, the Emergency Locator Transmitters (ELT), which are normally fitted to aircraft, and Personal Locator Beacons (PLB) commonly carried by bushwalkers and four wheel driver owners. Regardless of the type of beacon they should all be registered with the JRCC and transmit on 406MHz. The 406MHz system is digitally based. Each beacon has an identification code that can identify the

person, vessel or vehicle in distress. Once activated the signal is received by a number of low orbiting and geostationary satellites that relay it to a ground station and onto a RCC for action to be taken. If everything is aligned - beacon, satellite, ground station, SAR asset - then rescue can be as quick as 30 minutes but, in more remote parts of the country, it can take longer to get an asset on scene that has a rescue capability.

Australia has one of the best search and rescue systems in the world and it is only so because of the co-operation between all levels of SAR authorities. This work is underpinned by the selfless actions of volunteers in search and rescue organisations who search for and rescue strangers in all types of weather conditions.

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About the author

Senior Sergeant Jim Whitehead has been a policeman for 32 years and is the Queensland State Search and Rescue Coordinator & Training Officer. He has several Diploma and Advanced Diplomas of SAR Coordination and Management, a Bachelor of Social Science (Emergency Management), and a Master of Emergency Management. He has provided SAR instruction Queensland Police and volunteers, National Police SAR Manager's Course, Royal Solomon Island Police, The Solomon Island Marine Rescue Coordination Centre, and the Australian Federal Police in Canberra, Christmas Island, Cocos Island and Norfolk Island.

The Oso mudslide: reflections of an emergency manager

Journalist, Rosemarie Lentini, talks with John Pennington, founder and Director of the Snohomish County, Washington, Department of Emergency Management.



Image: John Pennington

John Pennington, Director of Department of Emergency Management, Snohomish County, Washington.

John Pennington was expecting 22 March 2014 to be another lazy Saturday – until the hill collapsed.

Tonnes of debris above Hazel Slide plunged into the North Fork of the rain-swollen Stillaguamish River, creating a tsunami of mud that engulfed the logging town of Oso, Washington state in the U.S. Fast-moving quicksand loaded with trees and rocks killed 43 people, flattened 36 homes, dammed State Route 530 (a major highway), and caused more than \$US50 million in damage. One fire chief said Oso looked like it had been 'put in a blender and dropped on the ground.'¹

The world's attention focused on Mr Pennington, founder and Director of the Snohomish County, Washington, Department of Emergency Management who co-ordinated last year's 37-day response. The former United States Federal Emergency Management Agency (FEMA) Regional Director has led or managed nearly 30 federal disaster responses, including deploying assets to support the Space Shuttle

1 Snohomish County Fire Battalion Chief Steve Mason interviewed by CBS News, 'Washington officials warn to expect the worst'. At: www.cbsnews.com/news/oso-washington-mudslide-survivors-starting-to-feel-disasters-impact [28 March 2014].

Columbia disaster and hurricanes *Katrina* and *Rita*.² He was a founding executive member of the Anti-Terrorism Advisory Council of Alaska and is a senior member of the Department of Homeland Security's Urban Area Security Initiative for Puget Sound.

Despite his experience, Mr Pennington said the Oso mudslide – America's deadliest – changed his view of disasters.

'I learned from Oso that smaller events can be catastrophic, national level, internationally-focused and personally impactful.

'This incident was just so complex. Initial reports were that perhaps the slide was 300 yards (274 metres) long by 400 yards (365 metres) wide. And now we know of course that it wasn't.

'It was one mile (1.6 km) by approximately one and a half miles (2.4 km) and caused a wave of destruction on a 50-mile (80 km) stretch of one state highway.

'Because of the splintering of multiple communities, the tribal governments being impacted,³ the salmon, the mass fatalities, the debris management, it was just an extraordinary event that required the most dynamic examples of leadership that we've ever experienced and probably would ever experience,' Mr Pennington said.

Snohomish County is a flooding and landslide-prone area in Washington's northwest; a region that has experienced eight major presidential disaster declarations in seven years. Hazel Slide, the site of the Oso mudslide, has a history of collapsing, including in 2006. Geologists said Oso was the worst by far.

The mudslide followed weeks of heavy rainfall that, combined with the effects of logging and river erosion, 'reactivated' the 2006 slide.⁴ Recovery will take years.

2 Space Shuttle Columbia disintegrated over Texas and Louisiana, killing seven crew, in 2003. Atlantic tropical cyclones *Katrina* and *Rita* hit the US in 2005.

3 Snohomish County has three self-governing Native American communities: the Tulalip Tribe, the Stillaguamish Tribe and the Sauk-Suiattle Tribe.

4 Geotechnical Extreme Events Reconnaissance Association investigation. At: www.geerassociation.org/GEER_Post%20EQ%20Reports/Oso_WA_2014/index.html [22 July 2014].



Site of the mudslide in Oso, Washington state.

Although Snohomish County has spent ‘millions of mitigation dollars’ building a resilient emergency management system, the mudslide at Oso exposed some shortfalls. It also revealed the ‘new normal’ in global disasters.

‘I don’t think that most jurisdictions are going to experience *Hurricane Katrina* or the earthquake in Northridge.⁵ The State Route 530 slide is the best real-world example of what a catastrophic incident is going to look like for most jurisdictions in the future.

‘Geographically small, geologically large, complex beyond your wildest imagination and requiring every asset and resource,’ Mr Pennington said.

After reflecting on the response effort, Mr Pennington shared his recommendations for ‘fine-tuning’ at the Washington State Emergency Management Association’s annual conference in Spokane, Washington state, in September 2014.⁶ Some of the recommendations were:

1. Emergency operations centres need strategic ‘think tanks’

Two days into the response, the slide’s enormity came into focus. Emergency operations centre staff were frantically co-ordinating stabilisation efforts and dealing with ‘overwhelming media scrutiny’.

For Mr Pennington, a less reactionary, more strategic approach was needed. He took his deputy director, Jason Biermann, for a coffee to nut out a ‘big picture’ plan.

‘First responders were digging and searching, the helicopters were rescuing, but there had to be some

other element co-ordinating the larger portion of the disaster.

‘You have all these personnel who are working tactically and some working strategically, but who is really thinking long-range strategically?’

‘What happens if we don’t have this road back open within x-number of days or weeks or months? What are the cultural impacts to the three tribal governments? What happens to the endangered species in the salmon runs? What happens to the river as hazardous materials leach into it?’

‘One of the lessons learned is that emergency operations centres need to be augmented by a think tank component.

‘It could have one or two individuals who are not policy makers, they are not people who work traditionally within the emergency operations centre, and they’re not tactical first responders.

‘Their jobs are to ... synthesise all the intelligence and plan forward. When we created our own internal think tank, the process started to run more smoothly,’ he said.

