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Australian Emergency Management Institute

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Building a disaster resilient Australia

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

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ABOUT THE JOURNAL

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

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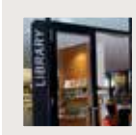
The Hon Robert McClelland, MP, Minister for Emergency Management promoting the DisasterWatch phone app.



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Foreword

By Roger Wilkins AO, Secretary Attorney-General's Department, Co-Chair of the National Emergency Management Committee.

On 14 December 2011, the first ever Commonwealth Minister for Emergency Management, The Honourable Robert McClelland MP, was sworn in. Minister McClelland is very familiar with this area of work and we look forward to working with him in this role.

Minister McClelland has an interest in new social media as a means of improved communication for disaster resilience. He recently launched the new '*DisasterWatch*' phone app that has been developed by the Department. The *DisasterWatch* app will improve national access to disaster information and help reduce unnecessary calls to Triple Zero in the event of a natural disaster.

This first edition of AJEM for 2012 has a Social Media theme. In addition, it also features:

- items from the recent Ministerial Council meeting,
- profiles on the work of the Australian Maritime Safety Authority and the Volcanic Ash Advisory Centre,
- showcasing of best practice through reporting on the Australian Safer Communities Awards announcements, and
- information on a new AGD disaster resilience product, the '*DisasterMapper*' school education on-line resource.

In relation to social media, I find that it is proving to be a powerful tool in all aspects of emergency management. The unexpectedness and speed at which humanitarian disasters can sometimes strike is often – in these digital times – initially documented and transmitted through the various social media channels by individuals witnessing the crises first-hand and through their friends.

I can see that emergency agencies will need to learn to use more rapid communications to inform the public. Agencies will need to be willing to seek information from the public and also to intervene into social media networks to convey correct and credible disaster information.

During the Queensland floods of January 2011, the Queensland Police's mythbusters tweets were used to clarify misinformation circulating on Twitter. The mythbuster tweets intervened into the public discussion space successfully correcting wrong information but also building their own credibility.

Looking ahead, 2012 will see all of us, including AJEM, actively progressing the COAG National Strategy for Disaster Resilience. The relevant Ministerial Council, the Standing Council on Police and Emergency Management SCPEM, has provided guidance on six key messages in relation to national disaster resilience. I present them here for you, in their short form:

- Disasters will happen
- Disaster resilience is your business
- Connected communities are resilient communities
- Know your risk
- Get ready – then act
- Learn from experience

A broader Communications Plan for the Disaster Resilience Strategy has also been formulated and proposals for resourcing and co-ordination will be brought before the National Emergency Management Committee.

I trust this future-focused edition of AJEM inspires your emergency related work.

About Roger Wilkins

Mr Roger Wilkins AO is Secretary of the Australian Attorney-General's Department. Prior to his appointment in 2008, he was Citi's Head of Government and Public Sector Group Australia and New Zealand.

Mr Wilkins was the Director-General of the New South Wales Cabinet, and Director-General of the Ministry of Arts. He has chaired a number of national taskforces and committees and was responsible for the introduction of an emissions trading scheme in New South Wales and design of a national emissions trading scheme for Australia. In 2008 he led the strategic review of climate change programs for the Commonwealth Government.

Mr Wilkins is a member of the Board of the Forum of Federations and advises international federal systems, particularly on fiscal issues. He was appointed an Officer of the Order of Australia in 2007 for service to public administration in New South Wales.

Standing Council on Police and Emergency Management

COMMUNIQUÉ

Auckland, 11 November 2011

The inaugural meeting of the Standing Council on Police and Emergency Management (SCPEM) was held on 11 November 2011 in Auckland, New Zealand. The new Council, established by the Council of Australian Governments in October 2011, forms part of the new Ministerial Council arrangements recommended in the Hawke Review. It brings together previously separate police and emergency management ministerial councils offering an integrated and strategic approach to the critical work and cutting-edge reforms being implemented in these areas.

- **Hon Judith Collins MP**
  Minister of Police
- **Hon Craig Foss MP**
  Minister for Civil Defence
- **Hon Robert McClelland MP**
  Attorney-General
- **Hon Brendan O'Connor MP**
  Minister for Home Affairs and Justice
- **Hon Michael Gallacher MP**
  Minister for Police and Emergency Services
- **Hon Peter Ryan MLA**
  Minister for Police and Emergency Services
- **Hon Neil Roberts MP**
  Minister for Police, Corrective and Emergency Services
- **Hon Rob Johnson MP**
  Minister for Police and Emergency Services
- **Hon Jennifer Rankine MP**
  Minister for Police and Emergency Services
- **Mr David O'Byrne MP**
  Minister for Police and Emergency Management
- **Mr Simon Corbell MLA**
  Minister for Police and Emergency Services
- **Hon Paul Henderson MLA**
  Minister for Police, Fire and Emergency Services

The new Council

Member jurisdictions will share chairing and hosting of the Council. New Zealand hosted this meeting, with the Hon Judith Collins MP, Minister for Police chairing the meeting. One minute of silence was observed for Remembrance Day, which continues to be a strong symbol of the co-operative ties and shared heritage that binds Australia and New Zealand.

Emergency Management

With Australian and New Zealand communities still rebuilding after last summer's devastating Canterbury earthquakes and Australian floods, cyclones and bushfires, the meeting provided a timely opportunity for Ministers to consider ongoing rebuilding and reconstruction work and examine disaster arrangements in preparation for the coming summer.

SCPEM's strategic priorities

The Council focused on the significant gains that have been made in building more disaster resilient governments, businesses, communities and households under the National Strategy for Disaster Resilience (the Strategy). The Strategy emphasises shared responsibility and a shift toward better planning and investment in disaster prevention, preparedness and mitigation.

The Council also agreed to jointly progress priorities of national significance including combating serious and organised crime, cybercrime, inter-jurisdictional co-operation in law enforcement and initiatives to address alcohol fuelled crime, public safety, child protection and related crimes.

Learning from the past to plan for the future

It is a Council priority to ensure that findings from significant commissions of inquiry into disaster events are taken into account in improving preparation, prevention and mitigation activities. Governments, businesses, non-government organisations and the community can learn from these lessons to become better prepared for future disasters.

Inquiries provide valuable lessons for informing national emergency management policy development, including the ongoing implementation of the Strategy.

At the meeting, the Council considered the Review of Recent Australian Disaster Inquiries, an independent study recently commissioned by the Commonwealth Government which considered common themes across a number of disaster inquiries. Importantly, this examination of our past experience supports the decision to take a national resilience based approach now and into the future.

Building disaster resilience capability

Following a successful flood technology forum in September 2011, Ministers agreed to continue to harness the latest scientific and technical expertise by conducting another forum in 2012. The theme for 2012 will be public warning and communication systems and situational awareness.

Ministers also discussed several new initiatives that will provide an immediate boost to our ability to provide information to the public and connect them with each other quickly so that they are better prepared and informed as we head into the Australian disaster season:

- A new Smartphone app will be ready by the end of the year which will provide users with mobile access to information about natural disasters to help them make better informed decisions about what to do and how to prepare.
- A national approach to improving State and Territory Triple Zero call services at times of high demand including:
  - improving interoperability of communications systems,
  - adoption of national phone numbers for State Emergency Services and Police Assistance,
  - all jurisdictions are continuing to partner in the further enhancement of the Emergency Alert system. Ministers agreed to look at ways to improve the integrity of static data relied on by the system, and
  - agreement on developing national standardised qualifications for Triple Zero call takers.
- The Commonwealth, States and Territories are working to provide public safety agencies with a nationally-interoperable mobile broadband capability. This will help first responders get better information about disasters earlier, so that lives and property can be protected.
- Effective communication is not only vital during a crisis but also across the whole prevention, preparedness, response and recovery spectrum. At today's meeting, Ministers endorsed a National Disaster Resilience Communication Strategy, underpinned by six key resilience messages:
  - Disasters will happen – Natural disasters are inevitable, unpredictable and significantly impact communities and the economy.
  - Disaster resilience is your business – Governments, businesses, not-for-profit organisations, communities and individuals all have a role to play and to be prepared.
  - Connected communities are resilient communities- connected communities are ready to look after each other in times of crisis when immediate assistance may not be available.
  - Know your risk – Every Australian should know how to prepare for any natural disaster
  - Get Ready – then act – reduce the effects of future disasters by knowing what to do.
  - Learning from experience – we reduce the effects of future disasters by learning from past experiences.

Knowing our risks

Ministers noted that the Interim Report from the Queensland Flood Commission of Inquiry and the Review of Recent Australian Disaster Inquiries highlighted the importance of knowing our risks for different hazards and factoring this into our disaster preparation.

Ministers agreed on the importance of being able to compare risk assessment and hazard mapping across jurisdictions by adopting the National Emergency Risk Assessment Guidelines. They also acknowledged some of the barriers faced to publishing this information and will take steps in the coming months to address these. This will support disaster resilient policy and planning by governments, town planners, developers, householders and the insurance industry.

Ministers acknowledged the central role of the private sector in making sure essential goods and services continue to be provided or are restored quickly during natural disasters. Key industry sectors will be invited to participate in a national exercise to test our preparations for a major disaster scenario. This will see the start of a national exercise program for emergency management that will allow feedback on issues of national strategic interest to be provided to the National Emergency Management Committee.

Continuing support for disaster response and recovery

Ministers endorsed a report of the review of effectiveness of disaster relief and recovery payments and resolved to implement its recommendations. The Review examines payments and other assistance to individuals and communities affected by natural disasters with a view to better targeting and reducing possible disincentives to disaster resilience. To

inform this process, Ministers committed to better data collection and analysis to evaluate the outcomes of assistance.

Ministers acknowledged the indispensable role of emergency volunteers in disaster response and recovery and resolved to remove impediments to their attraction, support and retention. In particular, this will include identifying and addressing disincentives that may be operating within existing jurisdictional regulatory, training and accreditation frameworks.

Policing

National Organised Crime Response Plan

Ministers noted the significant work of the Commonwealth, States and Territories under the National Organised Crime Response Plan 2011-13, which sets strategic principles and strategies to underpin a multi-jurisdictional approach to combating organised crime in Australia. Ministers today agreed to a range of priority measures under the National Response Plan, and agreed to oversee implementation of measures that focus on policing and law enforcement issues and justice initiatives.

National co-ordination of law enforcement cybercrime training and capabilities

In 2010 the Australia New Zealand Policing Advisory Agency (ANZPAA), taking into account a recommendation from the National Cybercrime Working Group and discussion with the ANZPAA e-Crime Committee and the Electronic Evidence Specialist Advisory Group, agreed to progress the issue of national collaboration in the provision of training and acquisition of technical capabilities in the e-crime area.

Ministers today noted the completion of training and education guidelines for the use of technology crime investigators and digital evidence practitioners as well as an online cybercrime conference and training calendar to ensure national awareness of law enforcement training and education. This is the first such time guidelines have been developed and will allow Commonwealth, State and Territory law enforcement agencies to better coordinate their activities to address cybercrime.

Emerging drug issues

Ministers resolved that the proliferation of synthetic cannabinoids and analogue drugs is an emerging issue that should be considered at a national level, noting concerns about the marketing of synthetic cannabinoids as a legal high. Ministers agreed that the Commonwealth Attorney-General's Department will work with other jurisdictions to examine in detail options for a nationally consistent response to synthetic cannabinoids and report to the Ministers when they meet again in 2012.

National scheme for the mutual recognition of DVOs and information sharing capability

Ministers expressed in principle support for the automatic mutual recognition of DVOs and the benefits a scheme will bring in ensuring protection to aggrieved persons and their children throughout Australia. Ministers also agreed that the Commonwealth will establish and lead a National Police Reference System Working Group, with representatives from Australian State and Territory police services and relevant courts and justice personnel, to consider in detail, the information sharing issues and associated costs that attend this proposal, and report back to SCPEM by the next meeting to ensure mutual recognition of DVOs is facilitated as quickly as possible.

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Completion of the Australian Government Crisis Coordination Centre

On 17 October 2011, former Attorney-General, the Honourable Robert McClelland, (now Minister of Emergency Management) officially opened the Australian Government Crisis Coordination Centre (CCC).

The CCC is part of the National Crisis Coordination Capability Program (NCCCP). The NCCCP was established in 2008 after the completion of the Homeland and Broader Security Review. The Review recommended a need to centralise information and coordination to improve the way the Prime Minister and Cabinet are briefed during a crisis,

The Review recommended the establishment of:

- an Australian Ministerial Briefing Room – now the Parliament House Briefing Room – to enhance decision support to the Prime Minister during a crisis; and
- a CCC that will provide the central point for consolidation and verification of information.

The Prime Minister's National Security Statement (4 December 2008) confirmed the Government's intent to move to an all hazard approach to crisis coordination.

An all hazards approach, as defined in the Australian Emergency Management Glossary refers to all types of emergencies or disasters and civil defence using the same set of management arrangements.

As outlined in the Australian Government Crisis Management Framework, the Crisis Centre Manager has responsibility for the overall management of the CCC. This role is filled by the Director-General of Emergency Management Australia.

In August 2009, work commenced on the development of the CCC Concept of Operations. This included research and analysis of current work practices and

The Hon Robert McClelland MP opening the Crisis Coordination Centre on 17 October, 2011.

aligning new work strategies to the recommendations outlined in the Review.

The CCC Concept of Operations describes the high level functions and processes undertaken within the CCC. The four main functions of the CCC are Situational Awareness, Intelligence, Planning and Public Communication.

Campbell Darby, Director General of Emergency Management Australia, says "the central CCC concept is whole of government coordination. There have been a number of complexities in determining the detail on how the concept would be put into practice. Having a state of the art facility designed to fit the concept has been of great benefit in transitioning to these new arrangements".

"As with any major program, there was a lot of ground work to be done including the development of the new policy proposals and the business case. Once Government approved the concept, the real work began. There were a number of complex activities from designing business processes and assessing requirements to procurement and contracts for demolition, construction, Information Communications Technologies (ICT), secure video teleconferencing (SVTC) and Audio Visual" said Mark Carpenter, Assistant Secretary Crisis Support Branch of Emergency Management Australia.

The design process for the CCC, accommodated in the Edmund Barton Building commenced in July 2009, initially focusing on the spaces shared with the Australian Federal Police. Design work for the CCC spaces began in earnest in February 2010. A design consultative forum was established and brought together the architects, CCC staff representatives and other areas within the Attorney-General's Department. The consultative forum provided an opportunity to workshop ideas for how the space could support the work of the CCC while meeting building codes and security requirements.

By April 2010, there was an approved sketch plan for the CCC space.

Another six months of detailed design work by the architects, engineers and security consultants was required to complete the documentation required for construction. Demolition work in the CCC space began in December 2010 and fit out commenced in January 2011. The fit out of the facility was completed in July 2011 and was followed by two months of Information Communication Technologies (ICT) and Audio Visual installation, rigorous testing and training.

Thorough external agency consultation occurred throughout all phases of the CCC project. External agencies provided input into key concept documentation including the CCC Concept of Operations and other methodologies. Regular stakeholder meetings were undertaken to discuss the implications of the changes being made and the impacts of that these changes would bring.

The CCC has been designed to connect relevant Australian Government, State and Territory agencies to centralise Australian Government actions during complex national crises, to develop a single, timely and consistent picture or understanding of a crisis, its implications and the national capacity to respond.

The CCC is capable of supporting whole-of-government coordination for multiple, concurrent domestic crises and provides support to Department of Foreign Affairs and Trade and AusAID during international incidents.

The CCC is managed by Emergency Management Australia, a division of the Attorney-General's Department (on behalf of the Australian Government) on a 24/7 basis.

"The new CCC facility has greatly enhanced the way CCC Operations does its work" said Emma Appleton, Director of CCC Operations.

"We now work very closely with the Planning and Public Communications functions on a daily basis, and when necessary we will also be able to work with staff carrying out the intelligence function. The new facility also has plenty of room for Liaison Officers from Australian Government agencies and the jurisdictions to work with us when necessary." Ms Appleton says.

Key features of the CCC include:

- a dedicated Situational Awareness room, three planning rooms and a Public Communication room.
- secure video teleconferencing and telepresence suite;
- capacity for up to 100 officers from State, Territory or Australian Government agencies to work collaboratively in a crisis within the functional areas of the CCC;
- high-tech, high-speed and highly secure communications links for officers from all agencies to reach back to their home agency in order to share information;
- meeting facilities with enhanced external videoconferencing capability; and
- enhanced audio-visual technology allowing documents such as maps to be easily shared between groups within the CCC.

"The real test of the CCC will be the 2011-2012 disaster season and future incidents. This will allow all the new capabilities to be tested" said Mr Darby.

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'Disaster Mapper' designed to help build student resilience

The Attorney-General Robert McClelland launched an innovative new interactive schools resource tool designed to help students and teachers find information about disasters on 9 December 2011.

It is called the *Disaster Mapper – An interactive resource for schools* and it is the latest in an extensive suite of disaster education materials available through a national Emergency Management for Schools program managed by the Australian Emergency Management Institute.

"This interactive map of Australia shows a wide range of disaster events from which students can learn about becoming better prepared for emergencies and natural disasters," said Mr McClelland. He launched the resource at the Kogarah High School in southern Sydney.

The *Disaster Mapper* is aimed at Year 5-10 students. It holds statistics, images, video and text for more than 50 significant disaster events that have occurred in Australia from the early 1900s to the present day.

"By looking at the disasters that have gone before us – be they natural events like floods, bushfires, tsunamis, earthquakes, heatwaves or cyclones, or human-caused incidents such as oil spills or bridge collapses – we can better understand causes and prepare for similar events occurring in the future," said Mr McClelland.

"Let's recognise that disasters will happen in this big country and they will have significant impact on our communities. So I encourage all teachers to use this information tool to broaden knowledge and to make it a catalyst for discussion and learning."

The Attorney-General emphasised that learning from past experiences is one of the most valuable ways a community can build resilience and become self-reliant in times of crisis. "Knowing about the risk of disaster and how to prepare will arm everyone before such events occur," he said.

Access to the **Disaster Mapper** can be found on the Australian Emergency Management website at www.em.gov.au/schools

Kogarah High School students in southern Sydney actively engaged with the interactive Disaster Mapper program at the launch.

The Minister for Emergency Management, The Hon Robert McClelland and Executive Director of the Australian Emergency Management Institute, Ms Raelene Thompson watch as students engage with Disaster Mapper.

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DisasterWatch phone app

The Attorney-General's Department has released the free DisasterWatch phone app to improve access to disaster information, and help reduce call volumes to Triple Zero (000) during natural disasters. This project received National Emergency Management Program funding for 2011-12.

Australians currently own more than 4.5 million smartphones. This technology has grown rapidly in Australia in the last twelve months — by 2013 it is expected that more people will access the internet via mobile devices than via desktop computers. Mobile applications can help people access government services and data, creating innovative ways to use information and deliver services to citizens.

On 29 July 2011, the former Attorney-General Robert McClelland announced funding for the development of a national smartphone application. 'Nearly half of all calls to Triple Zero are non-urgent calls and when a disaster happens, calls are often requests for information about the disaster,' he said.

The DisasterWatch phone app contains information about disaster events in Australia via direct feeds from a range of authoritative sources in the States and Territories and nationally. The information will be regularly updated.

By reducing non-emergency calls, the vital Triple Zero Emergency Call Service can respond to those with a need for a police, fire or ambulance emergency response.

Please note: this app does not provide direct emergency alert warnings to users.

DisasterWatch is available from the Android Market and from Apple-iTunes (search for DisasterWatch).

In the following months, the project team will engage with the community and the emergency management sector to gather feedback for new versions of the app and ideas for other apps.

The Hon Robert McClelland, Minister for Emergency Management, and Mr Tony Sheehan, Deputy Secretary, Attorney-General's Department, at the launch of the DisasterWatch phone app.

Australia's maritime disaster training no longer oceans away

By Kate Lahey

In his 20 years at sea, Captain Graham Edgley picked up a treasure trove of skills. Long before Global Positioning Systems, he learnt to find his way on the open water, he learnt the pressure a captain feels when something goes wrong, and as a former master of merchant ships, he reflects, "there was a certain element of emergency management in that occupation".

For the last 18 years, he has worked on shore, but his emergency management skills are now in as high demand as ever, if not more.

Like so many of Australia's maritime responders, Captain Edgley is not a full-time, professional emergency service worker. He is the Senior Manager for Marine Operations for Sydney Ports Corporation.

His main job, aside from managing a team of about 100 people, is to provide services to shipping berths, conduct audits and checks on dangerous goods and tankers, and provide pilot vessel and emergency tug services for ships.

"I probably spend maybe 20 per cent of my time on oil spill response or emergency management, and that's about all," he says.

He represents the bulk of responders who are called on nationally in maritime emergencies. Unlike, for example, teams of professional firefighters, the emergency response component of their work is almost an afterthought.

Photo courtesy of Mark Hamilton

For this reason, the Australian Maritime Safety Authority (AMSA) and the Australian Emergency Management Institute (AEMI) have embarked on a new training regime to help boost the skills and knowledge of the people the nation relies on in a maritime crisis and foster greater national consistency.

Since 1973, Australia's responses to spills in the ocean have been managed under what is known as the National Plan. Originally designed to respond only to maritime oil spills, it has since been extended and is now formally referred to as the National Plan to Combat Pollution of the Sea by Oil and other Noxious and Hazardous Substances.

The plan is a framework that integrates federal, state and Northern Territory government personnel, as well as representatives from shipping, oil, exploration and chemical industries, and emergency services.

It is designed to maximise Australia's capacity to respond to marine pollution incidents and is managed by AMSA.

Captain Edgley says he believes the system as it stands works well, but needs greater consistency among states and territories, more training and on-going investment in renewing equipment.

In October last year, Australia sent approximately 70 people to help New Zealand authorities cope with the grounding of the container ship *Rena*, on a reef in the Bay of Plenty, under the National Plan framework.

In announcing the deployment on October 12, a week after the grounding, AMSA said its immediate priority was to help Maritime New Zealand mitigate risk to the environment by providing personnel, advisers and equipment.

"AMSA coordinated the deployment of approximately 70 personnel from the Australian marine oil pollution National Response Team. The team consists of experienced marine oil spill managers and responders from AMSA, the states and Northern Territory, Great Barrier Reef Marine Park Authority, and industry through the Australian Marine Oil Spill Centre (AMOSC)." AMSA also sent a salvage expert.

Captain Edgley was not part of that deployment, leave intervened, but he has seen his share of oil spills closer to home.

In 1999, he responded to a spill from the tanker *Laura D'Amato*, in which 294,000 litres of crude oil poured into Sydney Harbour.

"It was a shocker. The oil was a light, Middle Eastern crude and it just spreads rapidly across the surface, almost like diesel, so it was really hard to locate at night and then capture," Captain Edgley says.

It was estimated that roughly half the oil was lost through evaporation, and of the remainder, 90 percent was recovered.

The NSW Land and Environment Court fined the shipping company $510,000 and the chief officer $110,000.

In his decision, Justice Angus Talbot praised the response to the spill. "The prompt reaction by all those agencies who responded to the report of the spill played a significant role in confining and reducing the environmental consequences," he said.

The master of the ship initially reported the spill as just 14 cubic metres in size (or 14,000 litres).

Captain Edgley says large discrepancies in such numbers are not uncommon, in fact they are among the well-established challenges responders have to negotiate.

"The biggest problem is always getting information. You get aboard a ship that's clearly leaking oil, you say 'how much is lost?' They say '30 tonnes'. We have a philosophy of putting a zero on the end, and it's nearly always correct," Captain Edgley says.

"They underestimate, sometimes because the Master is potentially facing jail or at best, losing his job. I think this is one of the advantages of having been a mariner myself, I've been on the other side of the fence."

"While ship owners might be large companies, or wealthy individuals, the shipping workforce today often comprises relatively low-paid staff from developing countries, adding to the fear and pressure those in charge of a ship at sea might be facing," Captain Edgley says.

