



Australian Government
Attorney-General's Department

THE AUSTRALIAN JOURNAL OF EMERGENCY MANAGEMENT

ISSN: 1324 1540

Volume 26 | No. 3 | July 2011



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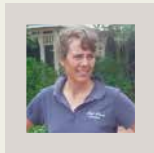
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The Australian Journal of Emergency Management

Vol. 26 No. 3, January 2011 ISSN: 1324 1540

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.

PUBLISHER

The Australian Journal of Emergency Management is published by the Australian Government's Attorney-General's Department. The Journal is published on the 'Emergency Management in Australia' website at www.em.gov.au

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Sapper Lachlan Stevens from 14 Troop, 2nd Combat Engineer Regiment (2CER) clears rubbish and debris from a home in Chelme, Brisbane following the devastating Queensland Floods. Credit: Corporal Janine Fabre.

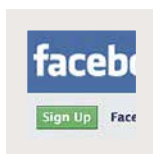
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PUBLICATION DEADLINE

The Journal is published on the last day of January, April, July and October, each year. Copies of the Journal are distributed quarterly without charge to subscribers throughout Australia and overseas.

CIRCULATION

Approximate circulation: 3,000.

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Foreword

By Tony Sheehan, Deputy Secretary, National Security and Criminal Justice Group Attorney-General's Department



"It is with pleasure I contribute for the first time to the AJEM in my capacity as the incoming Deputy Secretary of the Attorney-General's Department (AGD), with responsibility for National Security and Emergency Management matters, and as Chair of the Australian Emergency Management Institute (AEMI) Board, publishers of the journal on behalf of the Department and the Attorney-General."

Having joined AGD from the Department of the Prime Minister and Cabinet, where I headed Homeland and Border Security Division, through working closely together I was already aware of the important work of AGD and AEMI specifically on Emergency Management and Disaster Resilience.

The impact of the summer season of natural disaster events has made a big impression on us all. The response by Emergency Management agencies, volunteers and at all levels of government in the face of these events has been crucial to the nation. And the Council of Australian Governments (COAG) endorsement of the National Strategy for Disaster Resilience provides essential directions to our forward work.

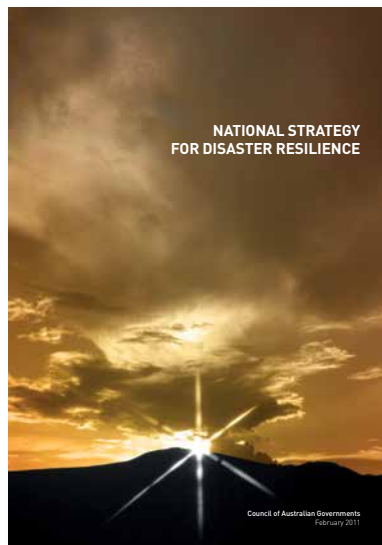
For the AEMI this means new focus in education/curriculum, training, research and publications including AJEM. Some of our national capacity building business will shift in orientation towards Business Continuity, Risk Management, Organisational Resilience, Resilience Leadership, Youth and New Media, Multicultural Resilience, Knowledge Hub building and sharing and

all involving Strategic Partnerships. In short, centre of excellence thinking, and related practical action, will be our focus.

In this edition we feature a handful of "stories" which reflect personal experiences in the devastating summer that was. The stories are quite short but certainly evocative and inspiring. For example, Lockyer Valley Mayor Steve Jones says after the flooding of Grantham "If you're ever going to make a change, now's the time to do it". Reading Councillor Jones's story and his plans for the rebuilding of his town, exemplifies the 'can do' attitude and true Aussie spirit.

Rebecca Burt's story of her West Australian cattle station provides an insight into the plight of a remote and geographically dispersed community during the December 2010 flood events. It tells of the amazing resilience and the strength of individuals, families and communities.

Also in this edition of AJEM are a diverse range of papers across the all-hazards and national security space. I trust you will find this an enjoyable and valuable edition and encourage letters to the editor with your comments and feedback.



Opinion: An organisational resilience approach to managing education, research and training.

By Carolyn Thompson



In the October 2010 issue of AJEM, our Executive Director, Raelene Thompson outlined some of our important priorities in the Australian Emergency Management Institute's (AEMI's) quest toward a *Centre of Excellence*, particularly its need

for a continuous improvement process for curriculum development and design. In addition, the release of the Council of Australian Governments (COAG) National Strategy for Disaster Resilience in February 2011 served as a timely reminder of how AEMI needs to ensure it is a resilient organisation, to address the needs of the emergency management sectors. As a *Centre* that prides itself on its education and research, it needs a system that incorporates strategic, operational and tactical system development, with capabilities that include:

1. **A sense of purpose:** being a *Centre of Excellence* for emergency management education, research and training.
2. **Pragmatism:** being responsive to policy and strategic directives, including a commercial fee-paying environment.
3. **Flexibility:** in thinking and labour.
4. **Innovation and experimentalism:** a culture that is supportive of trying new approaches and means of doing business.
5. **Connectivity:** a strong and broad-ranging network.

Our *Curriculum Review Project*, headed by Cameron Scott, used a variety of mechanisms including: a Training Needs Analysis; a review of the AEMI strategic direction against national priorities; a review of the current AEMI program against the priorities, and a market analysis. While this approach has yielded some competing results, the rigour of the review has enabled an evidence-based decision process that can inform future directions in education product and research priorities. It has also brought some formality to the decision process around new knowledge creation for emergency management education and research directions.

It is evident that AEMI has existing client groups who must be serviced, and in addition to developing products to meet their needs, it also needs to consider how it might assist in developing resilience capability for the broader community. The education review has also highlighted areas where AEMI is currently under-performing or under-represented. Examples include: train-the-trainer type education products that assist other providers in the field in ensuring *wise practice*, and university engagement. AEMI seeks to redress the first issue by providing education meetings and programs, and the second by formalised arrangements with our university colleagues.

Examples of how this may work, and how it can improve innovation and experimentalism, flexibility and connectivity include:

- developing discipline teams, assisting with knowledge management and communities of practice;
- adopting Adjunct researchers to scaffold research methods skills development and engaging with a broader education community;
- targeting conference attendance built around AEMI research outcomes to increase our reach;
- formalising AEMI Fellows, Visiting Lecturers and Friends of AEMI, likely through an Emergency Management alumni organisation; and
- including interns, work integrated learning students and work experience students to inject other ways of viewing our world.

While our task is not quite completed, our discipline teams are excited and energised. Having so many engaged *Friends of AEMI* has certainly assisted our continuous improvement modelling, and we look forward to sharing and working closely with each of our sectors.

About the author

Ms Carolyn Thompson commenced as Director of Education, Research and Training at AEMI in February 2011. She holds postgraduate qualifications in business and education, with extensive experience nationally and internationally in public and private sector institutions. Her current research is in organisational behaviour, and she hopes to finish that elusive PhD, *one day*.



When the drought broke in Carnarvon

By Kate Lahey

Rebecca Burt doesn't shy from a challenge. A pilot and mother of two boys, she runs a cattle station with her husband Paull on the Gascoyne River, just outside the West Australian town of Carnarvon—where she is also a local councillor.

The Burts have a pastoral lease for 226,000 hectares and run 5000 head of cattle. Until the floods, they also had a few sheep.

Rebecca describes herself as strong and happy by nature. "It takes a lot to really flatten me," she says.

When the entire station flooded in December, she and her family relished the excitement of it from the safety of their homestead's verandah, surveying the lake that surrounded them. The boys, aged 10 and seven, steered their remote control boat all over what was once the front lawn. After a decade of drought, the Burts were just so grateful for rain.

But as the water receded, it revealed its destruction. Then, in the weeks and months that followed, Rebecca discovered the limits of her own strength.

In mid-December last year, Rebecca and Paull were aware the cyclone that been forecast for the area was no longer expected. "We were just praying to God it was going to hang around for some rain," she says.



Rebecca Burt recounts her emotional roller-coaster ride of drought to flood in less than three months.

It did, and kept pouring as Rebecca and Paull went to bed on the Friday night, 17 December. A friend called to say a station up the road had received five inches in four hours. Rebecca thought little more of it.

“In the morning a staff member came in and had heard all the gossip in town saying: ‘there’s rain, there’s rain, the river’s coming down’,” she says. Rebecca and Paull decided to move their aeroplane, a Cessna 172, to Carnarvon, behind the levee. When they came home they began sandbagging their

home, shifting vehicles and lifting as much as they could to higher ground.

Rebecca checked the Internet for water authorities’ predictions of the river height and was reassured.

About 2pm she checked again and realised they’d be in trouble. She got on her two-way radio and warned others in the area.

“Then we had to lift everything again,” she says. “So now I’ve gone into town and got more sandbags.

We’ve started sandbagging and the rain started again, so we’re now sandbagging wet sandbags and we did that ‘til midnight.”

There was no time to protect the cottage where some of their staff lived—and they’d gone to Perth for the summer. The kitchen block is separate to the main house, and about a metre lower, so they shielded that. They were exhausted, and went to bed.

After a couple of hours, Rebecca woke and shone a torch on the front lawn, about 50 metres from the riverbank. The water was already there. She woke Paull and the two of them knew instantly they’d lost their workshop, on lower ground. All their fuel floated away.

“We just kept walking around, back to bed, grab another half an hour sleep, back up again,” Rebecca says.

“The kids were still asleep. It was quite warm, we’d left the door open. All our bedrooms go on to the verandah, so when the sun came up, we were just absolutely surrounded by water and the roar of the water was loud,” she says.

“I’ll be honest, the excitement was absolutely amazing, the kids were really excited, the whole thing was a big learning thing and it was great, until the aftermath.”

They sat on the verandah with the two-way radio and a mobile phone and listened to the ABC. Rebecca credits local ABC radio station (based in Karratha) with keeping her community together.

“They put it live to us down here so that anyone could ring in, talk to the guys up there, and they just wanted to know: How are you going? Is everything ok? Do you need anything? If you can’t get someone on the phone, call us, we’ll relay it. And then they kept saying ‘get on the Facebook page, we want to see photos,’ so the Facebook came out. So everyone got to see photos, everyone knew what everyone else was doing, so no one was in the dark. When you’re not in the dark, then the stress and the anxiety’s not there.”



Brickhouse Station owner Rebecca Burt looks over the destroyed work shed housing plane engines and now-ruined motorbikes.

But not everyone could call the ABC, the small town of Gascoyne Junction; about 180km from Carnarvon, has no mobile phone coverage.

"No phones, no radios, no power, no network. Nobody knows what's going on, so everyone's starting to think: are they still alive?" Rebecca says.

They were, but Rebecca believes people in that area may have received help sooner, had they had a mobile network.

The ABC invited psychologists on air, to explain what to expect.

"I didn't believe it," Rebecca says. "They said you get the adrenalin hangover then reality sets in, and don't make any harsh decisions in the next three months. I thought, 'yeah, yeah, right'.

"Well," she laughs, in hindsight, "I have to agree with everything he said!"

For about three days, Rebecca ran on adrenalin, and barely slept. Soon she lost track of the days and crashed. "I couldn't get out of bed," she says.

Then again, the adrenalin returned. Roads were cut off by floodwater

and people needed pilots. It took five days after the flood for the Burts to be able to land their plane on their airstrip. Rebecca then used it each day, for about three weeks, to fly into town and help a charter company take mining workers to and from a mine, and fly water to Gascoyne Junction. "About three weeks later, I think the worst of the reality hit," Rebecca says.

"The ABC had lots of people coming on trying to discuss things, so I was fairly aware of it. Then they had a couple of counsellors in town that Paull and I did go and see, because at the end of the day when you have that much devastation, you think 'where do you start?' I couldn't get out of bed in the morning, I thought 'Why? What was the point?'

"By the time we needed to discuss it with somebody, I just cried. I couldn't stop crying."

This wasn't the first time their workshop had flooded, but Rebecca says she simply didn't know where to begin. There was no longer a driveway, the place was covered in mud, and the front-end loader was 50km away. They couldn't get to it. The heat was also a problem.

"You've got to remember, it's 40 degrees, and 98 per cent humidity,

so anytime you started, you were wet," Rebecca says.

"It became depressing. It was hard. I had family saying, 'na, it's too hot, I'm not going to come and give you a hand'. No one gave us a hand, we were here on our own. There were a lot of people who came in and had a sticky beak and left, but nobody would pick up a shovel.

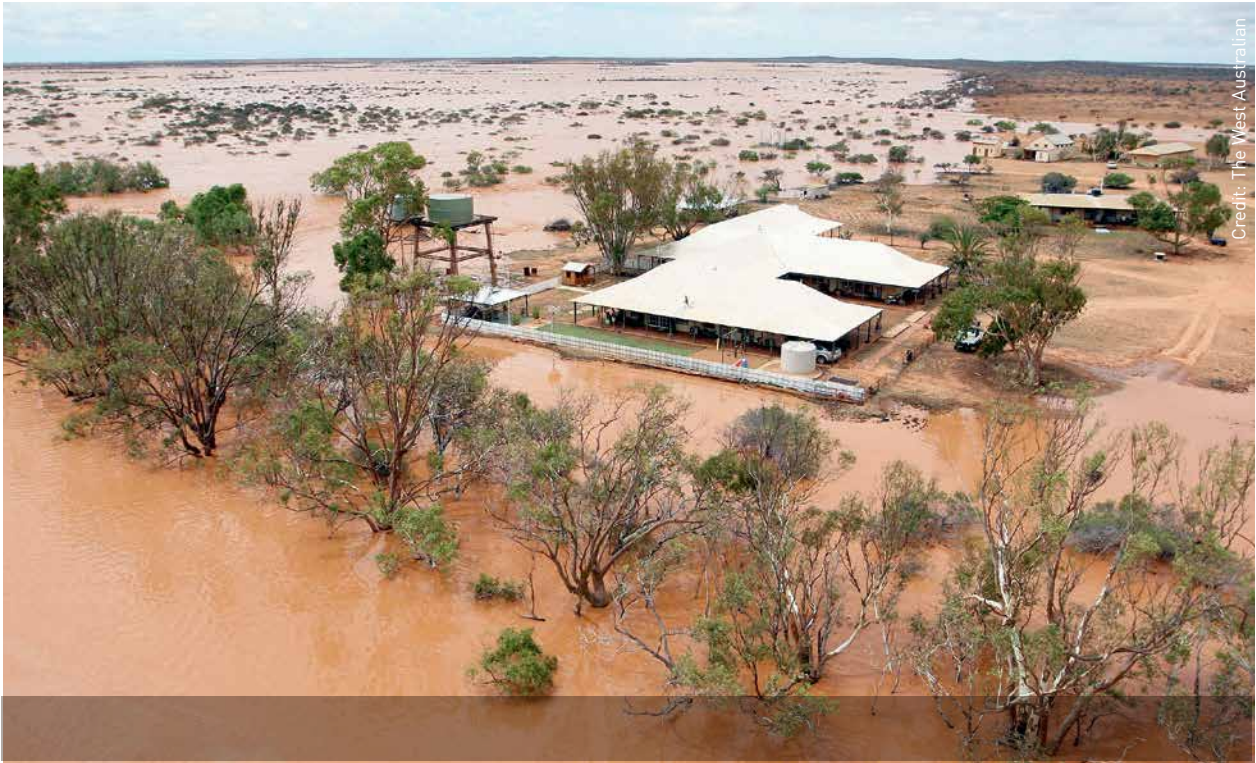
"I felt like I'd been forgotten and it was very difficult."

At the supermarket, Rebecca ran into a woman she knew from day care. She says the woman recognised immediately that she simply wasn't herself.

The woman arranged for five other women from her local church to go with her to Brickhouse Station and help Rebecca.

"They came out and gave us a hand. That was the best thing they ever did," Rebecca says.

"They cleaned out our singlemen's quarters, then the next weekend they came and cleaned out another



building and then they wanted to come the following weekend and I said no—we'd cleaned out two and a half buildings in two weekends and I couldn't thank them enough. It got me over that hurdle.

"I'm not a church goer myself, I'm in God's country, looking after his animals—but that's where Carnarvon is a really good community," she says.

It took until June for Rebecca and Paull to clean the last of their flooded buildings. They were grateful for the reprieve they received on their pastoral rent for six months, worth about \$6,700.

They were insured but not for flood.

"They won't insure us for flood. The whole property is on a delta, everything went under, all 226,000 hectares," Rebecca says.

Soon after the floods, Paull and Rebecca received help from Centrelink—\$1000 each, and \$400 per child. Paull said this money came quickly, and was easy to access—they visited a Centrelink office, filled in forms and the funds came through within days.

In January, the Commonwealth Government increased the financial help being offered to flood victims in

the area, from \$15,000 to \$25,000, as a joint arrangement with the West Australian Government.

This money is being made available through clean-up and recovery grants of up to \$5,000, not requiring proof of damage and expenditure, and grants of up to \$20,000 for small businesses and primary producers, including pastoralists with proof of damage and expenditure.

The Burts say they have applied for both of these grants through the West Australian Government but were still waiting to receive them.

The biggest cost Paull Burt is now considering is the damage to the fencing that separates their cattle from Highway 1.

"A few of them have wandered onto the road but the majority are contained elsewhere," Paull says.

The Burts didn't lose a significant number, they'd shifted them away from the river.

"We just haven't got the manpower or resources to go and fix 70km of fences," he says.

He estimates that damage bill to be as high as \$500,000.

One Saturday in June, Rebecca, went to the growers' market in town. There wasn't much on offer. Crops are back in, but they're not harvested yet. People are still coping with their own heartaches.

"Everyone still has their ups and downs," Rebecca says. "Last week I had a big cry again. You go round the property and you still see the devastation."

Before the floods, the Burts were trying to sell. They'd had enough. That's now on hold, but after the floods, and with lower domestic beef prices, it seems more likely than ever.

"My dream is somewhere else now," Rebecca says. "I want to carry on with my flying. I want to get into the airlines, and I'm so close."

About the author

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



Global help is on its way

By Kate Lahey

On the asphalt of a Christchurch street, in front of a large hotel, a message had been sprayed in orange paint: 'Help is on its way'.

Bed sheets were hanging out of the hotel's windows, like streamers, and fires were burning across the city.

Bruce Cameron and his team saw the words on the road as they took their first steps through Christchurch, around dawn on February 23.

As the first international Urban Search and Rescue (USAR) team to land, they'd arrived from Australia just 16 hours after the 6.3 magnitude earthquake struck.

"There were people still on top of buildings, there were fire appliances at work extinguishing fires. It hadn't got to the stage where it was under control," Mr Cameron says.

"It took me by surprise and I've been in it 30 years. It took everyone by surprise," he says.

There were 36 members of the team, with 10 tonnes of gear. At the request of their New Zealand counterparts, Mr Cameron and half the group immediately set out on patrol.

"They (the New Zealanders) said, 'go out and find where you think the hotspots are and where the people need to be deployed,' and we came back and said, 'basically, everywhere'." Mr Cameron says.

They were then directed to the Pyne Gould Guinness building, which had collapsed. Mr Cameron says the New Zealand team leader handed over the site to him, saying: 'It's all yours, mate. There are about 20 people missing, 20

people in there, they're all yours. We don't know whether they're dead or alive. We're about to fall over, we've just got another two or three out this morning.'

It was here that Mr Cameron and his team found and freed Christchurch resident Ann Bodkin, after an Australian Channel Nine crew heard her through the rubble.

Ms Bodkin had been pinned under her desk for 26 hours by the time she was pulled to safety.

"She was almost out, we were just getting out on the end of a hydraulic fire ladder and a big aftershock came," Mr Cameron says.

Rubble and steel fell down around the site as Ms Bodkin's husband stood watching the rescuers. "I thought, this is all going to go belly-up now," Mr Cameron says.



"The lot's going to cave in on top of her. Getting her out was extremely dangerous. You wouldn't have done it if it was to recover a deceased person.

"We just took the risk I suppose, a balanced risk, to do what we did because she was a live victim and because she was in good spirits and good health we had to do what we had to do."

Mr Cameron says that success was a career highlight. "She was a bit of a miracle I suppose to get out in the way she did, and she was the last person to be found alive."

Just weeks earlier, Mr Cameron was pulling people, and one body, out of floodwaters in Queensland as part of a swiftwater rescue team. Six years earlier, he was wheeling patients in and out of a makeshift surgery in Banda Aceh. This was not the career he imagined when he first joined the NSW fire service in the early 1980s.

Now, trained to the highest international standards, he is one of hundreds of Australian emergency service workers who know how to respond to almost anything. It is these specially trained firefighters, police officers and paramedics, as well as doctors, engineers, and search dogs who are on call to form a USAR team when disaster strikes.

Queensland and NSW have both developed their USAR teams to meet the highest United Nations standards, and the two states alternate at being 'on call' internationally. The Australian Government has contributed funding to enhance the USAR capabilities.

NSW Fire and Rescue Chief Superintendent John Denny has watched the USAR taskforces evolve from the time of the Thredbo landslide in 1997, when he held the position of rescue manager. Thredbo identified gaps in Australia's capability, he says,

and events like the 2000 Sydney Olympics provided even greater impetus to improve Australia's resources and join an international network.

Mr Denny also worked in both the Queensland floods and Christchurch but says the real heroes were the local communities in those areas who responded first to the disasters. "We just do a job that we're well trained to do," he says. Mixing with other international teams in Christchurch also highlighted some cultural differences, he said. "We integrated our team in to the teams from Japan and China," he says.

When a request for help comes to the Australian Government from another country, Emergency Management Australia helps to coordinate the deployment of a USAR team.

The Australian teams have been used regularly in the past in various countries but have never been in such demand as they were for the first three months of this year, NSW Fire Commissioner Greg Mullins says.

"We've had other periods, after the tsunami 2004 we sent portions of our capability to Banda Aceh, the Maldives, Sri Lanka and Thailand, but just in logistic support roles setting up tents, food, water, sanitation and assisting with medical teams," Mr Mullins says.

"There've been some deployments following earthquakes over the years to Turkey, Taiwan, Indonesia and a couple of times' Queensland teams have also been sent to Samoa and Sumatra' - but never an entire team."

Mr Mullins says he had become accustomed to thinking of USAR as having a menu of capabilities, and that occasionally some items on that menu were called upon.

"All of a sudden in January this year, in the Queensland floods we were called to deploy a medium taskforce of about 36 up there as well as two swiftwater rescue teams," Mr Mullins says.



The NSW team in action.

“That was the first thing, and we thought wow, that’s pretty big. Then all of a sudden Christchurch and that was the first time we’d had an overseas deployment of a heavy rescue taskforce of 72 people, and 20 tonnes of equipment.”

The equipment included tents, sleeping gear, portable showers, two full sets of gear for cutting through concrete and steel, cameras on long poles and seismic and acoustic devices for sensing human movement and sound such as moaning or scratching through the rubble.

They also packed 24-hour ration packs of dehydrated food. “There are cracker biscuits, squeeze tubes of jam and one bar of chocolate,” Cameron says. “There’s not much in there, just enough to sustain you for 24 hours, and that’s really all you live off for 10 days, you’re just about ready to eat the packet for a bit of variety. And we took our own water. We can’t be in any way an impost on the community we’re going in to help.”

A second NSW team and a full, or ‘heavy’, Queensland taskforce followed Mr Cameron’s team to Christchurch, both landing later

that same day. When the time came to replace them, authorities looked to other states as well.