One example was the management of community resource centres.

Difficulties arose when individuals seeking accommodation, food vouchers and other materials ‘were having to mingle with relatives of people who had died in the slide,’ he said.

‘Part of that strategic thinking was establishing separate venues so we were successfully able to keep those two populations distinct. Not apart from one another, because they needed support, but distinct from one another,’ he said.

⁵ *Hurricane Katrina* hit America’s Gulf coast in 2005, while the 6.7-magnitude Northridge Earthquake shook Los Angeles in 1994. They are among the costliest disasters in US history.

⁶ View presentation at www.wsema.com/wsema-conference.



Snohomish County Emergency Operation Centre was activated in response to the Oso mudslide.

2. Leaders should be empowered to lead

When the mudslide hit, Mr Pennington's long-standing deputy director retired. His replacement was temporarily deployed, while another employee had joined the department just six weeks earlier. With just 14 staff, Mr Pennington had to co-ordinate about 2 000 first responders and volunteers.

'It was a unified command but it was more of a strategic unified command that I really found myself, to a large extent, facilitating, and it was a very different role for me.

'I had the authority to co-ordinate the disaster, but the question of "did I have the statutory responsibilities or statutory authority to actually co-ordinate something this large?", was very uncertain.

'The final conclusion I drew, and what I instructed my senior staff, was just to lead.

'If you see any vacuums in leadership, fill that vacuum until an attorney tells you not to do it. And the objective was that I had built very strong leaders here, more than just emergency management professionals.

'I put them in positions of leadership in domains they were probably not really prepared for, but they succeeded,' he said.

3. 'Regional teamwork' is achievable with statutory change

Washington state is comprised of 39 counties, each responsible for managing disasters in their jurisdictions. To Mr Pennington, this is not the best use of resources. The Oso mudslide showed that intense catastrophic incidents stretch every resource. If several massive disasters hit at one time, how will responders cope? What's needed is statutory change.

'We have to develop a regional construct that will essentially say, yes there are 39 counties but there are actually 10 counties, as an example, which have such strong, robust emergency management functions, that they can become regional anchors to assist the state.

'You would have state liaisons who come into these regional centres like Snohomish County which is large,

robust, very proven, very effective, where we would basically help to manage, in co-ordination with four other counties, an entire region.

'I think I now have the courage to say this needs to change or we're going to have real issues,' he said.

4. Australia and Washington state can learn from each other

Learning from the experiences of other countries is critical to building national resilience, Mr Pennington said.

Australia's *Memorandum of Understanding on Emergency Management Cooperation* with the United States, first signed in 2010 and recently re-signed for another five years, facilitates this knowledge exchange.

'Australia is faced with changing climate as much as we are in the U.S.

'Where Australia would have raging wildfires that would overwhelm certain areas, the way you respond has to be just more than looking at it as, "Australia has an amazing wildfire risk". Washington state has to look at it as more than "we have an extraordinary quake risk".

'So the term 'all hazards' becomes really critical.

'In a changing world where climate is becoming something we have to face and address, not to mention the social impacts and the cultural impacts of disasters, we have to train to lead as individuals and as organisations.

'That's where there is a connection between Snohomish County, Washington state, and Australia.

'Disasters don't have borders, they shouldn't have borders and there shouldn't be boundaries.

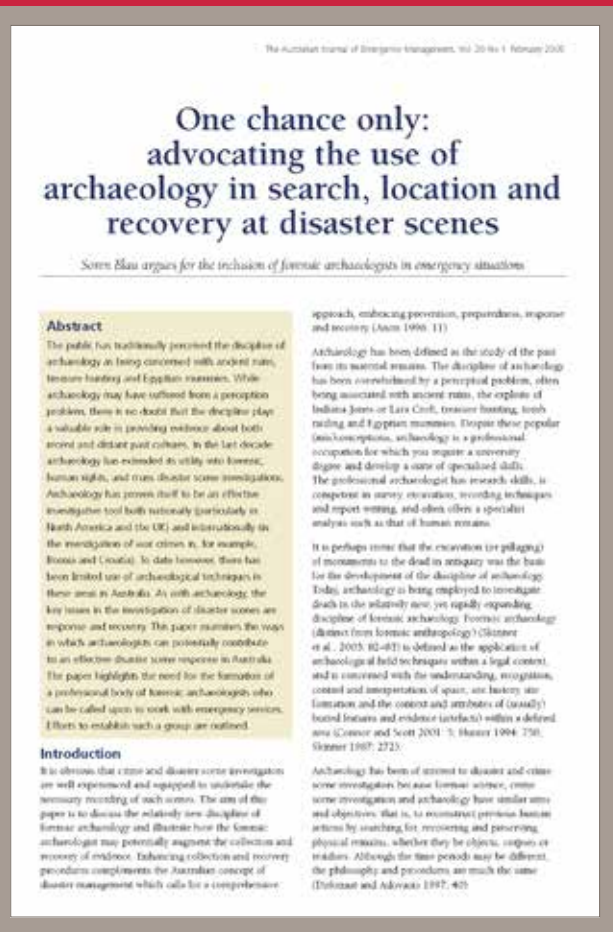
'While the jurisdictions vary a little, the reality is we're facing the same thing and had better start speaking the same, common languages or we're going to start to face unfortunate consequences,' he said.



Tonnes of debris above Hazel Slide plunged into the North Fork of the rain-swollen Stillquamish River, creating a tsunami of mud.

The use of archaeologists at disaster scenes: a reflection 10 years on

Dr Soren Blau, Victorian Institute of Forensic Medicine, Monash University, offers an update of her 2005 paper.



In 2005, Dr Soren Blau summarised the ways in which the inclusion of appropriately trained archaeologists at disaster scenes could benefit the search, location and recovery of buried evidence. The article outlined how archaeology had been an effective forensic sciences tool domestically and internationally in many countries but that it had not been taken up in the same way in Australia. It was recognised that the situation in Australia was more than likely a result of misconceptions about the role of archaeology, namely that the discipline is associated with treasure hunting, tomb raiding and laborious recovery of remains. In an attempt to dispel this misconception, a preliminary workshop was held in 2003 at the University of Adelaide which brought together professional archaeologists and representatives from emergency and forensic services to discuss how each of the areas potentially overlapped and where archaeologists could assist. It was anticipated that this workshop could lay the foundation for the development of a formalised

database of names of professional archaeologists who could advise and assist forensic and emergency services where required. While some agencies did receive the list, a professional group of Australian forensic archaeologists was, unfortunately, never formed. While there are organisations such as NSW Police who have an Expert Referral Team which includes forensic anthropologists with expertise in the recovery of buried evidence, there is no established formal group of forensic archaeologists. This differs to the situation overseas where professional organisations have been established (e.g. NecroSearch setup in 1991 in the USA and the Forensic Search and Advisory Group established in the UK in 1995). Such organisations provide a register of appropriately trained forensic anthropology/archaeology practitioners that law enforcement and emergency services organisations can consult when required.