Among the other major incidents he has been involved with are the grounding of the *Pasha Bulker* on a Newcastle beach in 2007, and that of the British destroyer, *HMS Nottingham*, which struck rocks off Lord Howe Island. The impact tore a hole in the ship's hull and flooded several compartments.

"I went over there as the incident controller, with no equipment, no trained people – and you've got to do it all in five minutes and be prepared," Captain Edgley says.

"That was pretty hard, we flew a lot of gear over on an RAAF Hercules and then took people across and trained up the locals."

More recently, in August 2009 and again under the National Plan framework, he was called to Canberra to help manage the response to an oil and gas spill from the Montara drill rig in Commonwealth waters, in the Timor Sea.

Captain Edgley says he knew little about oil rigs, but he knew enough about spills and the seas influences, including the most basic information like the difference between describing wind direction (coming from) and the direction of a current (going to). Oil can follow both, he says.

"A simple little thing like that, to somebody who's not a mariner or a sailor, can totally throw a response, where the prediction of the movement of the oil would be 180 degrees removed from where it actually ends up, in a period of only six hours," Captain Edgley says.

In the Montara incident, it was at times difficult enough to find out where the oil was, he says.

No one could get back onto the rig as it was also pumping out highly flammable gas. "When you have a blowout from a well, if it's not captured straight away then you know there are going to be problems.

"My thoughts were 'where is the oilspill?' You plot a latitude and longitude of the rig on a chart and see where it is, then you go 'Oh, it's 400 miles from the nearest port.'

"Then you look at things like weather, the locational equipment and personnel and whether you can get out there and operate that gear on the surface, trying to collect this stuff."

Captain Edgley says AMSA's initial reaction was to spray dispersants, which was the appropriate first strike

Photo courtesy of AMSA

Beach cleaning after the *Pacific Adventurer* oil spill, Cape Moreton, March 2009.

response. However, they found they could only spend an hour or so spraying over the site by the aircraft in daylight hours only, as they needed most of their fuel to get to the oil and back.

The next challenge was who to send in boats to chase the oil, capture it and collect it.

"Most of the people there were not mariners – we needed to make sure that the responders we sent out there were not going to be sea-sick the first day."

Among various workforce issues was the need to perform crew changes via helicopter. "You can't fly in the chopper without having done a helicopter underwater escape training course, so we had to organise those things, which most people didn't have. Then we had to ask, did they have the ability to climb a ladder and climb down onto a rig boat off a crane and onto a rig boat and be able to transfer from one to the other? All those sorts of things."

Finding the oil by plane was proving difficult, until long-range AMSA surveillance aircraft arrived – and even then, Captain Edgley says, "trying to find the stuff is like trying to find a needle in a haystack".

"Early on, we dropped some personal, DART buoys over the side, the kind used for people who are lost at sea, because they have roughly the same profile laying in the water as oil would. It worked well, they resembled the flow of oil – so with satellite imagery, we could have an educated guess at where the oil was heading.

"Satellite imagery is ok sometimes, but it also picks up cloud and algal blooms and things like that, but put together with infrared, ultra-violet and predictive models and we got a reasonable feel for where the oil was."

"The weather had changed up there and there was absolutely no wind. It was flat calm, so the oil was entirely affected by the current and the current maps were showing no really strong current.

"I could remember when I was at sea and going across the Pacific to the States, they have a lot of these seamounts, off the ocean floor, just like peaks.

Photo courtesy of AMSA

The *Pacific Adventurer* after the disaster.

"This was pre-GPS days, and your only navigational tool was the sextant, and if you'd get a few cloudy days and couldn't take a sight, you might not know exactly where you were. What we could tell, we had charts of the ocean, and these showed the positions of submerged seamounts which became gatherers of junk. These were acres wide, paddocks of rubbish, as the eddy currents around these sea mounts just kept all the rubbish around the top of it, when there was no wind. From this information we were able to predict our position more accurately."

Captain Edgley says he decided to use the same example and examine the sea mounts near the Montara spill by aerial observation, and found "great big patches" of oil that could then be recovered.

Until now, training in the National Plan has been technically-based. The new training program represents a shift to more competency-based training, with formal assessment. It has come as a result of a number of recent experiences that have highlighted the need for better, more consistent competency across the board.

Among those is the Moreton Island spill in 2009. AMSA and Maritime Safety Queensland launched a review into the response to that incident to be conducted by an independent analysis team. The team issued its findings in 2010 and amongst other recommendations, called for better integration between the National Plan and state and Northern Territory disaster management plans, while allowing for command and control to remain under established National Plan procedures, even in the event of disaster management legislation being triggered.

As well, it urged AMSA, the states and NT to raise greater awareness of the national, state and NT plans amongst disaster and emergency management agencies, local government authorities and environment management agencies, "key players who play vital roles in support of the plans, but which in many cases may not be fully aware of the national/state/NT plans, relevant policies and procedures, nor their roles and responsibilities under the plans."

Jamie Storrie, AMSA's Manager, Marine Environment Pollution Response says

Photo courtesy of AMSA

The bulk carrier *Pasha Bulker* grounded at Nobby's Beach, Newcastle, NSW, June 2007.

other drivers of the new training system included the desire to learn from other emergency services, and 2009 Victorian Bushfires Royal Commission findings around training standards.

There was also now some acknowledgement that while oil and chemical spill response planning has been seen as sitting to the side of emergency services, authorities could no longer afford to treat it this way.

"The Moreton Island oil spill in particular really highlighted the need to be part of the broader disaster management or emergency management within the state," Mr Storrie says.

"There were difficulties of integration, so there was an acknowledgement that we needed to work much closer. The training is part of that."

AMSA has contracted AEMI to develop three courses, one for incident controllers, an operations management course and a logistics course.

"AEMI's able to do this because of their broader background in emergency management," Mr Storrie says.

"We have a different provider running a base level, incident management team course, and we're trying to set up a pathway where people who work in incident control centres would do an incident management team course, then specialise."

The National Plan funds the training, which is made available to states and the Northern Territory, as well as oil industry personnel.

"There are very few full-time professionals, the rest are a mix of harbour masters, port authority managers, transport agency personnel from a range of backgrounds.

"In a lot of ways, to look at the workforce we have, while it's part of their job, they wouldn't be any different

to say a volunteer firefighter or SES in terms of the amount of time that they can focus on preparing and training – we effectively treat them as volunteers, even if it is a part of their job."

The new training is also timely. Shipping movement in Australia is expected to increase by 20 per cent in the next five years, potentially increasing the chances of oil spills and other incidents.

"That's 20 per cent of the country as a whole," Mr Storrie says.

"There are places in the north-west where you're looking at 200-300 per cent over the next 10 years with the minerals export growth and the pressure to keep the ships moving."

It's a sobering prospect, considering the damage a spill can cause, environmentally, economically and to public health and safety. Not to mention the years of recovery work it can require over hundreds, or thousands, of square kilometres.

Mr Storrie says the National Plan approach to responding to spills makes it different to other emergencies, and the response team generally adopts a long-haul response from the start.

"We're moving large equipment and slow moving vessels so we move into very much a campaign type response operation rather than an immediate fast moving response," he says.

"The equipment is big, we operate offshore, we have aircrafts. We look at mobilisation nationally of those things and internationally as well."

"The National Plan has a very strong focus on interstate assistance at an early stage, and states will ask for help from others extremely early in the process," he says. For example, Queensland would call AMSA, ask for 30 people, and AMSA would draw them from other states.

Mr Storrie's own background is as an environmental scientist. He initially worked at Great Barrier Reef Marine Park Authority. Early in his career, he advised on spill responses and later moved into emergency management.

"Oil spills require a very high level of science support. Environmental protection is a high priority and drives a lot of our decision making so that environmental background is an appreciated skill set in the response planning," he says.

"At this stage, AMSA plans to run four incident management team courses, to train up to 100 people in total in a year," Mr Storrie says.

In each of the specialist courses, AMSA is hoping to train between 12-25 people a year.

"What I'm hoping is it will provide us with a highly skilled workforce, a workforce that can integrate better with emergency services when required and that will have a better focus on the management skills that are required," Mr Storrie says.

"The previous training structure was very good on the technical approach to spill response. What we're hoping is to get a mix of how you do it, technically, and the emergency management processes. If we can get that meeting of the minds, so to speak, then we'll have met our objectives."

The launch of the new training also coincides with the National Strategy for Disaster Resilience, adopted by the Council of Australian Governments in February 2011.

The aim of the strategy is to increase Australia's capacity to deal with disasters.

"We must work with the people and organisations that can effect the necessary changes, and empower individuals and communities to exercise choice and take responsibility," the strategy says.

"Our planning approaches must include risk reduction strategies and our capacity to deal with disasters must be enhanced by greater flexibility and adaptability of our emergency services agencies and communities."

It also highlights the importance of drawing on the expertise and capacity of various agencies and organisations to achieve the best possible results. "Partnerships across and within governments, businesses, the not-for-profit sector and the community, will create a well-informed, integrated and coordinated approach to increasing disaster resilience. The result will be a more resilient nation," the strategy says.

Despite all of his experience with major incidents, Captain Edgley says the course he attended at AEMI, for incident controllers, was challenging enough to make him "sweat".

He is a strong believer in uniform national planning and national standards and hopes the new training will forge greater cohesion among all parties involved.

"You rock up to one of these incidents and find someone was trained a particular way, or their procedure for operating gear are different. We persevere and make it work, but it has probably made the task a little bit harder," he says.

"So aligning ourselves with these public safety training packages and the likes of the Australian Emergency Management Institute has given us a foundation where we can ensure that everyone's trained the same and will react the same," he says.

"Obviously AEMI don't have a great deal of experience with oil spill responses, but emergency management is emergency management, and that is their forte. Yes, there are peculiarities with oil spill response, because you don't necessarily know what you've got. You can turn up at an incident and you can't see anything – the oil may be sub-surface, it may be dark or it might still be contained in the ship – but in the end it's not that wildly different from managing any other emergency operation."

Captain Edgley says he welcomed the chance to learn from full-time professional emergency services personnel.

"Some people might wonder what someone from a fire service can teach about oil spill response. Well, I believe they can. They might not have the technical knowledge but they certainly know how to run an emergency."

About the author

Kate Lahey is a senior journalist, commissioned by the Attorney-General's Department. Kate has been tasked with interviewing key Australian Government representatives and community members to share their stories on recent natural and man-made hazard events.

No volcanic ash clouds to rain on Australia's parade

BY KATE LAHEY

Volcanic ash clouds have been such a rarity for the Australian public that among the frequently asked questions the nation's Volcanic Ash Advisory Centre receives is: "Where can I buy some in bulk?".

The team of forecasters at the Darwin-based centre, one of only nine such centres in the world, doesn't, in fact, sell ash (often used by farmers), but instead monitors and plots volcanic ash movement. Their role, in doing this work, is to protect aircraft in flight.

When Chile's Puyehue-Cordon Caulle erupted on 4th June 2011, the centre became a hub of advice for airlines and pilots as the cloud made its way over Australian, South African and South American skies.

While the event was a new experience for many Australians, international airlines and passengers had faced a major ash cloud event only a year earlier, when Iceland's Eyjafjallajökull volcano erupted on April 14, 2010 and caused worldwide travel chaos, as a large chunk of European airspace was closed.

Yet even this event, on the other side of the world, was relatively uncommon and since then, authorities and airlines have been keenly pursuing better systems and more information to help them prepare for the consequences of volcanic eruptions.

This may seem odd: volcanic eruptions are hardly new, and aeroplanes have been flying commercially for almost a century, but the potentially catastrophic consequences of flying through an ash cloud only really came to light in 1982.

With increased air travel today, and the experience of the Chilean and Icelandic plumes, the risk of flying through ash is now well and truly on the radar.

There have been no known fatalities, but in the 1982 incident, a British Airways 747 travelling from Kuala Lumpur to Perth encountered an ash cloud from the Galunggung eruption in Java, Indonesia.

All four of the plane's engines failed and it was forced to make an emergency landing.

"That was the first documented case of the risk volcanic ash posed for aviation," says Rebecca Patrick, Manager of the Darwin-based Volcanic Ash Advisory Centre.

"After that, there was a huge international push to create a system which was known as the international airways volcano watch, and that

With Geoscience Australia, VAAC members have been regularly visiting Papua New Guinea and Indonesia to forge closer ties with their volcano observatories and meteorological offices.

involved meteorological forecasting centres as well as the volcanic ash advisory centres, air traffic control, airlines, and volcano observatories.

"It's a collaborative system and there are a lot of different organisations that need to go into it."

The Darwin office of the Bureau of Meteorology was seen as the logical spot for a centre, not only because it is close to volcanic activity in the region but because it has a specialised meteorological centre with tropical expertise. It is already looking at imagery over the tropical region and has direct satellite access for that part of the world.

The centre was established in 1993. The VAAC duties are part of the centre's general aviation duties. An aviation forecaster is rostered on at any one time and part of their role is monitoring satellite images and issuing volcanic ash advisories.

"It's a very active area," Ms Patrick says. "There are about 130 active volcanoes in Indonesia alone at the moment and we've also got Papua New Guinea and the Philippines as well that we need to keep an eye on – so there are always volcanoes erupting.

"Generally they're only small eruptions to low levels and not a huge impact on the aviation industry," she says.

"It's the big ones we want to focus on and there are maybe one or two a year."

As it happens, this year has been busy, with three major eruptions in Indonesia, as well as the Cordon Caulle event and the Bromo eruption that affected Denpasar airport, Ms Patrick says.

"That was a different event in that it was a low level eruption which normally isn't such a big deal, but because of its proximity to the airport, it started to affect aviation and people in Australia wanting to fly to Bali."

Forecasters in the Darwin centre are trained specifically to monitor and forecast ash movements. Ms Patrick says this generally follows meteorological effects and they are able to rely on existing models that will show which way winds are blowing and allow them to forecast how the ash will move and disperse in the atmosphere.

"The difficult part is working out when the volcano is going to erupt. Obviously we need to have close collaboration with the volcano observatories in that."

A challenge here is that the volcanoes tend to be in developing countries.

Over the last 15 years, AusAID has provided funding to improve seismic monitoring in the region. On top of helping neighbouring countries prepare for disasters, it's one of the ways Australia can build its own resilience to these events, by having more, and better information on volcanic activity in the area.

With Geoscience Australia, VAAC members have been regularly visiting Papua New Guinea and Indonesia to forge closer ties with their volcano observatories and meteorological offices.

"The face to face contact is quite important," Ms Patrick says. Yet, even with increased monitoring, and better relationships, knowing when a volcano will erupt is difficult to pinpoint, she says.

"It varies a lot. I'd like to say volcanoes have personalities; one volcano might show signs for months beforehand, but then there might be other volcanoes that just go bang with very little warning.

"It's very difficult, and we're not volcanologists, so we're relying on the experts to give us that advice. Hopefully they can do the monitoring and let us know in advance of an eruption, but if they can't let us know, we're pretty dedicated with our monitoring and making sure we're watching the satellite imagery 24 hours a day."

When Puyehue-Cordon Caulle erupted in June, forecasters at the Darwin VAAC initially resolved to 'wait and see', Ms Patrick says.

"When the ash cloud moved over into the Atlantic, around the 7th[of June], we were thinking, 'ok, it's coming our way' and we started running some scenarios for it to see if it was going to affect us.

"We had probably three or four days prior notice that it was going to be coming over to our area of responsibility.

"But we couldn't say 'it's going to be this airport or exactly where it was going to go'," Ms Patrick says.

It was the first time since the VAAC was formed that an ash cloud affected southern Australia and Ms Patrick says for this reason, there were some things that were done on the fly. Some of that was educating smaller, southern airlines who had never had to deal with ash clouds before, about what the effects and limitations of the situation were.

Among the recommendations of the National Strategy for Disaster Resilience adopted by the Council of Australian Governments in February 2011, is to ensure people are equipped to know what to do with the information they are given.

"Empowering individuals and communities to be more disaster resilient involves more than just providing them with information," the strategy says.

"It requires the availability and accessibility of transparent, accurate and trusted sources of information in

various forms, and the provision of tools to help communities understand and act on the material provided."

Ms Patrick said this gap between accessing information and understanding it, did create some confusion about the ash cloud.

"Smaller airlines were phoning us directly asking 'what does each part of the advisory mean?'

"There was a lot of confusion because of what had happened in Europe. Procedures were put in place in Europe, the first expectation was that it was going to be exactly the same here. For example in Europe they were producing concentration charts and all these extra things that we were reluctant to produce, for various reasons." Ms Patrick says.

Ash-concentration charts are a very new tool and have rarely been used.

Since the event in Europe, there has been more work done in this area. "We have found that concentration forecasts from computer models can be quite misleading, and for this reason the international community is now looking into how we can use different types of satellite data to 'ground truth' these models and get a better idea of which are the most dangerous areas of volcanic ash." Ms Patrick says.

A new International Volcanic Ash Task Force has been established to speed up the process of learning more about planes and volcanic ash, through examining the science, volcano watch system, air traffic management and airworthiness and flight operations.

"Before about 18 months ago, no one had worked out what sort of concentration of ash is really hazardous to aircraft," Ms Patrick says.

"There wasn't really any kind of indication if it's just a *bit* of ash in the atmosphere that is to bring down a plane, or does it need to be a whole *lot* of ash?

"So we were just warning for ash or no ash, if we could see something we'd put a warning out for that area. Since the Eyjafjallajökull eruption … they decided there needed to be a bit more consideration in terms of pointing out the areas that have a higher density of ash compared to areas that have light amounts of ash. But there's still no agreed international concentration standard yet – it's a work in progress."

The Civil Aviation Safety Authority allows airlines to determine their own procedures and responses to a volcanic ash cloud. No one is allowed to fly through the cloud itself, but each airline determines how much of a buffer it will allow around, above or below the cloud – and this can vary, based on the different constraints of different aircraft.

Several months after the ash cloud cleared Australia for the second time in June, CASA spokesman Peter Gibson said the authority was still reviewing its response to what was a unique event, through both an internal review and as part of an international network.

"Whatever we do here we want to make sure we're reflecting best practice around the world. There are lessons being learned from it," Mr Gibson said.

However, it seemed highly likely the power to make decisions about the response would remain with airlines, based on the information they receive from the Darwin VAAC and elsewhere.

"We have the power to close airspace if certain circumstances warranted it, we could close airspace entirely," Mr Gibson said.

"Our preferred approach is to allow airlines to make those judgements themselves."

"CASA would step in if it believed an airline was not responding appropriately, but closing airspace, as a blanket response, could create problems," he said.

"CASA would need to determine what would trigger an entire closure of airspace, and then what would trigger its reopening. This may not be the best approach in what is a constantly changing situation," he said.

"It's a moveable feast, as the weather pushes through, so does the ash," Mr Gibson said.

According to information from the VAAC, the main risk of flying through an ash cloud is that ash will get into the engine, and melt at high temperatures, before resolidifying and causing the engine to stall.

Small pieces of rock in the cloud can also create what some describe as a "sandblasting" effect on the windscreen.

Ms Patrick says sulphur dioxide in the ash clouds can also form sulphuric acid in the atmosphere, which can have corrosive effects on parts of the aircraft as well.

"And it's not just flying through an ash cloud, it's the amount of time that you're in that cloud as well, that will have an effect," she says.

It remains such a new area for authorities and airlines that the priorities of the International Volcanic Ash Task Force include:

- Study feasibility of safe aircraft operation in contaminated airspace and develop acceptable levels of ash concentration.
- Determine achievability of volcanic ash risk management framework.
- Assess engine tolerance to ash exposure in view of safe operating levels.

In July, CASA updated its information on volcanic ash clouds, to include recommendations for aircraft operators and to introduce a formalised risk assessment process. The process was developed by the international task force, under the International Civil Aviation Organization and is designed to be globally applicable.

When the Chilean ash cloud arrived over Australian in June, Qantas had already had some experience in this area. Aside from its exposure to the Icelandic event, its flights to Buenos Aires were already being disrupted.

However, this did not stop the southern ash cloud causing what the company has since reported as the "Greatest ever disruption to [the] group – 10 times that caused by the European ash cloud in 2010". This remains the case despite the more recent grounding of the Qantas fleet as part of an industrial dispute.

As a result of the ash cloud, more than 2,000 Qantas group flights were

cancelled and hundreds of thousands of customers were disrupted, as Qantas ceased all flights and chose to resume only once air space was confirmed safe. The group includes Jetstar and Qantas link, among other divisions, and operates in what Qantas says is the third busiest passenger route in the world, Melbourne-Sydney.

In a financial context, the series of natural disasters and major weather events had a total impact of $224 million on Qantas' end of year profit before tax, which was $552 million.

These included floods and cyclones in Queensland, earthquakes in Christchurch and Japan and the resulting tsunami, snow in the UK and Europe, as well as the Chilean ash cloud. The ash cloud was responsible for $49 million.

(Despite all this, the group's net profit after tax rose 115 per cent to $249m.)

Virgin has estimated the ash plume had a $7 million effect on its figures and, with the financial consequences of other natural disasters as well, reported a loss after tax of $67.8 million.

At the time of reporting the Qantas results, chief executive Alan Joyce said that while natural disasters and weather disruptions were "an unavoidable reality for the aviation industry," the frequency and severity of disruptions seen in the 2011 financial year was "unprecedented".

"Throughout these events, safety and the interests of our passengers were our top priorities," Mr Joyce said at the time.

"Thanks to the operational resilience we have developed as a business, we were able to respond effectively and recover quickly on each occasion."

Daniel Liddell is Qantas' Manager, Group Business Resilience. He says that in the last few years, the group has very deliberately adopted a "resilience approach," which stood it in good stead for the Chilean ash cloud.

"We recognise that we will have to deal with a whole range of events that we can't predict," Mr Liddell says.

"We've had an almost unprecedented series of events starting in April 2010. Our process of rapidly looking at 'what have we learned from it?' really helped us out in this case."

This series of events included the Icelandic ash cloud, the group's decision to ground it's entire fleet of A380s after an engine failure in Singapore in November 2010, as well as all of the natural disasters since.

"By the time the [Chilean] ash cloud came, we were probably about as well prepared as we could be. We'd been so practised in those events….I won't say it was business-as-usual but the organisational effort was a lot less, despite the fact it was a bigger event," Mr Liddell says.

Qantas' resilience approach includes establishing good links with everyone its airlines deals with, from its trusted information-sharing networks, to regional communities, right up to the Department of Foreign Affairs and Trade and Emergency Management Australia, Mr Liddell says. The benefit of this goes beyond learning from each other, it means when something does happen, those people know who to turn to in Qantas, and vice versa, he says. "It's too late if, in the moment you need to pick up the phone to call someone, you're finding out who that person is."

Also crucial to building resilience is relying on simplicity, he says.

"If you have a plan and capability that's simple and flexible, that is therefore very agile. Simplicity is best. It means people can concentrate on what needs to be done, rather than on following a rigid and complex plan."

Unlike some airlines, Qantas decided not to fly at all in the ash cloud event.

To help its customers understand Qantas' policy and decision not to fly, the group posted a video on YouTube, titled Safety over Schedule, and used other social media, such as Twitter and Facebook to keep people constantly updated.

Mr Liddell says having access to ash concentration reports would have made a difference to the Qantas response, and it has entered a partnership with Flinders University to research this area further.

Qantas is represented in several industry safety forums, including the group developing the International Civil Aviation Organisation's guidelines on volcanic ash.

The company also invests heavily in running emergency exercises to help everyone in the organisation become familiar with its response framework.

Mr Liddell refers to this as building "muscle memory" within the organisation.

"Plus it ensures the plan works," he says.

"We do four of those a year, which is possibly three more than most organisations. We find it's very valuable.

"It's kind of like making your own luck," he says. "People say 'wow, you were lucky you did that exercise recently!' "Well, you do make your own luck."

Forecasters in the Darwin centre are trained specifically to monitor and forecast ash movements.

The role of social media as psychological first aid as a support to community resilience building.

A Facebook study from 'Cyclone Yasi Update'.

By Mel Taylor, Garrett Wells, Gwyneth Howell, and Beverley Raphael.