“We made sure that we had people from every state and territory so that the lessons would go throughout Australia,” Mr Mullins says.

As the second Australian taskforce was working in Christchurch, another devastating earthquake shook the region, this time in Japan. Rob McNeil, a NSW firefighter, happened to be rostered on. He also happens to know a lot about radiation risks.

Since 1994, Chief Superintendent McNeil, the Assistant Director of Community and Corporate Risk, has been training in and working with hazardous materials.

He has also developed good contacts within organisations such as the Australian Nuclear Scientific Technical Association (ANSTA). As he drove to Ingleburn to get his taskforce ready to leave, he called one of these contacts and asked if he had any spare radiation monitoring equipment, and specifically any dosimeters his team could wear. Dosimeters

are badges that measure radiation exposure and can alert the wearer when levels are high. By the time Mr McNeil reached Ingleburn, the dosimeters were there.

On Sunday, March 13, Mr McNeil and his heavy taskforce of 76 landed at the United States Airforce base in Yokota, about 300km from where they needed to start searching for people to rescue.

“The roads were broken up, the power supplies were gone, the water supplies were interrupted,” he says. Finding a truck was hard and finding a driver who wasn’t too scared to take them where they needed to go was another challenge.

He describes that journey to Minamisanriku as ‘an operation in itself’. It took two days and a lot of help from the Department of Foreign Affairs and Trade, Emergency Management Australia and the Australian and US military, he said.

“When we started to drive up through the areas, it became evident that these major highways had major cracks in them. Then we were getting messages back saying,

'you're going to have to stop 5km short because there are no roads into this place, there's three or four metres of silt on top of them, and you're going to have to traverse this'. It basically looked like a rubbish tip," he says.

"We thought, well, we've got 20 tonne worth of equipment and if we're going to go and do search and rescue we're going to have to carry this equipment with us," Mr McNeil says. "The logistics of this deployment started to really challenge my thinking."

Despite the risk of radiation, aftershocks and below-freezing weather, the members of the taskforce decided their biggest threat was another tsunami, so they set up camp away from the coast. They slept in tents, while at night the temperature dropped to minus 17 degrees.

Mr Mullins says this Japanese experience was like nothing an Australian USAR team had witnessed before.

"It was just total devastation," he says. "Normally when the USAR team moves into an area, they contact the local emergency management authority. Well, they weren't there. Our people became the authority because all that were left were some remnants of families trying to survive."

Mr McNeil describes a similar scene. And the rescue work itself provided no comfort.

"As opposed to a building collapse where there may be voids and you may be able to find people, this was more like a tea strainer. The water rushes out, everything's just smashed into one area and those areas were buildings," he says.

"Normally, even in a pancaked building, where there's a void of more than about 24 inches, there can be life. But these voids in this area all would have been filled with water. So the chance of finding life



Car demolished by girder.

was drastically reduced, but we were still there on a search and rescue mission and we always have that hope."

When things felt tough, he says, the team thought of Australian soldiers in Afghanistan. "We didn't have anyone shooting at us, and we knew it was only going to be for 10 days," he says.

All the while, Mr McNeil was receiving advice from home, from the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) and predictions for the radiation plume. The taskforce also had a back-up plan a fleet of US Blackhawks. The military helicopters were nearby and ready to evacuate the Australians at a moment's notice.

The plume never came, but there was one medical evacuation. A member of the taskforce had tried to help one of the two Australian search dogs, who was stuck on a wire fence. The dog reacted by biting his face and tearing his top lip apart.

A US frog helicopter flew the man to a US medical base where a plastic surgeon repaired the damage.

"We brought both dogs home. Even the naughty one," Mr McNeil says.

"They were fantastic but the handlers were quite concerned that those dogs were in Christchurch also. They're live victim locators and if they keep finding deceased people, they start to lose that capability because they're not getting rewarded."

Mr Mullins held similar fears for his people.

"They had constant aftershocks and the fear of another tsunami, so wherever they worked they had to have escape routes," Mr Mullins says.

"There were piles of debris and everything you could think of, trees mixed in with bits of timber from homes, mixed in with cars, and the dogs would indicate there might be someone in there, so they'd have to dig through. They'd come to big chunks of soil with tree roots and have to dig through it and it was all frozen. It was quite horrific.

"They did find remains of humans, but as we found in Banda Aceh, there wasn't a lot that was recognisable, it was just that the dogs had indicated them."

Ultimately, they found no one alive.

"There was a psychological impact," Mr Mullins says. "The whole focus of USAR teams is to find living victims and get them out to medical care, so morale could have bottomed out pretty quickly." Keeping morale up became one of the biggest challenges, he says.

This experience, and a similar one in Christchurch where rescue work quickly turned into body recovery has led to one of three changes the Australian USAR teams will now use in future disasters.

For NSW teams, an extra person will now be embedded in each taskforce to act as a debriefer.

"It's having someone there on the spot, rather than wait until they get



The rescue team coming back home to Australia.

home to start that psychological recovery. It's psychological first aid," Mr Mullins says.

"So, just having a chat, then saying, this person needs to pull back to a logistics role for a while so we can rotate people into different roles.

"If somebody has a particularly nasty rescue job, lots of dismembered bodies, we can say 'ok, tomorrow you're coming off the rubble and we'll have you back in the base'."

Such people were used in Christchurch and Japan though the team members sometimes took a bit of convincing.

"Their comments were: 'yeah I don't feel too good, but look at those poor people, they've lost their whole village, they've got no grandparents, parents, cousins, sisters they're all gone. So who am I to whinge?'" Mr Mullins says.

Queensland Fire and Rescue Chief Superintendent John Cawcutt's taskforce in Christchurch found no live victims, but pulled 45 bodies from the CTV building in an intensely short period of time. Once this became apparent, his state flew a team of four people over to begin the psychological recovery process before the taskforce flew back to home soil, he says.

Queensland has 275 people trained to the highest USAR standards and NSW has 220. With demand as high as it was this year, deciding who should be deployed, and how often, was tough.

Many Queensland rescuers were exhausted by the time help from NSW, and every other state and territory, arrived.

"The guys were hammered, from mid December," Mr Cawcutt says. "Normally if you have one disaster, that's enough. But we had north Queensland flooding, then central Queensland flooding, south-west Queensland flooding then we had the Brisbane floods and the Lockyer Valley disaster, and Toowoomba. Then we had cyclone Yasi."

"The USAR and our technical rescue staff were stretched to their absolute limit. A lot of the guys did two or three deployments."

Mr Mullins says the NSW service tried not to double up. In the four deployments one to Queensland, two to Christchurch and one to Japan, about 150 NSW people were deployed, in total.

"The hardest thing we find is telling people they can't go," Mr Mullins said. "The type of people we're talking about, ambulance officers, fire officers, police officers, they're just natural helpers.

"So, whenever there's a disaster anywhere in the world, expectation management becomes one of the biggest challenges in our organisation because they all want to go and they all think they should be there helping.

"All the people who'd just come back from Christchurch just wanted to up sticks and go to Japan. It's very humbling when you work with people like that. They're wonderful, but you have to be a bit tough and say 'no, we have to spread this out and you mightn't see it now, but it could damage you for life'."

"It's like the 1994 bushfires, or the Thredbo landslide—the people who were there have all this corporate knowledge and the more of them we have, the better the organisation is," Mr Mullins said.

Many states are simply not big enough to support the "triple depth" the UN requires for them to have their own full USAR teams, Mr Mullins says.

"We have to be able to put three taskforces in the field so if one goes we still have equipment and personnel for a second and then we have a domestic capability left over if we send two abroad," Mr Mullins says.

"You have to be a very big organisation to do that. It's a high-consequence but low-frequency event that we're talking about, so there's quite an investment and sometimes you don't see the payoff for years."

In Japan, Rob McNeil's investment in radiation training paid off. He was very confident entering the areas he did, and says that led to confidence in his team.

"On our trip back, we did a risk assessment and we decided that a tsunami was more dangerous than driving through the Fukushima exclusion zone, so we drove. We all had our dosimeters and detectors on. We had the windows up and the air-conditioning on recycle and we wore protective dust masks and

we all numbered and named our masks and handed them to ANSTA when we got home.

"Not one of them came up with any sign of radiation. The dosimeters determined the most exposed we got was background radiation."

The second change being adopted by USAR teams is to ensure daily contact with the families of taskforce members—this proved crucial for those with loved-ones in Japan.

"We set up an SMS tree. Morning and night, we'd send messages to all the taskforce families, just giving them an update, and we'd ring every two days and say 'here's what's going on'," Mr Mullins says.

"They were hearing on the TV and radio that Australian rescuers were at risk from radiation contamination, and you could understand why the media said that, because the information was sketchy. But we were able to reassure them that wasn't the case, and say 'if it is the case, we've got an evacuation plan, the US Airforce has a fleet of Blackhawks, they'll be out of there within an hour if the wind changes."

"The feedback we had from families was amazing. They were so grateful, because they were so worried."

The third change is that a media officer will now be embedded in

taskforces to relieve the taskforce leaders of handling inquiries.

When USAR teams are not freeing people from rubble, they find other ways to help. Rob McNeil's team donated their full cache of medical equipment and supplies, tents and remaining food and water to the Japanese when they left. In Christchurch and Japan, the job of the Australian taskforces shifted from rescue work to community support.

Mr Cawcutt suspects USAR teams will be used a lot more in the future, because their skill sets are so broad and they're extremely efficient and agile.

"We always look at ways of improving things but we've got to be careful too because the beauty of a USAR team is its ability to be mobile and quick. If you start to think 'oh we could have had this bit of gear, or this or that,' then your footprint starts getting bigger and you can start to lose that ability to be light," he says.

Mr Mullins says the USAR work in New Zealand soon became community outreach. "They'd just go out, drive down a street, knock on a door, say 'have you got any problems?' They'd say 'yes, we can't get our garage door open, it's wedged shut. So they'd fix it, or they'd do a bit of plumbing to fix the toilet, or they'd prop up a roof that was sagging,'" Mr Mullins says.

"I had someone come up to me at the airport as I left Christchurch. I went over for a couple of days with Lee Johnson (the Queensland Fire Commissioner). This elderly lady came up and said, 'have you been helping us?' I said 'no, no, I just came over to see our teams' and she said 'oh, well we're just so grateful for your assistance' and grabbed me and gave me a kiss." Mr Mullins said. "I had rather wet eyes. Our people told these similar stories and you'd see these big tough men tearing up because it was just so rewarding."





Defence force helps Queensland on road to recovery

By Kate Lahey

To Queensland flood victims, the site of a dozen soldiers willing to strip their sodden house and take the rubbish away must have been a relief.

On 17 January—one week after the worst of the floods raged through the Lockyer Valley, and days after the waters inundated Brisbane’s suburbs—Brigadier Paul McLachlan took command of the Australian Defence Force’s Operation Queensland Flood Assist taskforce,

leading a joint outfit of 1900 troops from the Army, Navy and Air Force as a contribution from the Australian Government, to help Queenslanders start to get back on their feet.

It emerged from an original deployment of about 300 troops who helped in the initial response phase, and it became the biggest deployment of personnel on home soil since Cyclone Tracy—when the Army rotated through 2000 soldiers

during its four-month effort to help Darwin rebuild.

The ADF’s contribution to the Sunshine State’s Natural Disaster Resilience Program this year included more than 19 aircraft, engineers, divers, trucks and other equipment as well as its instant, large and highly-capable workforce who turned up with pickaxes and shovels, just as families were returning to their devastated homes and wondering where to start.



Credit: Corporal Yasmine Fabre

“Having that support at the very worst time certainly I think helped a lot of people and we were very pleased to be able to do it,” Brigadier McLachlan says.

The ADF also contributed its unique way of looking at things.

“I suppose it’s a mindset,” Brigadier McLachlan says. “We are serial planners in the military, we just can’t help ourselves. We would

rather write a plan than just react to circumstance.

“If you’re in a conflict situation, you can’t afford to be just reacting, you’ve got to actually be trying to change the situation proactively, so that you bring pressure to bear on your adversary.

“We know that if we haven’t got a plan up front that we can execute faster than our adversary, then we are just reacting—and that’s

something the military tries to avoid. Reacting is bad. Reacting means you’re coming second,” he says.

Brigadier McLachlan says this way of thinking helped him figure out how the ADF could be of the best possible help to Queensland in its recovery phase. He had three days to prepare before taking over the command from Colonel Luke Foster.

“That allowed me to pull all of my people in and develop a plan, set up our liaison system. Then we were in a really good position to start that reconstruction effort then and make sure all the people we were dealing with actually knew what we were bringing and what our capabilities were,” Brigadier McLachlan says.

“Having a lot of experience working in places like East Timor and the Solomons, as the higher conflict places, it’s just organisation and that capacity to develop a plan and then execute it, that was really useful.”

The ADF did not take charge of the recovery effort, but worked as part of the emergency management framework—performing tasks that state, regional and local disaster coordinators wanted Defence to do, he says.

Brigadier McLachlan describes the experience of working this way as “a singular pleasure. Everybody just came together and concentrated on getting things done,” he says.

Last year was a rough one for Brigadier McLachlan’s Brisbane-based 7th Brigade. It lost six soldiers in Afghanistan. He says the support the Brigade members felt from the Queensland community in 2010 made them more determined to help the state in its time of need.

“When we recalled people from leave to come in and help, we were very conscious that we had guys who had just come back from Afghanistan from a very difficult deployment, and we were trying to leave them alone and at home with their families.



"They just turned up. They just came in and said, 'we want to help'. Despite our best intentions, we couldn't stop them," he says.

Brigadier McLachlan said while the emergency response organisations had good plans in place, the addition of a Defence resource gave those in charge some 'space'.

"A lot of the commanders we sent have combat experience and a lot of them have been about planning and about trying to get distance between ourselves and the problem," he says.

"My experience is, that for people dealing for the first time with a real crisis, you can get caught up in the reaction/counter-reaction pace. What you actually need to do is build an organisation where you've got people who are dedicated to managing those immediate responses, but you

have to have, separate from those, people saying 'ok, what's likely to be happening in the next 36 hours? what do we need to get ready for?' So you can get ahead, so you're not going to have a whole range of crises rolling on the ground."

A good example of this, he says, was the evacuation of the Cairns Base Hospital, ahead of Cyclone Yasi.

"When people thought the eye of the cyclone was going to go straight over it, they were concerned the hospital might not survive, so a decision was made in enough time to get those people out," he says.

In the days after Brisbane flooded, a navy vessel fitted with sonar equipment surveyed shipping channels, in Morton Bay and the Brisbane River.

Brigadier McLachlan says this was to ensure the channels were clear of any hazards that would prevent, for example, fuel vessels reaching

Brisbane so there was no chance the city would run out of fuel.

Clearance diving teams were also used up and down the Brisbane River, to identify any hazards to ships.

"We found 154 major contacts and we gave those coordinates to Queensland maritime authority so they could deal with them," Brigadier McLachlan says.

"They were things like sunken pontoons, a few boats, there was a trawler that sank."

"Another preemptive step Defence was able to provide was to pre-position water purification units in isolated communities, to prevent a future health crisis," Brigadier McLachlan says.

By the end of last year, Queensland had experienced its wettest spring and December on record and even at that stage one of its most significant



Credit: Corporal Janine Fabre

Major Lee Bowden from 2nd Combat Engineer Regiment (2CER) briefs Brigadier Paul McKachlan, Commander of Joint Task Force 637.

floods in history. Its own resources were stretched and the state sought Australian Government help from the Australian Government's Department of Defence through the Attorney-General's Department Emergency Management Australia Division. The ADF's Operation Queensland Flood Assist began on December 28.

During its various phases, under Colonel Foster, and then Brigadier McLachlan, Defence personnel performed rescues, airlifted people to safety, and delivered medical supplies, food and more than two million litres of purified water. They collected aerial imagery, helped sandbag properties, cleaned, door-knocked, and provided environmental health teams as well as psychological support teams to help the Queensland Government.

They also performed the grim task of searching for bodies. Brigadier McLachlan says in total, more than 300 personnel, with vehicles and helicopters, searched 500km up and down Lockyer Valley river systems. The troops covered the difficult terrain twice, to satisfy coroner's requirements.

Brigadier McLachlan's operation was carried out in three stages. It began with a surge, to do what was needed as early as possible. This involved more than 1000 people in Brisbane, 400 in Ipswich, 300 in Grantham, plus special aviation and maritime task groups.

As the crisis eased, the role turned to more specialised capabilities, using engineers to pull 150 cars from Murphy's Creek at Grantham and clear 22,000 tonnes of debris. Eventually, it concentrated on the worst hit areas, such as the Lockyer Valley, that needed the ADF for the longest. The joint taskforce ended on 5 February but 300 personnel, including an engineer task group and image analysis team remained until 16 March. Major General Mick Slater was continuing to chair the Board of the Queensland Reconstruction Authority at the time of writing.

In the weeks and months surrounding the Queensland floods, the Australian Government, through the ADF, also provided help in the



Credit: ABIS Jo Di Lorenzo

Commander Joint Task Force 637 and Chief of Army, Lieutenant General Ken Gillespie, AO, DSC, CSM fly over flood affected SE Queensland in a Blackhawk helicopter.



Prime Minister, The Hon. Julia Gillard, MP with Commander of Joint Task Force 637; Queensland Flood Assist, Brigadier Paul McLachlan speaks with soldiers participating in the flood clean-up effort in Brisbane Suburbs.

Credit: ABIS Jo DiLorenzo

West Australian bushfires and Carnarvon floods, the Victorian floods, Cyclone Yasi, the Christchurch earthquake and the tsunami in Japan.

Brigadier McLachlan says although the situation in Queensland was horrendous, the spirit of those involved in the response—from civilians to emergency service managers—was remarkable. It made the task all the more satisfying.

“Certainly for the soldiers, you couldn’t keep them away with a pickaxe handle,” Brigadier McLachlan says.

“They were amazed at just how hard all of these guys (residents) were working so soon after such a catastrophic event to get their lives back in order and it just inspired them and made them want to help.”

“It started a whole lot of new relationships and generated a whole lot of understanding and in doing that, everybody involved in that process has seen a whole lot of new opportunities for us to work together better and I think that only bodes well to a better response next time.” As for the local opponent, the mighty force of nature, he says: “That’s a particularly hard adversary to second guess.”



Prime Minister, The Hon. Julia Gillard, MP and dignitaries disembark the Sea King helicopter to visit affected suburbs of Brisbane.

Credit: ABIS Jo DiLorenzo

At the peak of the Queensland flood crisis, the Australian Government deployed Defence 1,976 personnel, comprising:

- 1,198 Regular Army
- 356 Army Reserve
- 266 Royal Australian Air Force
- 131 Royal Australian Navy
- 19 Air Force Reserve
- 6 Contractors

Queensland Communities helped by the Australian Defence Force since December 28 2010:

- Theodore, Emerald, Condamine, Rockhampton, Surat, St George, Roma, Toowoomba, Ipswich, Brisbane, Lockyer Valley, Bundaberg, Townsville, Grantham, Dirranbandi, Moreton Bay, Brisbane River, Dalby, Somerset and Gladstone.
- Moree in NSW was provided with 300 camp stretchers, for the Moree Evacuation Centre.

Units involved in the Queensland floods:

- Army 1 Division elements—troops and vehicles.
- Army 7th Brigade, including 8th/9th Royal Australian Regiment, 7th Combat Services Support Battalion, 6th Battalion Royal Australian Regiment, 139th Signal Squadron, 1st Field Regiment, 2nd Combat Engineer Regiment, 2nd/14th Light Horse Regiment Queensland Mounted Infantry.
- Army Reserve 2nd Division elements, including 9th Royal Queensland Regiment and 31st/42nd Royal Queensland Regiment.
- Army 6th Engineer Support Regiment, including 17th Construction Squadron, 21st Construction Squadron, 1st Topographic Survey Squadron.
- Army 6th Aviation Regiment
- HMA Ships Huon, Leeuwin, Shepparton and Paluma
- Navy Aviation Group
- Navy Clearance Divers
- Deployable Geo-spatial Survey Team
- Air Force Combat Support Group. 1st Airfield Defence Squadron and personnel, Numbers 84 Wing and 86 Wing.

Transport and earthmoving equipment:

- 19 Helicopters
- 7 fixed wing aircraft
- 17 Army Bushmaster vehicles
- Trucks
- Graders, bulldozers, excavators

Analysis of command and control networks on Black Saturday

By T. Andrew Au Defence Science and Technology Organisation, Department of Defence, Canberra, ACT 2600.

ABSTRACT

In times of crisis, incident management requires the mobilisation of a complex network of interdependent entities to form rapidly to coordinate a multifaceted emergency response. By having timely access to disparate sources of information, responders are able to group together to develop a better understanding of the problem and to define shared objectives. Problems with maintaining information flow directly degrade the ability of responders to make informed decisions, which could significantly impact the efficiency of a response effort. Since coordination is essentially a human-centric activity, important insights can be gained by studying the complex patterns of large-scale coordination in incident management. This study investigates the 2009 Victorian bushfires as a case study in which one of the main findings of the Royal Commission was poor coordination efficiency in the incident command system. The analysis was geared towards understanding how the command and control network evolved over the course of the Kilmore East fire on 7 Feb 2009. Network diagrams were generated of the actual topologies that emerged during the different phases of the incident. An examination of the interactions reveals the distinct patterns of communication and the key actors in shaping the performance of incident management. Our results point to lack of efficiencies in the network connectedness, which is an enabler of coordination efficiency. An enduring solution will necessitate synergy between qualified people, well designed processes, and enabling technology in order to break down seemingly complex coordination challenges.

Introduction

Command and control (C2) is an essential part of all emergency management operational activity. It is the means by which an incident commander, being responsible for all aspects of an emergency response, recognises what to achieve and the means to ensure that appropriate actions are taken. C2 helps the incident commander achieve organised engagements in emergency management through coordination of the incident management team, application of resources, and dissemination of information.

Good C2 aims to reduce ambiguity in situational awareness in emergency response operations so that responders can decide on an appropriate course of action to positively shape the situation. An incident commander may reduce ambiguity by acquiring more knowledge of the situation, but it takes time to gain and process information. Unfortunately any C2 system also needs to be fast, at least faster than the situation's rate of deterioration. In a firefighting scenario [1] for example, the fire will grow if the fire is spreading faster than the rate at which firefighting units can cover the ground. The resulting tension between coping with uncertainty in situational awareness and time constraints presents a fundamental challenge of C2.

An essential element of a C2 system is its organisation of people [2] working to achieve the commander's intent through formal processes, networks, and the application of sensors and appropriate assets. An incident command system (ICS) is such a C2 structure designed to improve emergency response operations of all types and complexities. Emergency management requires the mobilisation of a command structure of personnel to control the incident. Individuals gather information, make decisions, take action, communicate, and cooperate with one another in the accomplishment of a common goal. Not surprisingly, an ICS sometimes fails to respond immediately to an incident due to the individuals lacking coordinating abilities required to effectively and efficiently manage resources. The cognitive and cooperative skills of the individuals working in concert towards the same goals could ultimately determine the success or failure of emergency response operations [3].