Forensic archaeology (Hunter & Cox 2005, Hunter *et al.* 2013) and forensic anthropology (Blau & Ubelaker 2009, Dirkmaat 2012a) have emerged as distinct disciplines in the UK. However, there are no such divisions throughout Latin America and in the USA where many forensic anthropologists are trained in archaeology and incorporate the methods and techniques in their daily work. In Australia, many of the forensic service providers employ forensic anthropologists, some of whom have training in archaeology (Donlon 2009). The value of including such practitioners at disaster scenes was seen during the disaster victim identification DVI



A forensic anthropologist and VicPol assist in the examination of a scene following the 2009 Victorian bushfires.



A forensic archaeologist provides training to police members in the archaeological recovery of evidence.

process following the 2009 Victorian Bushfires (Blau & Briggs 2011).

While forensic archaeology is still not an independent, recognised discipline in Australia, efforts to raise awareness about the benefits of including a forensic archaeologist and/or anthropologist where evidence (including human remains) may be buried are continuing in the form of training and education for relevant stakeholders. For example, the Victorian Institute of Forensic Medicine has delivered training in the location and recovery of buried evidence to Australian Federal Police crime scene examiners (Blau & Sterenberg in press A) and, more recently, in collaboration with the Institute of Technology, Sydney, to Victorian Police crime scene examiners.

While Australian police and emergency services agencies still do not routinely recognise the value of including a forensic archaeologist and/or anthropologist at a disaster scene, the increase in recent national (Blau & Sterenberg in press B) and international publications on these subjects (e.g. Cheetham & Hanson 2009, Cox *et al.* 2008, Dupras *et al.* 2012, Dirkmaat 2012b, Groen *et al.* in press, Holland & Connell 2009) clearly highlights the benefits. It is hoped that with continued awareness raising the situation in Australia will begin shift.

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Notes from the Field

National Arboretum recognises Australian Fire & Rescue services. Contribution by Pat Jones AFSM FIFireE, ACT Emergency Services Agency

In May 2014, the National Arboretum in Canberra launched a website that links honour rolls from Australia's fire and rescue services together in one place. This website provides a dedicated, physical memorial in the Nation's Capital for firefighters who have lost their lives protecting the community. It brings together honour rolls from Fire & Rescue services around Australia in one easily accessible place.

Bushfires swept through the ACT including the site of the current Arboretum in 2001 and again in 2003. The National Arboretum serves as a phoenix from the ashes.

The Bunya pine tree, which has fire protection characteristics, has been selected to symbolise the courage and dedication shown by current and past firefighters and aims to symbolise firefighters as a collective while recognising the contribution made by Australia's firefighters to the National Arboretum in Canberra.

The location of the Bunya Pines at the Arboretum is bounded by the Bicentennial National Trail. This location allows visitors to look north and south over the vista of the Canberra and its surrounds. The view extends north to Telstra Tower on Black Mountain and Canberra's city area, to the Parliamentary Triangle, through Woden Valley to the south of Canberra. The expansive view allows for reflection on the work of urban firefighters.

The web site can be found at www.nationalarboretum.act.gov.au/about_us/fireandrescue.

The view south to the Brindabella Ranges reflects on the work of rural firefighters, and to the west, the ever-present bush that surrounds not only the Nation's Capital but most of its urban centres.



Image: Christine Becher

The eagle and nest sculpture overlooks the National Arboretum which has become a symbol of the Capital's recovery program.

Notes from the Field

Older people key to success in rebuilding Haiyan-affected communities



Typhoon Haiyan one year on: older people key to recovery



The report by HelpAge International and the Coalition of Services of the Elderly was released in November 2014.

According to HelpAge International, older people have been key to helping 150 000 people recover from *Typhoon Haiyan*. Their 2014 report titled, *Typhoon Haiyan one year on: older people key to recovery*, shows that new skills have been acquired, stronger homes built, and farming diversified using global aid. Significantly, the report indicates that older people play a big role in helping communities on the road to recovery.

Based on the records provided by the Philippine Statistics Authority, approximately 1.27 million people over the age of 60 were affected by the typhoon, or eight per cent of the reported 16 million people affected¹, many losing their homes, livelihoods and loved ones.

Before *Typhoon Haiyan*, nearly 65 per cent of older people were working but many were not included in cash-for-work programs after the disaster.²

Poverty levels³ and malnutrition⁴ rates in Leyte province were high and poor access to information compromised people's ability to receive help. For example, 75 per cent of older people interviewed by HelpAge and

UNHCR did not know that medical services were available free of charge.⁵

As a result, HelpAge International and their local partners, the Coalition of Services of the Elderly (COSE) stepped in to ensure older people were a key part of recovery efforts. The chief objectives were to ensure older people had regular incomes, shelter, healthcare and access to their rights and entitlements.

Working with local organisations, the agencies provided cash transfers, shelter repairs, training in carpentry and geriatric care, a mobile community health service, and ensured community pharmacies had access to appropriate and affordable medicines. They also helped older people access legal documents and senior citizen ID cards.

Older carpenters were trained in new building techniques, resulting in stronger shelters with improved resistance. Those who had lost their tools were provided with replacements to ensure they could resume work.

At least 10 000 older people received cash transfers, with 11 000 receiving cash and repair kits to build new homes. Rice seeds and fertilizer were given to 7 000 farmers. Cash helped kick start businesses ranging from selling fish and food to taxi services, pig and poultry farming, and fishing.

The support enabled older people to help one another and improve their own resilience in the aftermath of the typhoon and encouraged them to actively participate in the process of rebuilding age-friendly communities.

Older people were encouraged to join training in psychosocial support and present radio programs about some of the issues being discussed. Many older people said that these activities made them realise how they could contribute, helping them to feel part of society again.

Mr Ian Clarke, HelpAge International and Coalition of Services of the Elderly Emergency Programme Director in the Philippines said 'In any emergency, helping communities to meet their most immediate needs as well as aiding longer-term recovery is a challenge.

But we have overcome these challenges with the active involvement of older people themselves as well as with the support of their organisations,' he said.

The Confederation of Older Persons Association of the Philippines (COPAP) also contributed in the success of the acute emergency relief phase through psychosocial support to older people, identifying specific needs and helping to distribute aid.