ABSTRACT

In this paper we review data collected from an online, social media-administered survey developed to explore public use of social media during a series of natural disasters, predominantly in Australia and New Zealand, during January to March 2011. These data are then explored using examples taken from the experiences of those involved in administering the most widely-used community-driven Facebook page during these disasters, which focused on tropical cyclone Yasi ('Cyclone Yasi Update'). The survey was completed by 1146 respondents who had used social media in relation to the recent natural disasters. Data indicated that the public relied on a mix of formal and informal information sources, often using social media to re-post or re-tweet links from government websites felt to be of use to communities, thus acting as filters and amplifiers of 'official' information. This paper discusses how social media, specifically their core strengths of timely information exchange and promotion of connectedness, were able to act as sources of psychological first aid in the early stages of disaster and assist in supporting aspects of community resilience.

Introduction

Social media are internet-based applications that enable people to communicate and share resources, e.g. Facebook, Twitter, YouTube, blogs, chat rooms (Lindsay, 2011). Social media are revolutionising communication and connections in all areas of life. The increasing use of 'smart phones' has been identified as an important factor enabling access to social media; most critically during and after disasters when landlines are often affected but mobile networks remain operational (White, 2011; Dufty, 2011). Two aspects of social media of particular relevance to their use in the context of natural disasters are their ability to provide access to timely public safety-related information from official and informal sources and their ability to enable connectedness; both to loved ones and to the broader community, providing reassurance, support and routes to assistance.

During the 2011 series of natural disasters in Australia, New Zealand and Japan, the importance of social media emerged sharply as a powerful communication channel for emergency management and response. The Queensland Police Service (QPS) demonstrated highly effective and well-supported social media engagement during the QLD floods and subsequent disasters, and their achievements in this area have been internationally recognised. Their ability to reach the population through the social media platform Facebook was dramatically evidenced by their Facebook 'likes' profile which rocketed from under 20,000 to over 160,000 within the three days of the flash flooding events in Toowoomba and the Lockyer Valley and during the period of rising flood waters in Ipswich and Brisbane (QPS, 2011).

In addition to Facebook pages run by a number of government agencies, councils, and NGOs during these disasters, a plethora of community-led pages was created across the affected communities; some focused on general information sharing and status reporting, e.g. closures of local roads, often accompanied by photographs, whereas others were set up for specific purposes, such as volunteering or fostering pets. The most widely used community-driven Facebook page was 'Cyclone Yasi Update' and this will be used as a case study here to discuss and support findings from an online Facebook-administered survey of social media use in disasters.

Following a disaster individuals and communities may cope and recover in a variety of ways and via different trajectories. Two concepts that relate to response and recovery are the focus of this paper; psychological first aid (PFA) and community resilience (CR). PFA is now an established component of the psychosocial support delivered, as community-based activity, in response to disasters and emergencies. PFA outlines the first things you might do to assist individuals and families in the first hours following a disaster. It aims to reduce initial distress, meet current needs, promote flexible coping

The changing 'face' of Cyclone Yasi Update as it tracked through the emergency.

and encourage adjustment (Burke and Richardson, Australian Red Cross/Australian Psychological Society, 2009). PFA comprises six core principles; these are to promote safety, calm, connectedness, self- and group-efficacy, hope, and help. Further information is available from the Psychosocial Support in Disasters (PSID) portal, http://www.psid.org.au/.

Resilience is challenging to define due to lack of a single definition. Here we use the following definition, that resilience is "a process linking a set of adaptive capacities to a positive trajectory of functioning and adaptation after a disturbance" (Norris et al, 2008). In our context we are interested in community-level adaptation following disaster, as mediated through four main adaptive capacities which are the sets of resources thought to underpin community resilience. These are economic development, social capital, information and communication and community competence (Norris et al, 2011). Briefly, economic development refers to volume of resources, their diversity, and equity of distribution, with strengths arising from adequate economic resources, economic equity and minimising dependency on single industries or resources; social capital refers to the interconnectedness of individuals and organisations, in which strengths come through social support, sense of community and attachment to place. Information and communication in the context of disaster includes the need for accurate information to meet community needs but also includes the enabling of shared meaning and understanding of events and the ability of communities to share their stories and support a collective narrative. Community competence is the capacity for meaningful intentional action; the ability of communities to collaborate, form a working consensus, agree on a way to achieve goals and collaborate effectively on required actions.

The extent to which social media use in disasters can provide or support elements of psychological first aid and support the capacities that assist community resilience is an area that has not been addressed in the research literature to date. The exploratory survey reported here sought to assess a range of issues concerning use of social media in disasters. To assist emergency media and responder groups it sought to identify the social media 'audience' in disasters, to find out what they were doing in relation to these disasters, to explore their use and integration of information and their reliance on different sources of information. To support those in the health and disaster response and recovery areas, it also explored some of the psychological and affective components of social media use, and here, draws from the experience of the 'Cyclone Yasi Update' team to support these findings.

Case Study: Cyclone Yasi and the Facebook page 'Cyclone Yasi Update'

Tropical Cyclone Yasi began forming near Fiji on 26 January 2011 and was named four days later. After progressively increasing in strength, it was confirmed as a Category 5 system on 2 February. With uncertainty over where it would make landfall, a large coastal section of Northern Queensland was on alert and with the State Premier urging people to evacuate, tens of thousands of people left the region. Residents in areas likely to be impacted were told by the State Emergency Coordinator that they would be on their own for up to 24 hours due to the dangerous conditions.

Media heralded Yasi as a cyclone that could be the worst in Queensland's history; of greater severity than cyclones Larry and Tracy, one that could 'annihilate' the entire Queensland coast, with the energy of four Hiroshima bombs! Unsurprisingly, those who remained waited with trepidation and those who had left were deeply concerned for their neighbourhoods, friends, properties and belongings.

Against this backdrop the 'Cyclone Yasi Update' Facebook page was launched on 31 January. Initially conceived by Garrett Wells, it was based on an approach used in an earlier flood-related Facebook page 'CQ Flood Update', which provided communities in the Central Queensland (CQ) area with useful information and support. The rationale behind this page and similar area-specific 'Update' pages that followed was 'helping people to help themselves'.

The full Yasi Update team comprised 12 'admins'; administrators and content managers recruited by Garrett, through earlier Facebook interactions. The team was geographically dispersed – from Merimbula in northern NSW to Cairns in northern QLD – and with a range of backgrounds and complementary skills; each member with his/her own social media networks and local knowledge.

From the outset, and somewhat different from many community-run disaster-related Facebook pages, Cyclone Yasi Update was coordinated as a disaster management 'hub'; bringing together official information from many sources in a timely manner and combining that with two-way communication with people in the affected areas. This mix enabled the team to listen and correct inaccurate information, orientate people to the most helpful and relevant sources of official advice, 'de-bunk' rumours, and personalise information, if necessary, through direct contact. In doing so, they were able to provide a single initial trusted point of contact for people who needed to prioritise their activities to protect themselves, rather than spend time searching for information.

In addition to the provision of timely information, and the subject of this paper, the Cyclone Yasi Update team was able to provide psychological and emotional support to frightened and anxious people, and those doubting their ability to take effective action to protect themselves or their loved ones.

The success of the Cyclone Yasi Update page is reflected in its usage statistics. The member base reached 15,000 in the first 24 hours and grew to 92,299 at its peak on 2 February. On that day there were 509,743 direct page views, 3576 wall posts and almost 22.5 million 'impressions' (posts viewed on wall feeds).

Methods

Survey questionnaire development

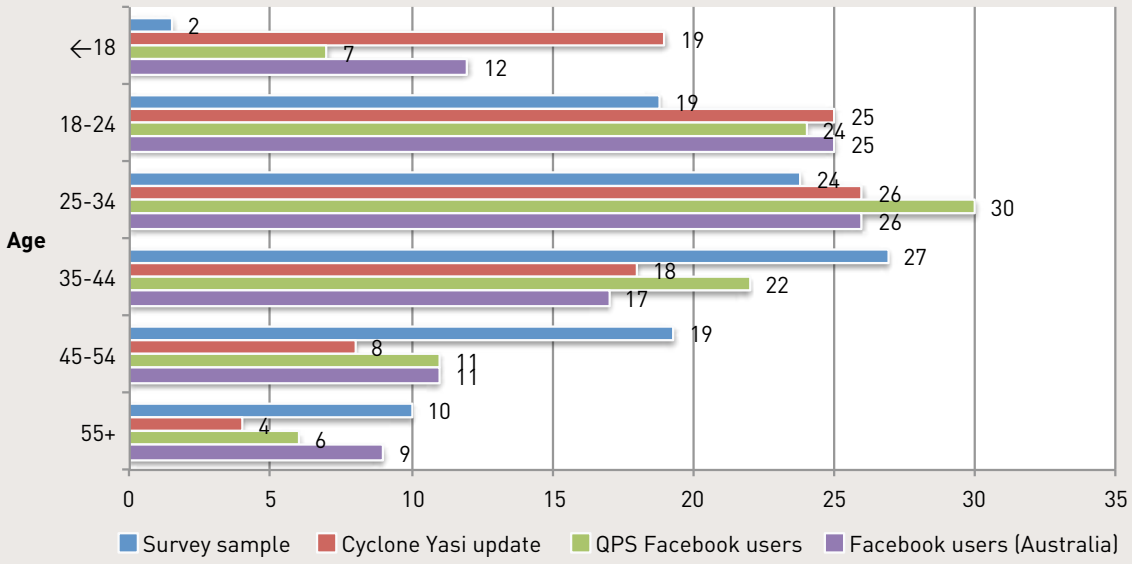
The questionnaire was developed following a series of ten face-to-face interviews conducted in February 2011 in Toowoomba and Brisbane with individuals who had set-up and administered community Facebook sites relating to recent flooding events in Queensland, or who were active in posting to such sites. These interviews identified a range of issues related to social media use, use of information and motivation for becoming involved in using social media in disasters. In addition, survey questionnaire development was influenced by recent American Red Cross research which explored the use of social media in disasters and emergencies (American Red Cross, 2010); identifying the extent to which social media was being used to post eyewitness information and as a medium for requesting help from emergency response agencies.

The questionnaire comprised 27 questions, mostly multiple choice and many with multiple parts. The questions sought to investigate general use of social media in emergencies and disasters, use in recent disasters, identification of an 'index' event (the recent disaster for which social media had been used the most), use of social media and information sources in relation to this index event, and general demographic questions and questions around routine use of social media.

Survey administration

The survey questionnaire was hosted online using 'survey monkey' and the link was distributed using an uncontrolled (snowball) sampling technique. Access to the link was mostly driven via Facebook with an invitation and link posted on the most popular community Facebook pages for each of the recent major disasters. Subsequently, these links were re-posted and endorsed on 'official' government and

FIGURE 1. The age distribution of the sample (n=1057) compared to the age distribution of 'Cyclone Yasi Update' Facebook page, QPS Facebook page, and the Australian Facebook user population.



response agency Facebook pages, e.g. Christchurch City Council, QPS, and the link was also forwarded to other social media platforms, such as Twitter. Participation in the survey was through self-selection.

Results

The survey link was sent out on 11 March 2011, three hours before the East Japan earthquake and tsunami. Within 36 hours 800 responses were received and when the survey link was closed on March 31st responses had been received from 1146 respondents.

Demographics

The majority of the sample was female (71%), 20% were male and 9% did not specify. In terms of their current situation, 60% were in employment, 17% were students, 11% were engaged in home duties, 4% were retirees and 2% were unemployed. Most respondents (81%) were living in Australia (50% in QLD, 23% in NSW and 8% other Australian states and territories). Of the remainder of the full sample, 8% were living in New Zealand, 3% were living overseas and 8% did not specify their residential location. Figure 1 shows the details of the age distribution of respondents in the survey. For comparison, these data are plotted against the age demographics of 'Cyclone Yasi Update' and QPS Facebook users and the Australian Facebook user population (Socialbakers, 2011). In the survey more than half the sample (51%) were in the 25-44 year age range, compared to 44% for Cyclone Yasi Update and 52% for QPS.

Use of information and information sources

Respondents were asked how likely they would be to go to different communication channels in the event of an emergency or disaster. As expected, a large proportion indicated they would be very likely to go to Facebook (75%), however, 85% would be very likely to go to TV News, 75% would go to online news and weather, and 56% would go to local radio. Just under a third (31%) said they would use Twitter. When asked the extent to which they would rely on social media or official sources of information, e.g. response agencies, the majority reported they would rely equally on both (56%), 38% would rely more on official sources and only 6% indicated they would rely more on social media sources of information.

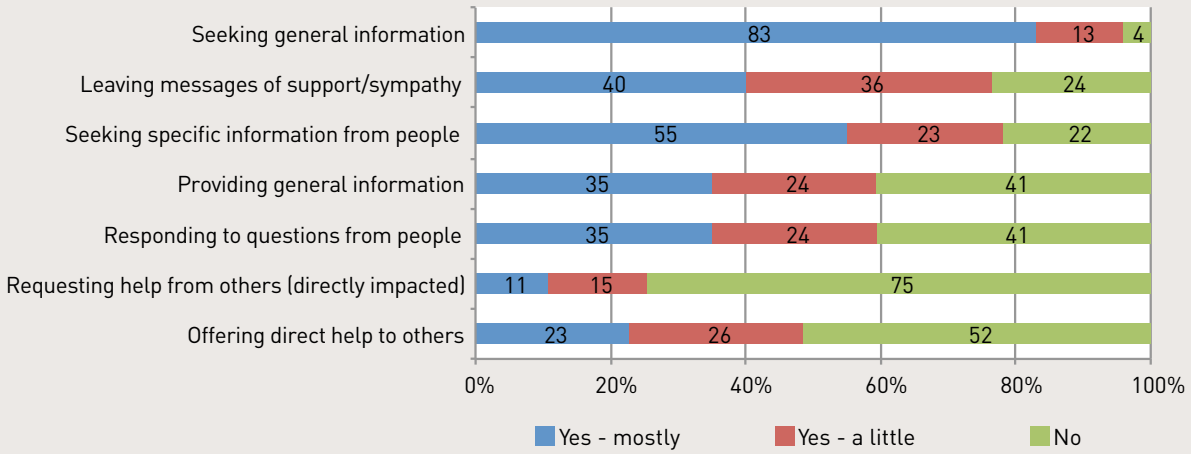
When asked if they would do a range of actions to get help in an emergency or disaster if they couldn't get through on triple zero (or 111 in New Zealand) more than half (52%) indicated they would be very likely to post a request on a response agency's Facebook page, 18% would be very likely to send a message via Twitter to a response agency requesting help and 73% would be very likely to use social media to ask others to help them reach a response agency.

In relation to their nominated index event 91% of respondents indicated that they used official online sources of information; with 36% coming to these sources mostly by following links posted on social media and 37% coming to these official sources through a combination of social media links and their own searches.

Index events and what people were doing

Respondents were asked to nominate an index event for which they'd used social media the most and then answer more detailed questions in relation to that specific disaster event. Most of the sample (87%) clustered around five events; floods in Brisbane/Ipswich

FIGURE 2. What people were doing on social media, in relation to their nominated index event.



(38%), Cyclone Yasi (19%), flash flooding in Toowoomba/ Lockyer Valley (19%), Christchurch earthquake (16%) and the Japan earthquake and tsunami (9%). In relation to all index events, 39% of respondents were directly affected and were living in the area/were there when the disaster happened, 32% had family or friends in the area of the disaster and only 11% had no connection to the place where the disaster occurred, so–called social media 'tourists'. Overall, 57% of respondents were actively participating in social media in relation to their index event; posting messages, asking questions, providing information and 40% had more passive engagement; looking at information. A small proportion of respondents (3%) were actively involved in organising or administering a site or page. Figure 2 summarises what respondents were doing on social media and the extent of this activity.

Finally, respondents were asked how their use of social media in relation to their index event made them feel. Figure 3 summarises these data.

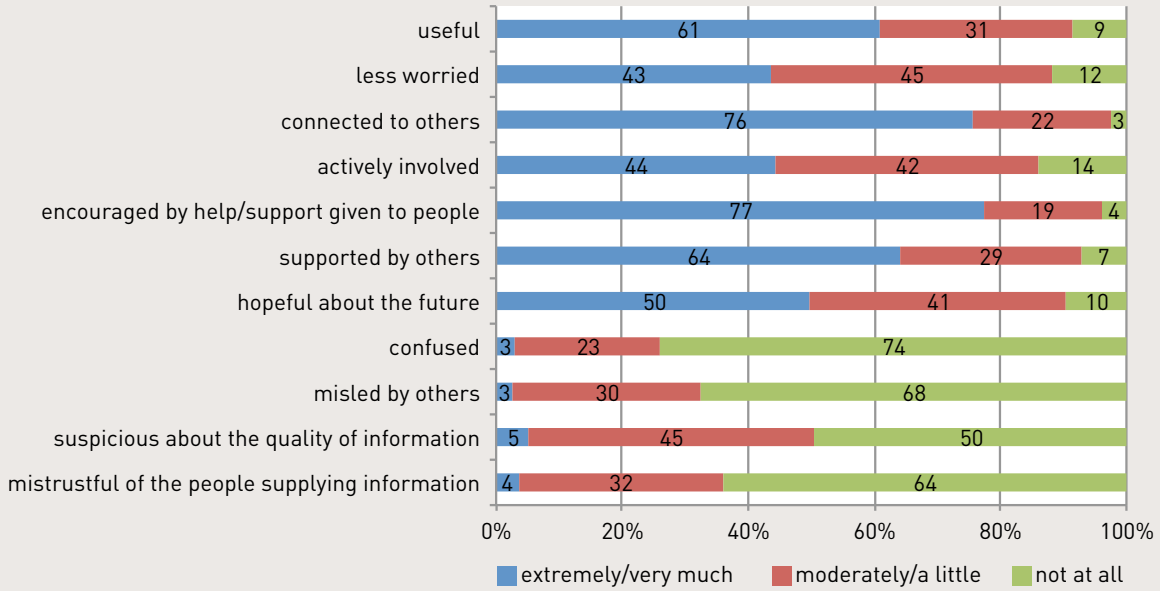
Discussion

Comparing the survey sample demographics to user data collected by QPS and 'Cyclone Yasi Update', the sample distribution was similar in the 18-34 age categories, but was skewed slightly to older respondents, probably reflecting a greater willingness in the older age groups to complete an online survey. In terms of gender, the high proportion of female respondents (71%) reflects similar user figures for QPS (70%) and 'Cyclone Yasi Update' (76%), although it is over-representative compared to the Australian Facebook user population (54%). Given the lack of control over the sample, due to the sampling method, it was encouraging that 84% of the sample was from Australia and New Zealand, and that, when asked about their index event, that such a large proportion were either in the area where the event took place (39%) or had friends/family in the area (32%).

Data on the use of information and information sources clearly indicates that although social media are popular with this sample, there is still a strong interest for emergency information via traditional forms of media, especially television. It is also clear from the survey data that social media are acting as a conduit; orienting people to official sources of information and amplifying these messages to a broader audience. Compared to American Red Cross data (American Red Cross, 2011), Australian social media users would be more likely to post a request on a response agency's Facebook page (52% c.f. 35%), less likely to send a message via Twitter to a response agency requesting help (18% c.f. 28%), and more likely to ask other people to help contact a response agency via social media (75% c.f. 44%). Although there are differences in the samples in these two studies, the results suggest that Australians would turn more readily to social media for help if '000' or '111' was not available.

The breakdown of what people were doing on social media also reflects, to an extent, their needs. Data suggest that most people were seeking information; either general factual information about what was happening, or directly asking people for specific information. More than a third of the sample was spending most of their time providing general information or responding directly to questions; explaining what was happening or directing people to further information. Around a quarter were using social media to request help. In support of others, around half were offering help or practical assistance and over three quarters were posting messages of support and sympathy. These patterns of activity are reflected in the experience of the 'Cyclone Yasi Update' team, with the supply of information, general and specific, forming

FIGURE 3. How use of social media was making people feel.



the larger proportion of their activities, with the page providing a rallying point to enable and encourage page users to get people to help each other. Clearly, in the context of PFA principles, these activities promote safety, connectedness, self- and group-efficacy, and help, and in terms of community resilience, directly support the adaptive capacities of information and communication and help to bolster social capital, and community competence.

Perhaps stronger evidence for support of PFA principles through use of social media is provided by the breakdown of how the use of social media made people feel. Overwhelmingly people reported feeling a sense of connectedness and usefulness, felt supported by others and felt encouraged by the help and support being given to people. To a slightly lesser extent people reported feeling hopeful about the future, actively involved and less worried. These latter emotions probably reflect the realities of the disaster events, which were likely to involve a degree of loss and uncertainty about the future for themselves or their loved ones. In relation to experiences of the 'Cyclone Yasi Update' team, as Yasi was approaching people were increasingly more frightened and concerned about whether they had done enough to protect their properties and their families. One of the team said "people don't want your sympathy they just want you to understand, and to 'get' what they're going through." To be able to say to someone in need, "I'm here, you're not alone, I know I may be 800kms away from where you're sitting - but I'm right here" and to have a conversation via social media can be a great source of comfort. Some of the Yasi team were themselves caught up in the storm, one team member based in Cairns posted updates from the floor of her bathroom where she was sheltering with her family.

Finally, along with the positive and supportive aspects of social media in disasters, it is important not to overlook the darker side of these media and their users. As Figure 3 showed, levels of reported negative emotional responses were generally much lower, and given that use of social media was voluntary, those who did not find involvement supportive or helpful were likely to opt-out. It is interesting to note that respondents in the survey displayed a moderate level of suspicion about the quality of information they were receiving and around a third reported feeling mistrustful of the people supplying information and misled by others. A healthy degree of suspicion is typical of social media users, and data from the survey indicate that few (6%) would rely solely on social media or unofficial sources of information. The 'Cyclone Yasi Update' team devoted a significant amount of time and effort correcting misinformation, countering rumours, validating the accuracy of information and dealing with 'trolls'. A 'troll' is internet slang for those who provoke other users and disrupt discussion; posting off-topic or making inflammatory statements. To those who administer social media trolls are a considerable source of annoyance. To quote a member of the Yasi Update team, "these individuals delight in crushing goodwill and attempts to help others". To maintain the integrity and protect trust in Facebook pages and other social media sites it is critical that trolls are banned quickly and those who seek to post information with ulterior motives, such as advertising or scamming, are identified early. Unfortunately, such issues have challenged many community-based social

media sites, due to the level of vigilance and active management required, something made possible for 'Cyclone Yasi Update' by a large team and 24/7 monitoring at peak times.

Conclusions

The online survey data and experiences of the 'Cyclone Yasi Update' team provide strong evidence to support the assertion that use of social media in disasters can assist in the delivery of psychological first aid to those affected by disasters and support community resilience. The role of social media in this context is not to replace face-to-face support or contact, or to replace official warning services, but it can expand capacity to deliver information, extend the reach of official messages and limit the psychological damage caused by rumours and sensationalised media reporting. A mix and balance of official and informal information sources and communication channels is likely to be the best way to enhance emergency management capability. Empowering individuals and communities to help themselves through provision of accurate, timely and relevant information and a mechanism to connect with others are fundamental needs that social media can deliver. The dynamic and organic nature of social media is such that pages and sites take on a life of their own. Self-regulation and careful administration are elements that serve to ensure that the sites that succeed are those that listen and support the needs of their users.

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Flooding Facebook – the use of social media during the Queensland and Victorian floods

By Deanne Bird, Megan Ling and Katharine Haynes Risk Frontiers, Macquarie University, North Ryde, Australia 2109.

ABSTRACT

Community–initiated Facebook groups emerged during the 2010/11 Queensland and Victorian floods, gaining a near instant following from local residents within, and family and friends beyond, the impacted areas. Administrators of the groups sourced their data from agencies such as the Bureau of Meteorology, State Emergency Service, Queensland and Victorian Police Departments, local councils and news media. Even more importantly, administrators published near-real time information from the general public: Facebook members posted information and questions; local residents asked for and received help and advice; and, travellers driving through the area posted and received up-to-date information on road closures and flooding. During the floods in Queensland and Victoria, Risk Frontiers used Facebook to distribute a survey to members of community groups such as CQ Flood Update-version 2 and Victorian Floods. The results indicate that most respondents began using the community groups on the floods to get information about their community and almost all found the medium useful and an effective means of communicating with family or friends. In this paper, we discuss the results of this survey and consider the value of social media to the emergency services, not only as a tool to disseminate information but also as an important resource to tap into and review informal communications, something that was previously inaccessible.