Whilst an ICS aims to ensure unity of effort for command and control of emergency response,

coordination of members is as important as the formal chain of command. Communication between responders is vital and could influence response performance. Without adequate situational awareness or communication of the actions taken by relevant units, there is difficulty in the incident management team to work coherently to achieve the overall goals. It is recognised that failure to adequately respond to large-scale disasters is often not a problem of insufficient resources or technology, but lack of coordination [4]. Causes of the failure include lack of communication between responders, slow circulation of often outdated information, and insufficient dissemination of situational data and action plans [5].

Analysis of patterns of communication can aid in understanding the effectiveness of an incident management team. Using the 2009 Victorian bushfires as a case study, we examine in this paper the social interactions for incident command and control. Representing crisis management in social networks facilitates analysis of the coordination mechanisms, providing lessons learned from the (un)coordinated response to this major natural disaster on Black Saturday.

Social network analysis provides a means of exploring the incident command system and assessing the state of actor involvement. Investigation of the social network is useful to identify the patterns of network behaviour, which may provide insights into process chokepoints and inefficient work practices. To analyse the structure, dynamics and evolution of the social networks, we focus on some key questions:

- who are more influential within the network?
- who are more involved in the network?
- how does the structure of the social network evolve on Black Saturday?
- does the information flow match with the formal chain of command?

The purpose of this study was to understand how the incident management team operated and evolved over the course of the incident response on Black Saturday. This study looked at the Royal Commission reports of the 2009 Victorian Bushfires as an accurate account of the incident management team as it stood during the crisis. When investigating data collected by the reports, it is inevitable that data may be incomplete or missing due to the nature of the inquiry. This potential incompleteness of data may expose this study to the possible misinterpretations of use for social network analysis.

Black Saturday

On 7 Feb 2009, bushfires swept through the Australian state of Victoria. Encyclopaedia Britannica offers a compelling overview of this catastrophe.

The most deadly conflagration, which claimed 121 lives, was sparked by a faulty power pole near the township of Kilmore East, 37 miles (60 km) north of Melbourne. The flames quickly jumped a major highway and roared into a forest, where they turned

into a giant fireball, dwarfing the resources of local firefighters, who could only flee in its path. Aided by steep slopes and powerful winds, the Kilmore East fire raced through a series of townships, catching residents by surprise and trapping many in their homes [6].

In the aftermath of the crisis, The Australian reports on the intensity of the Black Saturday bushfires.

The Black Saturday bushfires unleashed the equivalent of 1500 Hiroshima atomic bombs on Victoria, generating their own winds of up to 120km/h, which snapped trees and created fireballs of exploding gases that surged 600m in 30 seconds ... the energy produced by the fires in just a few hours on February 7 was enough to provide Victoria's industrial and domestic energy needs for a year [7].

Inevitably, Australia's worst natural disaster needed immense firefighting efforts.

More than 4,000 firefighters ... have worked to battle the fires. [They] were assisted by the military aid offered by the Commonwealth Governor-in-Council, and firefighters sent [from other States as well as overseas] [8].

Data collection

This study is based on the account of the emergency response to the bushfires presented in the interim [9,10] and final reports [11] released by the 2009 Victorian Bushfires Royal Commission established to investigate the disaster. In particular, this paper examines the command and control arrangements on 7 Feb 2009 in response to the fire that started at Kilmore East.

This study divides the Kilmore East fire into three distinct phases. The first phase of the fire is the initial period before crossing the Hume Highway. The second phase corresponds to the period after the fire crossed the Hume Highway and continued onto the slopes of Mount Disappointment to the time Commonwealth assistance was requested. The third phase of the fire is defined as the period when the Commonwealth was requested to play a role in response and recovery from the disaster on 7 February.

Command and control in an emergency is a complex human-centric decision making process competing against time. In order to look into the responses to the 2009 Victoria Bushfires, there is a need to capture the salient features of the teamwork and the decision making processes. We therefore extracted information contained in the case study of the Kilmore East fire to provide time-stamped messages sent between firefighting units or responders on 7 February 2009. The response activities provided timed information about the state of progress by responders.

Disparate recollections of the activities were synchronised to facilitate merging into a single consolidated view for each time step. This was facilitated through the data table in Figure 1 using an

FIGURE 1. Main data table for Kilmore East Fire.

Phase	Label	Function	Operation	Time observed	Agent	OSD Type	From
	1.41	fax threat messages to iec	delay uploading due to messages chasing fire fax threat messages for kilmore east fire to iecc	13:51:50 13:53:00	info officer@seymour recc info officer@seymour recc	delay transmit	info office
	1.42	relocate info officer	receive fax that wandong healthcote junction & u decide to locate info officer physically at kilmore i task new info officer to travel to kilmore from cfa	13:53:30 14:00:00	iecc seymour recc	receive decision	
	1.43	observe fire situation	observe erratic fire behaviour & spotting all over t	14:00:10	seymour recc	transport	
	1.44	analyse fire behaviour	observe erratic fire behaviour & spotting all over t find fire incapable of being suppressed & going t	14:00:20 14:00:30	whittlesea cfa iecc	monitor operation	
	1.45	prepare further urgent thre	prepare further urgent threat message (release 3) submit for approval of threat message (release 3) authorize threat message (release 3)	14:05:00 14:10:00 14:11:00	info officer@seymour recc info officer@seymour recc regional ops officer@seymour recc	operation request decision	info office regional o
			receive authorisation	14:11:30	info officer@seymour recc	receive	
2	2.1	observe fire situation	fire crossed hume highway & heading towards m	14:12:00	fire tower operator@pretty sally	monitor	
	2.2	pass onto kangaroo groun	inform kangaroo ground tower receive situation report	14:12:10 14:12:20	fire tower operator@pretty sally fire tower operator@kangaroo grou	transmit receive	fire tower
			pass onto kangaroo ground icc receive situation report	14:12:30 14:12:40	fire tower operator@kangaroo grou kangaroo ground icc	transmit receive	fire tower
	2.3	observe fire situation	note burnt leaves dropping in kangaroo ground a distribute second threat message to abc radio	14:12:50 14:14:00	fire tower operator@kangaroo grou seymour recc	monitor transmit	seymour r
			receive second threat message	14:14:30	774 abc radio	receive	
	2.4	distribute threat message	distribute urgent threat message (release 3) to a receive urgent threat message (release 3)	14:15:00 14:15:10	info officer@seymour recc abc local radio	transmit receive	info office
			request to upload second threat message (releas receive request	14:15:20 14:15:30	info officer@seymour recc iecc	request receive	info office
			not upload threat message (release 3) to cfa web	14:15:40	iecc	delay	
	2.5	police response	activate nillumbik municipal emergency coordinat	14:18:00	victoria police	operation	
	2.6	address briefing	conduct briefing concerning kilmore east fire conduct briefing concerning kilmore east fire	14:19:00 14:19:20	ic@kangaroo ground dic@kangaroo ground	decision decision	ic@kange dic@kang

analytical prototyping tool, known as WESTT (Workload, Error, Situational Awareness, Time and Teamwork) [12,13]. The data table is an ordered list of events over time together with the actors involved and the relevant details. It captures the details of individual interactions between responders (such as the description of activity, the start of events, and task duration) for further analysis of the scenario.

Analysis of social networks

Extreme events often trigger high density of communication and interaction among actors to stimulate coherent response. The ongoing dialogue among members of incident management teams facilitates the building of shared situational awareness so that they understand what to do, by when, and whom they

FIGURE 2. Social network in Phase 1.

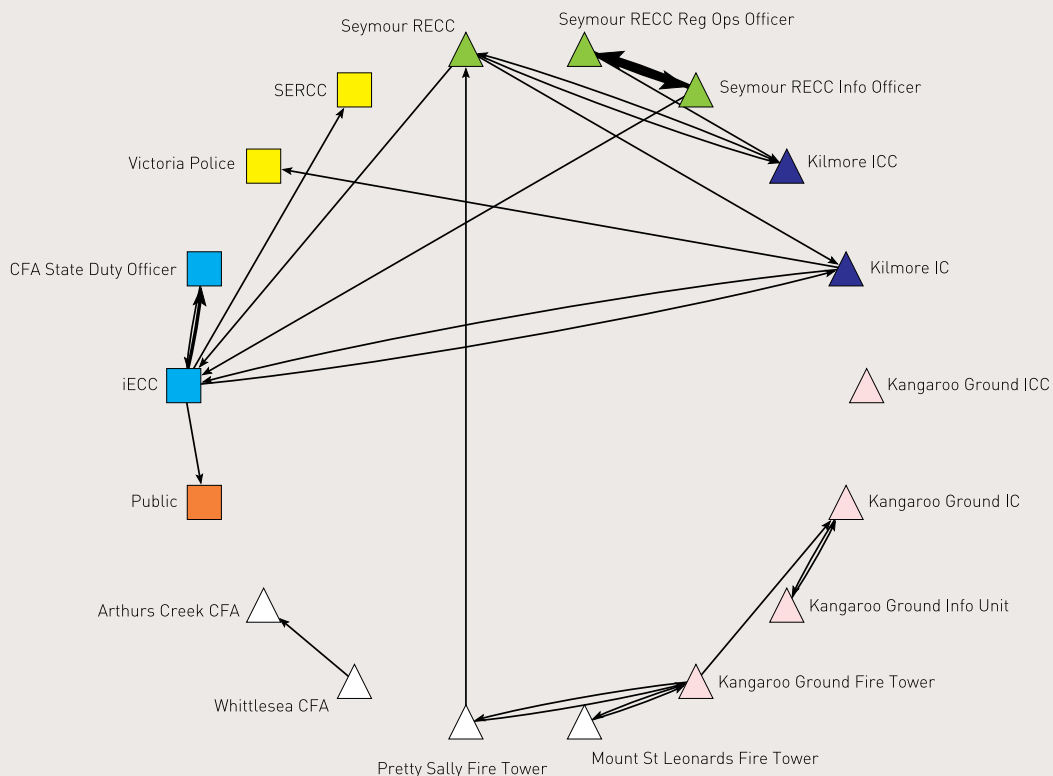


FIGURE 3. Social network in Phase 2.

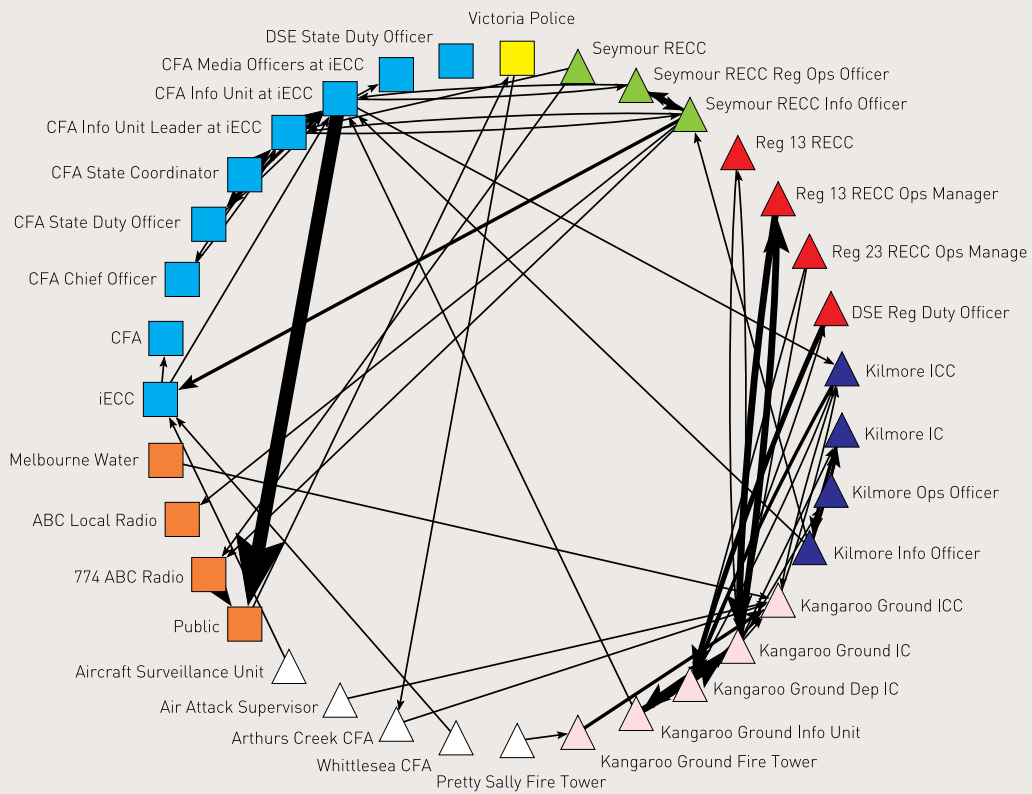
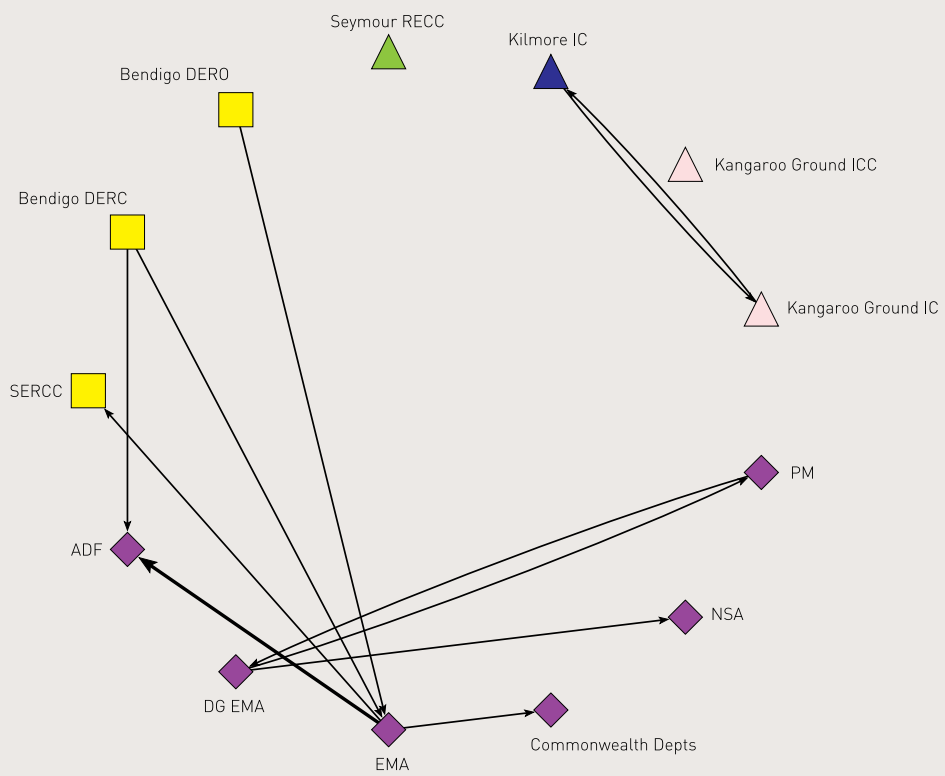


FIGURE 4. Social network in Phase 3.



should contact in unexpected circumstances. Inter-organisational networks of coordinating and supporting units naturally evolve to deliver effective and collective action. These networks can play an important role in facilitating the dissemination of information within a command structure. Social network analysis views social structure as a graph consisting of nodes and edges. Actors or units are represented in the graph as nodes while edges are used to characterise the formal or informal relationships between nodes. Increasing interconnectedness may create more possibilities of multi-organisational partnerships in the wake of extreme events. The results could be utilised to improve overall emergency response effectiveness across organisational boundaries.

From the scenario described in Figure 1, Figures 2 to 4 reveal the evolving interactions between actors when responding to the Kilmore East fire. The figures indicate the interconnections between stakeholders for emergency response, regardless of the modes of communication or the context. The diagrams were produced using the tool, Pajek [14] for network analysis and visualisation. In isolation, a pictorial representation for each distinct phase of the fire allows an analyst to determine the frequency of communication between actors.

The edge thickness reflects the amount of communication between actors. Actors are colour-coded and shaped according to their roles and the command hierarchy, respectively. The inquiry did not look into all interaction details within every functional unit, but one would infer the presence of some internal

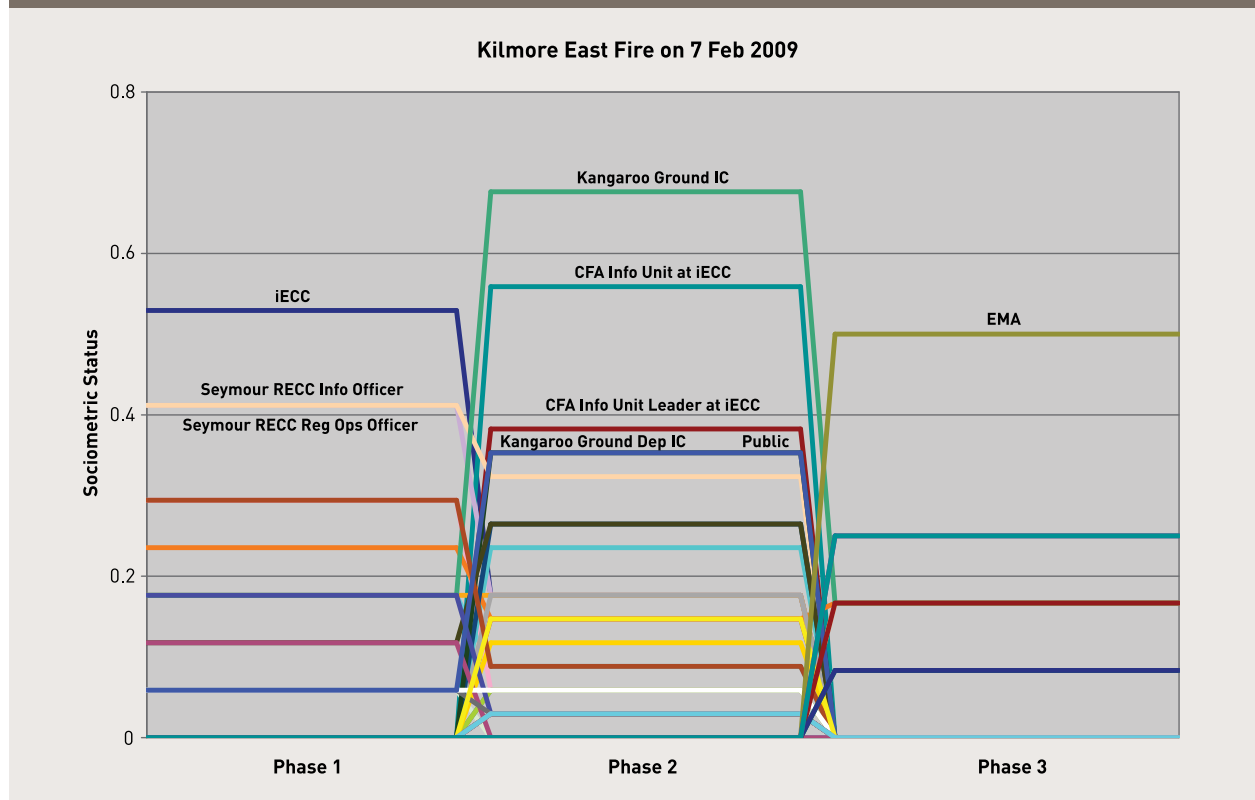
communication to facilitate information transfer. For instance, the Emergency Management Australia (EMA) should have reported to its head, Director General (DG) EMA for an executive decision to provide Commonwealth assistance.

Actors at the local level are depicted in circles. The Kilmore elements are drawn in blue circles whereas entities at various locations are represented in pink and white circles. Regional command elements are depicted in triangles, with green and red triangles representing the Seymour Regional Emergency Coordination Centre (RECC) and others, respectively. Squares are state level actors. Victoria's fire service agencies at the state level are represented in blue squares whereas yellow squares are assigned to actors of the Victoria Police. Orange squares denote entities not belonging to emergency services such as utilities, media and the public. Finally, the Commonwealth actors are represented in purple diamonds.

From these social network diagrams, there are some nodes that appear to have higher degrees of connectivity than others. In order to explore the relative importance of these actors to the social network, we characterise the response activities by using two social network metrics—sociometric status and centrality.

Sociometric status [15] is a measure of node activity that gives an indication of the contribution a given node makes to the overall amount of communication in the network. In developmental psychology, sociometric status reflects one's popularity or rejection by peers.

Figure 5. Measures of sociometric status in Kilmore East Fire.



Centrality measures how well connected a node is in a social network. It denotes the structural power position of a node in a given network. Tapiero and Lewin [16] relate the concept of centrality to that of social importance, influence, and prominence of an actor. In particular, betweenness centrality is an overall indication of a node's ability to act as a broker or conduit in the network. Betweenness is the number of times the node appears on the shortest path between pairs of other nodes. As an index of potential for control of communication, betweenness can reveal bottlenecks in communication and structural weak points to information flow. The higher the measure is, the more influence a particular node has on the entire network.

Figure 5 and Figure 6 show measures of sociometric status and betweenness for each phase, respectively. The value of the mean plus one standard deviation [17] is used to define key actors and labelled accordingly in the network. They were the Integrated Emergency Coordination Centre (iECC) and the Seymour RECC (or its officers) in Phase 1; Kangaroo Ground actors, Country Fire Authority (CFA) Information Unit, and the Kilmore Incident Control Centre (ICC) in Phase 2; and the EMA in Phase 3.

Phase 1

In Figure 2, the social network in Phase 1 essentially comprises various separate components. After the initial report of a fire burning in Kilmore East from Pretty Sally fire tower, a command structure is developed into a main component with the iECC taking the central focus to coordinate activities amongst

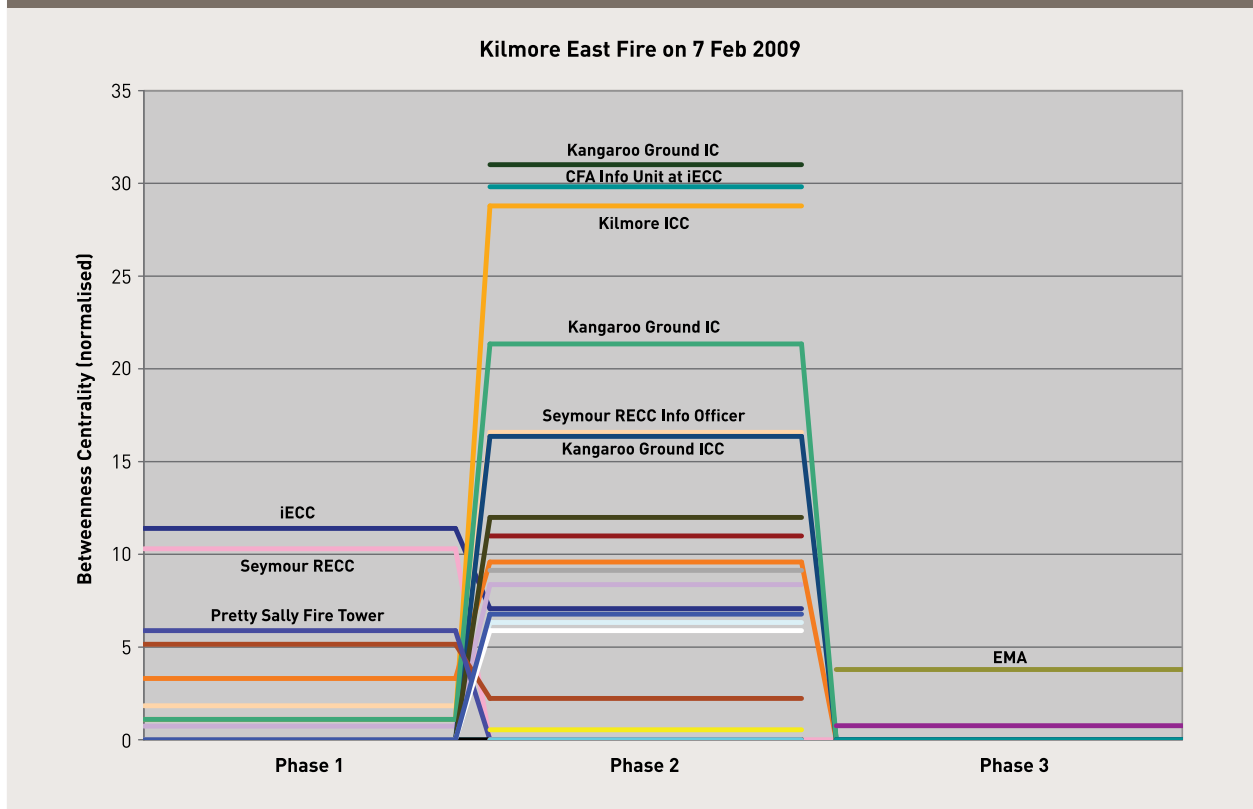
responding agents. However, other agents at the local level potentially affected by the incident are gaining awareness of the situation through their own clusters. An evolving cluster is centralised around Kangaroo Ground and fire tower operators, whereas some information exchanges between the Arthurs Creek and the Whittlesea CFAs broaden their awareness of the situation. Having loose clusters largely separated from the main component means that information for situational awareness does not reach the entire network. Isolated clusters are formed independently with no direct relationship between them, confusing initial responders' understanding of the incident action plans.