1 See www.helpage.org/newsroom/latest-news/older-people-disproportionately-affected-by-typhoon-haiyan.

2 See *Assessment of Older People - Super Typhoon Yolanda*, UNHCR/HelpAge International, December 2013.

3 See www.nscb.gov.ph/ru8/FactSheet/FS_on_Poverty.pdf.

4 See HelpAge secondary data, *Typhoon Haiyan*, 22 November 2013.

5 See *Assessment of Older People - Super Typhoon Yolanda*, UNHCR/HelpAge International, December 2013.



Image: Aldrin Noiny/HelpAge-COSE

About these organisations

HelpAge International helps older people claim their rights, challenge discrimination and overcome poverty, so they can lead dignified, secure, active and healthy lives. www.helpage.org

The Coalition of Services of the Elderly (COSE) helps older people to continue living in and contributing to their communities.



Image: Hazel Aynne Garcia/HelpAge-COSE

Cash transfers helped people buy what they needed and keep businesses going.



Image: Robyn Lacey/HelpAge-COSE



Image: Hazel Aynne Garcia/HelpAge-COSE

Involvement in psychosocial support and radio programs provided valuable opportunities for contribution for older people.



Image: Carolyn Ganham/HelpAge-COSE

Distribution of radios helped people get vital information.

Notes from the Field

Mercury Rising replay available

The unexpected elements of a bushfire and the community's decision-making were explored in an interactive live event in September.

The Bushfire and Natural Hazards CRC teamed with South Australia's Country Fire Service and the South Australian Department of Environment, Water and Natural Resources for *Mercury Rising: Extreme Bushfires*, which was hosted by RiAus in Adelaide on 23 September 2014.

Bushfire and Natural Hazards CRC researchers Dr Mika Peace (Bureau of Meteorology), Associate Professor Jason Sharples (University of New South Wales) and Dr Josh Whittaker (RMIT University) examined the unexpected ways that weather, terrain and vegetation affect bushfire behaviour, as well as how communities react to extreme bushfire threat.

An audience of emergency management practitioners and the general public watched from the studio at the Science Exchange in Adelaide, with the event simultaneously streamed online, seeing hundreds of people join in the discussion via the RiAus smartphone or tablet-based audience voting system. By voting on the scenarios presented, the audience and online participants could choose the direction of the discussion in a 'Choose Your Own Adventure' style storyline.

CFS Project Manager of Partners in Bushfire Safety Peta O'Donohue said the forum helped to get the message out that when it comes to bushfires, people must expect the unexpected.

'Bushfires are dangerous and it is critical that bushfire preparation is taken seriously.

'People must take responsibility for their safety and ensure they have a Bushfire Survival Plan in place.

'It was great to have the involvement of the Bushfire and Natural Hazards CRC researchers to hear about the science of fire weather, extreme bushfire behaviour and community behaviour,' Mrs O'Donohue said.

The full replay of the live stream is available on the Bushfire and Natural Hazards CRC website¹.

The event was promoted widely throughout regional areas in South Australia. Many of those tuning in were watching as part of group meetings for rural fire brigades and land management offices.



Dr Paul Willis from RiAus and Dr Mika Peace from the CRC and the Bureau of Meteorology discuss extreme fire weather.



Dr Josh Whittaker explained how communities react to bushfire, and why they do or don't prepare.

1 BNHCRC website. At: www.bnhcrc.com.au/events/2014-extremefire.

Notes from the Field

Public event marks International Day for Disaster Risk Reduction

Monday 13 October was the International Day for Disaster Risk Reduction. To raise awareness, the Bushfire and Natural Hazards CRC held a free public forum in Canberra.

The forum featured a panel of speakers who explored Australia's contribution to natural disaster risk reduction at home and in the region. All talks were filmed, with replays and an overview available at www.bnhcrc.com.au.

The panel featured:

- Samantha Chard - Attorney-General's Department, Assistant Secretary Emergency Management Policy.
- Dr Helen James - Australian National University, a specialist in Asian disasters, governance and sustainable development.
- Andrew Coghlan - Australian Red Cross, National Manager, Emergency Services.
- Professor Stephen Dovers - Australian National University, Director of the Fenner School of Environment and Society.

The event was held at University House at the Australian National University. Around 60 people attended, with a lively question and answer session following short presentations by each of the speakers.

The forum drew on the perspectives of researchers, academia, government and NGOs, exploring the challenges faced in preparing for and responding to natural disasters, what can be done today to ensure the impacts are less tomorrow and that the recovery process is better, and what policy changes would be needed.

The International Day for Disaster Reduction started in 1989 with the approval of the United Nations General Assembly. The UN General Assembly sees the day as a way to promote a global culture of disaster reduction, including disaster prevention, mitigation and preparedness.

The day promotes how people and communities are reducing their risk to disasters and raising awareness about the importance of disaster risk reduction. Each year the day is themed. For 2014 the theme was *Resilience is for Life: Older Persons and Disasters*.

The Bushfire and Natural Hazards CRC was recently appointed the national coordinator for the Integrated Research on Disaster Risk (IRDR) in Australia. This is backed by the United Nations International Strategy for Disaster Reduction, the International Council for Science and the International Social Science Council and seeks to promote and support disaster risk reduction research programs and activities around the world, including the International Day for Disaster Reduction.



Samantha Chard, Assistant Secretary Emergency Management Policy at the Attorney-General's Department speaking at the International Day for Disaster Risk Reduction forum.



Speakers at Disaster Day 2014 were Bushfire and Natural Hazards CRC CEO Dr Richard Thornton, Samantha Chard (Attorney-General's Department), Dr Helen James (Australian National University), Andrew Coghlan (Red Cross), Professor Stephen Dovers (Australian National University) and MC Catherine McGrath.



The panel discussions explored Australia's contribution to natural disaster risk reduction at home and in our region.

Notes from the Field

Signing of South Australian Common Incident Management Framework – Control Agency Agreement

On 20 February 2014 a Common Incident Management Framework Control Agency Agreement was signed by all South Australian Control Agency Chief Executive Officers. South Australia emergency management arrangements determine a Control Agency for all emergencies regardless of level and require all other agencies to support that control agency in meeting 10 defined objectives for resolving an incident. There are nine different agencies allocated the control role across the emergency spectrum in South Australia. Some of these agencies use the AIIMS model, Police use the ICCS+ model, and there are a number of other derivatives in use.

This is a first across Australia and means control agencies in South Australia will work under a common framework, with consistent terminology and standards at local, regional and state levels. In addition, the framework commits the control agencies to:

- apply functional management
- align management with the 10 responsibilities of a control agency
- provide for a common diagrammatic representation of the management structures, and
- nominate that the person leading the control agency in the response is to be known as the Incident Controller.

This last point will reduce a large amount of confusion that arises with multiple persons wearing similar tabards. The new South Australian framework does not detract from the AIIMS or ICCS+ models but builds them into a common framework to ensure interoperability.