Introduction

Facebook is a web-based social networking service, allowing registered users the ability to connect and share with friends, family and co-workers, join common interest groups and 'like' (essentially subscribe to) businesses. Established in February 2004, Facebook currently has more than 800 million users globally (users who have returned to the site in the last 30 days), is available in 70 languages and is growing at around 150% per year (Facebook, 2012a, b). While Facebook is the largest and most widely used social networking service, other services such as Twitter, MySpace, Google+ and Hi5 are also popular.

In addition to the traditional method of accessing social media via desktop computers, a survey has shown that Australians are just as likely to access social networking sites via a smartphone (Moses, 2011). Offering advanced computer ability and connectivity, smartphones are high-end mobile phones with Australia leading the way in penetration rates, behind Singapore (OurMobilePlanet, 2011). 'The Nielsen Company' survey showed that nearly a third of users who access the internet through their smartphone, log on to social networking sites daily (Telstra, 2010).

This increasing trend of accessing social media via smartphones makes social networks particularly useful during a disaster when power disruptions may eliminate television and radio. While many phone networks are themselves unable to cope with the hundreds of thousands of people trying to call or text immediately after a disaster, Facebook and Twitter, which have the capacity to deal with such large volumes, can remain online and communicate amongst other things, requests for assistance. Within minutes of the March 2011 Tōhoku earthquake, the word 'Japan' was recorded in dozens of posts on Facebook and, within one hour, almost 1,200 tweets per minute (Twitter messages) were coming from Tokyo (Spong, 2011). It was a similar story following the July 2011 bombings in Mumbai (A.A.K., 2011) and following the 2010 Haiti earthquake when social media was used to coordinate emergency response efforts (Yates and Paquette, 2011).

In America, the Director of Social Strategies for the Red Cross stated that "During the record-breaking 2011 spring storm season, people across America alerted the Red Cross to their needs via Facebook. We also used Twitter to connect to thousands of people seeking comfort and safety information to help get them through the darkest hours of storms" (American Red Cross, 2011).

In Australia, we saw the emergence of social media as an effective method of disseminating information during the 2011 floods in Queensland and Victoria. Significantly, the Queensland Police Service Facebook page became a key source of information and its popularity rapidly grew as the wet season continued to impact the state (Fig 1). Heavy rain and flooding associated with Tropical Cyclone Tasha resulted in the numbers of 'likes' doubling. During the 24-hour period following the flash flooding in Toowoomba and the Lockyer Valley on 10 January 2011, the number of 'likes' increased from 17,000 to 100,000 with an average of 450 post views per second (QPS, 2011). The media also relied on information posted through the Queensland Police Service social media sites, with radio and television anchors reading reports within moments of them being published. This resulted in the dissemination of information at an unprecedented rate to large numbers of people (QPS, 2011).

In addition, Facebook community group pages appeared almost simultaneously with the floodwaters – for example, Rockhampton and CQ Floods 2010 was created on 29 December 2010 and by 3 February 2011 had more than 8,600 'likes'. The group Toowoomba & Darling Downs Flood Photos & Info was created at 16.55 on 10 January 2011, just hours after the flooding began, and within a month had 37,700 'likes'. This means that 37,700 people looked at the site and "liked" what they saw or used the 'like' function to demonstrate support for the victims. However, it is likely that many more people used the site for obtaining or distributing information.

In an interview with Rockhampton's local paper, The Morning Bulletin, Garrett Wells and Andrew Hunter, creators of CQ Flood Update and Rockhampton and CQ Floods 2010, two of the most 'liked' and most viewed Facebook pages, stated that they simply started the pages to assist their families and to allow people to share photos (Mcbryde, 2011). Their sources of information included the Queensland Police Service, State Emergency Service (SES), local councils and the Royal Society for the Prevention of Cruelty to Animals (RSPCA), but the most important resource was local people.

In the days following and during the Queensland and Victorian floods, Risk Frontiers conducted a survey of people who were members of a number of community

FIGURE 1. Growth of the Queensland Police Service Facebook page 'likes' from May 2010 to February 2011 and the events that potentially impacted its popularity (Charlton, 2011; p. iv). Note that Cyclone Yasi weakened prior to making landfall.

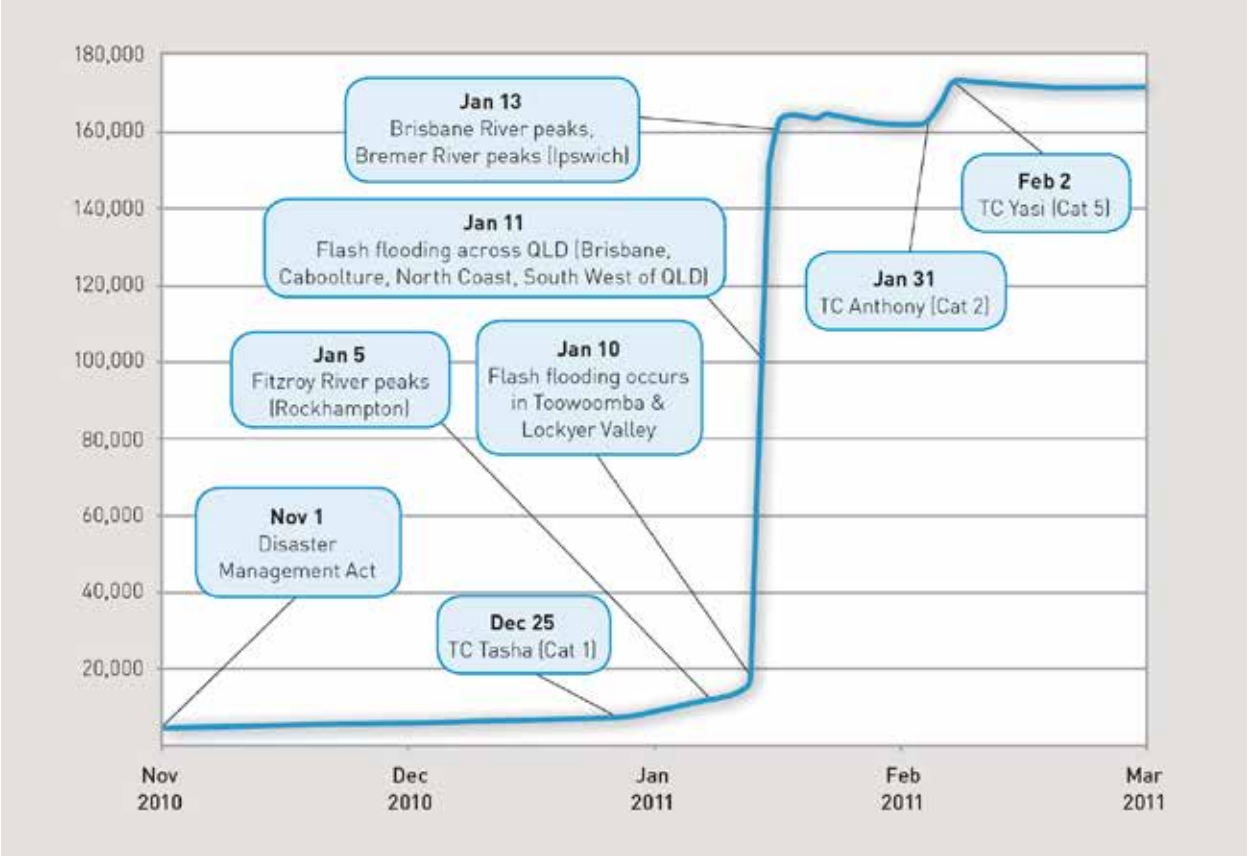
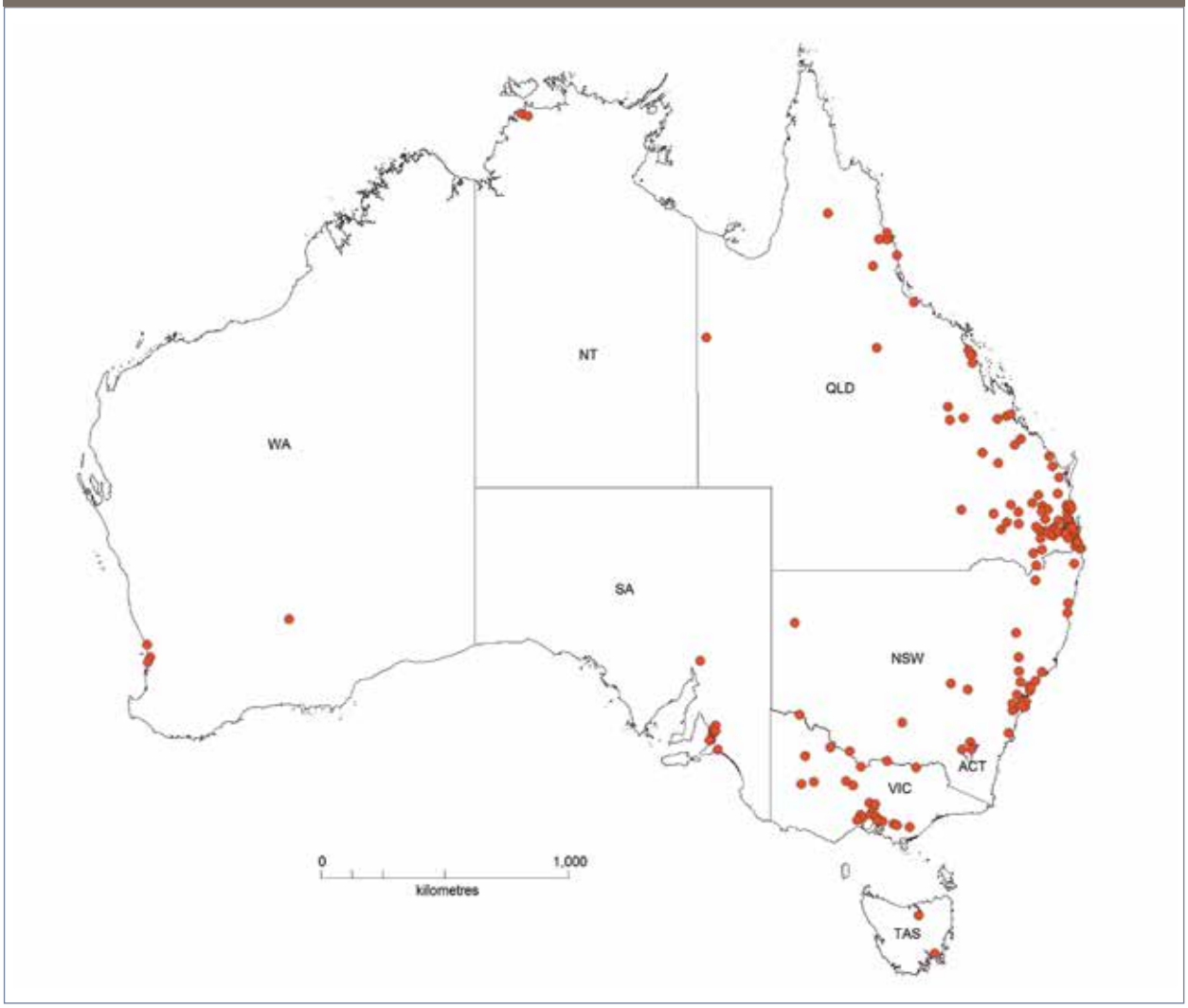


FIGURE 2. Centroids of Australian respondent's postcodes. Map produced by Keping Chen (Risk Frontiers).



Facebook pages. The survey sought to discover how people found out about the existence of the pages, what they were hoping to learn, and what they did with the information. The next sections describe the survey methods and key results.

Online survey method

An online questionnaire was developed and advertised through a posting on various Facebook community group pages, including CQ Flood Update-version 2 and Victorian Floods. The posting included a short description about the aim of the survey and a link to the online questionnaire, which was hosted by SurveyMonkey®. The invitation to participate was open from January to March 2011 to anyone who accessed these Facebook groups.

The questionnaire contained 14 closed and 4 open questions covering the following topics:

- Respondent demographics
- How and why people used Facebook during the floods in Queensland/Victoria
- Perception of the quality of information on the floods
- Use of other social media for flood information including government and media Facebook groups, websites and Twitter
- Perception of information on Facebook websites in terms of accuracy, timeliness, usefulness and trustworthiness

Open text boxes accompanied several questions to give respondents the opportunity to provide more details, if desired.

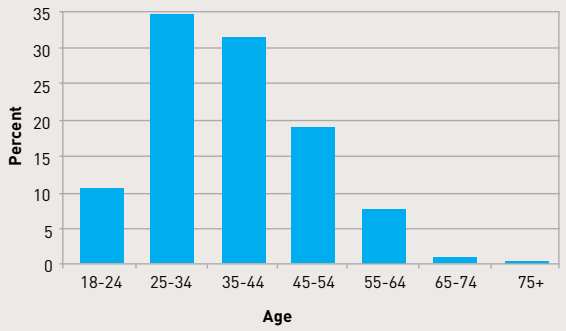
An electronic copy of the questionnaire is available from the lead author on request.

Respondent demographics

In total, 432 people responded to the survey. Respondents were widespread with 194 unique postcodes (from 361) around Australia (Fig 2) with the highest representation from Toowoomba, Queensland (16%). In addition, a number of respondents were from New Zealand, Germany and the USA.

92% of the respondents were female and 33% were between the ages of 25-34 and 30% were between 35-44 (Fig 3). A number of factors might potentially skew the distribution: the demographics of these Facebook pages, which generally show about three-quarters of users are female and under 44 years of age (QPS, 2011, Dufty, 2011), and the demographics of the subset of those users who are willing to participate in an online survey.

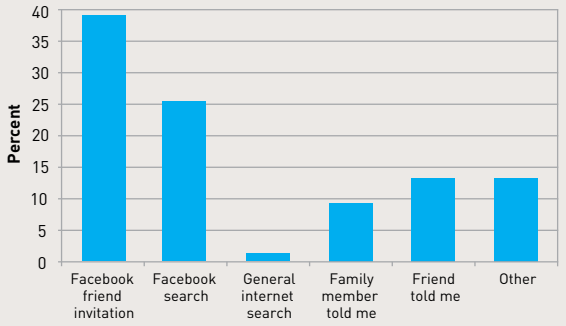
FIGURE 3. Respondents' age



How and why people used Facebook during the floods in Queensland and Victoria

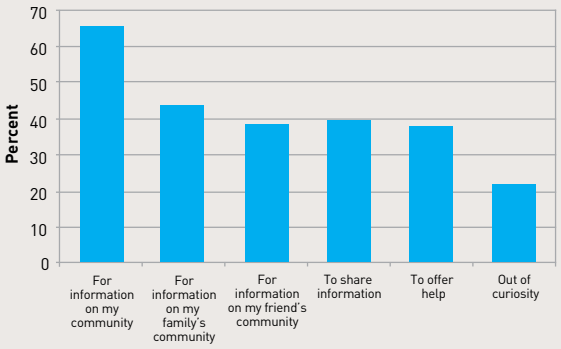
Most respondents accessed the community Facebook groups following an invitation from a Facebook friend or through a Facebook search (Fig 4).

FIGURE 4. How respondents' first heard about the Facebook groups on the floods in Queensland/Victoria.



Many users relied on these pages for flood-related information during the worst phases of the disaster and nearly two-thirds of respondents used the Facebook groups to gain information about their own community (Fig 5). Other people were using the pages to gain information about the communities of their family and friends, and most importantly, nearly all respondents (97%) communicated this knowledge directly back to family and friends.

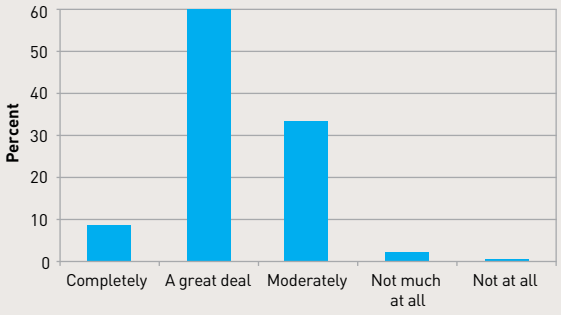
FIGURE 5. Respondents' reasons for signing up to, or looking at, the Facebook groups on the floods in Queensland/Victoria.



Perception of the quality of information on the floods in Queensland/Victoria on Facebook

Almost all respondents (99%) found the information useful and less than half (39%) reported conflicting and inaccurate information. Overall, the majority of people trusted the information posted on Facebook (Fig 6).

FIGURE 6. Respondents' level of trust in information on the floods in Queensland/Victoria on Facebook.



Greatest concerns about conflicting and inaccurate information related to:

- Reports of roads being closed or open
- Reports of areas in need of volunteers
- Incorrect information about businesses (over/under pricing)
- Reports of fuel shortages
- Death tolls and missing persons
- Comments which were considered offensive, inappropriate or unnecessary

While rumours were common at the height of the disaster, respondents reported that the moderators of the Facebook pages were prompt at confirming information and providing official sources when available. When not available, local knowledge and discussions often provided confirmation on what was accurate. Also, Queensland Police Service used their

Facebook page and Twitter to 'mythbust' rumours generated on community groups and through the media (QPS, 2011). Inaccurate information posted by a user was usually swiftly corrected by other users, making these pages self regulating.

"There were a few times that information was found to be incorrect but was later corrected - helped to be following the QPS [Queensland Police Service] page as well as other pages as the QPS had "mythbuster" comments to clarify incorrect messages in circulation."

"The Queensland Police Facebook page is constantly squashing rumours. E.g. Wivenhoe Dam wall is not failing."

"A few rumours were started online - I waited to see what more credible sources were posting - such as the Qld [Queensland] Police Service."

"A lot of people post things they have heard, so you cannot be sure how accurate the information is. Lots of people posted links to sites, such as the Bureau of Meteorology which were very informative."

"I've found the information posted by the QLD [Queensland] police service to be very accurate. The television media on the other hand, have been over dramatising most coverage. They seemed hell bent on getting a "record" flood, always slightly over estimating expected peaks, and showing footage of areas different to what is being spoken about. For example, horrific footage from Toowoomba was played constantly while talking about Ipswich."

"Victoria DESPERATELY needs an emergency services site similar to those operated by Queensland Police (Floods) and Joint Emergency Services (cyclone Yasi) which dispels rumours and brings all emergency information together in one place in an accessible, human form."

"There was talk about contamination in the water, but by friending ['liking'] the QPS page, we were able to make sure we received correct information."

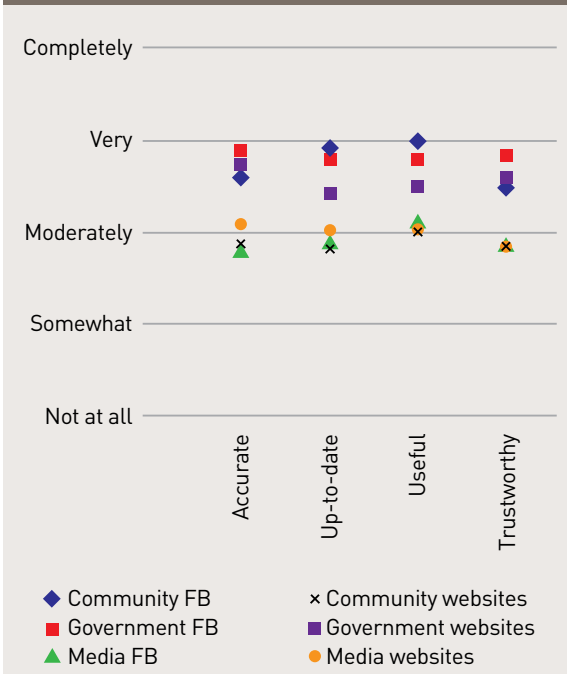
Use of official sources and other social media for flood information

74 % of respondents stated that they had used government or media Facebook groups and websites with an overwhelming majority referencing the Queensland Police Service Facebook group. Other sources for information included: the State Emergency Services (SES), Australian Broadcasting Corporation (ABC) News, Bureau of Meteorology, VicRoads (Victoria Roads Authority), Victorian Police, Royal Automobile Club of Queensland (RACQ), various council websites and commercial news media sources. In comparison, Twitter usage was far less popular with only 6% of respondents indicating that they had used it to follow information on the floods. This result suggests that those people who use Facebook do not use Twitter but it does not tell us anything about the use of Twitter before, during or after a disaster.

Perception of the quality of information on Facebook and other websites

Respondents were asked to rank the information provided by community, government and media in terms of accuracy, timeliness, usefulness and trustworthiness. In terms of accuracy and trustworthiness, government Facebook groups and websites ranked higher than community groups (Fig 7). In comparison, community Facebook groups ranked higher than government groups and websites in terms of timeliness and usefulness.

FIGURE 7. Respondents' perception of information from government, community and media sources in terms of accuracy, timeliness, usefulness and trustworthiness.



Open responses and comments verified the quantitative data and also provided further details and examples to broaden the analysis. Comments in relation to community sources noted the benefits of the local knowledge inherent in the community groups and that Facebook often remained the only form of communication when all others failed:

"Community groups are well placed as they are in the thick of it all and the information is timely and generally accurate."

"As we were without mobile coverage and home phone communications due to the extreme events of last week - Facebook was our only means of communication and we found it more accurate that other sources - especially in regards to roads open/closed... people would comment/ post if they got through roads that sites were saying were closed, etc..."

"By using Facebook, you connect directly with those in that AREA you're trying to get to. Media only cover the larger communities, I understand it's very hard to cover everyone everywhere."

"Facebook and the internet have been our main source of local information as the media coverage has concentrated mainly on Grantham, Toowoomba and Brisbane (and now interstate) flooding."

"Facebook was a valuable tool to me while my brother's family were flooded in Qld and I in NSW [New South Wales]. Their land line was down, at one stage their Vodaphone mobile was down and my nephew ran out of credit on his phone. So there were times when Facebook was our contact with my nephew. He could share pictures and we could offer words of encouragement while they were flooded in."

Comments in relation to government sources noted the accuracy but lack of timeliness:

"Government websites trail with information - not up to date like Facebook ones."

"Government websites took too long to be updated."

"I've basically just stayed with the Qld Police Facebook group. They've been very accurate in not only recording what's happening, but also mythbusting the rumours."

"I found the Cardinia Shire website to have basically no information of worth - especially when I was trying to provide others with information. VicSES [Victoria State Emergency Service] did a shocking job on their FB [Facebook] page, only posting once every 10 hours. VicPol [Victoria Police] did a great job with every update and lots of them. VicRoads are a great resource, but the information is not quite as quick to be posted."

Comments in relation to media sources noted the superiority of the ABC but the lack of local detail:

"ABC websites were the most accurate media site - largely because they avoided the language of hyperbole. Other websites focused on hyperbole e.g. ABC news coverage titled "Flood Special", commercial station labelled news coverage titled "Flood Disaster" to name one example. Community sites did not always provide accurate information, but members would correct the information and provide valid / official sources to confirm corrections."

"I have found that Media websites (and television, commercial radio) are focusing more on the greater Brisbane area rather than the Lockyer Valley area. Facebook groups offer greater access to more information, allowing people to choose info on wider areas, OR more particular areas of interest, as well as offering basic information, or information on how to volunteer or what/ where/ how to donate. I also believe people being able to communicate what they have seen first-hand offers an outlet for them to try and deal with what they have come across, and to give a more genuine and personal idea of the issues to the wider public than Media can offer with interviews."