From Figure 5, it is clear that three key actors are contributing significantly to the interactions of the network in Phase 1, i.e. the iECC, Seymour RECC Information Officer, and Seymour RECC Regional Operations Officer. From Figure 6, it can be seen that the iECC is also the most central agent within the social network in Phase 1, followed by the Seymour RECC and the Pretty Sally fire tower. Overall, the iECC is most central, exerting command and control through the Seymour RECC (and its actors) over the appointed agents within its command structure. This finding suggests that the emergency response network provides effective vertical command and control, yet the horizontal flow of information to other entities is ignored.

Phase 2

As incident intensity increases in Phase 2, the interaction between actors becomes more intense

Figure 6. Measures of betweenness centrality in Kilmore East Fire.



throughout the entire network. As shown in Figure 3, the network has a higher degree of connectivity than in Phase 1. The network structure is strengthened to form one main cluster.

In terms of sociometric status, Figure 5 shows that Kangaroo Ground Incident Controller has by far the highest status, followed by CFA Information Unit and its leader at the iECC, Kangaroo Ground Deputy Incident Controller, and the Public. Interestingly, the status of the agents at Kangaroo Ground suggests that during this phase of the incident, there are actually two networks, one focusing on incident command and control and the other on situational awareness. Kangaroo Ground Incident Controller (IC) and Deputy IC are two key agents in terms of centrality, reflecting their prominent communications roles in Phase 2 in terms of interactions with the regional actors for situational awareness.

In Phase 2, the Kilmore ICC has high centrality without a corresponding high value of sociometric status. Being assigned the controller of this incident, the Kilmore ICC and its actors should have played a prominent role in directing the incident response. As the information officer for the Kilmore East fire, Seymour RECC Information Officer has a high centrality score because of the continued role in collecting and disseminating information. This finding suggests a dysfunctional incident management team in which the Kilmore ICC does not sufficiently exercise its command and control leadership, while the function of information dissemination is left to the Seymour RECC.

Phase 3

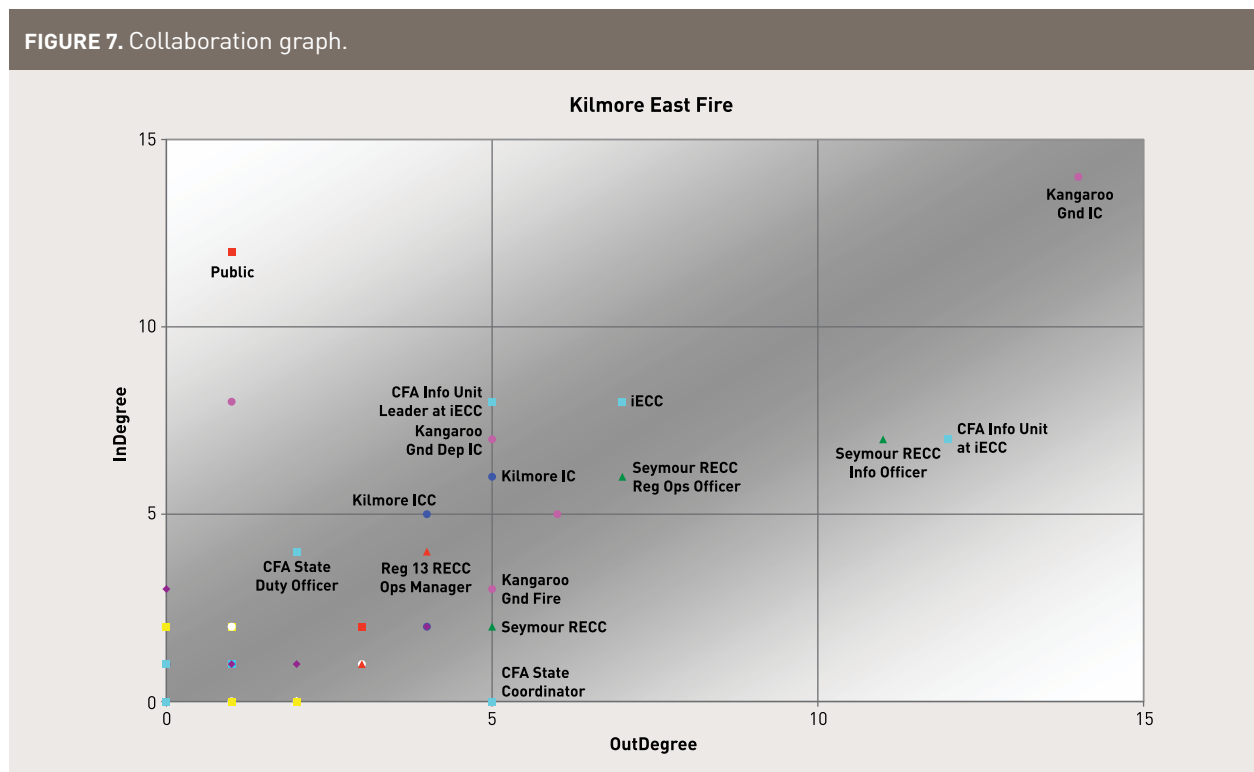
In Phase 3, the EMA, and through its head DG EMA, lies at the hub of the network in Figure 4. The EMA needs to coordinate activities at the Commonwealth level amongst other actors to play a role in response to this incident. Actors at the local and regional levels are still involved and interacting to handle the situation. This is not to imply that the EMA fulfils a command role, but that it is the conduit through which agents (particularly Commonwealth actors) exchange information or communicate requests for information or action.

Figure 5 and Figure 6 clearly indicate that the EMA is the central focus of the social network, as it needs to coordinate activities amongst the greatest number of other agents. It is also the conduit through which agents within the network, exchange information or communicate requests for information or action. Nonetheless, this may be an incomplete finding because of the lack of detailed description of other emergency response activity in the Royal Commission reports.

Degree of collaboration

Degree in social networks is used to measure connectedness, which defines the number of relationships or ties to which a particular node is connected. The social networks of the Kilmore East fire are directed graphs in which each node has both an in-degree and an out-degree, representing the numbers of incoming links and outgoing links, respectively. Effective response operations require collaboration between actors at all levels. Collaboration is defined as the act of working together to achieve collective results by sharing commitment among actors to the task at hand [18]. It is assumed that a collaborating

FIGURE 7. Collaboration graph.



node is the one who sends and receives information. Figure 7 compares in-degree against out-degree for all actors on Black Saturday. Out-degree measures the expansiveness and influence of an actor, whereas in-degree can be regarded as an indicator for the prominence or popularity of an actor. Information broadcasters are nodes in the bottom right region that have a high out-degree and a low in-degree (e.g., Seymour RECC Information Officer and CFA Information Unit at the iECC). Information receivers are nodes in the top left region that have a high in-degree and low out-degree (e.g., the Public).

Along the upward diagonal, collaborators are those who have comparatively equal numbers of incoming and outgoing links [19]. These include Kilmore Incident Controller, Seymour RECC Regional Operations Officer, the iECC, and Kangaroo Ground Incident Controller. Note that the CFA and the Department of Sustainability and Environment (DSE) exercised their state-level coordination functions on 7 February from the iECC. The Seymour RECC was responsible for resource management and coordination in the region of the Kilmore East fire. The Kilmore ICC was the location where the Incident Controller was appointed to provide overall direction of the response to the fire. As Figure 7 demonstrates, the fact that Kilmore Incident Controller had minimal interaction with other actors suggests that the incident command system was ineffective, leaving the divisional commands to respond on their own initiatives. In contrast, Kangaroo Ground actors were assertive through their informal acquaintance networks in an effort to clarify command responsibilities even before the Kangaroo Ground ICC was assigned the divisional command near midnight.

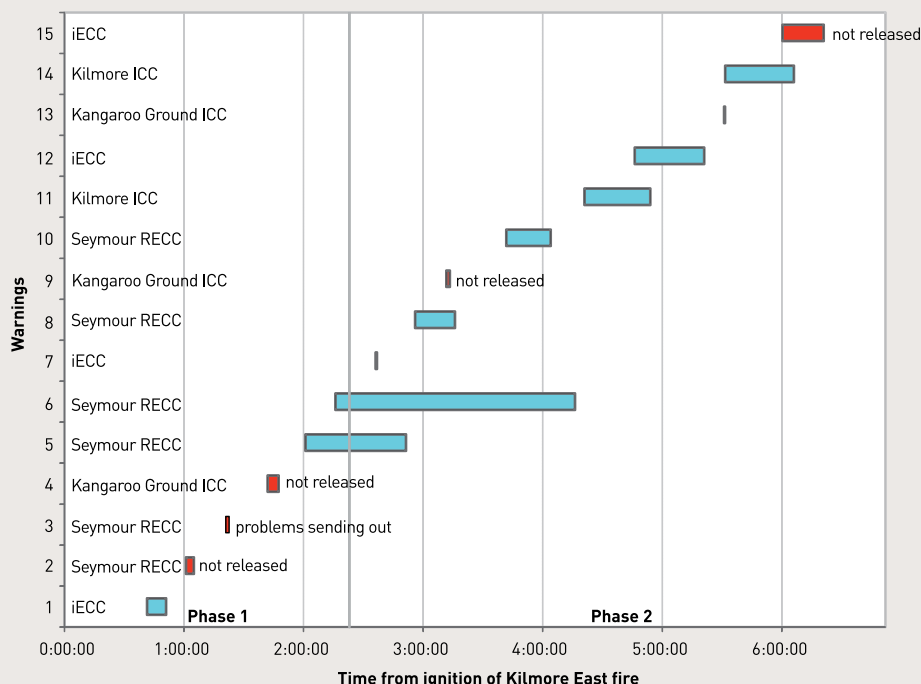
Warning the communities

An informed public is the best defence against any emergencies, during which demand for information is often overwhelming. In times of impending emergencies, the residents of the affected communities need to have situational awareness, in order to be able to make the right decision to stay or go. On Black Saturday, the fire agencies did attempt to communicate warnings to the public concerning the Kilmore East fire. Figure 8 illustrates the duration of the tasks in processing fire information release.

According to the interim report [9], four stakeholders at various levels of command originated the warning messages during Phases 1 and 2—the Seymour RECC, iECC, Kilmore ICC and Kangaroo Ground ICC. Initially, fire information release was processed through the Seymour RECC until an information officer was relocated to the Kilmore ICC in the late afternoon. However, multiple sources of emergency warnings may confuse the public and could lead to serious life-threatening consequences. These warning messages were provided to the ABC and local media agencies for radio broadcast and uploaded by CFA Information Unit onto the CFA websites. In Figure 8, warnings successfully released are coloured blue, whereas those failed to eventuate are in red. The existence of ineffectual efforts suggested that there was no credible mechanism for preparation and dissemination of warnings to the communities.

Overall, one message was issued within the first hour of the crisis, which was the only one during Phase 1 despite some attempts to convey more information to the communities. Whilst general warnings were issued prior to the Black Saturday, this lack of emphasis given to warnings at the early stage highlighted inadequate

FIGURE 8. Duration of warning development concerning the Kilmore East fire.



preparedness in the wake of a fire out of control. More frequent warnings were generated during Phase 2. However, the prolonged process to issue warning messages 5 and 6, in particular, was not considered normal practice to provide the public timely information about what was happening or what they needed to do to protect them.

This observation indicates that the public communication activities were poorly coordinated across the command and control units to respond to the deadly and intense firestorm in a timely fashion. Not only were the processing and dissemination of warning messages problematic, the content of the messages also failed to convey the severity and potential of the fire to the affected communities [9].

Implications for emergency response

The inquiry revealed a number of systemic failures and leadership failures on Black Saturday [11]. The lack of pre-planning had significant effects on preparedness of emergency management officials and ultimately the ability to manage the fires. In particular, the Kilmore ICC was not ready for a hot start due to a lack of pre-positioned qualified staff and inadequate critical facilities. Failures of internal communication and breakdowns in warning development contributed to a lack of situational awareness and decision uncertainties among responders. The account of emergency response problems to the Kilmore East fire highlights a coordination issue most probably brought about by ineffective leadership and deficient communication infrastructure.

An incident command system is designed to ensure that decision making roles and responsibilities are assigned appropriately to the chain of command, while allowing for seamless integration of incident response activities and disparate resources of multiple agencies. Merely establishing an incident management team is insufficient to overcome an extreme disaster in a timely and efficient manner. Only fostering coordination of the teamwork enables the responders to work together to achieve the common goals. Coordination is an abstract concept that is difficult to measure, but network connectedness was found to be positively correlated with the potential for coordination [20]. Hence, a significant lack of interconnectedness and communication between actors has serious implications for coordination of emergency response in order to effectively manage interdependencies between activities. Further, it was found that coordination is strongly associated with network centrality of an individual, irrespective of the organisational position of that individual [21].

To determine who the key nodes were in the incident command system for the Kilmore East fire, this paper identified those in the top range for in- and out-degree, sociometric status, and betweenness centrality. These were actors in the iECC, the Seymour RECC, Kilmore ICC, Kangaroo Ground ICC, and the EMA. The first three entities were the leaders of the command hierarchy to

empower and entrust responders to fulfil their roles in the emergency response effort. Although the Kilmore ICC was in charge of the crisis on Black Saturday, the facility was poorly equipped to operate at a heightened state of readiness in anticipation of the fire [9]. This serious shortcoming largely constrained the potential effectiveness of the incident command system. Besides, the proactive effort of the Kangaroo Ground ICC was unable to improve the extreme situation because of confusion about command.

Conclusions

Coordination is one of the critical issues confronting incident management. A command and control network for emergency response is meant to be distributed but integrated, underpinned by a high degree of coordination in dynamic situations. In this study, social network analysis provides a basis for examining the command and control arrangements on Black Saturday. The network visualisation illustrates the complex sequence of interactions from responders that allows for evaluation of the state of coordination. Communication brings an awareness of the situation and allows responders to make informed decisions about how to proceed in concert with others. Inadequate communication patterns however inhibit coordination and create misunderstandings between individuals. We inferred the state of coordination on Black Saturday from social network measures based on a positive correlation between network connectedness and the level of coordination [20,21].

The incident management team for controlling the Kilmore East fire can be seen to experience a real problem with managing effective coordination in times of crisis. Divided into three phases, the social network structure tended to follow the rhythm of the fire with the highest period of activity occurring in Phase 2. The inadequacies in coordination extended not only to the flow of information between actors but also to warnings and community advice. The warnings prepared for affected communities in the path of the Kilmore East fire were inadequate and failed to reflect the severity of the fire in a timely fashion. The arrangement of multiple initiators of warnings also negatively impacted on the effectiveness for communicating accurate information to the public and the consistency of the warnings.

Our study points to lack of efficiencies in network connectedness when the incident command system was called on for a real-life response effort. Operational coordination of an incident management team is as important as formal relationships defined by the organisational positions. If the connectedness of the command and control network is improved, the responders' ability to coordinate should increase and, in consequence, a better outcome of the response operations.

Analysis of emergency response can enhance knowledge of the command and control arrangements and the patterns of communication, and expose the vulnerability of the network to systemic failures. Positive change is the bridge to the future. Lessons

from the analysis results could be applied to the design of an adaptive and robust incident command system in order to gain the necessary synergies between the people, processes, and technology. Development of processes for incident management should be matched with qualified people responsible for responding to crises, while technology is considered the major enabler for spanning processes over functional and organisational boundaries.

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The integration of emergency management and tourism

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ABSTRACT

Many natural disasters, crime incidents, epidemics, acts of terrorism and civil strife are either deliberately targeted at places where tourists gather or coincidentally occur in areas with high concentrations of tourists. In Australia a high proportion of international and domestic tourists are attracted to coastal areas which are vulnerable to natural disasters in the form, of floods, cyclones or sea surges. Although there is high level of informal cooperation between tourism industry businesses and government tourism authorities and emergency services this paper will explore a more formalised, structured and consultative level of cooperation between emergency service agencies and providers and the government and private sectors of the tourism industry.

Introduction

The United National World Tourism Organisation released a tender document in July 2010 (UNWTO 2010) that called for the development of a global approach to and implementation of a best practice guide for the integration of tourism into national emergency structures and processes. The UNWTO's proposal for a formalised integrative approach represents a major advancement in global tourism approaches to risk and crisis management. At an informal level, considerable cooperation occurs between government tourism agencies and private tourism businesses and emergency management providers. In specific cases, notably with airlines and airports integration has been practiced in a structured manner for decades. Integrative practices have also been commonplace for mega events such as the Olympic Games and the World Cup.

Despite the significant growth of global tourism since 1970, the management of risk and crisis has rarely been accompanied by commensurate integrative policies between the tourism industry and emergency

management agencies. During the first decade of the 21st century an upsurge of crisis events have impacted on and involved tourism. Some include natural disasters such as volcanic eruptions, earthquakes and most notably tsunami events in which tourists and tourism infrastructure have figured prominently in damage and casualty figures. The tendency for large concentrations of tourism infrastructure to be located in regions (Weaver and Lawton 2010) referred to as the *pleasure periphery* make them highly vulnerable to storms and climatic extremes. The *pleasure periphery* refers primarily to coastal areas in warm-tropical climate areas which are often subject to cyclones, typhoons and hurricanes (depending on their geographic location).

Tourism and tourists are increasingly targeted by terrorists and criminals. The terrorist threat is a particular concern for tourism as the core aim of terrorist violence is the achievement of international publicity for their actions and the religious or ideological cause of the perpetrators. Consequently attacks on attractions, hotels, entertainment centres, transport hubs and other places where international tourists gather ensures that victims will be from a variety of countries and as a consequence the publicity generated will be global in scope. Tourists are also considered to be soft target for criminals who target the perceived and actual anomie of tourists in an unfamiliar environment. US Tourism security expert Dr Peter Tarlow, has developed tourism oriented policing training programs in the United States that are designed to heighten the sensitivity of policing to the special circumstances of tourists especially in those areas that attract a high density of domestic and international tourists (Tarlow 2006 and 2010).

The October 2002 Bali bombing vividly illustrated the need to effectively integrate tourism and emergency services. The killing of 200 tourists and the wounding of over 300 more was beyond the capabilities of Bali's medical, emergency rescue, police, ambulance and hospital services to cope with a disaster of this scale (PATA 2003). Clearly, a terrorist attack on this scale would have stretched the capacity of emergency services in any jurisdiction in the world. However Bali, in common with many destinations catering to mass tourism, is characterised by a level of integration between tourism and emergency services which is rudimentary at best. Heavily visited tourist destinations

frequently lack an emergency management infrastructure to match the number of visitors.

Tourism has also been a significant contributing factor in the rapid spreading of infectious diseases. The recent H1N1 (Swine Flu) outbreak, initially identified in Mexico in April 2009 had spread to over 100 countries by the end of that year. The rapid global spread of this disease was largely attributable to tourists, many of whom were unaware they had H1N1 symptoms when they travelled. Heat sensors which were deployed at airports around the world frequently failed to identify people with the disease in its earliest stages. In many countries affected by pandemics (even those as relatively benign as H1N1) there is little integration between tourism and emergency management services on matters as basic as patient quarantine or isolation. Some obvious linkages between tourism and emergency services would be hotels having mandatory contacts with medical, police, fire and other emergency services. Although Australia has taken this issue seriously, many countries with high concentrations of tourists impose few regulations.

The concept of tourism and emergency management integration is a two way process. Emergencies that impact on residents in any given locality are equally likely to impact on tourists. While residents are normally easy to locate and identify by local emergency agencies, tourists by virtue of their transient presence are not. During a natural disaster tour operators, accommodation providers and transport providers have an important role to play in identifying tourist victims and confirming those visitors unaffected by a natural disaster. Tourist facilities can play a positive role in providing emergency accommodation and refuge, evacuation transport by land, sea or air in the event of natural disasters or human caused crisis events.

The basis of an integrative structure

The Australian tourism industry at both government and private sector level has (with the notable exceptions of the airline and airport sector and mega events) been somewhat remiss in addressing collaboration between emergency services and tourism. The Australian Government's National Tourism Industry Incident Response Plan (Australian Dept of Resources Energy and Tourism 2007) focuses its attention on crisis communications and reputation management in its response to crisis events. Important as these issues are to the management of tourism related crisis events there is no discussion collaborative or integrative links between tourism authorities and businesses and emergency services. The absence of such a link is even more inexplicable in view of the consultation which the authors allege took place with Emergency Management Australia. The absence of an integrative approach to crisis events is equally prevalent at a global level. The UN World Tourism Organisation's decision to develop a policy approach in 2010 is recognition that the lack of an integrative approach between tourism and emergency management services requires urgent attention.

The APEC Tourism Risk Management Guide (APEC 2006) referred to a number of cases in the Asia/Pacific region in which the tourism industry was involved on a consultative basis with the Asian Disaster Preparedness Centre and the Tourism Disaster Response Network which was established in January 2005. With the exception of the International Civil Aviation Organisation the connection between the tourism industry and Emergency services tends to be informal and consultative rather than formalised and integrative. As Dr Alison Specht correctly points out (Specht 2006), "Active (tourism industry) participation in regional planning and disaster management teams will ensure that the needs of the tourism industry are understood and incorporated sensibly into planning. A strong, effective, regional (world, country, state or smaller) tourism body which actively engages with its members and with other organisations can be an insurance policy in itself".