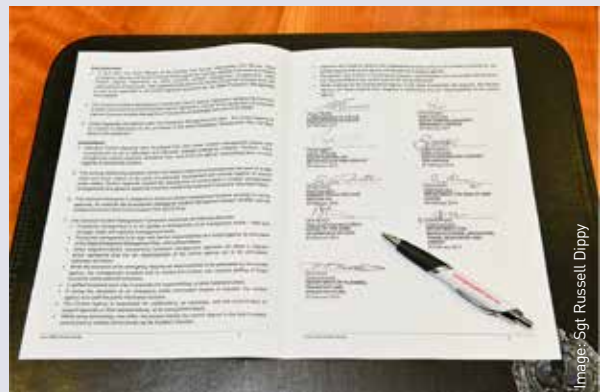
This new framework builds on the April 2011 agreement signed by the Country Fire Service (CFS), Metropolitan Fire Service, State Emergency Service and Police which at the time was also a first across the nation. The 2011 agreement has been successful and, in fact, received recent praise at the last South Australian State Emergency Management Committee by the CFS Chief Officer (Mr Greg Nettleton) who asserted that one of the reasons for the successful management of the January fires, heat and flood events was in part due to the seamless integration between the emergency services, due to the common incident command systems in use between emergency services and police in the state. The commonality of this system with national systems also allowed seamless integration of the fire-fighting resources from New South Wales, Western Australian and Victoria. Given that praise, it can be reasonably assumed that the new agreement will have similar benefits for the community.

The State Coordinator, Police Commissioner Gary Burns congratulated all signatories for their unity and commitment noting that such cooperation between the agencies significantly contributes to ensuring that the South Australian community receives the best possible response from all agencies in time of an emergency.

For further information on this agreement please contact SAPOL's Emergency Management Coordinator, Senior Sergeant Russell Dippy at russell.dippy@police.sa.gov.au or 08 732 24251.



Standing left to right: Rick Janssan (for Geoff Knight), Don Frater (for Scott Ashby), Brett Morris, Grant Lupton, Stephen Christley (for David Swan), Rod Hook. Seated left to right: Greg Nettleton, Gary Burns, Chris Beattie.



The Common Incident Management Framework Control Agency Agreement signed by all South Australian Control Agency Chief Executive Officers.

CALL FOR PAPERS AND PEER REVIEWERS

The *Australian Journal of Emergency Management* is an official publication of the Attorney-General's Department. Its purpose is to be a world-class journal advancing emergency management knowledge, research and practice.

In 2015 the AJEM will publish a special edition focussed on animals and pets – both as at-risk factors for evacuation and their role in recovery.

Practitioners, professionals and academics are encouraged to submit manuscripts for publication consideration. Authors should refer to and comply with the AJEM Editorial Guidelines and the Contributor Guidelines available on the AJEM website. Papers will be evaluated on the basis of originality, content, clarity, and relevance to the theme.

Practitioners, professionals and academics with particular experience, knowledge and skills in this area are invited to nominate as a referee of papers.

All correspondence can be directed to ajem@ag.gov.au.

TYPES OF SUBMISSION

Research articles: present an original thesis and report results that are based on an empirical method of evaluation. Subject to double blind peer review. Word limit guide (total with references): 3000 words.

Practitioner papers: present information, innovation, practice stories, lessons learned, evaluation and on-the-ground methodologies in a practical sense. Subject to single peer review. Word limit guide (total with references): 3000 words.

Opinion: pieces that reflect the submitting author's evaluation of and commentary on the topic that is of interest to students and practitioners of emergency management. Approval to publish opinion pieces rests with the Editor-in-Chief. Not peer reviewed. Word limit guide: 1000-1500 words.

Book/media review: reviews a recent publication on the topic. Reviews must provide critical evaluation of content. Not peer reviewed. Word limit guide: 700-800 words.

Case study/reports: present a short explanation and evaluation and possible recommendations about a particular topic relevant to the theme. They could include lessons learned, innovative practices, and new developments. May be subject to single peer review.

Word limit guide: 700-800 words.

DEADLINES

Abstracts for editorial consideration are required by **20 February 2015**.

Other submissions are required **as soon as possible**.

Correspondence: ajem@ag.gov.au



Australian War Memorial, Canberra – 24 November 2014



The Resilient Australia Awards national ceremony is the culmination of the year's awards program which is sponsored by the Attorney-General's Department in conjunction with the states and territories.

The Hon. Michael Keenan MP, Minister for Justice presented the 2014 Resilient Australia Awards at a ceremony held at the Australian War Memorial in Canberra on Monday 24 November 2014. There were a total of 24 entries recognised from 160 applications.

'Congratulations to the award-winning and highly commended projects in this year's national Resilient Australia Awards.

'These awards recognise outstanding contributions communities are making to disaster management including risk assessment and mitigation, education, training and research, community awareness and engagement, as well as to response and recovery.

'The work of these organisations, groups and individuals are helping to prepare our nation for future natural disasters and ensuring our communities are more resilient to adverse events that are a fact of life when living in Australia.

'The Australian Government is committed to making the nation's communities safer and more resilient to natural disasters. Better understanding of how we can manage our natural disaster risks is essential to achieving this goal.

'There is an opportunity for reform, to better protect our communities from harm and improve the living standards of Australians. The release of the Productivity Commission's draft report in September was an important step in this process', said Minister Keenan.



Australian Red Cross *Building Resilience Workshops*

The Building Resilience Workshops project focused on making sure older people, people with disabilities and those from culturally and linguistically diverse communities are better prepared for disasters. The Australian Red Cross worked in partnership with councils, emergency agencies and experts, to determine how best to provide preparedness messages to vulnerable members of the community. The ultimate aim was to ensure people would have the skills to prepare for, respond to and recover from disasters.



Mt Wilson/Mt Irvine Rural Fire Brigade *Mt Wilson/Mt Irvine Community Engagement Plan*

The Mt Wilson/Mt Irvine Rural Fire Brigade developed a Community Engagement Plan to improve communication with the community. Neighbours worked together in survival planning and gained a better understanding of their role in an emergency. A Response Plan and Recovery Plan were also developed. The Brigade runs workshops on planning for a bushfire and provides information via the community newsletter and community website which is jointly funded by the Brigade, Mt Wilson Progress Association and the Historical Society. Evaluation following the 2013 State Mine Fire showed a high level of community participation and contribution to the response.