Concluding discussion

The survey results presented here have shown the importance of Facebook during the Queensland and Victoria floods from a community perspective and provided a snap-shot of how people found out about the existence of the pages, what they hoped to learn and what they did with the information. While ABC Emergency is the official communication vehicle in a disaster, there is a time lag on the information delivered as it all must be verified prior to publication. In comparison, community Facebook group pages rely on real-time information from the general public and although timely, this information is not always accurate. However, administrators of community Facebook groups and other Facebook users quickly verify and correct any inaccurate reports. In addition, users often have to search for information and links on websites providing emergency information, whereas Facebook posts are delivered to a member's newsfeed live, giving an advantage of convenience over other, more traditional, means of communication.

A number of the community and government groups discussed here have continued to provide valuable information well beyond the floods. For example, in response to the impending threat of Cyclone Yasi, the administrators from various Queensland flood community Facebook groups joined together to develop and manage a new community group page entitled Cyclone Yasi Update. At 11:00 am on 2 February 2011, the day before the cyclone was due to cross the coast near Innisfail, Far North Queensland, the group had about 14,000 'likes'. By 10:30 pm this had escalated to more than 52,000, and by 11:00 pm this was up to just over 63,000. Significantly, emergency management officials on ABC radio were acknowledging the importance of Facebook and Twitter during this cyclone. Today, many of these groups are still actively providing recovery support and local emergency information.

For many Australians, social media is a part of their everyday life and it can be used to effectively and efficiently disseminate emergency information on: the occurrence of hazards; location of evacuation centres and road closures; fundraising opportunities; volunteering; and, reassure people about the safety of family and friends. Social media will not replace traditional forms of hazard and risk communication, but rather, provides another useful tool that shares the responsibility of reducing risk, facilitates community involvement and empowers people to take action. Social media also allows agencies to tap into and review informal communication networks, something that was previously inaccessible, and 'mythbust' conflicting and inaccurate information.

Acknowledging the importance of social media, FEMA suggests that emergency management agencies should promote the following points in household preparedness strategies (Fugate, 2011; p. 4):

- "Store useful phone numbers in your phone, including local police, fire departments and your utility company;

- Create a group for your emergency contacts on your cell phone;
- Know what social media tools are available to you at the state and local level, so that you can quickly access them in the event of an emergency;
- Have an extra battery for your phone (or a solar charger) in your emergency kit;
- In the aftermath of a disaster, update your social media channels to let your friends and family know you are safe by simply saying "I'm OK." This helps reduce the volume of phone calls in an area so that necessary communications can continue to be made."

Acknowledgements

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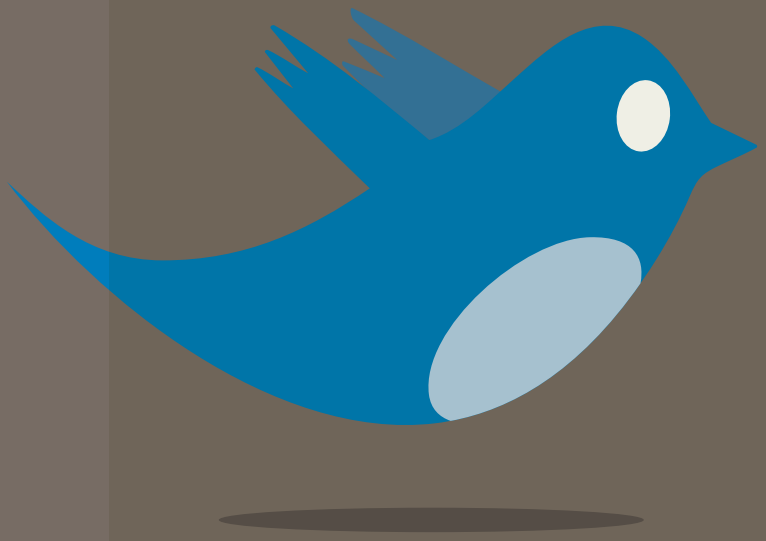
The twitterisation of ABC's emergency and disaster communication



A report released in January, on the first anniversary of the Queensland Floods, highlighted the important and rapidly emerging role of social media in emergency communications. The report, #qldfloods & @QPSMedia: Crisis Communication on Twitter in the 2011 South East Queensland Floods (Bruns, Burgess, Crawford & Shaw), found that the Queensland Police Media Twitter feed was the most visible presence in the flood of information emanating from Twitter. In second place was the ABC's Twitter account @ABCNews.

The ABC serves an important function in crisis communications as Australia's official 'Emergency Broadcaster'. So, how is the ABC approaching social media during natural disasters like #qldfloods (the Twitter hashtag by which the Queensland flood disaster became known)? What are the benefits, risks and pitfalls? And what can other organisations learn from the ABC about deploying social media?

University of Canberra social media researcher, Julie Posetti (who's working on a PhD titled 'The Twitterisation of Journalism'), asked the ABC's national social media co-ordinator, Ping Lo, to detail the ABC's experiences in an online interview for AJEM.

Q1:

What's the ABC's approach to using social media in emergency and disaster situations?

The use of these media during the Black Saturday bushfires of '08 – where a staff member used twitter to great effect – helped pave the way to making social media activity a more routine work practice. It became evident to the broader organisation that employing well-organised social media could have a profound impact in an emergency situation. Having set a precedent during a disaster which saw media coverage very closely scrutinised afterwards, we felt it was the ABC's responsibility to continue to use social media during emergencies thereafter. It's a continual work in progress – as is all coverage of emergencies – as broadcasters, emergency and response services, government agencies and the public all strive to better inform.

Q2:

It's a year since the Queensland floods and the subsequent cyclones. Can you take us through what the ABC did in terms of deploying social media communications during that large scale emergency?

Our emergency strategy is built on established daily routines. Rather than funnelling our social media activity through one or two key ABC accounts on different platforms, we have established many ABC accounts on these platforms. These accounts represent programs (such as 'triple j Hack'), stations (such as ABC Brisbane), networks (such as Radio National), genres (such as ABC Environment), and divisions (such as ABC News).

This is a resource intensive approach but enables passionate program makers to tailor their activities to suit those whose ABC preferences are as individual as they are.

During an emergency, having so many accounts offers opportunities and challenges. While it's helpful to be able to scale our social media coverage accordingly, it is obviously challenging to coordinate the efforts of these accounts, with the staff managing them spread across the country and based in completely different areas of the ABC.

For the floods, the divisional social media coordinators and I discussed likely coverage strategies and talked with some management and staff about resourcing relevant accounts, editorial responsibilities and managing the tricky juggling of social media on top of increased station/newsroom tasks. A new emergency-focused account was established on twitter (@abcemergency), and radio and news staff concentrated on covering the floods on multiple social media sites throughout the event itself and the ensuing recovery period. At that stage, divisional social media coordinator positions had only just been filled, and there'd been little opportunity for those pivotal roles both to connect with divisional staff and management, but also to collaborate across divisions. With every emergency, ABC staff become more confident in how they can utilise social media, but the biggest change has been the development of very effective channels of strategic cross-divisional communication – in the lead up to, during, and in the aftermath of an emergency – mirroring the communication which already occurs in the ABC's radio, TV and general online coverage of that emergency.

Q3:

Did the ABC see social media as a separate set of communication platforms to be deployed and staffed during #QldFloods, or just as adjuncts to its broadcast functions?

During the floods it was more the former than the latter, bearing in mind that with so many different accounts in operation, some realised the critical importance of proper planning and resourcing of social media activities sooner than others (— and in the spirit of learning from each emergency, by the time Cyclone Yasi was bearing down on the Queensland coast, all of those relevant account 'owners' recognised the importance of giving each account the thought and attention it required).

Very often social media and traditional broadcast media activities are discussed as separate spheres of activity, whereas in reality, for the ABC the approach is (rightly, I believe) much more blended than that. Social media platforms external to the ABC site are clearly a separate set of communication platforms but they serve the ABC and those connected with us in ways that are changing all the time, depending on what's going on. ABC staff have been quick to recognise that it's problematic and limited to approach social media platforms as 'support acts' for the main coverage on broadcast media. That said, in emergency situations we have core responsibilities that have long been built up on the key, robust platforms of radio, online and television. We now have those same responsibilities with social media, and it is up to us to embrace them as a standalone resource, not simply as an adjunct.

Q4:

How did the ABC try to integrate social media with its traditional outputs during the crisis?

This varied from account to account, as each has its own character (and expectations and responsibilities) within any particular social media platform. But generally speaking, on social media platforms we published key messages being delivered on air, summarised key on-air announcements, linked to key online articles and linked to other emergency services agencies and relevant organisations in the same spirit in which we connect with them on air. On our traditional outputs we fed crowdsourced information into on-air messages (with clear explanation, treating them in the same way we do public talkback), referenced the social media activities of other ABC and emergency services accounts, and used search tools to listen to what people were saying so that we could get a better feeling for what was going on in different places.

Some ABC accounts, such as @abcnews, already had a high level of integration with traditional outputs (the @abcnews account is managed by the senior producers on the News Online desk) so when the floods occurred it was more a case of providing more resourcing to enhance what these accounts were already doing.

Q5:

Social media is a very rapidly developing field and often it demands experimentation. How adventurous was the ABC in deploying social media during the floods? What new approaches did you try?

Beyond finessing our integrated social/traditional media approach, we undertook one significant experiment. The timing of the floods coincided with our trial of a map-based crisis-crowdsourcing platform Ushahidi. The trial centred on collecting feral animal sightings across Australia, but was conducted with emergency and other story coverage possibilities in mind. This platform, developed in Kenya as a result of growing unease over fraught election processes, is all about harnessing the power of numbers – in this case, numbers of people willing or compelled to contribute location-based information about a crisis through a number of means such as SMS, tweet, online form and email. We had been discussing the potential of utilising this platform for some time, having seen it used effectively in a number of weather-related emergencies further afield: the floods in Pakistan and the Haiti earthquake being two prominent examples. When an emergency happens here, the phone lines of stations are in meltdown with members of the public wanting either to contribute or to request information or assistance. With that in mind, it struck us that harnessing a platform such as Ushahidi could give any member of the public who felt so inclined the opportunity to offer information via this alternative means, while at the same time giving us the opportunity to collect and potentially draw attention to this information in a new, useful way. This was a highly adventurous but thoroughly considered experiment. It was agreed that of all emergency types, the slower-moving, more drawn-out nature of floods offered us the best opportunity to test the platform with as few risks as possible, people being unlikely, in such an area, to rely solely on the information to make critical decisions.

There is a compelling tension the ABC has to tackle if it is to assume some responsibility in this rapidly growing field of emergency coverage: that of timeliness balanced against verification. On the one hand, most of all it is verified information that everyone is aiming for – for this can mean the difference between life and death. But then again, so can timeliness: getting enough useful information out there, quickly, for people to refer to in order to make decisions. The two can't and won't always coincide. On top of this, the sheer ease and facility of social media means that excellent, succinct pieces of information can and do become lost in a sea of unintended or even malevolent information — with mass duplication of it all.

Ushahidi has a huge potential to make sense of this 'noise', but it requires of its participants that they accept a certain level of uncertainty in exchange for the ready availability of information that is 'most likely' to be correct, based on a whole suite of logical algorithms. It's not unlike taking a talkback caller whose information cannot immediately be verified by emergency services but is deemed urgent and potentially useful enough to be put to air with appropriate caveats. Nevertheless, it has the potential to assume a huge scale, given the escalating use of social media during emergencies by the public, so we didn't take it lightly. We contributed a large proportion of the information ourselves which we were able to mark as 'verified' by cross-referencing with emergency service and ABC reports, and then undertook a strict assessment of public-contributed data which meant that any uncertain pieces of information, however likely, were nevertheless still tagged as 'unverified'.

To allow ourselves the opportunity to learn about the platform and how it could work in an Australian emergency context when managed by us, a broadcaster, we kept the promotion of the Queensland Floods Ushahidi map low-key and largely confined to online (i.e. to an audience already engaging predominantly with online) instead of or in addition to traditional media.

Q6:

What approaches worked best in terms of information dissemination and community response?

It might seem obvious, but clear, simple questions are the most effective means to elicit response from the community. At any time, loading a status update with a heap of information and ending with a question means that all of that information is effectively devalued. This is especially the case during emergencies, when people don't have the time to sift through a lot of text to find the crux.

Timeliness is key, as is consistency. It is only reasonable for the public to know what they might expect from a social media account, both as regards update type and frequency. Too inconsistent, too irrelevant, — and people will disconnect from you. Engaging in conversation with people to elicit more information and connecting with 'power users' in the community on the ground in the midst of the emergency is also important. As is pointing to and intersecting with emergency services, response and recovery services, government agencies and other relevant ABC accounts.

Pointing to non-ABC and non-official sites such as a crowdsourced photo gallery on Flickr created by members of the community, and tailoring strategy and tone to each platform, on a per account basis are significant developments, too.

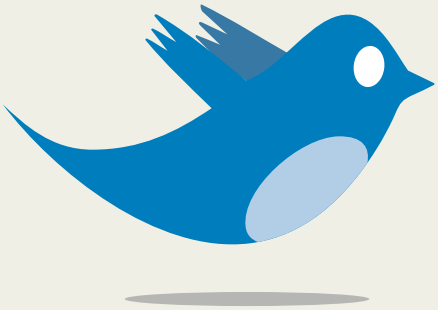
All of these approaches highlight the need to remain flexible enough to adapt strategies 'on-the-go', in response to community needs, or a development in the emergency. Also vital, is recognising that there are two different audiences relying on ABC emergency coverage: those in communities immediately affected requiring accurate, clear information, support; and interested observers who might have family or friends in the region but are not personally at risk. The requirements for both vary but the latter group's interest and willingness to be involved or provide assistance needs to be acknowledged and managed concurrently.

Q7:

What approaches were less effective? And why were they less effective, do you think?

One problem was too many updates, each not holding enough value in and of themselves to warrant contributing to the noise. Another was unnecessary repetition among accounts, especially those whose followers overlap, which contributes only to the noise and runs the risk of accounts losing followers.

Issuing untimely information, such as pointing to an overly generalised emergency information article (however interesting) at a critical point is also problematic — and a potentially dangerous distraction. Inconsistency in the frequency, tone or approach of posts is also an issue. At critical times, there should be no doubt as to what an account is going to cover and attempting a cover-all approach to all social media platforms, wherein one message is published across a number of different platforms can be a problem too. This is likely to result in fewer responses and less reach across the board.



Q8:

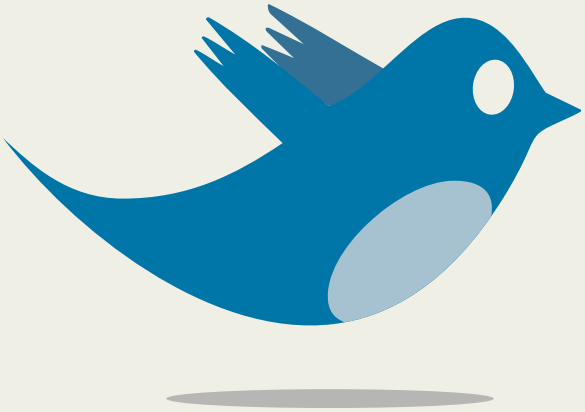
One area of experimentation you focused on was what's known as 'crowd-mapping', where you ask your community or audience to locate problem areas, such as rising floodwater, on an interactive map (see Ping Lo's answer to Q5 above for more detail). How well did that approach work?

Bearing in mind we kept the promotion of this trial low-key, the map nevertheless garnered a lot of attention, mostly from people not directly involved in the crisis but presumably interested in what was unfolding and how it was being covered. As we were putting a number of features of this approach to the test, we allocated resources to input verified data into the map alongside inviting the community and other agency contributions.

Approximately 1,500 reports were submitted to the map, of which we estimate one-third were contributed by the community, with the rest either created or harvested from different sources by ABC moderators. While information was able to be pulled from a number of different sources (email, SMS, online form, twitter, blogs), the online form built into the map interface was the most popular means for submitting reports.

The site received 230,000 visits over a 24 day period, with the peak occurring following the flash flooding that happened in Toowoomba. Despite the visits being so high at one stage that they toppled Ushahidi's servers, the average time spent was very short, indicating that most visitors were looking at the map out of interest but not exploring it in much depth. This ties in with the fact that most traffic came from references made to the map by Google, the BBC and the ABC.

We hadn't expected many public contributions given that there'd been no opportunity to build awareness among the community or indeed relevant ABC staff about the possibilities of the map. However, we were surprised to find that upon hearing about the map some people felt compelled to contribute their experiences of the disaster, for example providing evacuation advice based on their own experiences.



Q9:

Some organisations are now reporting that they rely on Twitter and Facebook, for example, as the fastest way to gather and disseminate emergency information. What's the ABC's experience? How did this play out during the floods? Was radio still king?

From the organisation's point of view, radio is still central to our efforts, and it's a matter of continually lifting our social media game rather than diminishing any focus on radio. Radio is an enduring, critical medium for good reasons: the network is resilient, fairly durable and far-reaching; the technology is simple and easy to access; the message is clear and, as far as the ABC is concerned, the audience has a reasonable idea of what to expect.

That said, the ABC recognises the continual increase in the use of online, and within that, social media, by the Australian public. In particular, during emergencies we are noticing an increasing number of ABC Online readers, ABC radio listeners and TV watchers choosing to use social media in the lead-up to, during, and after an emergency. There's an immediacy in them that lends them to emergencies. They're quick and allow people to dive into the eye of a storm, so to speak, from wherever they might be in the world. It's no coincidence that platforms such as Twitter and Facebook see big uptakes in their service in the lead-up to and following a major crisis.

At the ABC we certainly recognise the value of social media in gathering and disseminating emergency information quickly and to a vast potential 'audience'. To that end we are continually refining strategies for emergency coverage on social media that includes (but is not limited to) live breaking events and press conferences, crowdsourcing and clarifying misinformation.

Q10:

There are obviously risks involved in allowing publication of unfiltered, community-supplied information – particularly during emergencies which are traditionally the focus of risk averse communications – what does the ABC identify as the main risks and how does it evaluate them?

Key risks in using a tool such as Ushahidi have to do with the trustworthiness of the information being submitted to the map and the timeliness of that information given that conditions during emergencies change all the time. However, these risks need to be balanced with the community's changing approach to online activity during emergencies and their growing expectations about finding information online.

Ways to tackle these risks include raising awareness about the possibilities of such a tool and how they might best make use of it as contributors and/or audience members, involving official emergency sources in order to verify data, being clear about verified/unverified content when providing data, providing clear time stamps on submitted data and highlighting most recent updates and making the crowdsourcing process as transparent as possible.

It's important to note that challenges such as the trustworthiness and timeliness of data are foremost in the minds of those driving platforms such as Ushahidi. They are constantly working on ways to sift through the noise of social media and other online content to extract the most reliable and most timely information possible. During the floods we trialled a tool being developed by Ushahidi called Swift River, whose aim is to extract the best information possible by using a mixture of logical algorithms coupled with human assessment.

There's more work to be done around who should spearhead such an approach, and who should be involved in order to ensure the best possible outcome. There are a number of community initiatives such as Bushfire Connect (which also uses Ushahidi), Google's Crisis Response, as well as emergency services developments which need to be taken into consideration when thinking about how best to serve the community online during an emergency. It's everyone's responsibility to minimise confusion at these critical times.

Q11:

It can be a difficult balancing act trying to weigh up the potential risks of social media deployment against the potential (and often unanticipated) benefits – especially in a fast moving disaster. What kind of approach to this problem do you suggest?

Provide training to staff, so as many as possible feel comfortable with navigating social media. You also need to build awareness in the organisation about what colleagues in other areas are planning to do, and of how their activities are likely to figure in the broader picture of ABC coverage of an emergency, as seen from the point of view of a member of the public.

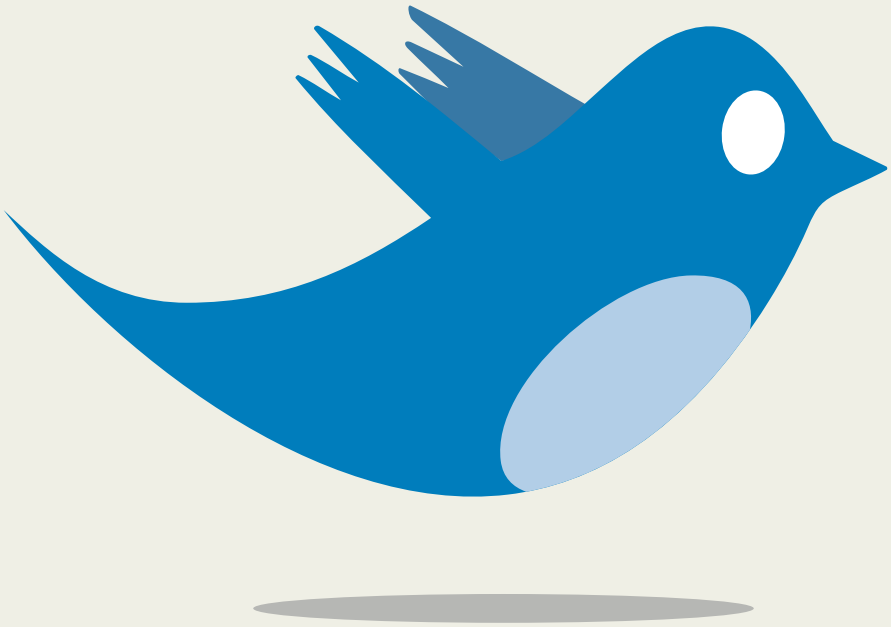
You should have a strategy in place, and service it responsibly. Consider the commitment you need to make to the plan, such as adequate resources. It's important, too, that consideration is given to the 'type' of emergency and what communications will be available to those on the ground. The 2010 Brisbane floods, for example, were anticipated with a few days to mobilise resources and implement strategy. Other emergencies such as bushfires do not always offer a window for preparation and planning.

The ABC contingencies include ensuring any staff potentially responsible for social media activity during an emergency have undergone editorial training and are confident of their ability to navigate the likely tides of information flowing in all directions. In addition, ABC Radio's Multiplatform team has created a trial role, Executive Producer for Emergencies, to facilitate this process and ensure staffing and resource capabilities are being met. This position is currently active for a six month period.

Q12:

Is it possible for organisations involved in emergency communication to avoid social media in 2012?

It's possible, but it's unadvisable. To avoid social media is to be missing an ever-increasing and vital portion of the puzzle.



Q13:

Finally, what are your top three tips for organisations using social media in emergency communications?

- Be strategic about your social media activity. Plan ahead. Allow for flexibility in approach.
- Build awareness internally and externally about what your social media emergency plans are.
- Consistency is vital. People need to know what they're getting, and when, where and how they're getting it.

You can follow Julie Posetti and Ping Lo on Twitter, they are @julieposetti & @pinglo

About the author

Julie Posetti is an award-winning, internationally published journalist and academic who lectures in broadcast journalism at the University of Canberra. She is currently writing her PhD thesis on The Twitterisation of Journalism. A former radio and TV journalist with the ABC at the national level, she has been a regional news editor and a Canberra political correspondent. She now writes about digital media transformations for the prestigious PBS Mediashift website and commentates widely about journalism. Additionally, She also consults on social media strategy and online community building, providing training and policy advice to major media and corporate clients including the Sydney Morning Herald, SBS, UNSW, the Commonwealth Ombudsman and CSIRO. You can follow her on Twitter twitter.com/julieposetti. She keeps an occasional blog at J-Scribe (http://www.j-scribe.com)

Using social media to build community disaster resilience

By Neil Dufty, Principal of Molino Stewart Pty Ltd.

ABSTRACT

Several emergency management researchers and practitioners have suggested that the use of social media can help build community disaster resilience. This article develops a strategic framework for the social aspects of disaster resilience-building based on the Australian National Strategy for Disaster Resilience. It then investigates the current and potential use of social media related to the strategic framework. The article concludes by discussing the possible implications for emergency managers of using social media within such a framework. R

Introduction

'Social media' and 'resilience' are two terms that now regularly appear in the emergency management literature. Several researchers in the emergency management field believe that using social media will help build community disaster resilience. For example, White (2012, p. 187) states that "community resilience should include a grassroots effort where social media is used in a number of ways to support the safety of the community." Dufty (2011) promotes the use of social media by emergency agencies to assist in "learning for disaster resilient communities".

