

The Australian Journal of **Emergency Management**



Australian Government
Attorney-General's Department
Emergency Management Australia

EMA *'safer sustainable communities'*

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EMA Institute celebrates 50 years

Insights from
Cyclone Larry

How 'new' federalism
changed the way we
manage natural disasters

Media management
at Beaconsfield

historical snapshot



The Australian Civil Defence School circa 1951.

In July 1951, the Director of Civil Defence prepared a paper outlining the need for a school devoted to instruction in civil defence. The Director wrote:

"Such a school will require suitable premises with living accommodation for the staff and students, lecture and store facilities, technical equipment (including radiological monitoring instruments and, say, two rescue vehicles), working dress for the students, and the construction of a rescue range (i.e. sample 'blitzed' houses) for practical training in rescue technique."

Five years later, on 2 July 1956, The Australian Civil Defence School (now Emergency Management Australia Institute) located at Mount Macedon in Victoria, was opened by the Minister for the Interior. Instructional courses began at this time and continued until the late 1960s. Instruction was devoted to matters related to protection of the civil population against hostile acts. There was then a gradual move towards teaching methods of coping with natural and other man-made disasters.

Cover shots and images of the Civil Defence School kindly supplied by John Ramsdale.

PUBLISHER

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FOREWORD

Mt Macedon 50th Anniversary

When opening the Australian Civil Defence School on 2 July 1956, the Hon Allen Fairhall, MP, the then Commonwealth Minister for the Interior and Works, emphasised the need for a civil defence program aimed at offering maximum protection from the effects of hostilities on Australian soil to all Australians. He highlighted the need for the greatest co-operation between the Commonwealth and State Governments; the important role of local government; and the need for students to be drawn from all walks of life so that the nation would be provided with a nucleus of trained civil defence workers.

The sentiments expressed by Allen Fairhall fifty years ago are just as valid today for the now Emergency Management Australia Institute as they were then for the Australian Civil Defence School.

As the Institute celebrated its silver jubilee in 1981, it paused to reflect on a quarter-of-a-century of development and achievement as a leading educational establishment whose primary focus has always been, and remains, on measures to mitigate, minimise or alleviate human suffering in the event of an emergency. The provision of education and training programs for the Australian community through the Institute is one of the important ways in which Emergency Management Australia (EMA) fulfils its mission to create "safer sustainable communities".

These programs address key aspects of prevention, preparedness, response and recovery through the provision of structured training on a range of topics, including emergency planning in evacuation, business continuity management, establishing an Emergency Coordination Centre, and managing recovery. Specialised training activities are also conducted to enhance the capability of States and Territories to manage the consequences of the newest emergent threat to community safety – acts of terrorism. Through these programs, EMA continues to provide national leadership in the development of measures to reduce the risk to communities and manage the consequences of emergencies.

The sharing of anecdotes and experience (story-telling) is acknowledged in adult learning as a valuable means of exchanging knowledge and is encouraged amongst the course participants during their temporary residence at the Institute. The environment created is conducive to the enhancement of learning outcomes and aids in strengthening the skills and knowledge of the emergency managers of both today and the future.

Research is vital for developing the capacity to identify and respond pro-actively to changing risk, and to provide the evidence base for best practice emergency management. The main purpose of studying past events, records and experiences is to broaden or improve background knowledge and understanding in order to contemplate the future appropriately, and to prepare for the events it may bring. The EMA Library and Resource Centre, situated within the Institute, assists to further the educational outcomes and information available to the emergency management sector. This facility is a national reference centre for specialist information relevant to the work of the emergency management community and is unique in Australia as it covers the entire spectrum of emergency management issues. It is therefore often the first point of reference for researchers in the subject area.

As risks continue to evolve and governments and communities change, the sound body of knowledge and expertise and the strong partnerships built by individuals who have participated in activities at the Institute, as well as those who will do so in the future, will continue to be of benefit to all Australians.