Top: Carolyn Townsen, The Hon Michael Keenan MP, Jody Broun and Diana Bernard
Bottom: Elizabeth Raines, Kathleen Oakes, The Hon Michael Keenan MP and Kim Gow

Not-for-Profit



Bundaberg North State School *Bears Calm Bundy North after 2013 Floods*

Bundaberg North was devastated by floods in 2013. Nearly every home sustained significant damage. During the emergency the Bundaberg North State School became a hub for physical and emotional support. This prompted the school Guidance Officer to provide ongoing support for students and their families. The Guidance Officer developed the BEAR Plan and along with the school Chaplain, students were taught calming strategies based on the letters B E A R – Breathe, Exit, Ask, Relax. Students were also given teddy bears to help calm them when they became emotionally overwhelmed.



University of Wollongong *Floodengage*

Floodengage is an online support system that empowers the community to learn about, prioritise and make collective and considered decisions about floodplain management options for their local water catchment area. Floodengage provides a database containing knowledge on a range of flood management measures currently available. This data includes information on management options, specific advantages and disadvantages, and environmental, constraints faced by the community. Floodengage also documents case studies, past successes, and lessons learned.

Top: Alan Bowmaker, The Hon Michael Keenan MP, Selina Taggart and Veronica Geiger
Bottom: Ray Laine, The Hon Michael Keenan MP and Chris Cook

Education and Research



Are U Ready: Anthony Turner and Sandra Slatter *Are U Ready? - surviving small business disaster*

Are U Ready? –surviving small business disaster is a unique and easy to read book that provides clear insights into the psychological and emotional impact of disaster. Are U Ready is a comprehensive and easy to complete series of check-lists, tools and templates designed to assist business owners both identify and then create realistic plans to mitigate potential threats to their business.

Sandra Slatter, The Hon Michael Keenan MP and Anthony Turner

Private Sector



Geoscience Australia *Water Observations from Space*

The Water Observations from Space (WofS) program aims is to better inform communities of where flooding is usually present, where it is seldom observed, and where inundation occurs. WofS is derived from satellite imagery archives dated from 1998—2012. WofS was developed to provide a nationally consistent view of surface water in an open and accessible way to improve the understanding of floods. WofS is part of the National Flood Risk Information Project and is available through the Australian Flood Risk Information Portal and via web map services at Geoscience Australia.

The Hon Michael Keenan MP and Norman Mueller

Australian Government



Australian Red Cross and Noggin IT *Register.Find.Reunite*

The Register.Find.Reunite program was funded by the National Emergency Management Projects grant program and the Australian Red Cross in partnership with state and territory governments. Register.Find.Reunite is a voluntary registration and enquiry service for people impacted by an emergency through a web-based filing system. The system helps reunite families, friends and loved ones separated by an emergency. It provides basic details on the whereabouts of people and also streamlines access to agencies providing recovery support services.



Women's Health Goulburn North East, Women's Health in the North and the Monash Injury Research Institute *Gender & Disaster: Leading the Change*

Leading the Change is working to achieve better health, wellbeing and safety outcomes for community members and emergency service workers through ground-breaking work in the area of gender and disaster. It brings a gender-focus to disaster policy, planning, training and practice. Its aim is to improve the support that men and women receive before and after disaster, mitigate risks to men and women's health and wellbeing post-disaster and to build awareness of the critical need for attention to gender in disaster planning.

Top: Owen Prime, Simon Rickard, The Hon Michael Keenan MP, Julie Groome and Charlie Forsyth
Bottom: Claire Zara, Debra Parkinson, The Hon Michael Keenan MP, Susie Reid and Helen Riseborough

Nationally Significant



Department of Natural Resources and Mines Qld *Queensland Flood Mapping Program*

The Queensland Flood Mapping Program provides the Queensland community with information that assists in preventing, preparing, responding to and recovering from flood disaster across the state.

The first two phases of the program have included mapping more than 100 high-risk flood towns in 40 local government areas and developing flood maps for a further 75 at-risk locations. These flood maps are now being incorporated into geospatial information systems to better articulate flood hazard and determine strategic land use planning.



Tasmania Fire Service and the University of Tasmania *Bushfire Ready Neighbourhoods Tasmania (pilot project)*

The Bushfire Ready Neighbourhoods program trialled the implementation of evidence-based community development in bushfire prone areas by working with selected communities to build community preparedness and resilience.

An example of this was a community-led bushfire prevention, preparedness and recovery event called 'Molesworth Fires Up'. This was a whole of community event that included students from the local school participating in the trial.

Top: Graeme Milligan, The Hon Michael Keenan MP, Sudarshan Karki and David Carlisle
Bottom: Sandra Barber, The Hon Michael Keenan MP, Mai Frandsen and Peter Middleton

State and Territory Government



Further information about the Resilient Australia Awards program is on the Australian Emergency Management Knowledge Hub on the *Connect!* page: www.emknowledge.gov.au.



Emma van der Moezel

Renewal by Fire

The winning photograph (as voted by the public) depicts the burning of fuels which could be a hazard to communities in the ACT. The fire was a controlled hazard reduction burn by the ACT Rural Fire Service as part of the assessment of the newest fire fighters.

The Hon Michael Keenan MP and Emma van der Moezel

Photograph



Cairns Regional Council with Deaf Services Queensland, CentaCare Migrant Services and ARC Disability Services

Be Ready, Cairns!

The most at risk community members in the Cairns region have been the priority in a targeted public engagement program to grow disaster resilience. This has been achieved by working together to share knowledge, raise awareness and develop self-management response strategies. Specialised resources were developed and provided free in hardcopy and electronic versions from a wide variety of sources such as all the region's libraries.

The success of the Be Ready, Cairns! program was fully demonstrated through community preparation for and response to Tropical Cyclone Ita.



Sydney Coastal Councils Group and the University of Sydney

Coastal Vulnerability to Multiple Inundation Sources

The Coastal Vulnerability to Multiple Inundation Sources (COVERMAR) project facilitates the development of balanced, multi-hazard mitigation strategies. This project has developed the first multi-hazard assessment tool which compares the risks posed by multiple hazards, namely tsunami and storm surges using a probabilistic approach. The project also assesses the vulnerability of different types of buildings and critical infrastructure and assesses the financial cost applicable to inundation damage.

Top: Hala Kattab, The Hon Michael Keenan MP and Sioux Campbell
Bottom: Filippo Dall'Osso, The Hon Michael Keenan MP, Dale Dominey-Howes and Stephen Summerhayes

Local Government



A full list of the award recipients can be found at www.em.gov.au along with the annual awards booklet and photo gallery from the national ceremony.

Australian Emergency Management Institute embarks upon new chapter



After nearly 60 years at Mount Macedon, Victoria, the Australian Emergency Management Institute (AEMI) is moving to Canberra. The relocation will be completed by mid-2015.

On a historical note, the original premises for AEMI was first opened in 1956 at Mount Macedon in Victoria, then known as the Australian Civil Defence School, which was then renamed AEMI in 1993. In 2001, the Institute moved from the Department of Defence to Emergency Management Australia (EMA) in the Attorney-General's Department.