Although these and other researchers and practitioners provide some mechanisms and practical tips in the use of social media to build community disaster resilience, further investigation is required to review the full potential of the relationship.

Using current definitions of community resilience this article identifies a strategic framework for communities, emergency managers and other organisations to help build disaster resilience. It then explores ways in which social media can be effectively used to support this framework. The article concludes by discussing issues faced by emergency agencies in their use of social media, particularly in relation to their education, communications and engagement (ECE) activities.

Building community disaster resilience

The concept of resilience has been in the disaster management literature since the 1980s (Wildavsky, 1988) but has come into vogue as an overriding goal in the past ten years. This has been mainly due to its importance as a factor in achieving sustainability (Dovers, 2004), its role as a strategy in climate change adaptation and as a perceived requirement for communities in the wake of disasters such as 9/11 and Hurricane Katrina (Boin, Comfort and Demchak, 2010).

Like the term 'sustainability', there are a multitude of definitions of 'disaster resilience'. The original notion of resilience, from the Latin word resilio, means to 'jump back' or 'bounce back'. According to de Bruijne, Boin and van Eeten (2010), "In the past decades, research on resilience has been conducted at various levels of analysis – the individual level, the group level, and the organisational or community level – in a wide variety of disciplines including psychology, ecology, organization and management sciences, group/team literature and safety management." Several researchers (e.g. Longstaff, 2005) have made an interdisciplinary effort to further refine the concept of resilience in relation to disaster management. However, a dilemma for researchers has been whether disaster resilience should involve the ability of a community to 'bounce back' (i.e. resume its normal functioning) as per the original notion, or to 'bounce forward' after a disaster (Manyena et al, 2011). Some researchers such as Paton (2006a) opt for the latter notion arguing that the 'bounce back' idea neither captures the changed reality after a disaster, nor encapsulates the new possibilities wrought by a disaster.

Although the academic debate continues on what precisely disaster resilience is (and its relationship to 'vulnerability'), governments around the world have developed strategic plans that aim to guide communities and emergency agencies towards achieving it. For example, the Hyogo Framework for Action was an outcome of the 2005 World Conference on Disaster Reduction held in Kobe, Japan. One of its five specific priorities for action was "building a culture of safety and resilience".

In December 2009, the Council of Australian Governments (COAG) agreed to adopt a whole-of-nation, resilience-based approach to disaster management, which recognises that a national, coordinated and cooperative effort is needed to enhance Australia's capacity to prepare for, withstand and recover from disasters. The National Emergency Management Committee subsequently developed the National Strategy for Disaster Resilience which was adopted by COAG on 13 February 2011.

The purpose of the Strategy is to "provide high-level guidance on disaster management to federal, state, territory and local governments, business and community leaders and the not-for-profit sector. While the Strategy focuses on priority areas to build disaster resilient communities across Australia, it also recognises that disaster resilience is a shared responsibility for individuals, households, businesses and communities, as well as for governments. The Strategy is the first step in a long-term, evolving process to deliver sustained behavioural change and enduring partnerships" (Attorney-General's Department website: www.ag.gov.au).

The Strategy (COAG, 2011) identifies seven groups of actions to build community disaster resilience in Australia:

1. Leading change and coordinating effort
2. Understanding risks
3. Communicating with and educating people about risks
4. Partnering with those who effect change
5. Empowering individuals and communities to exercise choice and take responsibility
6. Reducing risks in the built environment
7. Supporting capabilities for disaster resilience.

The following three disaster resilience-building 'fields' were identified after analysing and further categorising the seven actions, and from other research (e.g. Paton, 2006b):

1. Disaster risk reduction
2. Emergency management
3. Community development.

One could argue the value of this division. For instance, why separate 'disaster risk reduction' from 'emergency management' when Prevention, Preparedness, Response and Recovery (PPRR) in emergency management could encapsulate both? One reason is that it distinguishes hazard risk mitigation (prevention) activities from preparedness activities, the boundaries of which are which are sometimes confused. According to Topping (2011), "Mitigation is distinguished from preparedness by its emphasis on creating long-term resilience through permanent modification of physical and other circumstances which create risk and vulnerability. Yet mitigation is widely misunderstood, often confused with preparedness - and not just by news media and the general public."

The distinction between disaster risk reduction and emergency management is demonstrated practically in several parts of Australia through the demarcation of responsibility and activity. For example, in NSW, floodplain risk management is primarily the responsibility of local councils, with the NSW State Emergency Service responsible for flood preparedness and response.

Educationally, the distinction between risk mitigation and emergency management is also apposite. A common fallacy in the design of disaster-related community ECE programs is that risk awareness will directly lead to preparedness and then appropriate response and recovery behaviours. Research (e.g. Boura, 1998; Rhodes, 2011) has shown that this linear logic process does not exist, and that 'critical awareness' is a part of several psychological processes determining preparedness (Paton, McClure and Burgelt, 2006). Thus ECE activities should target risk awareness and preparedness learning outcomes separately.

Why include 'community development' in the resilience-building mix? Several researchers (e.g. Paton, 2006b) believe that risk reduction and emergency management by themselves will not necessarily build disaster resilience in communities. They feel that social interactions, competencies and interactions improved by 'community development' activities form a critical part of the resilience-building triumvirate.

A relationship between the three disaster resilience-building fields is shown using the simple Venn diagram in Figure 1. Depending on the resilience 'profile' of a community, the importance of each field can be larger and smaller, and their linkages more critical (and thus not necessarily equal as shown in Figure 1).

FIGURE 1. Interrelationship of the three fields required to build community disaster resilience.

Social media

The term 'social media' refers to internet-based applications that enable people to communicate and share resources and information. Examples of social media include blogs, discussion forums, chat rooms, wikis, YouTube, Channels, LinkedIn, Facebook and Twitter.

The use of social media in recent disasters (e.g. 2010 Haiti earthquake, 2011 Queensland floods, 2011 Japan earthquake) around the world has been well documented (Palen, Vieweg, Liu, & Hughes, 2009; Liu, Iacucci, & Meier, 2010; Queensland Police Service, 2011; White, 2012). Some researchers such as Yates and Paquette (2010) even suggest that "disaster response may be the ideal environment for 'proving the worth' of social media as a serious knowledge management platform".

Returning to the three fields identified above (see Figure 1), social media have already demonstrated their use in the emergency management field but have potential in the two other fields, and thus in helping build community disaster resilience. This is because social media can easily form 'communities of practice' across the three resilience-building fields before, during and after an event. According to Wenger (2006), "communities of practice are groups of people who share a concern or passion for something they do and learn how to do it better as they interact regularly".

By further developing the disaster resilience-building framework (see Figure 2), the value of social media can be explored. Figure 2 shows the three fields linked to arguably their main 'social' goals.

The main goal of the disaster risk reduction field is identified here as 'minimising residual risk'. According to the United Nations International Strategy for Disaster Reduction (http://www.unisdr.org/we/inform/terminology), residual risk is "The risk that remains in unmanaged form, even when effective disaster risk reduction measures are in place, and for which emergency response and recovery capacities must be maintained". Social media can help people understand the residual disaster risks in their communities, and what is being done (structural and non-structural methods) to manage this risk. Several organisations around the world are using social media to engage with communities of interest to discuss ways to reduce disaster risk (e.g. Alabama Department of Homeland Security, 2010).

A main goal of emergency management is to ensure community safety though 'shared responsibility'. The concept of 'shared responsibility' is explained in the final report of the Royal Commission into the 2009 Victorian Bushfires in Australia. The Commission uses the expression 'shared responsibility' to mean increased responsibility for all. It recommends that state agencies and municipal councils adopt increased or improved protective, emergency management and advisory roles. In turn, communities, individuals and households need to take greater responsibility for their own safety and to act on advice and other cues given to them before and on the day of a bushfire.

According to the Royal Commission report, "Shared responsibility does not mean equal responsibility..... there are some areas in which the government should assume greater responsibility than the community. For example, in most instances fire authorities will be more capable than individuals when it comes to identifying risks associated with a fire; the government should therefore assume greater responsibility for working to minimise those risks".

The Australian Government stresses in its National Strategy for Disaster Resilience (COAG, 2011) that "achieving disaster resilience is not solely the domain of emergency management agencies; rather, it is a shared responsibility across the whole of society".

FIGURE 2. Goals and ways that social media can help build community disaster resilience.

Disaster risk reduction

- Goal: 'Minimisation of residual risk'
- Informing others of disaster risks
- Discussing and planning ways to minimise risk
- Coordinating and managing tasks
- Conducting post-event learning to improve

Emergency management

- Goal: 'Safe communities through shared responsibility'
- Providing emergency intelligence through crowdsourcing
- Helping people prepare for disasters
- Communicating warnings to others
- Coordinating community response and recovery
- Conducting post-event learning to improve

Community development

- Goal: 'Formation of social capital for disasters'
- Increasing and improving social networks, leadership and support systems
- Providing support to people during and after a disaster
- Conducting post-event learning to improve

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". Thus, by their very nature, social media can build emergency management communities of interest that share responsibilities. They can be aligned to a particular disaster or a community that is at risk of disaster. They can also consist of emergency managers including first responders (e.g. Social Media 4 Emergency Management at www.sm4em.org or #smem on Twitter).

A main goal for community development, particularly related to disaster resilience, is the 'formation of social capital'. Social capital broadly refers to the resources accumulated through the relationships among people (Coleman, 1988). "There is consensus that social capital consists of resources embedded in social networks and social structure, which can be mobilized by actors" (Dynes, 2002). The importance of social capital in disasters has been well documented. For example, according to Schellong (2007), during and after a disaster "social systems continue to operate while new ones emerge because they have greatest knowledge of the community, and because they need to initiate recovery themselves as many of their needs will not be met by outside agencies". Haines, Hurlbert and Beggs (1996) found that disaster victims and their social networks mostly become resources.

Several researchers (e.g. Antoci et al, 2011; Ellison et al, 2007) have assessed the value of social media in forming social capital. They found that social media have made it simpler to interact with others without the limitations of geography and lack of time. "Noting that contact through social media is asynchronous, they reference studies which show that such interactions are not necessarily of inferior quality compared to simultaneous, face-to-face interactions" (Tibbitt, 2011). In addition to the preservation and possible improvement of existing ties, interaction through social media can foster the creation of new relations. It therefore can encourage and sustain learning communities (Tibbitt, 2011) and, in this case, 'disaster resilience learning communities'.

Based on the disaster resilience-building framework previously discussed in this paper, there are several ways (see Figure 2) to use social media to build community disaster resilience. These include:

- Developing social capital (e.g. networks, leadership, support systems) for disaster resilience learning communities
- Informing others of the disaster risks in their community, discussing and planning what is being done to manage the risks and what they can do
- Engaging with others to help them prepare for a disaster
- Providing intelligence through 'crowdsourcing' to others (including emergency managers) before, during and after a disaster
- Communicating warnings and other information to communities during a disaster
- Providing support to people during and after a disaster
- Coordinating community response and recovery
- Conducting post-event learning to further build resilience (this is critical for impacted communities to 'bounce forward').

Implications for emergency managers

Although it appears that social media can help build the social aspects of disaster resilience, the framework for this interrelationship promoted above will have implications for emergency managers.

Firstly, the framework calls for emergency agencies to liaise not only with risk managers but with those involved in community development such as social scientists, psychologists and community planners. Although these experts are usually involved in disaster recovery actions, this framework encourages liaison and planning by all parties involved in the three disaster resilience-building fields before, during and after an event.

Secondly, emergency agencies will need to resolve the degree to which they will embrace social media as part of their ECE activities. This will require review of the effectiveness and appropriateness of 'traditional' ECE activities (e.g. media, website and community meetings) in comparison with social media opportunities to build disaster resilience.

Thirdly, as promoted in this paper, social media provides 'power to the people' in emergency management through P2P interactions. A paradigm shift from being the 'combat agency' telling others to one of community engagement and knowledge sharing may be required to fully obtain the benefits of social media through shared responsibility.

Fourthly, the perception of 'community' changes through social media use from a geographic locality to communities of interest and, ideally, disaster resilience communities of learning. This may mean the re-focusing of ECE activities using social media to not only the geographic community at risk but also the broader community of interest.

Lastly, there are potential issues of trust and misinformation that will need to be managed by emergency agencies when using the more 'open' social media. Bruce Lindsay, US Congressional Research Service analyst warns that "malicious use of social media during an incident can range from mischievous pranks to acts of terrorism" (Lindsay, 2011).

In conclusion, it appears that social media could greatly assist in the building of disaster resilience, particularly based on the strategic framework promoted in this paper. As Yates and Paquette (2010) suggest, "in short, it seems that social media are inherently flexible yet

have the robust knowledge structures that are closely aligned with how knowledge is gathered, shared and employed in a disaster response". The same could be said for other aspects of emergency management, as well as for disaster-related risk reduction and community development.

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About the author

Neil Dufty is a Principal of Molino Stewart Pty Ltd. He has extensive experience in the design, implementation and review of disaster-related community education, communications and engagement policies and programs across Australia. Over the past two years he has conducted extensive research into ways to build community disaster resilience including through the use of social media.

National Awards for Local Government 2012

The Attorney-General's Department (AGD) sponsors the *Land use planning – Addressing disaster risk and enhancing resilience* award in the 2012 National Awards for Local Government.

The National Strategy for Disaster Resilience makes the case for reducing risk in the built environment. Comprehensive consideration of hazards and risk in the planning system needs sound understanding of the hazards and risks. An understanding of risk management principles and approaches to strategic planning and development controls that will adequately mitigate identified risks is also required.

This award recognises councils that work to better serve their communities by strengthening disaster resilience through innovative risk-based land use planning and is open to all councils – large, small, capital city and non-capital city.

Entries opened on 1 December 2011 and will close on 17 February 2012. For more details please visit the National Awards for Local Government on the Department of Regional Australia, Local Government, Arts and Sport website at www.regional.gov.au/local/awards

AGD also hosts a Risk-based Land Use Planning course at its Australian Emergency Management Institute. Details of the course are available at www.em.gov.au/aemi

Erratum:

In our Volume 26, issue 3, July 2011 edition we published a preliminary version of Christianson, McGee and Jardine's paper entitled Canadian wildfire communication strategies. The following link now has the correct restructured version:

http://www.em.gov.au/Publications/Australianjournalofemergencymanagement/Pastissues/Pages/AJEM-Volume-24-Issue-3-July.aspx

The resilient community and communication practice

By Susan Nicholls.

ABSTRACT

Recent thinking in the field of emergency management suggests that resilience and adaptability need greater focus for both pre-disaster strengthening of communities and for the longer term psychosocial welfare of communities affected by disasters (Cork, 2009, 2010). Resilience is intimately associated with good communication whereby mutual understanding, fostered by two-way communication, delivers both needed resources to communities, and intelligence regarding community needs to relevant agencies. Without resilience, communities are not likely to recover after disaster. In this context, governments are rightly concerned with the maintenance of robust and fully functioning communities that are able to withstand the shock of disaster, whether caused by nature or human intervention. However, the problem for government agencies is how to communicate with people at risk – which, given recent extreme weather and geological events, is virtually the entire population – initially to encourage preparation and mitigation activities, and later to assist with recovery following disaster. Communication strategies for both of these stages are difficult to implement well and can be politically risky. My contention in this paper is that communication intended to foster resilience means more than simply delivering information. This is true of all stages of the emergency process – prevention, preparedness, response and recovery. This paper examines the components of resilience in the context of disaster; the role communication can play in promoting resilience, and proposes some pointers toward the use of communication to assist in building and maintaining resilient, adaptable communities. R

Introduction

This paper focuses principally on effective communication with communities seeking to adapt to, and be resilient in the face of, new and difficult circumstances in times of disaster. It also attempts to examine barriers and challenges that communicators face in contributing to such adaptation, providing examples of how these might be overcome. The discussion is in the context of natural disaster, during and after which the need for resilience is greatest.

The paper begins with a brief discussion about resilience, examining the components of resilience in the context of disaster. Next, concepts relating to information and communication, and the crucial role communication can play in promoting resilience will be explored. The paper concludes with suggestions for improving communication practice to improve resilience and adaptation, as well as ideas for further research in this field.

Broadly speaking, crises and disasters occur in the wake of inadequate anticipation and preparation. Sometimes this is because of poor strategic planning and risk management and sometimes it is because things happen that are outside the bounds of probability dealt with by these processes. Some strategic thinkers argue that there is insufficient imagination applied to anticipating where "inevitable surprises" might come from (Schwartz 1996, 2003; Scearce *et al.* 2004). The inquiry into the September 11 terrorist attacks in New York City and Washington DC concluded, for example, that the biggest failure on the part of security agencies was a "failure of imagination" (National Commission on Terrorist Attacks Upon the United States, 2004). It is not difficult to see how that conclusion could be applied to recent disasters in Australia such as the bushfires that affected Canberra and parts of Victoria, or the Queensland floods. None was surprising in hindsight but each caught authorities and the public off guard. Like the events of September 11 in the USA, these were events that had not occurred in the same way in those places before. Similarly, the periods of severe drought in parts of south-eastern Australia over the past decade pushed water sharing arrangements in NSW, Victoria and South Australia to failure point because such dryness had not occurred in the lifetimes of most people involved in water policy – they had, however, occurred in the longer term past (Connell 2007).

I contend in this paper that a greater emphasis on effective communication on the part of relevant agencies and authorities, by which I mean a productive dialogue with affected communities rather than the basic transmission of information, would help significantly in reducing the vulnerability of communities and increase their adaptive capacities in stress situations – that is, would increase community resilience (Kent and Taylor 2002).

Resilience

There are a number of definitions for such terms as resilience, adaptation and sustainability. Resilience is a word on many tongues across governments, communities and disciplines as diverse and engineering, psychology, medicine, ecology and economics (Cork 2010b, c). Resilience is fundamentally a property that gives individuals, social institutions, organisations and/or ecosystems the ability to cope with shocks without losing their essential functions, characteristics and identity (Walker and Salt 2006; Cork 2010a).

Resilience emerges from complex interactions among people, animals, plants and environmental social and economic processes that make up the coupled social and environmental systems of which humans are a part. As such, resilience is complex, and being able to create it or even determine for sure whether a system has enough of it are still big challenges. Nevertheless, we can identify the components of social-ecological systems that give them resilience, as well as the sorts of preparations that are likely to enhance or decrease the ability of such systems to cope with shocks and recover after them.

Research on resilience has focused on how ecosystems and social systems have dealt with shocks in the past and drawn conclusions about what characteristics allowed these systems to retain their identity. One of the most important conclusions has been that it is unhelpful to think of resilience as "resisting change". Systems that resist change are unlikely to adapt and likely to collapse once their resistance has been overcome. A resilient system changes within limits and does not necessarily "bound back" to exactly the same state as it was in before a shock (Walker *et al.* 2004).

A distinction has been drawn between "specified" resilience (i.e., resilience to specific pressures) and "general" resilience (i.e., resilience to a range of potential shocks) (Walker *et al.* 2004). Often there are trade-offs between specified and general resilience in that having more of one means having less of the other. General resilience is conferred by many aspects of systems but chiefly by diversity (e.g. of ideas, skills, resources, species, function), modularity (connections between parts of a system such that if one part fails it does not bring the rest of the system down with it) and feedback (ways in which information about changes in the system is transferred rapidly to wherever in the system it is needed and timely action is taken at appropriate scales) (Walker *et al.* 2004, 2006). It is the feedback aspect that is a focus of this paper. In governance systems, for example, these characteristics have been interpreted in terms of the concept of subsidiarity – allocation of responsibility, authority and resources at levels in a hierarchy that are appropriate to the scale of challenges and necessary responses (Marshall 2008, 2010). In terms of communication for resilience, this aspect of subsidiarity can be applied to diffusion of information through the use of credible spokespeople and opinion leaders to transmit information and to receive and pass on feedback (Katz and Lazarsfeld, 1955).

Norris *et al.* (2007) supply a useful list of 21 definitions of resilience, which includes definitions from the physical, psychological, ecological, social and community spheres, among others. In the disaster context, they define resilience as 'a process linking a set of adaptive capacities to a positive trajectory of functioning and adaptation after a disturbance' (p.130). They specifically nominate communication and information as crucial components of "networked adaptive capacities" which characterise community resilience, along with economic development, social capital and community competence (p.150). Further, Norris *et al.* offer an illuminating understanding of the characteristics of resilient systems: *robustness, redundancy and rapidity*. I argue that each of these has a specific relationship to communication.

For the purposes of this paper, I define adaptation and sustainability as subsets of resilience, the former signifying successful flexibility in the face of unpredictable or fluid situations, the latter as a state of ongoing capacity to maintain successful adaptive behaviour.

The role of communication in fostering resilient communities

The role of communication in fostering community resilience in a disaster context is threefold: to assist in prevention, preparation and mitigation through carefully designed and pre-tested communication campaigns; to facilitate emergency response during a crisis; and to contribute to and, where possible, expedite recovery, through a combination of information and dialogue.

Effective engagement of people across society aimed at anticipation of and preparation for disasters is vital in supporting resilient communities. Mechanisms for timely communication of relevant information (equating to "rapidity", where key messages are quickly transmitted to targeted audiences), such as social media and local broadcasting, are vital components of resilient communities. Equally important is investment in a diversity of skills and resources, and a variety of ways to deal with a wide range of potential challenges, including multiple communication methods and channels ("redundancy", where messages are not reliant on just one channel, such as mobile phones). As well, development of high levels of trust and shared values and objectives must be aligned with understanding and accepting differences in views and aspirations (Cork 2010a; Nicholls 2010).

Information or communication?

Where communities are faced with crisis, and when there is a strong need for information, there is also a strong need to *enable* communities to meet their own needs for information by connecting with them in a process that allows a two-way interaction. For example, research following the Canberra bushfires showed that while people knew they could obtain some information from the ACT Bushfire Recovery Centre in the form of leaflets, their particular and time-related needs for information could only be met by personal contact where they asked for what they needed when they needed it, modified or enlarged their request in conversation, and (ideally) achieved their aim. In the Canberra case, two-way communication, or dialogue, was strongly fostered by organisational structures (Camilleri *et al.* 2007; Nicholls and Glenny 2005). Through dialogue, the providers of information were thus able to meet expressed needs.

Being a mechanism for empowerment, dialogue supports community *robustness*. As dialogue is two-way, involving both speaking and listening on the parts of participants, it not only supplies specifically required information to those asking for it, but also informs the providers about what information is being sought. As such, it is a key means for agencies to understand how individuals perceive and act on (or the reverse), processes that contribute positively (or negatively) to their own adaptive behaviours.

Without information, communities and individuals under stress are unable to make good decisions. A sense of helplessness and despair follows. But without intelligent hearing on the part of the information givers, it is more difficult for individuals to express their situation: to understand and convey their informational needs. Through their own understanding they enable themselves to take the necessary steps to return to equilibrium. Communities that (re)build their own resilience after disaster and, for that matter, before – at the stages of mitigation and preparedness – are likely to experience a more robust and satisfactory outcome.

At this point, I would like to clarify what I mean by the words "community" and "disaster" in the context of this paper. Here, a "community" is a social grouping that interacts, albeit inconsistently, on a number of levels – often but not necessarily bounded by a geographic commonality but bounded by the effects of the disaster – and is characterised by a self-recognised and self-defined commonality of experience which changes over time (Nicholls 2006). "Disaster" has a plethora of definitions depending on which discipline is using the term (Saylor 1993; Perry 2007). For this paper I define 'disaster' as involving the following factors (Eyre 2006, Seeger 2002, Fearn-Banks 2002):

- an event in time that has an identifiable beginning (although often not a clear end-point)
- the destruction of property, injury and/or loss of life
- affecting a large group of people adversely
- out of the realm of ordinary experience
- public and shared by members of more than one family
- disrupting the normative or cultural system of a society
- traumatic enough to induce stress in almost anyone exposed to it, and
- the subject of intense media interest.