My predecessors and I are justly proud of the work of the EMA Institute and its committed group of staff. The past fifty years have seen an exponential growth in the challenges faced by our very important sector and therefore the services offered by EMA through the Institute. Its continuing work to research future directions in emergency management and to position emergency managers to deal with yet unseen challenges will assist the sector to continue to meet its responsibilities and to assure the safety of all communities. I wish the Institute well for its next 50 years of service to emergency management.



Tony Pearce
Director General
Emergency Management Australia

August 2006

Incoming Director General well placed to set new plans for AJEM



Tony Pearce commenced his appointment as Director General Emergency Management Australia on 14 August 2006 and takes on the role of Editor-In-Chief of the Australian Journal of Emergency Management. Tony has spent 26 years in the intelligence and emergency management sectors. He spent nine years in the Royal

Australian Air Force (RAAF) as an Intelligence Analyst (imagery) before commencing with the emergency services. After leaving the RAAF he spent twelve years with Ambulance Service Victoria in senior operations management positions responsible for emergency management and major incident response planning functions and is a qualified Paramedic. Two and a half years in the position of Deputy Director of the Victoria State Emergency Service preceded a move to the role of Director Emergency Management and Security in the Office of the Emergency Services Commissioner

in July 2003. This extensive period of involvement has seen Tony work across the emergency management continuum, commencing as a 'hands on' emergency responder and progressing to senior operations management positions before moving into senior government policy development roles.

Tony holds an Associate Diploma of Health Science, a Bachelor of Social Science majoring in Emergency Management from Charles Sturt University, a Graduate Diploma in Management from the Australian Catholic University, and an Executive Master of Public Administration from Melbourne University and the Australian and New Zealand School of Government.

Tony's emergency management background is extensive and he has for many years been a regular participant in forums dealing with national issues. Between 2004 and 2006 he chaired the national Catastrophic Disasters Emergency Management Capability Review Working Group on behalf of the Australian Emergency Management Committee and in 2005 was also a member of the Prime Ministers Science, Engineering and Innovation Council Tsunami Working Group following the Indian Ocean Tsunami.



If you would like to continue receiving the AJEM, please ensure you keep the November 2006 edition's mailing label. This mailing label will need to be returned to Emergency Management Australia for your subscription to continue. Full details on how to continue your subscription will be available in the next issue.

Outgoing AJEM Editor-In-Chief receives accolades from Attorney-General for leadership role

Attorney-General Philip Ruddock paid tribute to the contribution of David Templeman after almost six years at the helm of Emergency Management Australia.

Mr Ruddock said Mr Templeman had overseen Australia's emergency management and coordination arrangements at a pivotal time in both natural disaster management and in counter-terrorism planning, preparation and response.

David promoted a national approach to emergency management in all jurisdictions throughout Australia, and in the Asia/Pacific Region. His whole-of-government, multi-agency approach has been embraced by emergency management organisations, the volunteer sector, community groups, and the media.

David stepped down effective from 7 March 2006, to concentrate his attention on his health and his family.

"I would like to acknowledge David's leadership role in developing Australia's emergency management and setting a benchmark for whole-of-government response and recovery measures," Mr Ruddock said.

"His drive to establish and maintain international best practice has been a significant achievement and reflects extremely well on both David and his organisation."

Mr Ruddock noted the extraordinary emergencies in recent years over which Mr Templeman had presided in his role at EMA. "A range of emergencies and potential incidents on-shore have also seen his active involvement, from bushfires and floods to coordination of disaster conferences and emergency management volunteer summits."

David's particular challenges have included dealing with the re-entry of the Mir Space Station in early 2001, contributing to enhanced national security arrangements in Australia since the September 11 terrorist attacks in 2001 and the Bali bombings in 2002, and liaising on national health issues such as the Severe Acute Respiratory Syndrome epidemic in 2003. He also led the coordination of Australian Government assistance in response to major bushfires in eastern Australia in 2002-03, and following tropical cyclones that impacted on Fiji, Tonga, Samoa, Niue, Vanuatu, and the Solomon Islands. The latest challenge was managing EMA's role in Operation Tsunami Assist following the earthquake off Sumatra on 26 December 2004.

More recently, he oversaw the management of the Australian Government's new funding and policy initiative aimed at supporting local communities and volunteer groups involved in emergency management.