EMA-AEMI concept

The AEMI concept, as often showcased to overseas agencies, is that it is embedded in the Australian government and is connected to a policy environment. It is directed and guided by the government and senior executives of the Australia–New Zealand Emergency Management Committee. In this way, EMA-AEMI focuses on capability development for the whole nation.

EMA-AEMI's liaison with jurisdictions and agencies in pursuit of national capability development through excellence in education and knowledge management is a fundamental success factor for the Institute.

EMA-AEMI in 2015 and beyond

EMA-AEMI's core objective—to build capability through collaboration, innovation and education—will continue to guide the Institute as it transitions to a new era, with a new base in Canberra.

EMA-AEMI will continue to develop new products and services for the emergency management sector, including workshops, seminars, masterclasses and other events, bringing together practitioners, policy makers and other key stakeholders to build knowledge and collegiality at a senior level.

Other products and services will continue to be at the heart of EMA-AEMI's work encompassing community awareness programs, school education activities, ongoing development of the Australian Emergency Management Knowledge Hub, including the library, and publishing the Australian Emergency Management Handbook Series and the Australian Journal of Emergency Management.

The Institute has played a significant role in driving national emergency management capability and disaster resilience for close to six decades and will do so well into the future, with its influence reaching across Australia and regions of interest.



Australia & New Zealand
**SEARCH &
RESCUE
CONFERENCE**

Preparing • Deploying
Operating Search and Rescue

Jupiters Gold Coast
6th May 2015

www.sar.anzdmc.com.au



The Australian & New Zealand Search and Rescue Conference brings together leading practitioners to discuss challenges of preparing, deploying and operating search and rescue.

The aim of the conference is to facilitate sharing, knowledge and experience between the different search and rescue agencies, enterprises, communities and professionals. Presentations will cover air, sea, land-based, urban, wilderness, domestic and overseas search and rescue.

The focus of the conference will be better integration to more effective search and rescue operations. The program will reflect just how much the search and rescue world has evolved, tackling issues ranging from the latest requirements for airborne search and rescue assets through to the latest in innovative life-saving training and techniques.



**DISASTER &
EMERGENCY
MANAGEMENT**



The **Australian & New Zealand Disaster and Emergency Management** Conference will be held at Jupiters Gold Coast on the 3rd - 5th May 2015. The Conference will continue our support for the Disaster and Emergency Management community. You are invited to join us as we focus on natural disasters with the conference theme of **“EARTH; FIRE AND RAIN”**.

The Conference will feature multi-agency presentations covering all phases of emergency and disaster management – prevention, preparedness, response and recovery. There will be representation by fire, ambulance, emergency, rescue, volunteer, defence and health sectors.

Presentations will facilitate discussion and provide a spotlight on developing leaders in Disaster and Emergency Community.

Joint initiative of:



Australian & New Zealand Disaster and Emergency Management Conference

3 – 5 May 2015 | Jupiters Gold Coast | www.anzdmc.com.au

EMERGENCY MEDIA
& PUBLIC AFFAIRS
CONFERENCE
2015

PARKROYAL HOTEL
DARLING HARBOUR
SYDNEY AUSTRALIA

SUNDAY 31 MAY
----- to -----
TUESDAY 2 JUNE

Australia's leading forum for
Emergency & Disaster
communications

FIRST NOTICE SAVE THE DATE SUNDAY 31 MAY TO TUESDAY 2 JUNE 2015



CONFERENCE FEES incl. GST:

EARLYBIRD

Booked before 28/02/15

Individual: \$1175

Group, of 3 or more:
\$1095 ea

FULL FEE

Booked after 28/02/15

Individual: \$1375

Group, of 3 or more:
\$1095 ea

Now presenting the 9th Annual Australian Conference, EMPA 2015 reviews and discusses current best-practice in Emergency & Disaster Communications.

Formed in 2006, EMPA is recognised as the first organisation of emergency services and crisis communications practitioners in the world.

WHO WILL ATTEND?

- Emergency Public Information Officers
- Emergency Services Senior Management
- Federal, State and Local Government
- Response and Recovery Agencies
- Media Managers
- Media Liaison Officers
- Public Affairs Practitioners
- Crisis Communication Professionals

- Editors & Journalists
- Public Relations Professionals
- Researchers

PROGRAM:

- Half-Day Workshop
- Interactive Sessions
- Two Days of Regular Sessions
- Welcome Cocktails
- Conference Dinner and 'Disastrous' Trivia

...with more to be announced

NEED MORE?

For updates & information, including a full list of fees, plus booking and registration forms:

- **VISIT**
www.empa.org.au
- **PHONE**
(03) 9596 6662
- **EMAIL**
events@hpe.com.au

KEYNOTE SPEAKERS TO BE ANNOUNCED

PRESENTED BY Emergency Media & Public Affairs
SPONSORED BY Emergency Management Australia
ORGANISED BY High Profile Events





Australian Government

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Emergency Management Australia



BUILDING DISASTER RESILIENT FUTURES: PROFESSIONAL DEVELOPMENT WORKSHOPS

Building disaster resilience in your students will help them, their families and their communities when disaster strikes. This workshop will help you understand how.

The 'Building Disaster Resilient Futures' professional development workshops will put you in direct contact with disaster resilience education leaders and in touch with contemporary educational resources for your classroom.

Disasters are inevitable. Each year Australian communities are increasingly affected by disaster such as floods, bushfires and cyclones. The emotional, social and economic costs of such events to individuals and communities are substantial. Therefore, up-to-date knowledge about preparedness, response and recovery in relation to disasters should be part of everyday classroom discussions.

Hosted by Emergency Management Australia (EMA), we invite principals and leading teachers to join us to gain important insights on what disaster resilience education means to your teaching, and explore a range of ideas, resources and strategies to help build the capacity of your students, school and community.

SHOWCASE OF DISASTER RESILIENT RESOURCES

Discover the numerous online and offline disaster resilience resources and collaborative activities that you can readily access to develop and grow your lesson ideas and share with your teaching colleagues.

NATIONAL PRESENTERS

Each workshop includes a mix of inspiring and informative presentations, opportunities for interaction, networking and discussion, with a range of speakers including:

- **Jane Hayward, Principal, Strathewen Primary School, Victoria**
Personal account of the 2009 Black Saturday fires, Victoria, and the school community's journey through disaster to recovery.
- **Professor Kevin Ronan, Foundation Professor in Psychology, School of Human, Health and Social Sciences, Central Queensland University**
A perspective on disaster resilience education, its importance and linkages to policy, practice and research.
- **Michelle Roberts, Senior Psychologist, Department of Education and Early Childhood Development, Victoria**
Practical insights and understanding of schools and communities in times of disaster and trauma.