In Australia, an example of the integrative model between emergency management and tourism exists to a limited extent with the Australian Department of Foreign Affairs and Trade's *Smartraveller* Advisory Group. The *Smartraveller* Advisory Group was established in 2003 following negotiations between DFAT and the leadership of Australia's key outbound travel industry associations and companies. Initially, the primary role of the *Smartraveller* Advisory Group was to assist DFAT in the dissemination of Australian government travel advisories for Australian citizens travelling internationally. Although this remains the primary role of SAG, it has increasingly worked with DFAT to provide a travel industry dimension in emergency management for Australian victims of crisis events abroad. This includes airlines and tour operators being requested by DFAT to either waive or ease cancellation or change restrictions to facilitate the evacuation of Australians in danger from natural disasters, episodes of terrorism, political instability or regional conflict. It also includes travel organisations being asked to urge Australians travelling abroad to register their itinerary on the *Smartraveller* website so that they can be contacted in the event of a major threat to their safety. DFAT works closely with emergency management and tourism organisations globally to ensure that Australian's involved in disasters or emergency situations in foreign countries can be rendered assistance. The Insurance Council of Australia plays an important role in working with DFAT. DFAT's message to outbound travellers to purchase appropriate travel insurance policy is a core message of the *Smartraveller* campaign.

The integration between the tourism industry members of the *Smartraveller* Advisory Group and DFAT's own crisis management unit is very limited in scope but the consultative relationship that SAG represents is a move towards a integrative process. In the outbound travel context Australian tourism organisations are still highly dependent on the co-operation of emergency management agencies and tourism industry principals at the various destinations.

The process of developing an integrative approach to tourism and emergency services starts with a bilateral assessment of how emergency management services can assist the tourism industry and how tourism businesses can assist and enhance emergency management capability.

Capabilities and Services Tourism Businesses are able to provide Emergency Management Services and Agencies:

- emergency accommodation and shelter and hotels, resorts, caravan parks and other tourism accommodation facilities
- evacuation and emergency transport uplift and capacity on commercial air sea and land transport
- registration and identification of tourists on transport services, accommodation or tours
- register of working or damaged tourism infrastructure within a given jurisdiction
- assistance with emergency communication
- first aid equipment, facilities and trained staff to assist professional emergency management agencies
- guides with expertise of a destination region
- trained security personnel.

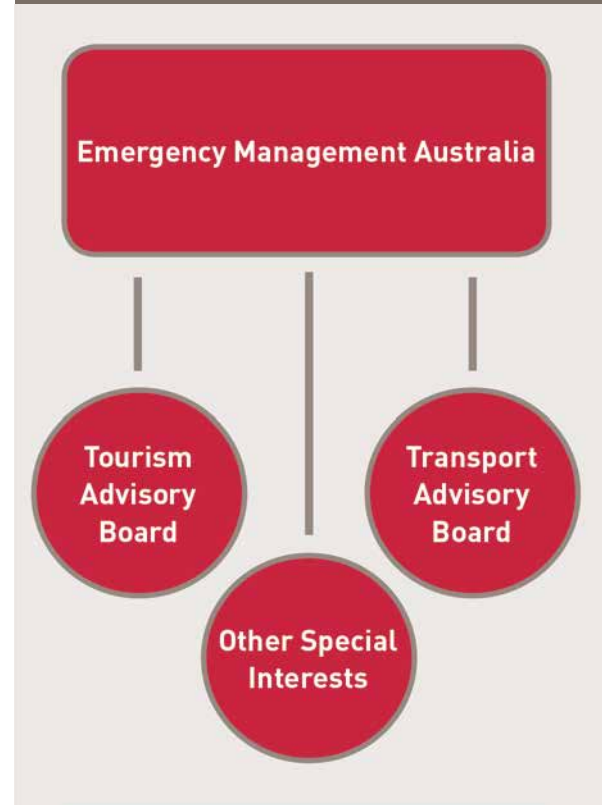
Capabilities the Tourism Industry requires from Emergency Management Agencies:

- policing and security
- medical and ambulance services
- rescue services
- fire fighting training and services
- flood mitigation services
- emergency evacuation services, procedures and escape corridors
- building and health regulation standards and governance.

Although both lists are indicative only, these examples demonstrate that the integration of tourism and emergency services is genuinely bilateral. The tourism industry and emergency service agencies have the capabilities to enter into a mutually productive alliance in many jurisdictions with a high density of tourists and a substantial tourism infrastructure. The overall planning of emergency services infrastructure and staffing should consider the number of tourists and the extent of tourism infrastructure as integral to the planning process.

One lesson been noted but not fully acted upon from recent tsunamis in the Indian and Pacific Oceans is the importance of building regulations on coastal tourism resorts and accommodation facilities to avoid building structures on locations vulnerable to sea inundation. Unless regulations are enacted and enforced as was the case in Phuket, after the 2004 tsunami, (Gurtner 2007) resort developers will frequently construct and site accommodation that is vulnerable. The tourism market demand for waterfront or on-sea accommodation is often more powerful than architectural common sense.

FIGURE 1. The Consultative Model Linking EMA with tourism and other special interest groups.



An important element in an integrative program between emergency service agencies and tourism is the capacity for emergency service agencies to train selected staff in tourism business the basic skills of emergency procedures relevant to their operational needs. This not only enhances the emergency response capability within a given jurisdiction but it means that tourists who may be affected by a natural or a human sourced crisis event are able to receive instant assistance prior to deployment of emergency services.

Successful and effective integration between emergency management and tourism could take one of two paths. One path may best be described as the consultative path. This would involve a tourism industry consultative board to emergency management agencies in a given jurisdiction. Applying this at the Australian national level, a tourism advisory board to Emergency Management Australia or the Australian Emergency Management Institute may include such organisations as The Tourism Department within DRET, Insurance Council of Australia, Tourism and Transport Forum, National Tourism Alliance, Australian Federation of Travel Agents, Australian Hotels Association, Australian Tourism Export Council (the association of inbound Australian tourism), key domestic airlines, Cruise Council of Australia and the Australian Society of Travel Writers.

Communication with and the education of tourism professionals and the public on emergency management matters is as important as practicing emergency management procedures. This group would meet at scheduled intervals to map out an overall linkage policy between the tourism industry and emergency services. In the event of a major crisis, especially one with a tourism dimension the members of the Advisory group may be co-opted to be involved in undertaking emergency management roles. In effect this would work in a similar fashion in an inbound dimension as the Smartraveller Advisory group does in conjunction with DFAT for outbound travel.

The primary advantage of this path is that a broad range of key tourism organisations would be sensitised to the role they need to play in working with emergency management services. It would present an opportunity for those associations and organisations involved in the consultative process to pass on information and approaches to emergency management to their constituents.

The main disadvantage of this path is that it does not represent true integration between tourism and emergency management. Its role is primarily advisory and it involves relatively little accountability on the part of the tourism industry and tourism authorities to consider emergency management as core role in tourism businesses. The consultative path would represent an intermediate stage towards integration rather than an end point.

The second path or option would involve tourism industry representatives playing an integral role in emergency management planning and response in all jurisdictions and as integral members of Emergency

Management Australia or the Australian Emergency Management Institute. In this case the number of representatives would be limited and ideally would need to be authorised by a broad cross section of the tourism and hospitality industry to effectively represent the combined interests and concerns of the tourism industry. The ongoing involvement would represent a more integrative approach than the consultative path. It would also mean that tourism industry resources and interests would always be considered as an integral part of emergency management planning and policy. In the event of international visitors being victims of any emergency situation the diplomatic legations require readily available information on the status of their nationals within a given jurisdiction.

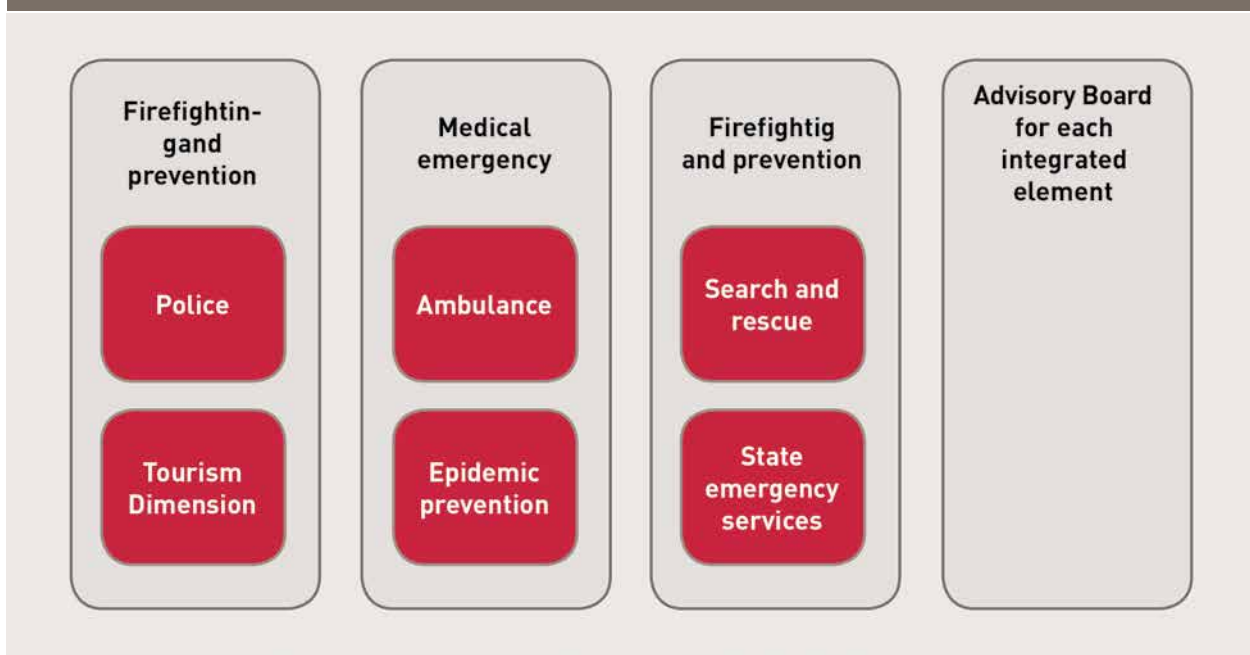
A key benefit of the fully integrative model is that tourism is factored in as an essential element of any emergency management structure and procedure and would be an integral part of the mobilisation strategy immediately in the event of an emergency situation.

The possible disadvantage of tourism representatives being fully integrated into the emergency management structure is the possibility that the tourism representative/s may not fully represent all sectors of the industry. In practice, the tourism industry is subject to atomisation in that airline people often feel tourism revolves around airlines and hoteliers tend to believe tourism revolves around accommodation.

Conclusion

The intent of this paper to advance the proposition that tourism is central to emergency management and planning, not a peripheral issue. Airports include key

FIGURE 2. Tourism within an Integrative Approach to Emergency Management.



emergency management resources and personnel on hand. A major airport authority would be perceived to be failing in its duty if it lacked fire fighting, security, ambulance and rescue resources either on-site or nearby. International gateway airports in their role as international border entry points incorporate a significant involvement of staff from many branches of government including immigration, customs, police, defence agencies and health authorities among others. The airline and airport industries represent an element of the tourism industry in which integrative practices between the industry and emergency services is standard practice. Organisers of mega events from major sporting events to events such as World Youth Day involve a high level of integration. Tourism academic Joan Henderson has pointed out that the tourism industry needs to build working crisis management partnerships from outside the industry to optimally manage the crises of the future.

Integration between tourism and emergency management should involve all sectors of tourism. Tourism and hospitality associations and businesses have resources which can make a valuable contribution to the planning and implementation of emergency management policy and procedures. The tourism dimension of crisis events and disasters includes national and international implications. Tourists (be they domestic or international) have a very high likelihood of being victims of emergency situations. Their lack of familiarity with a destination region, local customs, language or a lack of awareness of local security risks and threats often result in the tourists having a higher propensity to find themselves in dangerous situations than many local residents. Emergency services and agencies need to have a keen awareness of the tourism dimension of their role. Enhancing integration between the tourism industry and emergency agencies is mutually beneficial in terms of emergency readiness and response.

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Engagement or education?

By Neil Dufty, Principal of Molino Stewart Pty Ltd.

ABSTRACT

Most of Australia's emergency agencies have developed either engagement or education strategic plans to deliver community learning related to PPRR. This article identifies the engagement and education processes and activities commonly used in these plans and analyses their respective potential usefulness in broader disaster resilience learning in line with the National Strategy for Disaster Resilience. From this analysis, the integrated use of both engagement and education approaches by emergency agencies in their strategic plans is promoted. Social media are emerging tools that should be added to the engagement and education activities of emergency agencies. Agencies should also ensure in their strategic plans that all engagement and education programs and activities are adequately evaluated to enable continual improvement and effectiveness.

Introduction

The author recently researched the community learning delivery approaches of most of the State and Territory emergency management agencies in Australia. He found that emergency agencies tend to centre their community learning delivery activities either around an 'engagement' approach or an 'education' approach. Several of the agencies have developed and are implementing either community engagement or education strategic plans.

This article explores what is the best approach for emergency agencies: engagement or education? It also briefly examines the potential of new (social) media in supporting both approaches.

Learning for disaster resilience

There are many definitions of community disaster resilience in the literature. In this article, community disaster resilience is defined as the ability of a community to not only resist and recover from a disaster, but also to improve as a result of the changed realities that the disaster may cause.

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.

Learning—both within emergency agencies and with communities—has a critical role to play in building disaster resilience. This claim is supported by the focus on resilience-building in the national learning programs developed and implemented by the Australian Emergency Management Institute (AEMI). AEMI ‘continues to focus on improving knowledge and development in the emergency management sector. It supports broader national security capability development efforts to build community resilience to disaster’ (Attorney-General’s Department website: www.ag.gov.au).

Although usually attributed to changing community behaviours (e.g. for preparedness, response and recovery) in emergency management, learning can play a strong role across all seven disaster resilience-building actions in the Strategy.

A national approach to disaster resilience learning

As noted on page 3 of the Strategy, ‘emergency management in Australia is built on the concept of prevention, preparedness, response and recovery (PPRR)....preparing for each of these elements of emergency management helps build resilience.’ The contribution of emergency agencies to community disaster resilience learning through engagement and education therefore should be related to PPRR.

However, PPRR is only one element—albeit a critical one—in building disaster resilience. Other participants are required to build disaster resilient communities across Australia through a change to shared responsibility. ‘The fundamental change is that achieving increased disaster resilience is not solely the domain of emergency management agencies; rather, it is a share responsibility across the whole of society’ (COAG, 2011, p.3). There is therefore a need for disaster resilience learning to be delivered in a coordinated manner between State and Territory emergency agencies other relevant agencies, the Australian Government (e.g. through AEMI, Bureau of Meteorology), local councils, insurance industry, non-government organisations (e.g. Red Cross, volunteering organisations), and with the participation of community groups and individuals.

Engagement vs education

Is engagement or education the best way for emergency agencies to deliver their responsibilities in community disaster resilience learning?

Engagement involves processes that inform, consult, involve, partner with and empower communities (International Association for Public Participation, 2004). A major benefit of engagement is that it can include activities where communities participate in decision-making and share responsibility. Several studies during the past fifteen years have found the traditional approach to emergency management of ‘top-down’ provision of information to be relatively

ineffective. According to O’Neill (2004), this approach ‘was often one-off and one-way, and assumed that the audience was an undistinguishable group of individuals who had the same needs and values.’

The traditional approach is based on the premise that raising individual awareness will lead to preparedness and response behaviours. According to Paton et al. (2003), ‘It is frequently assumed that providing the public with information on hazards and their mitigation will encourage preparation. This assumption is unfounded.’ Several researchers, such as Boura (1998), have demonstrated that there is not a strong and causal link between receiving information and acting appropriately for hazards.

A more participatory approach to the delivery of community learning by emergency agencies is now being promoted. According to Paton (2006), ‘Participation in identifying shared problems and collaborating with others to develop and implement solutions to resolve them engenders the development of competencies (e.g. self-efficacy, action coping, community competence) that enhance community resilience to adversity.’

Education in this article involves planned activities that lead to prescribed learning outcomes. Based on education theory (e.g. Bloom’s Taxonomy of Learning Domains) and recent research into emergency management education (e.g. Dufty, 2008), learning outcomes relevant to disaster resilience-building are generally related to awareness-raising, skills development, behaviour change, attitudinal change and values clarification.

A major benefit of education is that it can be specifically targeted to measurable learning outcomes. For example, education programs can be designed to raise community awareness of disaster risk and for appropriate disaster response behaviours e.g. through evacuation drills.

Table 1 provides an insight into the similarities and differences between engagement and education processes and activities as used by emergency agencies.

Which approach for emergency agencies?

As shown in Table 1, there is a strong nexus between the engagement process of informing and the education process of awareness-raising (sometimes called ‘top-down’ delivery). Generally, they involve similar activities for emergency agencies. However, due to differences in their intent, the other engagement and education processes can have quite different activities.

Furthermore, the learning impacts in communities from engagement and education can be quite different. Generally, engagement by itself will provide unplanned learning for disaster resilience; education will provide planned learning for disaster resilience. This is shown in Figure 1.

Table 1. Some differences and similarities between community engagement and education approaches that could be used by emergency management agencies.

ENGAGEMENT					
Processes	Informing	Consulting	Involving	Collaborating	Empowering
Example activities	Fact sheets, websites, displays, presentations	Focus groups, surveys, public meetings	Workshops	Committees, citizen advisory panels	Citizen juries, delegated decisions

EDUCATION					
Processes	Awareness-raising	Developing skills	Behaviour change	Attitudinal change	Values clarification
Example activities	Fact sheets, websites, displays, presentations	Training, simulations	Emergency plans, emergency drills	Opinion pieces, debates, role plays	Visioning, values surveys

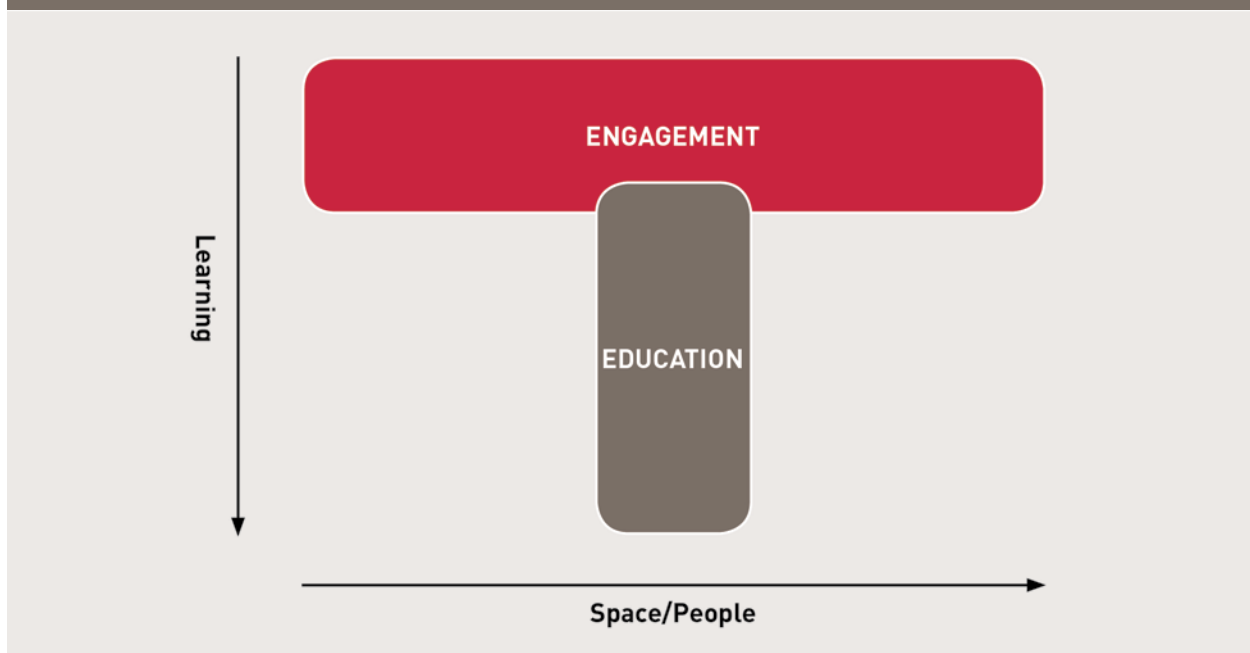
Figure 1 also highlights the limitations of both engagement and education in learning for disaster resilience. As shown, engagement by itself enables interactions across communities ('breadth' of delivery) but only provides a relatively 'shallow' level of unplanned learning. On the other hand, education provides 'depth' in community learning related to specific learning outcomes. However, due sometimes to resourcing issues (e.g. many education programs are financed by grants) and the need for expert educators to design specific programs (e.g. for schools, vulnerable groups, businesses), it is generally difficult to extend effective education programs across broad areas.

As shown by recent studies (e.g. Elsworth et al., 2009), it is when engagement and education processes and

activities are combined there is potency in impact. For example, a focus group or survey may identify and lead to a particular education activity such as an emergency drill to help build resilience. Also, engagement and education activities can be coupled together e.g. a community event to increase preparedness levels could involve elements of engagement (e.g. talking with people) supported by an education activity (e.g. how to prepare a home emergency plan).

Based on the above analysis it would be prudent for emergency agencies to include engagement and education processes in their delivery of community learning to gain 'breadth' and 'depth' of learning across communities. The impact of this delivery should be heightened through the coupling of both approaches.

FIGURE 1. A theoretical representation showing how engagement provides 'breadth' and education provides 'depth' to community disaster resilience learning.



After reviewing several engagement and education strategies prepared by Australian emergency agencies, it appears most utilise processes from both approaches, including in conjunction with each other. However, it could be worthwhile for agencies to consider this analysis (e.g. in Table 1) as they evaluate their community learning delivery strategies to enable improved precision in choosing appropriate and potentially effective processes from both approaches. There may also be value in using the title 'engagement and education strategic plan' in recognition of the use of both approaches.