Mr Templeman was appointed in June 2000. His resignation comes after 38 years in the Australian Public Service in the fields of Human Resource Management, Organisational Management, major Departmental restructuring and now emergency and consequence management. Nearly half of his public service has been in Senior Executive Service positions.

The role of Acting Director General of EMA was filled by Trevor Clement from 16 December 2005 to 14 August 2006. During this time Trevor Clement as Acting Director General EMA coordinated Australian Government assistance to Tropical Cyclone Larry, Tropical Cyclone Monica, the East Timor Unrest and Operation Java Assist in response to the Yogyakarta Region earthquake in Java, Indonesia.

Media management – Beaconsfield Mine collapse

Case study by Const. Phil Pike, Tasmanian Police

The collapse of the Beaconsfield Mine Joint Venture (BMJV) on the eve of ANZAC Day 2006 soon became an incident that swiftly captured the attention of state, national and international media and has continued to do so long after the actual event of the rescue concluded.

The event became an incident unprecedented in media management within Australia.

Ironically, the collapse at the BMJV occurred just three days before the tenth anniversary of the Port Arthur massacre – another event that also set new standards in media management within Australia.

The collapse on the night of the 25th of April was signified by localised seismic activity in the Beaconsfield area. The tremor caused the local police sergeant to run out of the station, fearing it was going to collapse. Residents of the West Tamar

town did the same – fearing the worst from what many described as “a mini earthquake”.

Bells ringing from the mine, in the centre of the small mining town, quickly indicated a disaster was unfolding. Most of the underground shift at the mine emerged uninjured, telling mine staff and responding emergency services about a collapse in the shaft at 925 metres.

A check found three miners missing and unaccounted for. None of the other miners who had escaped could identify the location of the three men and a rescue operation was immediately put in place.

Mining accidents in Tasmania have always attracted a strong level of media interest. In early 2006, local media drove for up to four hours to attend the isolated site of a mine accident on the State’s West Coast.

In the West Coast incident, three miners were involved in a truck accident in a decline mine. Following the accident, the vehicle caught fire causing the three miners to take refuge in a safety chamber until they were rescued some hours later.

Media response in the initial phase of the Beaconsfield rescue operation involved mainland based media, in addition to local media.

What should be explained at this stage is the presence of major mainland based media in Tasmania is an unusual response and only occurs at a time of a major incident or disaster. Such a response to the island state would only occur 5 – 6 times a year at the most.



The minehead of the Beaconsfield Joint Venture as seen from the 100 year old Grubb Shaft.



News crews prepare their positions for the extraction phase.

Constable Phil Pike and Peter Morris, a senior reporter with Channel Seven, both worked at Port Arthur ten years before. They agreed the media response to the Beaconsfield Mine collapse equalled, and in some parts exceeded, the media response to Port Arthur ten years before.

In addition to news crews, the major networks also provided crews for their respective current affairs programs and morning shows. Channel Nine also had an additional crew from *60 Minutes*, which included veteran journalist, Richard Carlton, who was to later die while covering the story.

Supporting the large contingent of journalists was an equally large contingent of photographers – with News Ltd sending multiple photographers from *The Mercury*, *The Herald Sun*, *The Daily Telegraph* and their flagship newspaper, *The Australian*.

As the incident evolved into a protracted rescue, using a remote control excavator within the collapsed area, a number of major stakeholders with a significant interest in the mine collapse were defined. All had to be included in the communications processes to varying degrees.

These stakeholders were:

- The Beaconsfield Mine Joint Venture (management and staff),
- Allstate Explorations NL (the managing body of the Beaconsfield Mine),
- The West Tamar Council,
- Tasmania Police and emergency services,
- Department of Justice (Coroner's Office),
- Workplace Standards,
- Chief Inspector of Mines,
- Australian Workers' Union,
- Tasmanian Minerals Council,
- Launceston General Hospital,
- The missing miners and their families,
- The wider West Tamar community, and
- Responding media.

During the initial stages of rescue, BMJV generated media releases via a Sydney based communications specialist and used the media contact stream via Tasmania Police Media and Marketing.