REGISTER NOW FOR THIS NO CHARGE EVENT

Cost: No charge
(catering included)

Time: 9:30am-5:00pm

For more information email
enquiries@dk2.com.au

Register: <https://www.surveymonkey.com/s/DisasterResilienceEdWorkshopRegistration>



Melbourne February 9 | Perth February 23 | Brisbane March 6 | Sydney March 20

www.emknowledge.gov.au/connect/DRASEN

EM Online: ABC Emergency

www.abc.net.au/news/emergency

The ABC Emergency website provides emergency warnings and coverage of events before, during and after times of crisis and disaster throughout Australia.

Sourced from ABC Local Radio and ABC News, the website highlights the type and location of an emergency and links to more information across other communication channels so users can make decisions about how to prepare for an emergency.

When emergencies reach a serious level, ABC Emergency alerts users about official warnings as soon as they come to hand.

The website also includes the ABC Emergency Twitter feed, emergency checklists and survival kits, a contact list for emergency services throughout Australia and ABC coverage of past emergencies, recovery information and other articles of interest.

The screenshot shows the ABC Emergency website interface. At the top, there's a navigation bar with 'Warnings and Alerts', 'Get Ready & Survive', 'Recovery Information', 'Emergency Services', and 'Disasters in Australia'. The main heading is 'Current ABC Emergency Coverage'. Below this is an 'ALERTS AND WARNINGS SUMMARY' section with a note: 'Note: this listing may contain non-emergency related information'. It lists regions with alert counts: QUEENSLAND (7), NORTHERN TERRITORY, NEW SOUTH WALES AND ACT (4), TASMANIA, VICTORIA (4), WESTERN AUSTRALIA (7), and SOUTH AUSTRALIA. A map of Australia highlights these regions with red numbers. To the right, there's a 'Tweets' section showing a tweet from @GrahamCreed about a bushfire and another from @ABC_Emergency about a cyclone forecast. Below the map, there's an 'EDITOR'S PICK' section with three featured articles: 'Cyclone Tracy transitions', 'Photos show storm chaos', and 'El Nino closer'. At the bottom, there are three more articles: 'Preparing for cyclone', 'Surviving disasters', and 'Confronting disaster'.

This screenshot shows the 'Get Ready & Survive: Plan for an Emergency' section. It includes a sub-heading 'The ABC Emergency team has sourced advice from emergency agencies on how to plan for an emergency including survival kits, what to do guides and important resources when planning for Bushfires, Cyclone, Flood, Earthquake, Storms or a Heatwave.' Below this, it says 'Select an emergency to access the relevant resources:' and presents a grid of six buttons for different emergency plans: BUSHFIRE PLAN, HEATWAVE PLAN, STORM PLAN, EARTHQUAKE PLAN, FLOOD PLAN, and CYCLONE PLAN. Each button includes the text 'Checklists & Survival Kits'.

This screenshot shows the 'Current Warnings: Western Australia' section. It features a sub-heading 'Current ABC Emergency Coverage' and a note: 'Current Alerts and Warnings: Western Australia. Note: this listing may contain non-emergency related information.' Below this, there are three specific warning alerts. The first is a cyclone forecast: 'If you live south of a line from Hopetoun to Norseman to Belgair to Eymé you should take action and stay safe with the start of bad thunderstorms. Issued 11:20:00 AM AWST on Monday 01 December 2014'. The second is a bushfire ADVICE: 'A bushfire ADVICE remains in place for people in Deean Farm Estate in Lancelin in the Shire of Gingin. Issued 11:00:00 AM AWST on Monday 01 December 2014'. The third is another bushfire ADVICE: 'A bushfire ADVICE remains for people in Eneabba in the Shire of Carnamah.'



Australian Government
Attorney-General's Department
Emergency Management Australia



Australian Emergency Management Knowledge Hub

THE AUSTRALIAN EMERGENCY MANAGEMENT KNOWLEDGE HUB

This innovative new online resource, developed by Emergency Management Australia, through the Australian Emergency Management Institute, provides emergency management practitioners, researchers, educators, policy makers and the general public access to:

- a research clearing house
- an historical disaster event database
- a case study library
- a multimedia library
- cross-sectoral discussion forums
- new media collaboration tools
- blogs.



The Knowledge Hub is a virtual and an actual knowledge environment and includes access to resources in the Australian Emergency Management Library. The Knowledge Hub provides ready access to evidence-based research leading to:

- enhanced decision making
- improved policy development
- a cycle of continuous improvement for the emergency management sector.

The Knowledge Hub is continually updated and informed by feedback, resources and ideas from users.



Visit: www.emknowledge.gov.au

Contact: emknowledge@ag.gov.au

Join:  @AEMKH

BUILDING A DISASTER RESILIENT AUSTRALIA



GET READY



Australian Government
Attorney-General's Department
Emergency Management Australia

Australian Emergency Management Handbooks

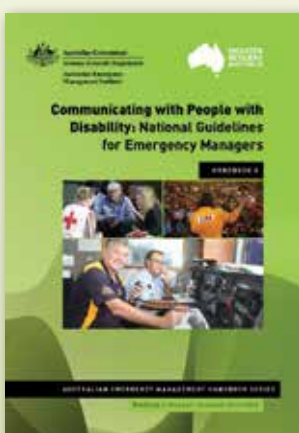
NEW RELEASES



HANDBOOK 3
Managing Exercises



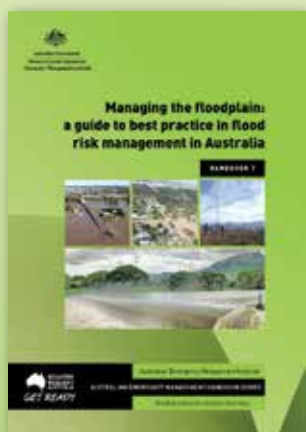
HANDBOOK 4
Evacuation Planning



HANDBOOK 5
Communicating with People with Disability



HANDBOOK 6
Community Engagement Framework



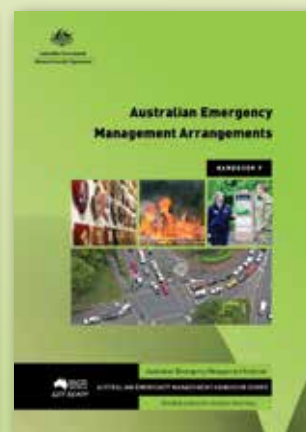
HANDBOOK 7
Managing the Floodplain



HANDBOOK 8
Lessons Management English version



HANDBOOK 8
Lessons Management Arabic version



HANDBOOK 9
Australian Emergency Management Arrangements



Download free eBook or order your own hardcopy via our new print-on-demand service at: www.em.gov.au/publications

Building a disaster resilient Australia