Social media

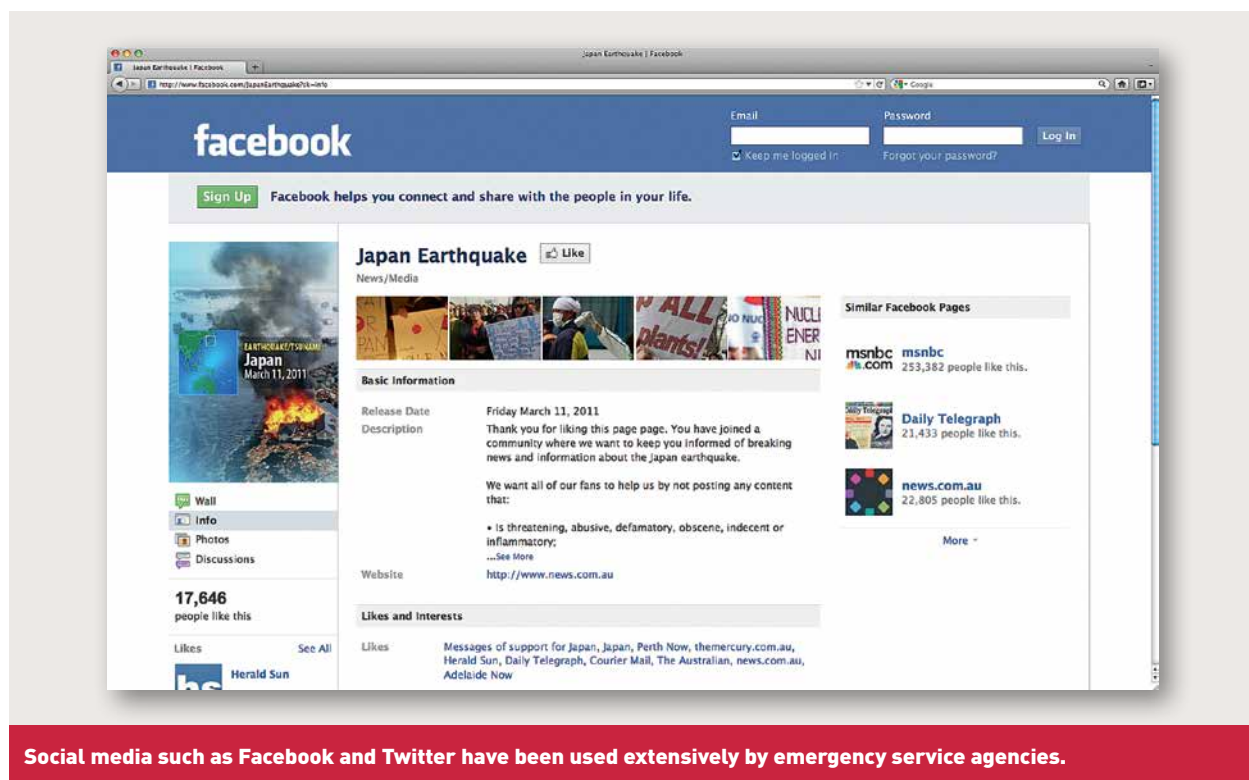
Social media such as Facebook and Twitter have been used extensively in the past few years by emergency agencies to engage with and educate users, particularly in relation to disasters such as the 2011 earthquakes in Japan and Christchurch, the 2010 Haiti earthquake and the 2011 Queensland and Victorian floods. For example, the Queensland Police Service (QPS) used Facebook and Twitter to help issue warnings, send out response messages and support flood-impacted residents through dialogue at the height of the 2011 Queensland flood disaster. To give some idea of the impact of this, there were apparently over 14,000 tweets mentioning 'QPSMedia' during the floods and Twitter followers increased from 2,000 to almost 11,000 followers in 25 days (similar striking increases occurred for the QPS Facebook site). Interestingly, a large proportion of the Facebook and Twitter users were under 50 years of age and about 75 percent were female.

Social media appear to be tools that can deliver all of the ten engagement and education processes listed in Table 1. 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. Using social media emergency agencies can inform, consult, involve, collaborate with and empower users. All five education processes in Table 1 can also occur through ongoing dialogue. Furthermore, social media enable a seamless and organic linkage between engagement and education processes as promoted above.

Several Australian emergency agencies including the QPS, the NSW Rural Fire Service and the Victorian Country Fire Authority are using social media for engagement and education. This trend should be encouraged with social media added to the traditional engagement and education activities used by emergency agencies, some of which are listed in Table 1.

Evaluation

A major weakness of engagement and education activities and programs delivered by Australian emergency agencies is lack of evaluation. The National Review of Community Education, Awareness and Engagement (EAE) Programs for Natural Hazards conducted by RMIT University for the Australian Emergency Management Committee (Elsworth et. al., 2009) found 'close to 300 separate programs and activities for natural hazard community education, awareness and engagement. Evaluation studies of 14 of these initiatives were located and reviewed in detail'.



The EAE Review report concluded that 'systematic monitoring and evaluation of community education, awareness and engagement programs for natural hazards is the exception rather than the rule. Some agencies have good systems for monitoring activities and the dissemination of information; however research into outcomes in terms of effectiveness of the information in changing attitudes, patterns of thinking, and behaviours is fairly scarce'.

Emergency agencies should ensure that evaluation is built into all engagement and education programs and activities in their strategic plans.

Conclusion

Most emergency agencies in Australia have an engagement or education strategic plan to deliver community learning. These agencies have an important role to play in community learning around PPRR as part of broader disaster resilience learning guided by the National Strategy for Disaster Resilience.

It is recommended that emergency agencies:

- ensure that engagement and education processes are linked where possible in strategic plans to enable 'breadth' and 'depth' of learning in communities
- position their engagement and education strategic plans in relation to the National Strategy for Disaster Resilience
- encourage shared responsibility for community learning e.g. through the development of local engagement/education plans involving local residents and businesses
- use social media as a disaster resilience learning tool in addition to traditional engagement and education activities
- evaluate all engagement and education strategies, programs and activities.

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About the author

Neil Dufty is a Principal of Molino Stewart Pty Ltd. He has extensive experience in the development and implementation of community engagement and education strategic plans across Australia. During the past eight years he has reviewed community engagement and education strategic plans, programs and activities for several emergency agencies including VICSES and NSW SES. He can be contacted at ndufty@molinostewart.com.au



Canadian wildfire communication strategies

By Amy Christianson, Tara McGee and Cindy Jardine of the University of Alberta.

ABSTRACT

In order to try to mitigate wildfire risks in Alberta, Canada, a taskforce of government, industry, and business stakeholders in the province created the FireSmart manual, which provides recommendations to residents and municipalities about how to reduce wildfire risks. The provincial government and local governments have established FireSmart related programs. These FireSmart programs include both social marketing and risk communication approaches. This paper reviews existing studies completed in Alberta to assess the effectiveness of these two approaches. Strengths and weaknesses of the two approaches are identified and discussed.

Introduction

Half of the province of Alberta in western Canada (Figure 1) is covered by forests prone to wildfire, and every few years wildfires threaten communities. Four factors are increasing the risk of wildland-urban interface (WUI)¹ fires in Alberta: (1) population growth is leading to increasing development in the WUI (Partners in Protection, 2007; McGee et al., 2005b), (2) fire suppression in the province has created an unnatural build-up of fuels that contribute to extreme fire behaviour (Partners in Protection, 2007; Pyne, 2007; Peter et al., 2006; Filmon, 2004), (3) climate change is resulting in an increase in weather conditions that are conducive to fire (Partners in Protection, 2007; Flannigan et al., 2005), and (4) the presence of mountain pine beetle in the province is resulting in increased fuels (Partners in Protection, 2007; Canadian Forest Service, 2005).

However, the risk of wildfire in Alberta has been found to rank low to moderate in the eyes of the public (Faulkner et al., 2009). Shindler (2007) found that in

the United States (U.S.), low risk perceptions result from decades of fire suppression, which creates a feeling that all wildfires can be controlled through fire-fighting efforts. In Canada and the U.S., there is generally enough warning for evacuation in order to avoid fatalities, which Shindler (2007) found may reduce risk perceptions. Living in the WUI is often a choice made by residents, so the risks are voluntary, which are generally perceived to be more acceptable than risks imposed involuntarily (Daniel, 2007b). There are numerous other factors that influence wildfire risk perceptions, such as geography, demographics, knowledge, values, emotions, context, trust, and personal experience (for examples, see: McFarlane et al., 2008; Daniel, 2007b; McCaffrey, 2007; Shindler, 2007; Bushnell et al., 2006; Collins, 2005; McGee et al., 2005b; Nelson et al., 2005; Monroe and Nelson, 2004; Nelson et al., 2004; McGee and Russell, 2003; Monroe et al., 2003; Beringer, 2000; Fried et al., 1999; Gardner et al., 1987).

Various programs have been developed internationally to encourage residents to mitigate² risk from wildfires, including those under the FireSmart banner in Alberta. Communication strategies for wildfire mitigation programs often focus on conveying that wildfire risk is high, that the resident is vulnerable to these fires, and that there are steps that one can take to reduce the risk. These communications generally involve the use of the media (newspaper, magazines, or television) or educational materials such as brochures and manuals (McCaffrey, 2004). This one-way communication approach reflects a belief amongst risk managers that lack of awareness, knowledge, and incentives are barriers to mitigation by residents (Arvai et al., 2007; Cohn et al., 2007; Shindler, 2007; Monroe and Nelson, 2004). However, there is considerable evidence that increased knowledge of wildfire risk does not automatically cause homeowners to take action to mitigate the risk (Flanagan, 2008; Daniel, 2007b; Martin et al., 2007; Steelman, 2007; Brenket-Smith et al., 2006; McGee et al., 2005a; Monroe and Nelson, 2004). Therefore, there is a need to examine the effectiveness of current programs that aim to communicate wildfire mitigation to residents.

1. The wildland-urban interface (WUI) refers to "an area where various structures (most notably private homes) and other human developments meet or are intermingled with forest and other vegetative fuel types" (Chisholm Fire Review Committee, 2001).

2. Mitigation is defined as any action—collective or individual, private or public—taken to reduce the potential harm posed by an environmental hazard (Bogard, 1988)

FIGURE 1. Location of Alberta, Canada.

This paper will examine wildfire mitigation communication strategies in Alberta. Specifically, this paper will review the results of studies already completed in Alberta as evidence of whether or not wildfire mitigation communication strategies are increasing residents' awareness of wildfire mitigation programs and the adoption of mitigation measures.

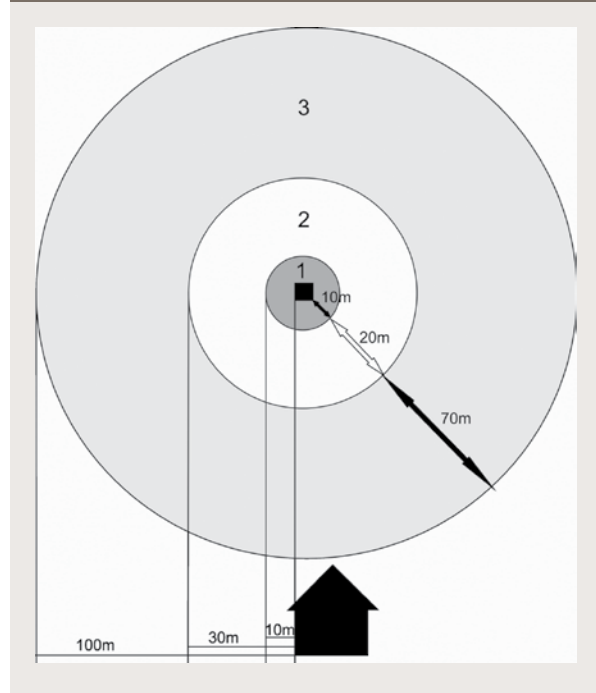
Alberta wildfire mitigation programs

In Alberta, there are various strategies in place to try to reduce WUI fire risk. These include: (1) the FireSmart manual and brochure, developed by Partners in Protection, and (2) Alberta Sustainable Resource Development (SRD) and Municipal FireSmart programs.

The FireSmart manual and brochure

Partners in Protection was formed in Alberta in 1990 when a taskforce representing various provincial and municipal governments and associations came together to address concerns regarding wildfires in the WUI (Partners in Protection, 2007). A major achievement of this organisation was the release of the manual "FireSmart-Protecting Your Community from Wildfire" in 1999, and a later homeowner brochure "FireSmart Homeowner's Manual" (Partners in Protection, 2003a). Recommendations given to homeowners to reduce wildfire risk are based on fire science research that has shown that implementing various measures on one's property can reduce wildfire risks (Cohen and Stratton, 2003; Cohen, 2001; Cohen, 2000). More than 22,000 FireSmart brochures and multi-media CD-ROMs have been distributed nationally (Partners in Protection, 2007).

The FireSmart Homeowner's Manual (herein referred to as the FireSmart brochure) (Partners in Protection, 2003b) presents recommendations that residents can undertake to reduce wildfire risk to their property. This brochure first introduces the problem of wildfires in rural settings, and then presents the three priority zones for wildfire mitigation activities (Figure 2). In Priority Zone 1,

FIGURE 2. FireSmart Priority Zones (adapted from Partners in Protection, 2003a).

residents are advised to remove flammable vegetation (such as pine, spruce, and juniper), deadfall, or woodpiles from this area and to keep the grass mowed and watered. In Priority Zone 2, residents are advised to remove highly flammable trees and debris that would support a crowning fire and make sure that remaining trees do not touch. In Priority Zone 3, residents are advised to thin or remove shrubs and trees and retain fire-resistant trees. The brochure also recommends the use of fire resistant building materials, such as roofing material, exterior walls, soffits, eaves, doors, and windows. The brochure also describes how a resident can assess the wildfire risk of their home and property. Further information can be found in the FireSmart manual "FireSmart-Protecting Your Community from Wildfire" (Partners in Protection, 2003a). Although the central focus of the FireSmart brochure is mitigation activities for homeowners, the FireSmart manual also incorporates recommendations for communities, with a focus on vegetation management including fire breaks.

Although the FireSmart manual and brochure are created and designed in Alberta, they are being used by provincial and municipal governments across Canada (for examples, see: City of Kelowna, 2009; Department of Community Services, 2009; Department of Environment, 2009; Department of Natural Resources, 2009; Forest Service British Columbia, 2009; Ministry of Natural Resources, 2009; Town of Swan Hills, 2007). This widespread use of the manual and brochure indicates that wildfire managers across Canada find this communication material to be useful.

Figure 3. 310-FIRE campaign logo from SRD (Alberta Sustainable Resource Development, 2008b).



FireSmart programs

The Alberta provincial department of Sustainable Resource Development (SRD) is responsible for the health, protection, management, and development of Alberta's forests, wildlife, and public lands. SRD has a Provincial FireSmart Unit that is located in Edmonton, Alberta. As well, in each SRD region of the province, there are forest prevention officers who are in charge of wildfire mitigation for their region. SRD has several wildfire mitigation strategies that deal with homeowner and community wildfire mitigation, although all involve FireSmart activities. SRD's public education program includes the distribution of FireSmart brochures to municipalities and residents in Alberta. In terms of community mitigation, SRD encourages each municipality at risk of wildfire to complete a Community FireSmart Plan consisting of a FireSmart WUI Plan³ and a FireSmart Community Zone Plan⁴ (Flanagan, 2008; Alberta Sustainable Resource Development, 2005). SRD also offers the FireSmart Grant Program which provides grants for municipalities, municipal districts and counties, Métis Settlements, and registered non-profit societies to develop their own wildfire mitigation strategies and money, guidance, and technical support to complete these activities (Gossell, 2008). The goals of this grant program (Alberta Sustainable Resource Development, 2009) are:

- to support community involvement and ownership of the WUI issues within municipal jurisdictions; and
- to provide financial support to those communities that wish to reduce the wildfire risk.

These funds have led to the development of 26 FireSmart WUI Projects and 11 FireSmart Community Zone Plans in Alberta (Alberta Sustainable Resource Development, 2008c). The main activity funded is vegetation management.

SRD also organises a FireSmart Community Series, which is an annual conference that brings together SRD staff, wildfire experts, municipal officials, with the aim of encouraging municipal governments to adopt FireSmart principles⁵ (Alberta Sustainable Resource Development, 2007). Roundtables are used at the conference so that participants can engage in dialogue with wildfire experts, SRD staff and other municipal government representatives.

Many local governments in Alberta and elsewhere in Canada use communication materials developed by the provincial government in their communities. For example, Harris (2008) found that many municipalities in Alberta distribute the FireSmart brochure to homeowners. However some municipalities are developing their own communications programs and materials.

Communication

The following section discusses two risk communication approaches, social marketing and risk communication, which are used to encourage homeowners to implement recommended mitigation measures.

Social marketing

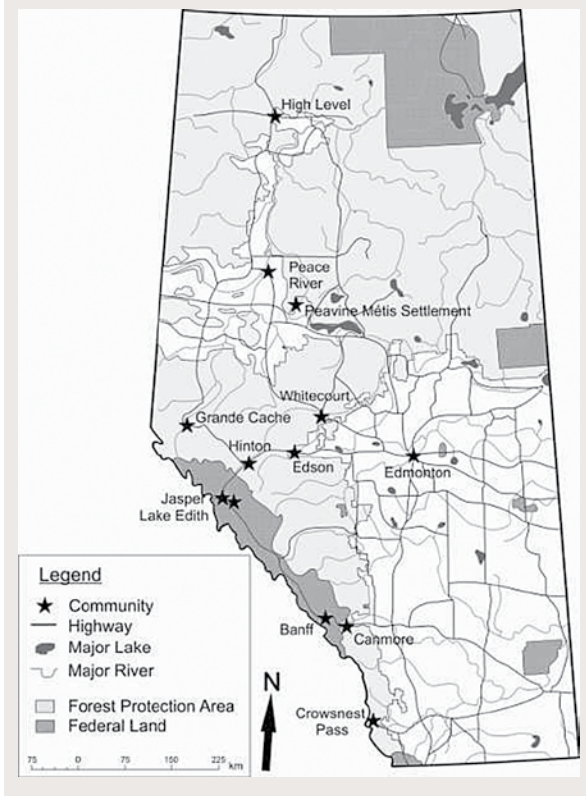
A commonly used communication approach by many government departments for causing social change is social marketing (Faulkner and Ball, 2007; Evans, 2006; Hastings and McDermott, 2006; Smith, 2006; McKenzie-Mohr, 2000; McKenzie-Mohr and Smith, 1999; Bloom and Novelli, 1981; Kotler and Zaltman, 1971). Social marketing is defined as "the design, implementation, and control of programs calculated to influence the acceptability of social ideas and involving considerations

3. A FireSmart WUI Plan incorporates all the area in a community within the WUI (Alberta Sustainable Resource Development, 2005) and focuses on wildfire mitigation measures such as fuel management, education, legislation, development and planning (Flanagan, 2008).

4. A FireSmart Community Zone Plan incorporates wildfire mitigation measures in a variable 10 kilometer radius around the WUI zone (Flanagan, 2008; Alberta Sustainable Resource Development, 2005).

5. This conference was cancelled for 2010 due to budgetary constraints.

Figure 4. Location of Wildfire mitigation case study communities.



of product planning, pricing, communication, distribution, and marketing research" (Kotler and Zaltman, 1971, p.5). Generally, social marketing encourages a change away from a behaviour that may be harmful to the person or society and/or the adoption of a new behaviour that will reduce risk (O'Neill, 2004). An example of a social marketing program is the "Smokey the Bear" campaign conducted by the Advertising Council of America (Kotler and Zaltman, 1971), which communicates messages about wildfire prevention and suppression using imagery of the devastation caused by wildfires. This social marketing program has led to the almost worldwide recognition of the slogan 'Only you can prevent forest fires' and the Smokey the Bear 'brand' which has led to successful wildfire suppression programs in the USA for the last 60 years (Donovan and Brown, 2007).

However, social marketing has been criticised as being manipulative (Grier and Bryant, 2005; Morgan et al., 1992; Kotler and Zaltman, 1971) and using techniques of persuasion rather than informed decision-making (Evans, 2006; McKenzie-Mohr and Smith, 1999; Morgan et al., 1992). Smith (2006) also notes that unsuccessful programs of social marketing are as well documented as the successful programs. Grier and Bryant (2005) argue that evaluation of social marketing programs tend to be poor or not conducted at all. Nonetheless, social marketing is still identified as an appropriate communication tool to promote behaviour change (Gordon et al., 2006). Social marketing can be an effective way to obtain name recognition for the programs in which they are used. However it is unclear whether

social marketing is an effective communication tool for promoting behaviour change when the activity needs to be repeated or where the behaviour change required is extremely complex (Bloom and Novelli, 1981), such as in wildfire mitigation.

Risk communication

It is widely recognised that everyone views risk differently because they process risk information based on their existing beliefs and values (Slovic et al., 2004; Slovic, 1999; Fischhoff, 1995; Morgan et al., 1992; Slovic, 1987). Therefore, there arose a need to tailor communication strategies accordingly. This led to the development of risk communication. Risk communication is defined as "an interactive process of exchange of information among individuals, groups, and institution...(that) raises the level of understanding of relevant issues or actions for those involved and satisfies them that they are adequately informed within the limits of available knowledge" (U.S. National Research Council, 1989, p.21 & 26). Risk communication involves shared decision making and interactive discussions about risk-management strategies (Maibach and Holtgrave, 1995). This is considered to be most effective as a two-way dialogue between regulatory stakeholders/scientific experts and the public, with the primary purpose of informing the public so they can make good decisions about risk (Jardine, 2008b; Morgan and Lave, 1990). Increasing dialogue between stakeholders by increasing stakeholder involvement in the entire risk analysis process has been receiving increasing attention in the risk communication field. One goal of risk communication is to move away from one- and two-way communication to two-way dialogue, where all the stakeholders involved make decisions together about how to deal with the risk (Jardine, 2008c; Petts, 2004). Two-way dialogue would allow the public to be present at every stage of the wildfire risk analysis process, from risk identification to implementation to evaluation, and to engage in a more participatory process where their views can be incorporated into risk management strategies (Jardine, 2008c; Petts, 2004; McComas, 2003; Beierle, 2002; Chess et al., 1995). This has been found to increase the acceptability and adoption of the mutually agreed-upon risk management options (Jardine, 2008a).

Many factors need to be taken into account for effective risk communication to occur, including good science, economic, social, cultural, ethical, political, and legal considerations (Omenn et al., 1997). Risk communicators use literature from behavioral decision-making to understand risk perception and how people make choices about risk (Maibach and Holtgrave, 1995). However, risk communication is a complex process that is issue dependent, and limited progress has been made in producing more effective risk communication programs that meet the needs of both the risk communicator and the recipient (Faulkner and Ball, 2007).

Table 1. 310-FIRE statistics from 1996 to 2008 (Drummond, 2009; Alberta Sustainable Resource Development, 2008a).

Fire Year	Number of Calls	Number of Calls resulting in the reporting of a wildfire	Number of Wildfires	Area Burned (Hectares)
1996	52	9		
1997	90	16		
1998	318	64	1698	726,968.07
1999	414	81	1354	120,504.77
2000	298	51	783	14,735.90
2001	578	102	989	154,124.01
2002	278	85	1447	496,514.88
2003	351	121	1188	74,874.27 (Social Marketing campaign begins)
2004	473	150	1612	236,089.77
2005	485	129	1448	60,763.09
2006	1138	261	1954	118,785.90
2007	743	180	1349	103,668.55
2008	917	218		

Wildfire mitigation communication in Alberta

This section discusses the communication strategies surrounding the wildfire mitigation programs in Alberta.

Social marketing

When providing information about wildfire mitigation to municipalities and residents, SRD uses a community-based (C-B) social marketing program (Partners in Protection, 2008). C-B social marketing focuses on: (1) identifying barriers and benefits to behaviour change, (2) identifying behaviour change tools, (3) conducting a pilot study, and (4) evaluating the program after it has been implemented and making changes if necessary (McKenzie-Mohr and Smith, 1999). C-B social marketing is different from social marketing because of the steps listed above, but also because it uses psychological knowledge regarding barriers to behaviour change to design a strategy for communication. C-B social marketing is increasingly being used in Canada, as compared to information-intensive campaigns (McKenzie-Mohr, 2000). C-B social marketing requires the breakdown of the information recipients into segments, with communication tailored for each segment (Evans, 2006; Smith, 2006; McKenzie-Mohr and Smith, 1999; Bloom and Novelli, 1981). The FireSmart brochures prepared by SRD do not tailor recommendations to segments of the intended audiences. However, C-B social marketing also requires evaluation of the project after implementation (McKenzie-Mohr, 2000; McKenzie-Mohr and Smith, 1999; Bloom and Novelli, 1981). SRD is currently initiating a community-based social

marketing pilot project in the Foothills region with the goal of tailoring wildfire mitigation programs to target audiences. They will be evaluating this project using brief surveys (Driscoll, 2010). There are also plans for surveys and focus groups in other regions to determine whether or not behaviour change is occurring as a result of SRD's social marketing program (Driscoll, 2010). SRD currently tracks the number of pamphlets they distribute, however they acknowledge this is not indicative of the success of the program (Driscoll, 2010).