Information flowed with reasonable regularity via this means, although some releases were disseminated post midnight – outside the news cycle of most Tasmanian based media.

In the initial phase, the point of contact for BMJV was the Sydney based communications specialist. There was no spokesperson at the mine and an initial reluctance by the mine manager, Matthew Gill, to engage the ever-growing media across the mine boundary fence.

Part of this reluctance was an imposed restriction by the mine administrator who was present at the mine offices. BMJV and Allstate Explorations NL were placed in administration some years earlier – despite Beaconsfield containing the richest gold bearing ore in the country.

The restriction bought with it a conflict between the need to:

- a. protect reputations;
- b. engage the media; and
- c. satisfy the legal needs of the administration to limit certain information.

It proved restrictive throughout the duration of the incident despite strong efforts by Mike Lester of CPR who later became the contracted media adviser to BMJV. The resulting information vacuum consistently proved to be a battle undertaken by Government communications staff deployed to assist the West



Inspector Paul Reynolds prepares for a Channel Nine interview with Tracey Grimshaw and Karl Stefanovic.

Tamar Council, Tasmania Police, emergency services and the Beaconsfield community.

In this information vacuum the Australian Worker's Union gained much credibility, with AWU national secretary, Bill Shorten and official Paul Howes always readily available for comment and willing to engage the media.

Initially the union officials discussed their proposed media interviews with mine management – agreeing to leave the issue of blame until after the rescue of the trapped miners.

The unionists later broke these conditions – appearing in Richard Carlton's last story on 60 Minutes openly blaming mine management for sending miners into what was described as "bad ground."

To be fair in this debate, the management structure of BMJV had limited depth with the mine manager, Matthew Gill, not only needing to supervise the rescue processes, but also needing to liaise with mining staff, their families and the media contingent.

As the rescue processes moved slowly, Gill developed better media awareness skills – making regular appearances at media conferences.

At one conference, he immediately fronted the media after a visit to the rescue site, dressed in overalls, mining vest and belt and holding a miners helmet complete with lamp.

Gill's practical involvement added a level of credibility to his role as a spokesperson, however holding a media conference only every 24–48 hours allowed the AWU to retain the initiative with the media contingent by being readily available.

The initial rescue period also saw a growing sensitivity against the media contingent amongst the miners who were working long shifts underground in hazardous conditions to find their missing workmates. This sensitivity saw mine staff erect large tarpaulins around the boundary fences and legs of the mine head, limiting media access to vision and photographs.

The move by BMJV to limit media access saw the major networks bring in their helicopters, with Channel Nine having a state of the art camera mounted on the underside of their airframe. The resulting vision was clear; showing close up shots, while being filmed several kilometres out.

The limited access by the mine saw consistent flying of media helicopters over the mine site – even drowning out conferences relating to the underground rescue at the mine operations room.

An attempt to have a no-fly zone implemented over the town didn't gain approval and the sound of the helicopters remained constant over the area during the protracted incident.

The miners made a decision that no miners, including those in charge of the rescue, would be interviewed by the media until after the rescue of Webb and Russell. This decision also included NSW mine rescue experts and NSW paramedics who were advising Tasmania Ambulance Service staff.

Two days after the collapse, the body of Larry Knight was recovered from the rock fall around the telehandler where he and fellow miners, Brant Webb and Todd Russell, had been working.

Knight's body was photographed by forensic police and removed in a mortuary vehicle during the night. Some photographers managed to take an image of the vehicle leaving



Media conference in the public park.

the mine head – a significant coup considering the limitations of the tarpaulins on the boundary fences.

Tony Scott (Department of Premier and Cabinet) and Jodi de Cesare (Tasmania Police) provided media assistance at the surrounding site was provided by On the evening of the discovery of Larry Knight's body, they arranged the media conference during which mine manager, Matthew Gill, announced the discovery of the body.

With the recovery of Knight's body, the jurisdiction for the incident fell under the Coroner's Office – with Tasmania Police responsible for the investigation and preparation of the file for the Coroner.