Regarding the first point, it should be noted that disasters which have long-term, major social, psychological, economic, infrastructural, environmental and other effects take time to recover from. It is difficult to anticipate when a disaster will be "over" or even to identify a point at which an end occurs (Nicholls and Glenny 2005).

Robustness: preparation, mitigation and communication

It is a truism that effective preparation for disaster, and mitigation practices to reduce the impacts of disaster, are essential components of a community's capacity to recover – i.e. its resilience (Eyre 2006). The more thoroughly a community readies itself for the impacts of disasters, the more robust it is likely to be in the event. Preparation for any kind of impact involves, as I have mentioned above, imagining what could happen and taking steps to be ready for that event. In Australia, local and State Government agencies typically take responsibility for providing information about such preparation. The Australian Government Attorney-General's Department (2009b) notes: "The concept of the prepared community concerns the application of the comprehensive, all hazards and all agencies approaches at the local level (typically at local government level)". The focus here is on what agencies do. The other part of the equation, the community, is unfortunately seen as a monolithic receptor of information and instructions from relevant agencies.

Given that many individuals are resistant to warnings, and minimise their risk preparation in the belief that 'it won't happen here/to me', persuasive and trustworthy communication plays a vital part in realistic and credible warning about risk as a first step (Paton 2003). Dialogue is a logical method to establish trust and to persuade an uncommitted audience. A second step, part of this dialogue, is to suggest a clear and practical set of actions that will mitigate the danger, taking into account feedback regarding a community's or individual's current perceptions and capacity to act on this advice. A third is to communicate the means by which these actions can be accomplished to prepare effectively for impact. This advice should be formulated in such a way as to convince audiences that if they make the effort: a) they have a reasonable expectation that they can accomplish their intention; b) it is a worthwhile thing to do; and c) there are advantageous and desired rewards for their effort (Vroom 1964 cited in Wood *et al.* 2004).

Robustness: response and recovery communication

Post-disaster, that is, after the initial emergency phase, a new range of communicational purposes come into play. Unfortunately, research about crisis and post-crisis communication focuses heavily on media management. While this is clearly a vital part of disaster management, and while media play a significant role in informing audiences about what measures are being taken in response to disaster, this focus ignores the capacity of affected communities to respond effectively in their own ways if given the opportunity – opportunity that dialogic communication can help provide. In fact, rendering communities powerless by disregarding their own agency in self-protection and resilience can be harmful to longer-term recovery. Moreover, the view that communities are helpless and prone to panic tends toward two unhelpful outcomes: it encourages an attitude within communities of over-reliance on government services that are often already at or beyond breaking point during disasters; and media is likely to exacerbate an audience's anxiety with alarmist and sensational coverage, as occurred after Hurricane Katrina (Tierney *et al.* 2006).

It is also worthwhile pointing out in this regard, given the difficulties of conveying accurate and timely information to affected communities during the response phase of a disaster, that the phenomenal growth of social media has already affected how information is shared among communities. Social media has tremendous potential to assist people facing disaster by providing trustworthy, timely contact and mutual support. Interestingly, it is characterised by the reciprocated responsiveness of sender and receiver.

Few studies have looked closely at how communication can assist recovering communities (Camilleri *et al.* 2007), but good dialogic communication is key to enabling communities to acquire agency in their own recovery. When a community is faced with disaster, individuals are in the curious dilemma of needing a great deal of information, often not knowing precisely what information they need, and often not being able to effectively assimilate or act on information when it is received. These factors come into play to a greater or lesser extent before, during and after disasters (underscoring the connectedness of all stages of disaster in contributing to recovery). There is a particular difficulty when it is government, often mistrusted or held responsible by communities for their plight, which is attempting to communicate.

Following a major emergency such as bushfire or flood, communities immediately begin their own recovery by bonding together, often demonstrating notable altruism (Wraith and Gordon 1988). Emergent groups appear, combining individuals who may have little in common but their shared disaster experience and their desire to re-establish normality (Gordon 2004). These groups often apply to government agencies for help. If agencies are not in the habit of engaging in dialogic communication, groups can feel rebuffed and become politicised (Stallings and Quarantelli 1985). This, in turn, can result in conditions of conflict detrimental to resilience.

One of the difficulties of post-disaster or recovery communication is in understanding what actually constitutes recovery. Fear, anxiety, disrupted relationships and depression are the shadow side of recovery, the unglamorous, slow, painful journey with few milestones or signposts.

Following these ideas, I define recovery as *an ongoing state of being, experienced differently by individuals in a community that has suffered disaster, in which there are varying states of restoration, recuperation, renewal and revival of physical, emotional, economic, and infrastructural conditions that had been damaged or destroyed by the disaster.*

There are no 'one-size-fits-all' solutions for individuals who are recovering from a disaster. Their needs are multiple. They include, differently for different people, material, emotional, aesthetic, social, environmental and spiritual assistance. Dialogic communication plays an essential role in elucidating and responding to diverse needs, thus encouraging and supporting resilience.

Resilience supported by communication: some examples

The Canberra experience of the aftermath of 18 January 2003 can teach us many lessons about recovery, especially about how extremely varied it can be from person to person. Research undertaken three years after the Canberra bushfire gave many contradictory indications about what helped and what hindered people's recovery. For example, some people found that media coverage repeatedly showing familiar places – even their own houses – engulfed in flame was deeply upsetting: others thought it was a good thing because it showed the rest of Australia, and the world, what they had gone through (Camilleri *et al.* 2007). A major finding was that people thought *Community Update*, the weekly recovery newsletter, a very great help and emphasised that they regarded it as 'their' newsletter.

As mentioned above, the structure of the recovery organisation itself was highly conducive to dialogic communication. A Community and Expert Reference Group was established, with representatives widely drawn from the community and relevant organisations, and the Canberra Bushfire Recovery Centre was also a source of mutual exchange of information, views and needs. This combination of formal and informal mechanisms fostered dialogic communication (Nicholls and Glenny 2005).

Communication was seen to fail dramatically during Hurricane Katrina in the USA. When devastation of large areas of infrastructure in New Orleans and neighbouring cities combined with a society divided by poverty, an already weak system of governance struggling to respond was overwhelmed. Most affected Louisiana communities were shown to be highly vulnerable and lacking in the key components of resilience.

Resilience: the capacity of systems to "bounce back" after shocks.

Communication – the mutual giving and receiving of information – is a crucial component of community resilience.

The role of communication in fostering community resilience in a disaster context is threefold:

- to assist in prevention, preparation and mitigation through carefully designed and pre-tested communication campaigns;
- to facilitate emergency response during a crisis; and
- to contribute to and, where possible, expedite recovery, through a combination of information and dialogue.

Dialogue in the disaster context can be understood as two-way communication allowing a mutual exchange of understanding between affected communities and the agencies charged with assisting them.

Communities need informational resources, enriched by dialogue with providing agencies, to successfully advance their own recovery and create resilience.

However, recovery communication brought to bear some time after Hurricane Katrina, like that following the 11 September attacks in 2001, was a highly sophisticated TV and print campaign designed to help a diverse group of people who were distressed (Nicholls and Healy 2008). An important aspect of both of these campaigns was their recognition that "telling" was insufficient, and two-way communication was essential: every TV commercial and all printed material had a free call number so that personal support could be reached. This, in turn, provided authorities with a clearer idea of where people were in their recovery and what their concerns were, leading to more refined and targeted information provision. In addition, hard-to-reach communities – such as particular "closed" ethnic groups and first responder teams – were recognised as having distinct communication needs and methods of access to help (April J. Naturale, Project Liberty, New York City pers. comm.).

Conclusion

Placing the principle of dialogic communication at the heart of disaster communication to foster resilient communities is the strong recommendation of this paper. Policy decisions that are informed by the feedback mechanisms of dialogic communication have a far greater chance of favourable outcomes than decisions made in isolation and without an informed understanding of the communities they affect. Research into recovery communication after the Canberra bushfires indicated that, among other communication strategies, the feedback mechanisms in place through a range of face-to-face encounters allowed recovery authorities to match services and information to needs. In relation to emergency communication management more broadly, one way to deal with the likelihood of shocks that are outside the experience or memory of current government policy-makers and people across society is to develop scenarios of multiple possible futures based on sound analysis of past trends, clarification and challenging of current assumptions and mindsets, and application of informed imagination to what *could* occur if current constraints on the environment, society and/or the economy change (Schwartz 1996; Scearce *et al.* 2004). Central to such activity is focused, feedback-enriched communication. Allied to this approach is the building of resilience (if it is lacking) or maintenance of resilience (if it is already adequate) across institutions and society more broadly using dialogic communication as a principal strategy (Walker and Salt 2006; Cork 2009; Resilience Alliance 2010, Cork 2010a; Nicholls 2010).

Further research into communication practices among other disaster-affected communities would reveal useful parallels and differences that would ultimately enhance efforts to create a society more resilient to the likely shocks associated with, for example, climate change. In particular, the growth of social media cannot be overemphasised, and needs to be explored in this context.

NOTE: An earlier version of parts of this paper appears in Cork, S (Ed) 2010, *Resilience and Transformation – Preparing Australia for Uncertain Futures*. CSIRO Publishing: Collingwood.

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The emerging legal issue of failure to warn

By Michael Eburn, Australian National University.

ABSTRACT

This paper will review the legal obligation upon the emergency services to warn the community of impending natural disasters. The essential legal elements in 'failure to warn' cases will be identified and, with reference to findings from post event inquiries (including the *2009 Victorian Bushfires Royal Commission*), post event litigation (including litigation arising from the 2003 Canberra fires) and recent amendments to legislation (including the *Fire Services Commissioner 2010* (Vic)) the implications for the emergency services and their media advisers will be discussed. This paper will show that agencies must, in future, put as much effort into 'putting out the information' as they do in 'putting out the fire'! R

Failure to warn cases

Failure to warn cases are not new, though they may be new in the context of the emergency services. The medical profession have faced litigation over failure to issue appropriate warnings for many years. The most significant medical case in this area is the decision of the High Court, in *Rogers v Whitaker*.[1] This case involved an ophthalmic surgeon who offered to perform surgery on Mrs Whitaker's eye but failed to warn her of a 1:14000 risk that she would end up permanently blind. That is what happened and she sued, not for negligent performance of the surgery as there was no doubt that the Doctor 'conducted the operation with the required skill and care', but for his failure to warn her of the risk of the adverse outcome.

Relevance to the emergency services

The relevance to the emergency services may not be readily apparent. The emergency services, we may think, are not in the business of giving people advice about options and then allowing them to make decisions; but that is not obviously true. The 'stay and go' policy for fires was predicated on the basis that people should make decisions based on an assessment of their own ability and the level of preparation around their property. The choice of whether to 'stay' or 'go' information about a particular day and a particular fire. People may not have much time to make a decision, but they do still need to make a decision, and they need to have information upon which to base that decision.

What can be inferred from the earlier cases is that for a plaintiff to sue, they would need to:

1. Establish that there was a duty to warn;
2. That there was an unreasonable failure to issue a warning or to issue a timely or meaningful warning; and
3. It would have made a difference to them if the warning had been issued. They would have acted differently to avoid the harm that falls upon them either by evacuating or staying to defend their property.[2]

The duty to warn

The 2009 Victorian Bushfires Royal Commission said:

> The evidence before the Commission has demonstrated that the community ***depends on*** (and ***has come to expect***) detailed and high-quality information prior to, during and after bushfires. In addition, the community is ***entitled*** to expect to receive timely and accurate bushfire warnings whenever possible, based on the intelligence available to the control agencies ...[3]

1. (1992) 175 CLR 479.
2. *Rogers v Whitaker* (1992) 175 CLR 479; *Chappel v Hart* (1998) 195 CLR 232; *Rosenburg v Percival* (2001) 205 CLR 434.
3. Teague, B., McLeod, R. and Pascoe S., *2009 Victorian Bushfires Royal Commission: Interim Report* (Government of Victoria, Melbourne, 2009), [4.2].

Even though there had been extensive reports on the need to issue warnings, on the 7th February 2009 there was

> ... a void in the responsibility for the issuing of bushfire warnings in Victoria ... no person or authority in Victoria [was] charged with a legal or formal procedural responsibility for issuing warnings to the community concerning the risk of bushfire.[4]

The Royal Commission concluded that it would be '... desirable to specify in legislation, a person who must shoulder direct responsibility for ensuring appropriate warnings during bushfire incidents.' [5]

Today, the Fire Services Commissioner 'must issue warnings and provide information to the community in relation to fires in Victoria for the purposes of protecting life and property.'[6] The Commissioner may develop and issue 'guidelines, procedures or operating protocols' regarding the development and issue of community warning.[7] The Commissioner may delegate his or her obligation to issue warnings to the Chief Officer of the Country Fire Authority, the Chief Officer of the Metropolitan Fire and Emergency Services, or to the Secretary or Chief Fire Officer of the Department of Sustainability and Environment.[8] These officers are then, duty bound, to issue relevant warnings.[9]

Breach of Statutory Duty

The tort of breach of statutory duty is separate from (albeit similar to) the tort of negligence. A person injured, for example by a lack of warning, may have a right to seek a private remedy, that is money damages, where the Commissioner fails to perform their statutory duty. Whether or not a duty imposed by statute allows an aggrieved person to seek a private remedy depends on the intention of the Parliament as expressed in the Act. Rarely will an Act say that failure to perform the statutory duty is, or is not, intended to give a private right to sue; that intention must be inferred from the entire Act. Crennan and Keiffel JJ suggested that it may be appropriate to bring an action for breach of statutory duty where:

> ... a statute contains special measures directed towards a class of persons, where its evident purpose is their protection and when it may be inferred that the legislature expects that the powers will be used in particular circumstances...[10]

Brennan CJ after rejecting various competing theories to explain private liability for failure to perform a statutory duty said:

> Where the power is a power to control "conduct or activities which may foreseeably give rise to a risk of harm to an individual" ...and the power is conferred for the purpose of avoiding such a risk, the awarding of compensation for loss caused by a failure to exercise the power when there is a duty to do so is in accordance with the policy of the statute.
>
> ... No duty breach of which sounds in damages can be imposed when the power is intended to be exercised for the benefit of the public generally and not for the protection of the person or property of members of a particular class. ... [11]

The duty to sound a warning is not a duty to 'control' nor is it a duty to do, or not do, something that directly exposes another to harm; it is not a duty to control work practices to ensure worker safety or to exercise control over a dangerous area. It is not a duty to take steps to prevent the harm and this may suggest that it is not the type of duty that will give rise to a private right to sue.

On the other hand, the duty is expressed as a positive duty and was intended to overcome identified deficiencies in Victoria's emergency management arrangements; the various fire authorities had powers and obligations to control the fires but they were not required, or directed to issue warnings. The obligation is clearly directed at a particular risk and provides for 'special measures' but is debatable whether it is directed to a particular class of people (perhaps those at risk of fire) or whether the 'community' is equivalent to 'the public generally'.

Providing a private remedy is not inconsistent with the legislation. Many Acts relating to fire brigades provide a statutory immunity such that members of the brigade or its commissioner or chief officer are not liable for acts done in good faith in the purported performance of their duties.[12] There is no similar clause in the *Fire Services Commissioner Act*. There is provision to ensure that the Fire Commissioner is not personally liable for any act or omission done in the good faith performance of his or her duties, but any liability that would, otherwise, fall on the Commissioner is to be met by the State of Victoria.[13] That provision does not deny an aggrieved plaintiff the right to seek compensation

4. Ibid, [9.151].
5. Ibid, [9.155]. In their interim report, the Commissioners recommended that this obligation should fall to the Chief Officer of the CFA but after their final report, the responsibility was given to the newly appointed Fire Services Commissioner.
6. *Fire Services Commissioner Act 2010* (Vic) s 24.
7. The Commissioner has issued Strategic Control Priorities which indicate that the 'new direction' for fire management will 'focus on primacy of life and the issuing of community information and community warnings'; Office of the Fire Services Commissioner, *Strategic Priorities*, 2 February 2011, <http://www.firecommissioner.vic.gov.au/index.php?option=com_content&view=article&id=76&catid=34&Itemid=56>, (accessed 1 March 2011).
8. *Fire Services Commissioner Act 2010* (Vic) s 26.
9. *Country Fire Authority Act 1958* (Vic) s 50B; *Metropolitan Fire Brigades Act 1958* (Vic) s 32AA; *Forests Act 1958* (Vic) s 62AA.
10. *Stuart v Kirkland-Veenstra* (2009) 237 CLR 215, [146].
11. *Pyrennes Shire Council v Day* (1998) 192 CLR 330, [25].
12. See for example, *Rural Fires Act 1997* (NSW) s 127.
13. *Fire Services Commissioner Act 2010* (Vic) s 33.

or alter the law that would be applied in determining whether or not liability has been established.

It follows that although the Fire Services Commissioner is under a statutory duty to issue warnings, it remains to be seen whether that duty can be enforced by a private action for damages in the event that someone suffers a loss that they say they would not suffer had adequate warnings been issued.

Common law – negligence

Negligence is a similar, but separate tort. In negligence the duty that gives rise to an action for damages is imposed by the common law not by statute. Evidence of a failure to comply with a statutory duty may be evidence of negligence as it may be evidence of a want of proper care as the reasonable person would comply with their statutory obligations, but that failure is only one of the elements in a negligence claim.

The courts have been unable to provide a simple or consistent test on when a statutory authority such as the Country Fire Authority or the Fire Services Commissioner and their equivalents in each state and territory, will owe a common law duty of care. All the facts and circumstances must be considered in light of relevant, salient features. The salient features include, but are not limited to

a. the foreseeability of harm;
b. the nature of the harm alleged;
c. the degree and nature of control able to be exercised by the defendant to avoid harm;
d. the degree of vulnerability of the plaintiff to harm from the defendant's conduct, including the capacity and reasonable expectation of a plaintiff to take steps to protect itself;
e. the degree of reliance by the plaintiff upon the defendant;
f. any assumption of responsibility by the defendant;
g. the proximity or nearness in a physical, temporal or relational sense of the plaintiff to the defendant;
h. the existence or otherwise of a category of relationship between the defendant and the plaintiff or a person closely connected with the plaintiff;
i. the nature of the activity undertaken by the defendant;
j. the nature or the degree of the hazard or danger liable to be caused by the defendant's conduct or the activity or substance controlled by the defendant;
k. knowledge (either actual or constructive) by the defendant that the conduct will cause harm to the plaintiff;
l. any potential indeterminacy of liability;
m. the nature and consequences of any action that can be taken to avoid the harm to the plaintiff;
n. the extent of imposition on the autonomy or freedom of individuals, including the right to pursue one's own interests;
o. the existence of conflicting duties arising from other principles of law or statute;
p. consistency with the terms, scope and purpose of any statute relevant to the existence of a duty; and
q. the desirability of, and in some circumstances, need for conformance and coherence in the structure and fabric of the common law.[14]

How those features will apply will depend on the facts in each case. It may be clear that a vulnerable community is at imminent risk of catastrophic injury in circumstances where a fire brigade is nearby and can warn the community without undue risk to themselves and where it is clear that a warning will be, or would have been effective in allowing the at risk population to take immediate and effective action to protect themselves. Alternatively there may be a situation where the community is able to determine the risk themselves from other sources of information so an official warning may not be essential or effective, where the danger is vague and where there is nothing further that could be done in any event. In between those extremes any number of factual situations may be envisaged that may or may not give rise to a common law duty of care.

With, however, a long history of inquiries[15] identifying the need to warn communities and the fact that the issue keeps recurring, the Court may well hold that a 'reasonable fire agency' would have in place sufficient procedures to issue timely warnings, and that failure to do so constitutes negligence.

Would a warning have made a difference?

Where there is a duty to warn, whether imposed by statute or the common law, the plaintiffs would have to show that a warning would have made a difference. That is they would have show that they both could, and would, have done something differently had they received the warning and that different thing would have been effective to avoid their loss or damage. The simplest way to do that is for the plaintiff to give evidence as to what they would have done if they had been warned.

Courts are, naturally, sceptical of this self serving testimony;[16] the testimony is wise with hindsight and confuses the question of what a plaintiff might have done if warned of a risk compared with what they now think they would have done given the risk has materialised. There will be significant difference between a person's reaction to be warned that there is a 1:14000 chance of

14. *Caltex Refineries (Queensland) Pty Limited v Stavar* [2009] NSWCA 258, [103] (Allsop P).

15. Going back at least to the 1983 Ash Wednesday fires; see A. R Ellis, SM., *In the matter of the Inquests touching on the deaths of FE Archer, AS Carter, AR Farquer, J Fraser, SJ Henderson, NF Thompson, JA Farquer* (Victoria Coroners Court, Melbourne, 29 September 1983), 17a-18a; 22a-23a.

a bad outcome compared to being warned 'you will or may go blind' but in failure to warn litigation plaintiffs are likely to argue 'I would not have done what I did if I had been warned that 'this' would happen' but that is not the correct issue; the issue is what would they have done if warned that there was a risk, perhaps a very low risk, that a bad outcome might occur. In response, the legislature has gone so far as to restrict the admissibility of this type of evidence and require that the Court determine what the plaintiff would have done taking into account 'all relevant circumstances'.[17]

That approach was demonstrated in *Neal v NSW Ambulance*. The plaintiff was intoxicated and had been assaulted suffering head injuries. He refused offers of assistance that were made by Ambulance paramedics but claimed that the paramedics should have advised the police that he needed to be assessed by a medical practitioner. If they had done that, he alleged, the police would have taken him into protective custody as an intoxicated person and then taken him to hospital where he would have been treated by doctors and not suffered permanent injuries. The court rejected that claim on the basis that:

> The objective circumstances therefore provide no assistance to the plaintiff. ... The only available inference is that he would not willingly have gone to hospital and submitted to medical assessment, whether taken by the police (which was itself improbable) or in an ambulance. It follows that he failed to establish, affirmatively, that he would have accepted medical assessment and treatment.[18]

A plaintiff in a failure to warn case will need to bring evidence to support an assertion that they would have acted differently if warned of a fire. A person who has perhaps taken no action to prepare their property or otherwise act on previous fire danger warnings will have more difficulty than a person who can demonstrate that they have been attentive to, and acted upon, previous warnings.

As an aside it is interesting to observe that in the inquiry into the 2003 Canberra fires,[19] the Coroner devoted a chapter of her report to the issue of warnings and 'Would people have acted differently if they had been warned?'[20] It was the coroners duty to determine the 'manner and cause'[21] of each death, and the 'cause and origin'[22] of each fire so it might be thought she went further than was required with this part of her report.[23] Regardless of her motivation or the appropriateness of this part of her inquest and inquiry, that evidence would certainly assist in the subsequent civil litigation that is still before the ACT Supreme Court.

Conclusion

The Black Saturday Royal Commission report and the response to the recent fires in Perth[24] demonstrate that even if people are willing to forgive or accept that fires cannot be controlled they ***expect*** immediate and effective warnings from their emergency services. Whether they are, at law, ***entitled*** to those warnings remains to be seen. In Victoria at least, the legal right to demand warnings will be affected by the statute duties imposed by the *Fire Services Commissioner Act 2010* (Vic). Whether or not they will lead to liability in the event of a failure to warn remains to be seen and will depend on the particular facts and circumstances.

In an earlier paper I argued:

> ... that where a naturally occurring event impacts upon a community and people want to find someone to blame an easier and attractive target for the litigation will be those charged with issuing a 'warning' to the community rather than those charged with managing the response.[25]

That appears to be born out by the facts. Litigation from a number of fire events ranging from 2001 to the litigation from the 2003 Canberra fires and now the Black Saturday fires is focussing on the duty to warn. That experience and the findings of the 2009 Victorian Bushfires Royal Commission show that warning to communities remains the emergency services' 'Achilles heel' both in practice and in terms of legal accountability.

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16. *Rosenburg v Percival* (2001) 205 CLR 434.

17. See, for example, *Civil Liability Act 2002* (NSW) s 5D(3)

18. *Neal v Ambulance Service of NSW* [2008] NSWCA 346, [49]

19. Doogan, M., *The Canberra Firestorm - Inquests and Inquiry into Four Deaths and Four Fires between 8 and 18 January 2003*: (ACT Coroners Court, Canberra, 2006), Volume II, Chapter 7, 43-187.