One social marketing technique being used by SRD is dramatic imagery. A video about FireSmart (Alberta Sustainable Resource Development, 2001) used to promote the FireSmart manual and brochure contains imagery showing the destruction caused by wildfire and the fear of residents being evacuated by a wildfire. The narrator of the video refers to wildfire as 'wild, unpredictable, and dangerous' (Alberta Sustainable Resource Development, 2001). While this type of fear-inducing communication can increase the perception of the magnitude of the risk and knowledge of wildfires, it may backfire because people may think the risk is so great they cannot do anything to mitigate it (Martin et al., 2007). Generally, fear-inducing communication increases enthusiasm in the initial stages of communication, but is likely to sabotage the success of the program in the long term (Daniel, 2007a). Also, the public may become more hostile to all types of fire (Shindler, 2007; O'Neill, 2004), including prescribed burning, which can reduce wildfire risk to communities. On the other hand, portraying fire as a natural and beneficial force may cause people to view wildfire as a low risk that they do not need to prepare for (Daniel, 2007b).

6. Research with Peavine Métis Settlement is currently ongoing.

Another common social marketing technique, the use of branding to increase recognition, is being used for FireSmart. In Alberta, FireSmart can be found on merchandise including water bottles, magnets, and pens. The preference of using social marketing for the communication of FireSmart is not surprising due to the continued effectiveness of another social marketing campaign in place by Alberta Sustainable Resource Development, the 310-FIRE campaign, which began in May 2003. This goal of this campaign is to increase recognition of the phone number 310-FIRE, which is the emergency wildfire reporting line in Alberta. The communication around 310-FIRE campaign has been one-way, involving poster campaigns, newspaper ads, radio ads, the placement of the number on the back of most Sustainable Resource Development vehicles, and merchandise such as pens, fishing hooks, and shirts (Figure 3). Numbers of wildfires called in on this line have been increasing each year since the program was implemented (Table 1).

However, the 310-FIRE campaign differs from the wildfire mitigation programs, as the 310-FIRE campaign only involves memorising a number, whereas the wildfire mitigation programs, such as FireSmart, call for a behaviour change that involves implementing numerous measures to reduce wildfire risk. Social marketing is also found to be limited in programs where the recommended behaviors need to be repeated (Bloom and Novelli, 1981). Many of the wildfire mitigation activities must be repeated, such as mowing lawns, removing deadfall near the home, thinning vegetation, removing needs, leaves, and overhanging branches from the roof and gutters, and removing debris under balcony and porches.

The FireSmart manual (Partners in Protection, 2003a) includes recommendations for the effective communication of FireSmart principles. The manual describes the main elements of a communication plan, such as identifying the target audience, purpose statement, desired outcomes, strategy, message, timing, and evaluation, which are all consistent with a social marketing strategy. The FireSmart manual provides recommended messages for various audiences such as wildland fire personnel, residents, elected officials, businesses, insurance industry, and land-use planners. This section of the FireSmart manual does not include any recommendations for involving homeowners in the development and implementation of a wildfire risk reduction plan.

SRD uses various strategies to try to encourage municipalities to implement FireSmart. Recent initiatives introduced to improve two-way dialogue between SRD and municipal governments have included the FireSmart Community Grant Program and the FireSmart Community Series. Once a municipality has decided to try to reduce wildfire risk, various techniques are used by municipal governments in Alberta to communicate FireSmart principles to the public. Information provision strategies have included brochures, newsletters, newspaper advertisements,

radio announcements, website notices, television advertisements, and displays (Harris, 2008). More consultative communication strategies have been identified as open houses, exhibits, municipal activities, door-to-door visits, workshops, school presentations, and practice exercises (Harris, 2008).

Risk communication

Some wildfire mitigation programs in Alberta use a risk communication approach. These programs are usually initiated by municipalities and involve residents in each step of the wildfire risk analysis process, instead of following a generic FireSmart program. An example of this is the wildfire risk reduction program at Peavine Métis Settlement. This program incorporates residential values into the programs, along with ideas from the FireSmart manual and brochure. The Council and employees of Peavine Métis Settlement initiate these programs, such as the Elder yard beautification program, where Métis Settlement employees assist Elders in cleaning up their yards and surrounding forest around their homes, reducing wildfire risk⁷. Another example of using risk communication to reduce wildfire risk is at Lake Edith in Jasper National Park (McFarlane et al., 2007b), summarised in the following section.

Case studies

This section summarises the results of ten studies on wildfire risk reduction that have been completed in thirteen communities in Alberta (Figure 4). The residential mitigation programs, the community level wildfire management program, and communication strategies used, are described for each study (Table 2).

In eight of the study locations, the FireSmart brochure was being distributed to residents either door-to-door or at community events and information sessions. Home risk assessments were conducted in six of the cases. In two cases (Lake Edith and Peavine Métis Settlement) residents were involved in developing the community wildfire management plans therefore they incorporated elements of risk communication.

In most of the communities, residents were found to be knowledgeable about wildfire and fire behavior (Faulkner et al., 2009; Flanagan, 2008; McFarlane et al., 2008; McGee and McFarlane, 2007b; McGee and McFarlane, 2007a). In six of these communities, Flanagan (2008) found that between 48% and 80% of participants had heard of FireSmart. She found FireSmart awareness was not significantly related with intentions to adopt or the adoption of mitigation activities, which may mean that respondents indicated they had heard of FireSmart but did not know what the program entailed. Other studies also found that the majority of participants said they had heard of FireSmart, but felt they were ill-informed about the program (McFarlane et al., 2007b; McGee and McFarlane, 2007b; McGee and McFarlane, 2007a). Therefore, while the social marketing

7. A work bee is when a group of people come together and volunteer their time to achieve a common goal. In terms of wildfire risk reduction, activities at a work bee usually consist of vegetation thinning and fuel modification.

Table 2. Summary of case study communities, wildlife mitigation programs, and communication strategies.

Community	Related Studies	Community Wildfire Management and Residential Mitigation Programs	Communication with Residents	Social Marketing	Risk Comm.	
Provincial (SRD)	Canmore	(McFarlane et al., 2008; McFarlane et al., 2007a)	<ul style="list-style-type: none"> • Canmore / Bow Corridor Community Zone Plan • Bow Corridor WUI Plan • Residential FireSmart 	<ul style="list-style-type: none"> • FireSmart brochures • Door-to door visits 	Yes	No
	Crowsnest Pass	(McGee et al., in press; Kulig et al., 2007; McGee et al., 2005a; McGee et al., 2005b)	<ul style="list-style-type: none"> • Emergency planning • Cross training • Residential FireSmart 	<ul style="list-style-type: none"> • FireSmart brochures distributed via mail, tradeshows, public events, and open houses • Home risk assessments 	Yes	No
	Edmonton	(McGee, 2005)	<ul style="list-style-type: none"> • Residential FireSmart 	<ul style="list-style-type: none"> • FireSmart brochures 	Yes	No
	Edson	(Flanagan, 2008)	<ul style="list-style-type: none"> • Town of Edson- WUI Plan 	<ul style="list-style-type: none"> • FireSmart brochures provided at community events and information sessions • Information Sessions about community wildfire management plans 	Yes	No
	Grande Cache	(Flanagan, 2008)	<ul style="list-style-type: none"> • Town of Grande Cache FireSmart Community Protection Plan • Town of Grande Cache-WUI Plan • Residential FireSmart 	<ul style="list-style-type: none"> • FireSmart brochures provided at community events and information sessions • Information Sessions about community wildfire management plans 	Yes	No
	High Level	(Flanagan, 2008)	<ul style="list-style-type: none"> • Residential FireSmart • High Level WUI Plan in development 	<ul style="list-style-type: none"> • FireSmart brochures 	Yes	No
	Hinton	(Flanagan, 2008; McFarlane et al., 2007b)	<ul style="list-style-type: none"> • Yellowhead Corridor and Hinton South Boundary FireSmart Community Protection Plan • Town of Hinton-Yellowhead County-WUI Plan • Residential FireSmart 	<ul style="list-style-type: none"> • FireSmart brochures provided at community events and information sessions • Information Sessions about community wildfire management plans • FireSmart Home and Site Hazard Assessments 	Yes	No
	Peace River	(Flanagan, 2008; McGee and McFarlane, 2007a)	<ul style="list-style-type: none"> • Residential FireSmart 	<ul style="list-style-type: none"> • FireSmart brochures 	Yes	No
	Peavine Métis Settlement	Current research	<ul style="list-style-type: none"> • Peavine Iskotew Plan 	<ul style="list-style-type: none"> • Door-to-door visits 	No	Yes
	Whitecourt	(Flanagan, 2008; McGee and McFarlane, 2007b)	<ul style="list-style-type: none"> • Town of Whitecourt Community Plan • Residential FireSmart 	<ul style="list-style-type: none"> • FireSmart brochures 	Yes	No

	Community	Related Studies	Community Wildfire Management and Residential Mitigation Programs	Communication with Residents	Social Marketing	Risk Comm.
Federal (Parks Canada)	Banff	(McFarlane et al., 2008; McFarlane et al., 2007a)	<ul style="list-style-type: none"> • Bow Corridor WUI Plan • Numerous prescribed burning and vegetation management projects • Residential FireSmart 	<ul style="list-style-type: none"> • FireSmart brochures • Door-to-door visits by fire department to explain thinning in community 	Yes	No
	Jasper	(McFarlane et al., 2007b)	<ul style="list-style-type: none"> • FireSmart-ForestWise (FsFw) Community Protection and Forest Restoration Project 	<ul style="list-style-type: none"> • FireSmart brochures 	Yes	No
	Lake Edith	(McFarlane et al., 2007b)	<ul style="list-style-type: none"> • FireSmart-ForestWise (FsFw) Community Protection and Forest Restoration Project 	<ul style="list-style-type: none"> • Door-to-Door FireSmart brochure distribution • Presentations at annual meetings • Work bees • Home hazard assessments and removal of problem trees • Project updates at community meetings 	No	Yes

communication strategy for FireSmart appears to be working in increasing name recognition, it is not clear if the FireSmart materials are contributing to residents' knowledge about wildfire, fire behaviour, and mitigation activities.

These studies indicate that some FireSmart mitigation activities are popular among most participants, such as removing dead branches and underbrush, mowing lawns, and keeping lawns clean. It was concluded in six of the studies that participants are completing these activities not to reduce wildfire risk, but as normal property maintenance (McGee et al., in press; Faulkner et al., 2009; McFarlane et al., 2007a; McGee and McFarlane, 2007b; McGee and McFarlane, 2007a; McGee, 2005). There are also unpopular FireSmart mitigation activities. Flanagan (2008) found that landscaping with fire resistant materials and vegetation was unpopular amongst participants in her study. Some participants were also unwilling to make structural changes to their house, such as replacing the siding or roofing, for financial reasons (Flanagan, 2008; McFarlane et al., 2007a; McGee et al., 2005a). Removing shrubs, small trees, and deadfall within 10 m of house, and landscaping with fire-resistant materials and vegetation, was also unpopular for aesthetic or lifestyle reasons (McGee et al., in press; Flanagan, 2008; McFarlane et al., 2008; McFarlane et al., 2007b; McFarlane et al., 2007a; McGee, 2005; McGee et al., 2005b; McGee et al., 2005c).

As part of the FireSmart-ForestWise program at Lake Edith in Jasper National Park, cottage owners were invited by Parks Canada to have a wildfire hazard assessment completed of their cabin and were provided with a list of recommended mitigation measures in and around their cabin, similar to those recommended in

the FireSmart homeowner brochure. Cottage owners were also invited to participate in work bees as part of vegetation thinning around their cabins. All participants had participated in at least one work bee⁷, and had also carried out fuel modification on their properties (McFarlane et al., 2007b). Participation in work bees was popular because it provided an opportunity for cottage owners to assist Parks Canada to reduce the wildfire risk to their cottage, aesthetic benefits, and an opportunity to reconnect with neighbours (McFarlane et al., 2007b).

Discussion

The majority of FireSmart communication appears to be following a one-way information transmission model where social marketing techniques are used to encourage residents to implement mitigation measures recommended by governments. The benefits of such a communication strategy in Alberta are unclear. The complex activities and behaviour changes needed for wildfire mitigation do not appear to be occurring on the majority of study participants' properties. Studies completed in Alberta, and reviewed here, have found that participants are knowledgeable about wildfire risk and fire behaviour. However it is not clear if this knowledge has been gained via the FireSmart communication programs. In the U.S., lack of personal contact has been found to explain low level of behaviour change despite an overwhelming amount of brochures and manuals that have been produced by various agencies on wildfire risk reduction (McCaffrey, 2004). McCaffrey (2004) argues that in order for these types of one-way communication techniques to be effective, the material must be given to directly to residents through personal contact with a

government or agency representative, and not through mailing, display tables, or newsstands.

On the other hand, two-way communication, either between residents or between residents and a trusted risk manager, has been shown to be key to creating a localised incentive to adopt mitigation measures (McCaffrey and Kumagai, 2007; McGee et al., 2005b; McCaffrey, 2004; Monroe and Nelson, 2004). Shindler (2007) found that many successful wildfire mitigation programs could be traced to one individual with strong communication skills who is respected in the community.

When the FireSmart manual and brochure were first developed, Partners in Protection was comprised of members from municipal, provincial, and federal government departments, as well as associations, training providers, research organisations, business, and industry (Partners in Protection, 2007). There were no representatives of the general public (Partners in Protection, 2007). It appears that Partners in Protection drew together scientific experts to develop broad risk reduction principles, and public involvement was deemed to be most appropriate in applying these principles to communities. However, this goes against the principles of risk communication, where all stakeholders are involved in every stage of the risk management process. Certain recommendations, such as removing fire-prone trees and replacing them with more fire-resistant species, continue to be included in the FireSmart manual and brochure, although most residents have indicated they are unlikely to implement them (Flanagan, 2008). Involving resident stakeholders in the entire risk management process would allow recommendations that conflict with residents' values to be identified early in the process. Therefore, a recommended mitigation measure may be reworded or redeveloped to increase the likelihood of implementation.

Wildfire communication programs must pay greater attention to the risk perspectives of those at risk, as commitment to wildfire mitigation programs can be expected to be limited if fire risk is a relatively low concern (Daniel, 2007b). The success of any program has been found to depend on whether it is physically possible, economically viable, and culturally acceptable for those being asked to make changes to actually do so (Shindler, 2007). Each community has unique cultural, social, economic, political, geographic, meteorological, and vegetative conditions that suggest that specific communication approaches and risk mitigation strategies will be needed in different locations (Steelman, 2007; McGee, 2005; McGee and Russell, 2003). When homeowners' values are incorporated in mitigation and education strategies, wildfire risk reduction programs are more likely to be adopted (McCaffrey, 2007; McFarlane et al., 2007b; Shindler, 2007; Winter and Cvetkovich, 2007; McGee et al., 2005b; Monroe and Nelson, 2004; Nelson et al., 2004; Fried et al., 1999). As seen from the Alberta case studies, wildfire mitigation programs that centered on risk communication, as opposed to social marketing,

were more likely to be accepted by residents and lead to great community participation in wildfire mitigation.

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Policing and climate change

By David A Chambers, Region Controller, NSW SES.

ABSTRACT

Policing within Australia in the 21st century does not resemble policing that occurred thirty years ago, due in part to a variety of events such as Royal Commissions (Wood and Fitzgerald), formation of the Australian Federal Police (AFP), technology, Port Arthur shooting tragedy and environmental issues to name a few (Etter, 1999, p4). Public debate about climate change has been significant in Australia; former Prime Minister Kevin Rudd in 2008 stated that 'climate change represents a most fundamental national security challenge for the long term future, locally, regionally and globally'. Whether it is natural disasters, crime, reduced food and water or environmental refugees resulting from the impact of climate change, police will have an important leadership role and responsibility.

Communities are rapidly changing and it appears that the world is 'shrinking' due to the ease and speed with which travel and communication can occur between continents. This in reality means that many of us are international citizens (Negus, 2010, p1). Gene Stephens (2005, p52) accurately states 'the twenty-first century has put policing into a whole new milieu—one in which the causes of crime and disorder often lie outside the immediate community, demanding new and innovative approaches from police.' In 2007, the Australian Federal Police (2007) hosted a conference titled '*International Policing: Towards 2020*' which was attended by 300 police and military delegates from many countries. The most challenging questions to be asked were '*What expectations will society place on law enforcement in 2020, what will the future look like for policing?*' Former AFP Commissioner Keelty emphasised that the 'future is virtually unknown, the world is in a state of flux and the burden of responsibility rests of the shoulders of police to face intellectually and practically the challenges' (Australian Federal Police, 2007, p4).

Many immediate and emerging challenges confront policing and how they are managed will impact upon the community confidence. Most Australian Police Services have either Future Direction Statements or Corporate Plans which briefly roadmap where they are heading (New South Wales Police Force, 2008).

Climate change has previously been an issue that has only captured the attention of the environmental community (New Europe News, 2009). 'Most Australian senior police haven't considered climate change to be relevant to their work' (Bergin & Allen, 2008, p1) however, former AFP Commissioner Keelty (2007, p5) describes climate change as 'the security issue of the 21st century.' It is critical that a full explanation of climate change, socio-economic issues and potential impact for security and policing be examined to assist strategic planning by Australian policing. Chris Abbott (2008, p3) advocates that agencies tasked with protecting and sustaining national security, such as police will need to adapt to better cope with a changing global environment.

What is the future for policing?

Tonita Murray (2000), former Director of the Canadian Police College appropriately highlights that it is vital for police managers to undertake the study of the future as it will identify key trends, which will demand their attention for maximum advantage with minimum effort and cost. Where do police start to identify what is 'to come and how will they react' thereby 'looking over the horizon', when traditionally police have been 'a closed, slow to-change subculture' (Stephens, 2005, p53). Possibly the increase in the number of Generation 'X' staff who are sometimes referred to as Generation 'E' (for entrepreneurial) (Davis & Cebron, 2005, p46) may provide assistance. David Foot in Murray (2000) stresses the importance of studying demographics as 'it explains about two-thirds of everything' and intelligent study of what is occurring in society. Police executives can take note of Foot's advice or not keep up with the rapid change, which is a potential serious threat (Stephens, 2005, p56). Etter (199, p7) identified the importance both in the medium and long term to consider the changing demographics such as aging population and breakdown of traditional family structures.

When reading the various Future Directions and Corporate Plans of Tasmania Police (2009), New South Wales Police (2008), AFP (2007a) and South Australia Police (2007) there is no real evidence of future trends or challenges that require significant research and planning. The Directions in Australia New Zealand Police 2007-2011 document prepared by the Australia New Zealand Policing Advisory Agency (2008) at item 2.1.1 stresses the *'need to complete environmental scanning and strategic assessments to inform business planning and identify emerging issues and trends.'* The International Policing: *Towards 2020* conference (Australian Federal Police, 2007) provided futurists such as Mr Watts Wacker from the USA and experts in a variety of disciplines such as international governance, technology, science, environment and social issues to stimulate and provoke thinking from a policing perspective, which hopefully can contribute valuably to strategic planning. Deputy AFP Commissioner Drennan (2010, p2) highlights the 'need to be cognisant of new developments, and to be able to adapt our methodologies and practices to ensure we remain effective and relevant as a law enforcement organisation.'

Future policing challenges leading up to 2030

Whilst there have been many policing issues/challenges identified over the next two decades. Murray (2000) believes that there are three significant mega-trends that policing worldwide need to consider, namely information technology, globalisation and the expansion of human rights.

In recent years, the advances of information technology have been significant from business, policing and illegal perspectives. Information sharing between police services has been enhanced, requiring extensive training and exploration of new areas, such as identity fraud through organised crime networks (Drennan, 2010, p4). Mr S Arnold, President of Arnold Information Technology, USA encourages police to work with and understand the weaknesses and strengths of companies such as Google as 'data-spaces' are developed (super ceding databases) (Australian Federal Police, 2007, p10). Keelty (2007, p3) reflects that '15 years ago people could not have predicted the incredible information technology revolution that has been experienced.'

Globalisation (Keelty, 2007, p3) and the policing effort has been gaining momentum for some time as the number of joint investigations and international/national cooperation that has occurred. Multi-jurisdiction training occurs (for example the Jakarta Centre for Law Enforcement Cooperation) and is increasing significantly as evident by the number of Australian police working overseas or contributing to conferences such as the Dutch-led *'Pearls in Policing'* which will be hosted by the AFP in 2010 (Negus, 2010, p 5). Oscar Gutierrez, Prefecto Inspector of Policia de Investigaciones de Chile states that he needs 'law enforcement agencies to cooperate and that is going to be of great importance for our future' (Australian Federal Police, 2007, p6).

In recent months, there has been significant increase in media attention relating to physical attacks on international university students in most Australian capital cities (Killick & Brown, 2010). Senior Police



Collaroy rock pool, Sydney, Australia.

and politicians from Victoria recently visited India to allay concerns with the Indian authorities about the safety of Indian students in Australia. This reinforces the emerging challenges that Barbara Etter (1999, p7) identified, namely dealing with incidence of violence in society and policing an increasingly multicultural population and client base.

Climate change

In 2007, the Intergovernmental Panel on Climate Change (IPCC) released their fourth assessment report (AR4), which concluded:

- warming of the climate system is unequivocal
- humans are very likely to be causing most of the warming that has been experienced since 1950
- it is very likely that changes in the global climate system will continue well into the future, and that they will be larger than those seen in the recent past.

These changes have the potential to have a major impact on human and natural systems throughout the world including Australia (Climate Change in Australia, 2010). According to the Department of Climate Change of the Australian Government (2009), this means that Australia is very vulnerable to the effects of climate change and the best estimates are that by 2030 Australia will face:

- a further 1 degree Celsius warming in temperatures
- up to 20 per cent more months of drought
- up to 25 per cent increase in days of very high or extreme fire danger
- increases in storm surges and severe weather events.

'Climatic features such as extreme events, abrupt changes, and the nonlinear behaviour of climate systems processes will increasingly drive impacts on

people and ecosystems' according to Professor Will Steffen (2009). Steffen's is supported by a number of other experts such as Alan Dupont and Graeme Pearman (2006) who claim that 'global warming in the century will present far more daunting challenges of human and biological adaption, especially for natural ecosystems which typically evolve over hundreds of thousands and millions of years.'

Despite the evidence and public debate, Australians rated climate change seventh out of ten as significant foreign policy in October 2009, when in 2007 it was rated as first priority (Gattan & Morton, 2009). 'Climate change is complex, making it difficult to predict with precision, and the associated risks' (Liu Institute for Global Issues, University of British Columbia, 2010, p2). It is critically important that the risks identified from the scientific community assist in informing the policy makers (Barnett & Adger, 2007, p649).

Climate change involves a likelihood of a global average temperature increase of between 2 and 4 degrees Celsius causing the sea to expand thereby causing a rise in sea level, suggested to be about one metre by the end of the century (Abbott, 2008, p5). The Pittwater local government in the northern beaches area of Sydney have drafted a flood management plan for the expected sea level rises, which the State Government predict as 40cm by 2050 and 90cm by 2100 (Nicastri, 2010). It is estimated that there will be serious impact on coastal property in Australia, low-lying Asian mega cities and the Pacific Islands (Queensland Police Service, Metropolitan South Region, 2008, p2).