20. Ibid, 147.

21. *Coroners Act 1997* (ACT) s 13.

22. *Coroners Act 1997* (ACT) s 18.

23. But see *The Queen v Coroner Maria Doogan; Ex Parte Australian Capital Territory* [2005] ACTSC 74 and *Peter Lucas-Smith v Coroner's Court of the Australian Capital Territory* [2009] ACTSC 40 where challenges to the inquiry and assertions that the Coroner was exceeding her jurisdiction were largely dismissed.

24. Santow S., 'Bushfire victims 'didn't receive warnings'.' ABC News, 8 February 2011 <http://www.abc.net.au/news/stories/2011/02/08/3132859.htm> accessed 11 March 2011; Prior N., and Thomas B. 'Phone alerts were delayed two hours' *thewest.com.au*, 10 February 2011 <http://au.news.yahoo.com/thewest/a/-/breaking/8808297/phone-alerts-were-delayed-two-hours/> accessed 11 March 2011; Hopewell L., 'WA defends SMS emergency system' *ZDNet*, 11 February 2011 <WA defends SMS emergency system> accessed 11 March 2011.

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2011 AUSTRALIAN SAFER COMMUNITY AWARDS

National Awards

The former Commonwealth Attorney-General, Robert McClelland congratulated the winners of the 12th Annual Australian Safer Communities Awards for their contribution to emergency management and disaster resilience.

Mr McClelland said there were fourteen winning projects from categories including emergency management agencies, local government, and education, training and research.

"I am pleased to see strong emphasis on community resilience in this year's entries," Mr McClelland said.

"This reflects an increased awareness of the need to be better prepared for emergencies and disasters such as those we have seen across Australia in the past 12 months.

"It also fits well with the National Strategy for Disaster Resilience, the blueprint for the nation to work together to build disaster resilience in our communities."

Mr McClelland said that several winning projects focused on using information technology and new media to warn and inform people about natural hazards.

"The Queensland Police Service won for its ground breaking use of Facebook to provide quick and accurate information during the Queensland floods," Mr McClelland said.

"Surf Life Saving Australia was highly commended for its BeachSafe website and smartphone app which gives beach goers current conditions and patrol information for beaches across Australia," Mr McClelland said.

Another winning project that received special recognition was in the youth category, where pupils at Lara Primary School in Victoria made their own fire awareness education video.

Of the 100 projects entered nationally this year, 26 made it to the final judging for category winners and high commendation.

To find out more, read the 2011 Australian Safer Communities Awards booklet located on the emergency management in Australia website at www.em.gov.au. If you would like to receive a copy please write to empublications@ag.gov.au

2011 AUSTRALIAN SAFER COMMUNITY AWARDS

Local Government

Winner-

Circular Head Council

The "Look out for your mates" – Mayor's Road Safety challenge is encouraging people to look after their mates by discouraging risky behaviour on our roads, for example, not letting them drive if they have been drinking in an effort to keep them safe. The campaign is essentially a peer education program, working with the assumption that messages delivered by one's 'mates' may be more powerful and more readily received than those delivered by law enforcement bodies. On the Same Wave provides Queenslanders from culturally and linguistically diverse backgrounds with potentially life saving surf safety education in their primary language.

LtoR: Hon Robert McClelland MP, Deb Mainwaring and Mayor Daryl Quilliam - Mayor's Road Safety Challenge

Highly Commended-

Hinchinbrook Shire Council

In February 2009, Hinchinbrook Shire suffered its worst flood event in over 15 years. The Local Area Warden System was developed in response to this event.

The Council established a system of nineteen wardens' localities and appointed and trained 26 wardens and deputy wardens.

LtoR: Hon Robert McClelland MP, Councillor Pino Giandomenico and Robert Clark - Local Area Warden System

Awards

Volunteer/Community Group

Winner-

NSW State Emergency Service

The Tweed Shire Aged & Disabled FloodSafe Guide is the first FloodSafe Guide developed by the SES to be locally driven and specific to the needs of the aged and disabled in NSW. The SES, in conjunction with established community networks, adopted innovative approaches to capture the interest and engage with the target audience in their own environment.

The project aims to respond to the identified needs within the community and adapt SES information to meet these needs.

LtoR: Hon Robert McClelland MP, Brian Sheehan and Simon Gregg - Aged and Disabled FloodSafe Guide

Highly Commended-

Surf Living Saving Queensland

Surf Life Saving Queensland has been working in partnership with the Queensland Government to help reduce beach fatalities and injuries among the state's growing migrant and refugee population.

On the Same Wave provides Queenslanders from culturally and linguistically diverse backgrounds with potentially life saving surf safety education in their primary language.

LtoR: Hon Robert McClelland MP, John Brennan and Scott Harrison - On the Same Wave Multicultural Program

Youth

Winner-

Lara Primary School

2009 was the 40th anniversary of the Lara bushfires. The 2009 Black Saturday bushfires resulted in some students feeling helpless and afraid of fire.

The educational movie Fire – Friend or Foe was made by the students with the express purpose of increasing other children's understanding and awareness of fire.

LtoR: Hon Robert McClelland MP, Darby Teesdale, Serena Gravett, Ros Heywood, Brooke Harris, and Marcia O'Brien - Fire: Friend or Foe

National

2011 AUSTRALIAN SAFER COMMUNITY AWARDS

Nationally Significant

Winner

SES Agencies and Australasian Fire & Emergency Service Authorities Council

The SES Children's Natural Hazards Awareness and Education Program helps children to better understand storms, cyclones, floods and tsunami through short, entertaining safety stories. It encourages children aged 5-12 years and their families to increase their preparedness for natural hazard events.

LtoR: Hon Robert McClelland MP, Amanda Leck and Andrew Gissing – SES Children's Natural Hazards Awareness & Education Program

Highly Commended

Surf Life Saving Australia

Beachsafe was developed to harness and capitalise on the wealth of data collected and managed by Surf Life Saving Australia covering all aspects of beach and water safety.

This wealth of information is presented in an easy-to-read, informative and educational manner that will help educate and keep safe the community using a popular website, a smartphone version and an iPhone application.

LtoR: Hon Robert McClelland MP, Travis Klerck and Gary Daly – Beachsafe

Winner

Red Cross

Communicating in Recovery was developed in direct response to concerns identified by community members following the 2009 Black Saturday bushfires.

It is a guide for people or organisations working and managing information in a post emergency environment. This resource outlines the basic principles of recovery and communication in recovery, includes information about the strengths and weaknesses of different forms of communication and looks at how to tailor communications for different groups in the community. It also includes information about working with the media.

LtoR: Hon Robert McClelland MP, Angela Sutherland and Lauren Gould – Communicating in Recovery (Note: originally entered in Education, Training and Research)

Awards

State and Territory

Winner

Queensland Police Service

The Queensland Police Service trialled a social media strategy in mid 2010. This social media strategy enabled them to engage with and inform the broader Queensland community throughout the natural disasters of late 2010 and early 2011.

Disseminating crucial public safety announcements and community engagement issues to those without electricity or internet connection proved extremely powerful.

LtoR: Hon Robert McClelland MP, Kym Charlton and Matthew Rigby – Social Media for emergency and disaster management

Highly Commended

ACT Community Services Directorate

This project was intended to improve the resilience of the more at risk members of the community by encouraging them to prepare an emergency plan, connect with their neighbours, engage with community sector case workers by consolidating a range of emergency preparedness messages into one easy to read and access document.

LtoR: Hon Robert McClelland MP, Kerry Webb and Mark Robertson – Emergency Preparedness Kit

Highly Commended

Northern Territory Police, Fire & Emergency Services

The Northern Territory Emergency Services and the Bureau of Meteorology developed new tropical cyclone advice. All talking posters deliver this cyclone advice at the touch of a button, in indigenous language, specific to the top end community.

LtoR: Hon Robert McClelland MP, Kerri McMahon – Fire and Emergency Services

Highly Commended

SA Country Fire Service

Acknowledging and understanding how women make decisions in critical times must help shape future bushfire education programs. Scant attention is paid to women and their roles in the emergency management landscape. This is particularly relevant in the field of bushfire preparedness and mitigation. Research undertaken in South Australia and parts of Victoria revealed the absence of those with fire fighting skills (generally men) from the home at the time of a fire. Women were often left not knowing what to do or how to operate equipment. Women were consulted to find out what they wanted from an education program and to determine knowledge and skills gaps. This was used to design and deliver pilot workshops. Feedback from the pilot workshops was subsequently used to inform the state wide program that has continued to improve.

LtoR: Hon Robert McClelland MP, Fiona Dunstan and Keren Sutton – Firey Women Program

National

2011 AUSTRALIAN SAFER COMMUNITY AWARDS

Education, Training and research

Winner

NSW Rural Fire Service

The Hotspots Fire Project is a training program which provides landholders and land managers with the skills and knowledge to actively and collectively participate in fire management ensuring healthy productive landscapes in which risk is managed, communities are safe and biodiversity is managed.

The program is adapted to suit each community and their specific requirements and objectives.

LtoR: Hon Robert McClelland MP, Lana Andrews and Dr Simon Heemstra – Hotspots Fire project

Highly Commended

Surf life Saving Western Australia

E-Learning for the Front Line Livesaver is a flexible self paced learning package which has revolutionised the way front line lifesavers are trained.

It is centred around a virtual beach and life saving clubrooms staffed by typical volunteer based characters performing the key tasks associated with the operation of a Surf Life Saving Club.

LtoR: Hon Robert McClelland MP, and Paul Andrew – E Learning for Front Line Lifesavers (Note: originally entered in Volunteer/community category)

Elissa Jackson, Principal of Lara Primary School.

Elissa Jackson's acceptance speech on behalf of all award recipients

"In Australia we are indeed fortunate to have the significant contribution of volunteer efforts within the emergency management sector. On a personal level, our school worked closely with our local CFA to build student and family understandings, including the production of our short film, Fire: Friend or Foe. The time, commitment and dedication of these fine community members should never be under estimated, and is a critical component of emergency management in our country.

I am confident all participants in the awards would join me in expressing their appreciation of the Australian Government Attorney-General's Department, in conjunction with States and Territories, sponsoring these awards.

May I also acknowledge the work of government and organisations in supporting disaster resilience through a range of strategies including supporting the work of volunteers in emergency management and building partnerships with business and community groups to improve their ability to respond to emergencies.

I commend the 14 highly commended or winners of national Australian Safer Communities Awards throughout the emergency management sector for their outstanding achievement, innovation and professional standing, and recognise the efforts of all entrants in the awards."

ALIES

AUSTRALASIAN LIBRARIES IN THE EMERGENCY SECTOR

Introducing the DEEDI Library and Research Services

The Department of Employment, Economic Development and Innovation (DEEDI) was formed after the Queensland state election in 2009, from the amalgamation of 8 agencies. The only agency with an in-house library service was the former Department of Primary Industries and Fisheries, and this library has expanded to now become DEEDI Library & Research Services (L&RS).

DEEDI works in the areas of employment, innovation, industry development, primary industries, fisheries, trade and investment, biosecurity, minerals, petroleum and gas, energy, tourism, rural and regional development, gaming and racing. It is responsible for driving and delivering a strong economy for all Queenslanders, and the Department works to drive job creation, create an investment climate that supports sustainable economic and industry development across Queensland and develop and implement trade initiatives and opportunities for Queensland business.

Within the last 12 months, DEEDI L&RS has moved into two new libraries, operated in conjunction with other agencies. EcoSciences Precinct library is shared with CSIRO and the Queensland Department of Environment and Resource Management, while Coopers Plains Health and Food Science Precinct is shared with CSIRO and Qld Health. These have been very cooperative and beneficial arrangements for all involved, and library staff enjoys closer contact with library clients and librarians from other agencies. Library clients too, enjoy the new state-of-the-art facilities, and they are proving very popular as meeting venues and collaborative spaces where staff can interact away from their desks and laboratories.

'I followed your instructions and solved the problems. Keep up the good work!'

Scientist, Toowoomba

The Coopers Plains Health and Food Sciences Precinct library provides a welcoming environment to catch up on the latest publications.

Role and function

DEEDI L&RS actively supports the scientific research, regulatory, policy and program work of the agency. The Library provides a comprehensive suite of electronic resources to staff via the eLibrary desktop, as well as print holdings at staffed collections around Brisbane. As much as possible, we aim to have all resources available to all staff to access, and we encourage self-sufficiency amongst our clients. The eLibrary provides access to over 20,000 full text journals, and over 100 databases, including the 'Business continuity & disaster recovery reference centre' database, covering management, business impact analysis, crisis communications and disaster mitigation.

'Your investigative skills have once again reigned supreme.'

Experimentalist, Sunshine Coast

We have recently developed a range of subject guides to assist, on topics including disaster recovery. These guides pull together links to journals, websites, ebooks, and the latest research and reports to get people in touch with relevant resources more quickly. Document delivery is also an important adjunct to in-house resources, and is a consistently busy area of activity.

The entrance to the EcoSciences Precinct Library, centrally located on the ground floor of the middle tower of he complex.

A central pillar of our service is the comprehensive training program we offer. This equips staff with the skills and knowledge to select and utilise the best resources for their needs, and we offer in-person, remote and on-line training to accomplish this.

DEEDI undertakes significant biosecurity work as part of its role in protecting animal and plant food resources, and ensuring market access for our agricultural producers and products. The Library makes an important contribution to this through information and literature searching, and compilation of an internal weekly newsletter. Our 'Biosecurity Update' incorporates news stories, internet sites and list serv entries, monitoring pest and disease outbreaks in plant crops and food animals, with particular emphasis on zoonotic organisms.

Our Reference and Research service is often consulted early in the detection of disease outbreaks, and we are regular contributors to the Department's emergency response through the work we do for officers 'in the field' and in laboratories where pest and disease diagnoses are made.

'... by far the best, most useful newsletter I subscribe to. I'm always interested in the content, & your efforts today have impressed me..'
Biosecurity manager, NSW.

Staffing and Service Centres

We have 13 positions in total, including the Manager, a Senior Librarian, 5 librarians, 3.6 library technicians and administrative staff, all providing services to staff from 3 libraries: Primary Industries Building, EcoSciences Precinct, and the Health and Food Sciences Library at Coopers Plains.

Contact details

email: library.research@deedi.qld.gov.au

phone: 3239 3126

DEEDI website
http://www.deedi.qld.gov.au/

DEEDI library web page
http://www.dpi.qld.gov.au/30_173.htm

The EcoSciences Precinct Library is regularly used for meetings and training events.

Marketing the message

Brave new world

By Kathryn White

In early October, an innovative, experimental, high-impact marketing campaign marked the launch of Queensland's storm season to great effect.

Could you survive three days of isolation at home if roads, power and water were cut?

This hypothetical became a reality for Brisbane-based comedian Stuart Fisher and NOVA radio personality Dave David as they bunked down together for three days in a mock living room under torchlight, with no running water, a generator, an emergency kit and basic food rations at Reddacliff Place in the middle of Brisbane's CBD.

The duo entered the mock home at 7:00am on Thursday 6 October and remained inside until the State Emergency Service (SES) came to assist them on Saturday 8 October.

Developed by Emergency Management Queensland (EMQ) in conjunction with NRMA Insurance, the Can you survive for three days challenge (the Challenge) also utilised social media, primarily Facebook and Twitter, with David and Stuart sharing their personal experiences in storm readiness.

Department of Community Safety Sponsorship Manager, Leah Hornibrook, said the department wanted more than a media call or press conference to launch storm season.

"The idea was to create something that would resonate with people for longer – a living, breathing event in a high-impact location, coupled with pro-active Facebook and Twitter messages designed to drive the disaster preparedness message home to all Queenslanders.

"Through this experiment we encouraged Queenslanders from all walks of life to share their experiences of coping without some of the things people take for granted as well as the actions they've taken to make sure they're prepared following this year's events," said Leah.

According to Leah, the use of social media to engage and sustain the public in a disaster preparedness dialogue was a first for Queensland.

"We faced new territory on this campaign," she explained, "setting out to specifically develop a social media audience in a way that communicated our core messages, engaged the public and highlighted our relationships with key community partners like NRMA Insurance, The Salvation Army Emergency Services, RSPCA, Bunnings Warehouse and the Red Cross."

To track what happened in the house and share experiences about how to prepare for the coming storm season, people were encouraged to 'like' the QldSES Facebook page, 'follow' @qldses on Twitter or join the conversation using #survive3.

When the Challenge started at 7:00am on Thursday 6 October, the QldSES Facebook page had 200 followers. A live NOVA broadcast from Reddacliff Place from 6.00am to 9.00am on the first morning helped ramp up online traffic, and by the end of the three-day event there were more than 3,800 Facebook followers.

"It's gone beyond our wildest expectations," said Leah. "Less than two months after the event we hit over 10,000 followers on Facebook and the number continues to climb," she said.

Throughout the three days, SES volunteers were on site to educate the public on household preparedness in conjunction with representatives from the Department's community partners.

"The success of this campaign was ultimately underpinned by the strength of our partnerships. Working with organisations that share the same values, goals, ideals and objectives strengthens the message being communicated and ultimately ensures a broader audience."

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

Organisational resilience

Professional development program

Adapt or fail

As a business continuity or risk assessment professional, are you fully aware of the benefits of **organisational resilience** for your business? Organisations must develop creative and adaptive strategies to be able to manage uncertainty while maintaining their traditional corporate capacities.

Organisational resilience is viewed by global continuity practitioners as a way to assist businesses build and enhance their ability to address significant challenges, including major disruption and incident management.

Learn more about harnessing innovative leadership strategies in order to turn adversity into positive opportunities for your business.

Attend the course and benefit:

- Gain an understanding of the rationale and principles underpinning organisational resilience.
- Appreciate the value and business benefits from taking an organisational resilience approach.
- Understand how being change-ready, networked and having appropriate leadership and culture contributes to organisational resilience.
- Draw on an extensive knowledge base of organisational resilience.
- Hear first-hand experiences in building resilience and surviving adversity from corporate representatives.
- Analyse and discuss a selection of key research papers and articles on organisational resilience.
- Extend your network of organisational resilience champions and course alumni.
- Obtain membership of Australia's leading library in this field.

This program requires pre-reading and includes full and smaller group discussions as well as debate about approaches to building a resilient organisation and how it can be achieved.

The program is a must for continuity managers wanting to broaden their approach and is recommended for all business professionals responsible for organisational behaviour, change and innovative practice.

Venue AEMI, Mt Macedon, Victoria

Cost $1200, includes accommodation, meals and bus transport to and from Tullamarine airport.

Register online at www.em.gov.au/aemi

For information about how to nominate visit www.em.gov.au/aemi
email nominations@ag.gov.au or phone 03 5421 5100

Australian Government

Attorney-General's Department

Australian Emergency Management Institute

ADVANCED DIPLOMA OF PUBLIC SAFETY

Established in 1956, the Australian Emergency Management Institute (AEMI) is the national Centre of Excellence for education, research and skills development in the emergency management sector.

Every year, some 2,500 emergency management participants from around Australia visit, learn and benefit from AEMI's specialised services and products.

AEMI's flagship nationally recognised course, the **Advanced Diploma of Public Safety** is now open for enrolments. Course content includes:

- Coordinate resources for a multi-agency incident
- Develop and maintain business continuity plans
- Establish and manage a recovery centre
- Manage recovery functions and services
- Establish and review the business continuity management framework and strategies
- Design and manage activities which exercise elements of emergency management

See www.em.gov.au/aemi for info and details about other courses

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Building resilience through education, collaboration and innovation

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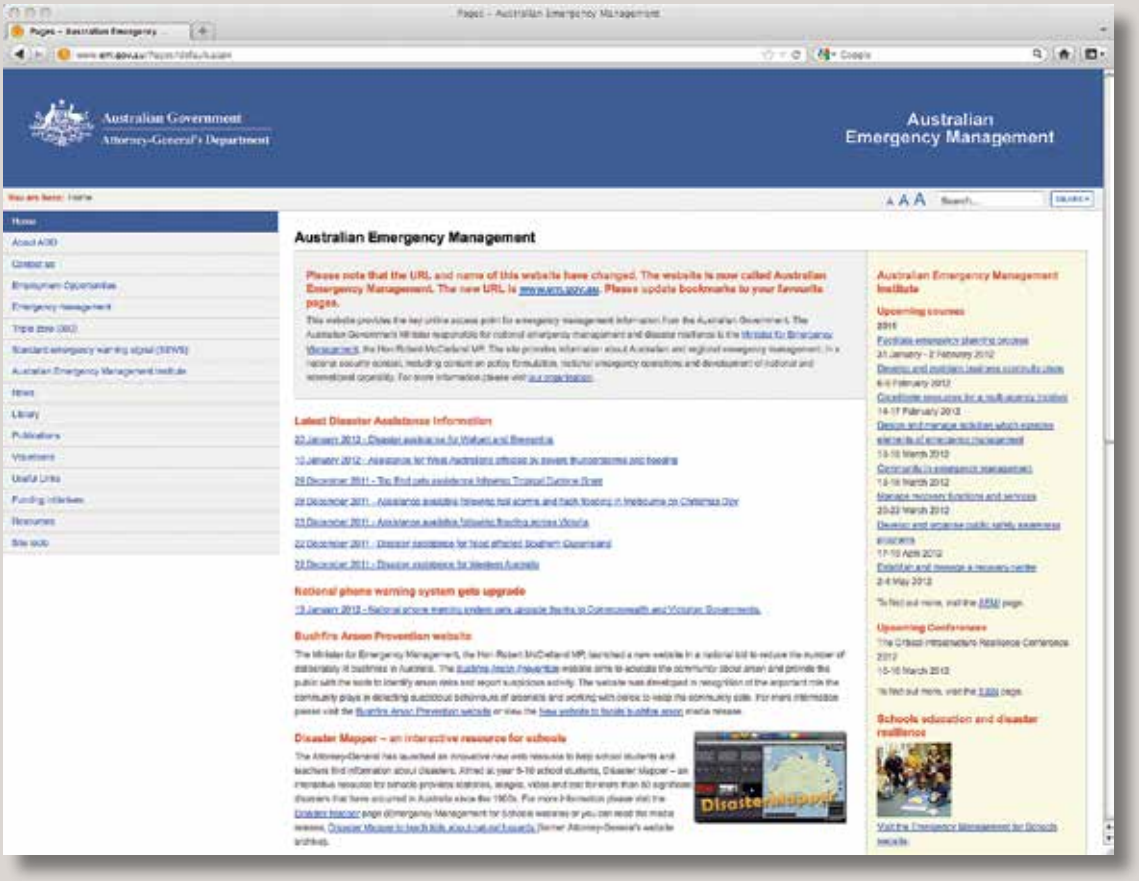

NAME CHANGE TO 'AUSTRALIAN EMERGENCY MANAGEMENT'

The Australian Government Minister responsible for national emergency management and disaster resilience is the Minister for Emergency Management, the Hon Robert McClelland MP. To reflect the change in portfolio, the URL and name of the Australian government's emergency management website has also changed.

The website is now called Australian Emergency Management and the new URL is www.em.gov.au

This website is the key online access point for emergency management information from the Australian Government.

The site provides information about Australian and regional emergency management, in a national security context, including content on policy formulation, national emergency operations and development of national and international capability.

Please update bookmarks to your favourite pages.

Australian Government

Attorney-General's Department

Australian Emergency Management Institute

Apply now for upcoming courses in 2012

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

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

13-16 March	Design & manage activities which exercise elements of EM
13-16 March	Community in emergency management
20-22 March	Manage recovery functions and services
26-27 March	Organisational resilience
17-19 April	Develop and organise public safety awareness programs
2-4 May	Leadership in Crises – Beyond Command and Control
2-4 May	Establish and manage a recovery centre
7-11 May	Facilitate emergency risk management
22-24 May	Develop and use political nous
28-31 May	Develop and maintain business continuity plans
29-31 May	Facilitate emergency planning process
31 May-4 June	Volunteer Leadership Program

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

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

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