Reconstruction work on Collaroy Beach, Sydney, Australia.

Socio-economic impact of climate change

It is realistic to expect that climate change is having and will continue to have significant impact on the people of the world and there will be naturally socio-economic damage, such as loss of infrastructure, resource scarcity and mass people displacement (Abbott, 2008, p6). As has been witnessed with the tsunamis in Asia in the last decade, buildings, roads, transport, communications and energy supplies have either been damaged or totally destroyed. Chris Abbott (2008) cites from the British Treasury in 2006 that if the worst-case situation occurs with climate change and there is inaction by governments, the cost to the world economy could exceed 20% of the global GDP each year. The majority of Asia's population and economic centres (India, China, Pakistan, Thailand, Indonesia and Philippines are located close to coastal areas (Maas & Tanzler, 2009, p10). This highlights the need to start seriously planning for mitigation strategies to ensure resilience of critical infrastructure in vulnerable areas (Purdy, 2010, p7). It is encouraging that Queensland Police are considering how to strengthen some of their physical infrastructure to withstand major disasters and put in place redundancy systems to deal with extreme weather events (Bergin & Allen, 2008, p8).

Food, water and energy are three resources that may become scarce with the negative impact of climate change. Food production areas of countries such as East Timor and China may be affected by land degradation caused by flooding, drought, and soil erosion. Shifts in rainfall patterns could render previously productive land infertile (Dupont & Pearman, 2006, p30). Closer to Australia, 85% of the East Timor population are dependent of agriculture as their sole source of income (Barnett & Adger, 2007, p641). In the densely populated Ganges, Mekong and Nile River deltas, a one-metre sea level rise would reduce 1.5 million hectares of land currently under intensive agriculture (Warner, Ehrhart, de Sherbinin, Adamo, & Chai-Onn, 2009, piv). Indigenous Australians living in remote communities of tropical northern Australia will also be adversely affected with natural resources at risk (Australian Government, Department of Climate Change, 2010, p2). Professor Steffen predicts that the large Himalayan glaciers are retreating quite rapidly and may completely disappear by 2050 potentially affecting one billion people who rely directly on that resource to support their food production (Source Security.com, 2009).

Water and the availability thereof, either for drinking or irrigation has been on the public agenda in Australia in recent times as our 'industries and urban centres face ongoing water limitations' (Australian Government, Department of Climate Change, 2009). Due to the drying trend, the water storage of the Murray-Darling Basin was so low that there was not enough water to meet critical human needs in 2009-2010 (Freeman, 2009 in Steffen, 2009, p15). There 'could be a catastrophic decline in the availability of fresh water with climate

change' (Keelty, 2007 Inaugural Ray Whitrod Oration, 2007). There could also be potential contamination issues of water sources due to storm surges and heavy rainfall (Abbott, 2008, p6).

The global population is expected to increase from six and half billion to over nine billion by 2050 (UN Department of Economic and Social Affairs, 2006 in Abbott, 2008, p7). Between 25 and 50 million people are estimated to be migrating or displaced by end of 2010, due to the impact of climate change (Warner, Ehrhart, de Sherbinin, Adamo, & Chai-Onn, 2009, p2). It is envisaged that in many Asian countries internal movement of people are more likely (Dupont & Pearman, 2006, pviii) from rural to urban centres resulting in increase in poverty and social grievances amongst inhabitants (Buhaug, 2009, p2). It is predicted that there could be up to 200 million environmental refugees by 2050 (Abbott, 2008, p7) and 'if atoll countries like Tuvalu, Kiribati and Tokelau become uninhabitable Australia could be come under pressure to help resettle their people (Dupont & Pearman, 2006, 58). Closer to home, a one metre rise in sea level would result in 8000 Torres Strait Islanders losing their homes (Human Rights and Equal Opportunity Commission, 2008, p5).

Climate change and security/policing issues

Whilst the number of security issues identified is extensive, this paper will concentrate on crime and natural disasters (both nationally and regionally-Asia/Pacific) as it reveals to a diversity of issues.

Many researchers claim that climate change poses risks to human security (McCarthy, Canziani, Leary, Dokken, & White, 2001 in Barnett & Adger, 2007) and viewed as a non-traditional security issue (Liu Institute for Global Issues, University of British Columbia, 2010, p4). In 2007, the United Nations (UN) Security Council held its first debate (5663rd meeting) on the impact of climate change on international peace and security (Abbott, 2008, p4). In 2009, the UN General Assembly unanimously passed a resolution urging relevant organs of the UN to intensify their efforts to address the security implications of climate change (Qui, 2010). Ashton Carter of the US Pentagon (Clean Air Report, 2010) stresses that effects of affected populations will present 'new challenges to global security and stability' and there is a move to request the USA Congress and President to place a greater emphasis on the 'link between climate change and national security, thereby recommending greater research' (Carbon Control News, 2010). This position is supported by Mr Kevin Rudd, Prime Minister of Australia who said 'over the long term, climate change represents a most fundamental national security challenge for the long term future, locally, regionally and globally' (The Prime Minister of Australia: The First National Security Statement, 2008).

Crime

There have been a number of studies conducted in Japan and United Kingdom revealing a linkage between the frequency and intensity of crimes committed during periods of increased temperature. According to the Commonwealth Scientific and Industrial Research Organisation (CSIRO), the predictions by 2030 are for more higher temperatures in Australia (10-50% increase in days over 35 degrees Celsius and 10-80% decrease in days below 0 degrees Celsius) (Dupont & Pearman, 2006, p16). On that basis, it is appropriate to consider the result of the Eastern Tokyo study, which identified more homicides and acts of violence occurring on hot days and sunny days (Ikegaya & Suganami, 2008). The study also highlighted the hot weather increases human interaction and induces psychological stresses during unstable weather. Brunsdon, Corcoran, Higgs, & Ware (2009, p922) also reveal that 'both high temperature and humidity significantly affect the geography of disorder and disturbances. A study in sub-Saharan Africa indicated that a one degree Celsius increase in temperature resulted in a 49 per cent increase in the incidence of civil war (Keating, 2010). All of this research is important for senior Australian police when scanning their environment and formulating strategies to reduce or mitigate the incidence of violence in their communities and respective Corporate Plans.

It is highly likely that there will be an increase in environmental refugees into Australia (Bergin & Allen, 2008, p5) and there will be potentially different cultural attitudes towards Australian laws such as drink driving or knife crime (Abbott, 2008, p9). According to Chris Abbott, police will have a greater need of interpreters, sensitive community liaison programs and improved cooperation with embassies and consulates (Australian Federal Police, 2007, p16).

Environmental protests are prevalent in Australia since the 'Save the Franklin River' in Tasmania in the early 1980's to Captain Votiacov (of the Greenpeace ship) blockade of the Hay Point terminal south of Mackay in Queensland in 2009 (Australian Associated Press, 2010). Australian police will continually need to monitor developments both nationally and overseas with regard to climate change protests as many Australians wish to express their support of objections to government policy about climate change (Australian Associated Press, 2009).

Former AFP Commissioner Keelty (2007) stressed that police would play a role concerning environmental regulations as investigation of offences, corruption and fraud could realise, similar to the Singapore Police investigating the Barings Bank Fraud in the Futures and Derivatives Markets. The global carbon market is estimated to be worth approximately \$118 billion and Interpol having already identified that it could attract criminal gangs (Deloitte, 2009, p1, 2). Carbon pollution reduction schemes have attracted organised crime in the UK and Europe and in the future there could be fraud with regard to organisation's misstating their carbon position or bribery and corruption with public officials for example securing land to develop wind farms. Australian police may also get involved



Water level looking to ocean.

with our neighbouring countries providing assistance in investigations and analytical expertise, as recently evident in the case of an Australian national trying to defraud the government of Vanuatu by offering a program to cut its greenhouse emissions (Bergin & Allen, 2008, p4). Prosecuting environmental cases has been historically challenging and investigations can be extremely resource intensive as demonstrated in the Enron case in the USA in 2001 (ibid, p3).

Natural disasters

The United Nations Development Program Bureau (UNDPB) states that the annual economic impact worldwide from natural disasters has increased from 213.9 billion dollars in the 1970s to in excess of 659.9 billion dollars in the 1990s (Pratt, 2010, p 21). When the death, injury and damage is taken into consideration, it clearly highlights that policing will need to provide significant leadership in prevention, preparedness, response and recovery of disasters. Buhaug (2009) highlights that the frequency and severity of climatic natural disasters has increased over the last few decades as evident by 360 hydro-meteorological disasters worldwide in 2007, affecting 210 million people.

It is anticipated that the region to the north of Australia will exceed four billion people by 2020 (56 per cent of world population) (The Prime Minister of Australia: The First National Security Statement, 2008) and it and the Pacific Islands will become more vulnerable to natural disasters due to climate change (Bergin & Allen, 2008, p7). Disasters have dramatic impact on communities and countries as stated by the President Carlos R Flores of Honduras 'that Hurricane Mitch in 1998 reversed 50 years of progress of the country' (Pratt, 2010, p19).

There will be an increase in Australian police either responding to the disaster or maintaining law and order in our neighbouring countries. More emergency planning and exercises will be required and greater robust partnerships, such as Red Cross will be required over the next 20 years. Currently there has been criticism that the focus for international relief has been on 'short-term relief at the expense of longer-term recovery and develop efforts' (Human Rights and



Exercise Management with the Royal Solomon Islands Police.

Equal Opportunity Commission, 2008, p10). Many of the vulnerable countries at-risk has no contingency planning or disaster preparedness (New Europe News, 2009). Police need to engage more with experts in a variety of areas to examine credible disasters scenarios (including worst case), (Purdy, 2010, p6) assessing risks (Bergin & Allen, 2008, p10), utilising available data (Antarctic Climate & Ecosystems Cooperative Research Centre, 2009) and enhance operational planning. The AFP and other Australian police realise the importance of building relationships with other organisations (Keilty, 2007 Inaugural Ray Whitrod Oration, 2007, p7) and (Negus, 2010, p5).

Between 2001 and 2007 in south-east Australia there was an increase by 10-40 percent of fire danger weather compared to 1980-2000, it predicted that such weather will increase by a further 5-65 per cent by 2020 (Steffen, 2009, 30). As evident by the 'Black Saturday' fires in Victoria in 2009 where 173 lives were lost and 2,029 homes destroyed (The Age newspaper, 2009), police will play a significant role in fires and other disasters over the next 20 years.

As people are required to move from their locations due to disasters there can also be psychological consequences such as with indigenous Australians in northern Australia potential will lose 'ancestral, spiritual, totemic and language connections to traditional land' (Australian Government, Department of Climate Change, 2010, p11). *'They feel like they've lost control of their "country"-which they are responsible for looking after'* (Human Rights and Equal Opportunity Commission, 2008, p5). Or the opposite could occur where 'traditional land owners make demands on those who are relocating there' as experienced in some Pacific Island countries (Qui, 2010).

Police should also be conscious of the human rights issues that become prevalent in disasters such as unequal access to assistance; discrimination in aid provision; enforced relocation; sexual and gender violence; loss of documentation and unsafe or involuntary return or resettlement (Human Rights and Equal Opportunity Commission, 2008, p11).

A round table conference in Bangladesh in March 2010 identified that 'water issue, cross border migration, loss

of livelihood of people and food security would be the major areas of conflict in South Asia (The New Nation, 2010). There is the potential over the next 20 years for an increase in inter and intra state conflicts within the region over competition for scarce resources caused through disasters, thereby requiring Australian police to intervene and uphold the law (Drennan, 2010, p9). Police budgets will be impacted upon due to this additionally role and extensive planning and cooperation will be required amongst all Australian police to ensure efficient financial modelling occurs.

With disasters, there is an increase in vector-borne, water-borne and respiratory diseases such as malaria and dengue fever. A 2003 joint study by the World Health Organisation and the London School of Hygiene and Tropical Medicine estimate that global warming has contributed to 160,000 deaths from malaria and malnutrition and it is expected to double by 2020. (Human Rights and Equal Opportunity Commission, 2008, 4). The NSW Police Force Corporate Plan 2008-2012 (2008) states that the organisation will provide a 'safe and supportive work environment', which is the same, as all other police services in Australia. If police are providing disaster relief in Australia or offshore there also is the potential for high incidence of fatigue and emotional trauma (Bergin & Allen, 2008, p7). With Australian police, assisting with disaster response overseas or in tropical northern Australia there is a need to ensure they are not exposed to unnecessary health risks (both physical and psychological).

Conclusion

Barbara Etter (1999, p11) appropriately stated 'policing clearly needs to become more adept at anticipating change in the environment and adapting to it in a timely and effective way. 'The increasing role for policing in helping restore order and stability internationally was a significant feature of discussion (at the International Policing: Towards 2020 conference) as Australia is considered a pioneer in the field' (Australian Federal Police, 2007a, p7)

Professor Tim Flannery emphasises that 'in the future, policing will bear a large burden for responding to the societal stresses that extreme weather events create' (Australian Federal Police, 2007, p14), so it is strategically important in 2010 for Australian police to plan provide leadership for the future. 'Climate change is a complex issue requiring integrated-not siloed-responses' (Liu Institute for Global Issues, University of British Columbia, 2010, p1).

Looking towards the 'horizon', Australian police would benefit significantly by establishing robust partnerships with a diversity of stakeholders who have expertise in the area of climate change as policing will be expected to take a lead role in ensuring a safe and secure Australia and region. The impact of climate change is of significant strategic importance to both state and national police and must not be ignored.

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About the author

David Chambers is the Sydney Northern Region Controller for the NSW State Emergency Service—(from Sydney harbour to the Central Coast). David has 34 years policing experience with Tasmania Police in a variety of roles including community policy, training, communications, district management and policy. David was a Visiting Police Fellow at the Australian Institute of Police Management prior to joining the NSW SES. He has a Masters degree in Leadership and Management (Policing) and a keen interest in emergency management.





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AMBULANCE SERVICE MEDAL (ASM) 293

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AEMI MASTER CLASS REPORT

Facilitating community-led recovery

Community resilience is about building local level capacity and empowerment. After a disaster there are some crucial supports that government, non-government, corporate and private business and philanthropic organisations can offer to communities. Linking these supports to the needs and processes that a community determines will create sustainably resilient communities. The following is a report on the master class that explored the practice of community-led recovery and the facilitation of this. The ideas in this report are gleaned from the discussion at the Master Class with acknowledgement to the participants. A group of 25 recovery practitioners and community members who had experienced the provision of recovery services, gathered at the Australian Emergency Management Institute to participate in the Master Class Facilitating community-led recovery on 20 May 2011. The aim of this master class was to facilitate exploration of the challenges and successes in community-led recovery. The process used modelled a community-led approach by facilitating the group to input into the day, uncovering the issues they wanted to explore and listening to each other's experience and knowledge.

Stephani Roy McCallum from Dialogue Partners, a consultancy based in Canada, co-facilitated the Master Class. She provided some key insights from her practice of working with diverse communities experiencing conflict, high emotion or outrage. The following topics and questions were discussed and the collective wisdom of those attending the master class has been captured below.

What is community-led recovery?

Community-led recovery will mean different things to different communities. It is essential that the processes and intentions of recovery for a community are clear at the outset. Community-led recovery may:

- involve supporting and facilitating a community to lead
- be inclusive, enabling equitable participation and building the capacity of individuals in the community to contribute and lead
- revolve around networks and connections
- resolve and embrace the "hard" issues while being emotionally supportive
- by its very nature need to be flexible in order to give possibility
- connect with both the past and future.

What does community-led achieve?

A community-led approach to recovery enables a community to come to an understanding of their own needs, what they want to achieve and how they will go about it. It is an opportunity for connectedness and builds capacity for a community to do what they want to do, which in turn, builds resilience. It should leave a community "much improved", enable them to live a life that they value and have reason for, and vision and prioritise a future. A community-led approach achieves more sustainable and better outcomes at lower cost.

A community-led approach is also a journey, of which the following is all a part: tiredness, uncertainty, a focus on wellbeing and emotional needs, a struggle to continue, educating and training, involvement of emergent groups and capacity building. The involvement of children and youth as leaders is a key element.

What are some of the challenges of community-led processes?

The challenges of community-led processes in the recovery environment include:

- ensuring that community-led processes are directed and sustainable, allowing for change along the way
- the questions of who from the community leads, when this will be the right time for leadership for those people, and what happens as a result, who is community, how do we ensure inclusion and

representation. Linked to this are challenges such as: what a community advisory groups might be formed, what is their purpose, and what is the community's intention and expectation?

- determining the approach. Ideally it is about what the people who are recovering decide will be the approach and finding a way to bring all the people together to hear many voices and envision and prioritise a future
- working to ensure that community needs are the drivers in the systems, timeframes and structures that are in place. There is often a tension between

constrained environments and organisations and the community needs and supports

- maintaining a balance between individual needs and the collective needs in a community
- keeping the focus on people, when the interest and momentum for rebuilding and infrastructure projects might be short lived.

Facilitating community-led recovery

Working to achieve a process with communities that will enable them to recover after disaster requires not

Table 1. Considerations for a community-led process.

	Needs, goals, expectations	Inclusion and conflict	Enablers
Identifying	What are our community needs, our collective intentions of recovery and what do we want and expect to achieve?	How is our community ensuring that participation is by as many people as possible from this community? How can we hear the many voices in this community? How can this community ensure that we are inclusive of everyone in the process? Equitable participation might mean using different means to engage with those who don't or are not able to access the "usual" means in order to participate.	What systems, timeframes and structures might we need to put in place to link our community needs to the recovery framework that is currently in place? How will a community advisory or decision making group work for our community- what would it be there for?
Adaptation in recovery	How can we allow for our community needs, goals and expectations to change along the way if it needs to?	How will our community know what is currently happening at any point in time in long terms of the recovery process? How will change in this process be managed?	How can we ensure flexibility throughout the long term of the recovery process?
Working together	Can we work together to envision and prioritise a future for our community?	How do we view conflict? There is often an associated fear of conflict. Can it be harnessed as an indication that something needs to change, and viewed as a positive? The importance of enabling individuals who are meeting together to express answer to-why are you here and how have you been impacted, before getting on to exploring some of the more factual and rational decision making that needs to occur.	How will we create sufficient time and space for our community processes in order to identify our priorities?
Connecting before and after	How will we connect what was being developed in our community prior to the disaster with our future plans?	How will our community embrace and resolve the hard issues which may be ones that have existed previously and often come down to strongly held values that are different for different people?	What supports do we need in order to lead our own recovery? (Information might need to be provided to enable communities to answer this question-about what supports have helped individuals in other communities in recovery such as emotional supports, building leadership education, practical supports so that individuals can attend meetings or simply talk to people and still keep their life and household functioning).

only the communication, education and information that we know is essential to the process, it also requires experienced facilitators who are able to employ techniques which empower the community. While many themes were identified, facilitators of community-led recovery will assist with the exploration of a range of questions.

Tips for recovery workers facilitating and aiming to enable a community-led approach included:

- take the time to establish good relationships
- remind yourself to keep listening. It is sometimes painful (for all of us) and it takes time to do something different like listening to stories or allowing for emotional outpourings so people can heal
- give people time to tell their stories. This is an important part of being able to move forward
- stay neutral—be open to hearing all voices; not just the most organised, loudest or squeakiest wheel. Sometimes the squeaky wheel takes up an inordinate amount of resources—remember you are working for the whole community, not just a few individuals. Use neutral facilitators when there is conflict or you need to build trust
- get the right people on the ground to communicate and share information. They need to be trusted people, but not necessarily community “leaders” in the traditional sense
- identify different needs in the community and respond to these in different ways. One size does not fit all
- focus on proactive activities that build trust and support community members, rather than reactive processes
- focus on the goal—what you are trying to achieve in the long run
- integrate the physical recovery of place with the social and emotional recovery of people
- pay attention to the intentions—of people and process

- be careful about how to form groups or committees in communities—they must be inclusive and also really be representative of community needs and interests. Are committees actually community-led? Need to consider how to access and involve *different* people
- take the time to make the right decisions instead of rushing to action. Need to start the conversation with what people value not necessarily what to do now
- train community members and organisations so they become owners and advocates of the process, and implement practical supports to enable their participation.

Participants also expressed the imperative to look at government policy which supports the resilience of community recovery and the herculean task of providing evaluation measures to assist with this.

This master class raised many questions as well as answers, and the exploration of the ideas from this workshop will be ongoing in the recovery community of practice. In addition, like any community process, the relationship building enabled will continue to assist in the evolution of practice in this area.

About the author

The convenor of the Masterclass, and author of this report is Ms. Louise Mitchell, Education Manager, Australian Emergency Management Institute.

Understanding Floods: Questions and Answers

Understanding Floods: Questions and Answers (UFQA) explains fundamental scientific and engineering concepts regarding floods, in clear and simple language. It provides balanced and authoritative information within the current state of knowledge, and focuses on three key themes: floods and their consequences; flood forecasts and warnings; and managing floods. It was written by the Queensland Floods Science, Engineering and Technology (SET) Panel, convened by the Queensland Chief Scientist, Dr Geoff Garrett, AO. The SET panel includes 25 Australian and international specialists with expertise across the range of flood-related disciplines. UFQA was developed in support of the Queensland Floods

Commission of Inquiry, to build capacity and understanding of floods in general. UFQA will also educate our leaders, the media and the Queensland community at large on the complex, inter-relational factors impacting on floods. UFQA will facilitate informed decisions to help shape the way in which we can plan for and mitigate our level of flood related risk now, and in the future. The report and further information on the Queensland Floods Science, Engineering and Technology Panel (who authored this report) can be found on the website: <http://www.chiefscientist.qld.gov.au/publications/understanding-floods.aspx>





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News from AEMI:

Leadership in Crisis

September 7 - 9, 2011

As a leader, have you found yourself watching the news and wondering if you've got what it takes to manage a catastrophic event? In a moment of honest self reflection have you wondered if you have all the skills you need if you find yourself in charge of a major crisis?

We can't promise to make you a better leader, but we can promise to expose you to innovative thinking, new research, and complex case studies. You will be asked to challenge your own assumptions about leadership, the future arc of disaster management, and ask yourself some difficult questions about what it takes to lead in times of turbulence.

United Nations World Tourism Organisation Forum

September 22 & 23, 2011

The UNWTO is hosting a forum addressing the interface of tourism and disaster management. It is being held in conjunction with Bournemouth University UK, University of Technology Sydney (UTS), Department of Resources Energy & Tourism, and AEMI.

Working with communities in conflict after disaster

Friday 28 October 2011

Working with communities after disaster often presents challenging situations and difficulties in decision making, particularly when there is conflict. This one day workshop will provide the opportunity to hear from speakers who have worked with communities in conflict and examined community processes in disaster recovery. Issues and strategies will be explored in smaller group work. The workshop has been designed for people who have or may be involved in working directly with community such as local government, NGOs, and community members.

Courses at AEMI: September - November 2011

- Facilitate emergency risk management
- Manage projects
- Exercise management
- Manage recovery functions and services
- Undertake emergency planning
- Work in an emergency management context & Develop community relationships (*New Program)
- Develop and use political nous (*New Program)
- Organisational resilience
- Volunteer leadership development