George Town Divisional Inspector, Paul Reynolds, would later undertake this role on behalf of the Coroner while also spending many hours at the mine and Council Chambers assisting throughout the wider operation.

The public park around the Museum carpark, mine boundary and West Tamar Council Chambers became a camping ground for the fast growing media contingent.

The discovery of Webb and Russell saw an explosion in hired campervans, broadcast vans and media tents.

Some media organisations hired vacant shacks in the Beauty Point area, buying stretchers and other camping gear. Those in campervans bought local camping stores out of warm jackets and polar rated sleeping bags.

Melissa Doyle and David Koch presented *Sunrise* from a steep bank overlooking the mine while Nine's Karl Stefanovic did his crosses to the *Today* show in front of the impressive brick facades of the Grubb and Hart shaft. In the evenings Tracey Grimshaw and Naomi Robson presented their respective current affairs shows from the same locations.

Under the only barbecue shelter, Channel Ten and SBS presented their news and ABC shared the muddy bank with Channel Seven. Local ABC Radio moved quickly and hired the local St John Ambulance hall nearby.

During gale force winds, driving rain and sleet, a small hall became the media centre and a majority of interviews took place amid a tight crush of journalists and cameras.

The resultant media scrum proved daunting for some spokespeople fronting the media for the first time but unavoidable considering the inclement weather.

With the search operation continuing nearly a kilometre underground, there was very little to fill the news bulletins or newspapers in the way of vision or images.

The discovery of Webb and Russell trapped 925 metres underground gave the story fresh angles and momentum. The competitive nature of the media, particularly between Channels Seven and Nine, gave rise to rumours of cash offers to miners on the rescue team.

There were rumours of television stations offering \$10,000 for a miner to take images and vision of the underground rescue area. This resulted in the bags of all miners being searched prior to the commencement of shift – added stress for the rescuers in an already difficult situation.



An interview with mine manager, Matthew Gill.



Broadcast vans fill the small Museum car park.

To assist in the media management of the growing contingent, Constable Phil Pyke (Tasmania Police) and Shaun Rigby (Department of Premier and Cabinet) joined Tony Scott and BMJV's Mike Lester at the site.

Later Mark Franklin (Tasmania Police), Julie Pellas, Mandy Smith (Premier and Cabinet) and Adrian Lacey (Health and Human Services) attended the Launceston General Hospital to assist media staff there.

An immediate plan was developed to overcome the information vacuum. This was achieved by producing spokespeople who had worked underground and been in communication with the trapped miners – with paramedics from the Tasmania Ambulance Service proving popular.

As the collapse, and subsequent rescue, had impacted upon the whole West Tamar community, it was appropriate the Mayor of West Tamar, Barry Easter, became the reassuring face of the local community.

This process was of major benefit during the Port Arthur tragedy with Tasman Mayor, Neil Noyes, presenting a reassuring face to the Peninsula community.

Barry Easter soon became a much sought after spokesperson with regular appearances on *Sunrise* and *Today*. Although limited in media experience, Barry had a strong on-air presence and steered away from speculation and judgement.

The next step was negotiation with mine management to take down some of the tarpaulins on the boundary fences and seek approval for camera crews to film the mine head and yard from a viewing platform at the Museum which overlooked the area.

This was achieved and gave the media different points from which to gain vision and images. Access to the viewing platform presented the idea of positioning a television camera and a photographer there to obtain pool vision on the extraction of Webb and Russell.

Requests to mine management for pool vision and images from underground had been refused but the viewing platform presented an ideal, and non obtrusive, position with the Museum prepared to cut out a section of fence.

Negotiations moved to engaging the Tasmanian Ambulance Service, psychologist and mine staff. Initial discussions revolved around decoy ambulances and other methods to prevent the media covering the extraction of Webb and Russell.

Thankfully these notions were quickly halted and further negotiations took place between mine rescue staff and the families of the trapped miners. Their approval was paramount for this pool site to be opened to the media.

A concession, which was to have a major impact on coverage of the extraction, was achieved at this time. This concession was departure of the ambulances, containing the rescued miners, through the mine gates and down the road through the middle of the media camp.

This would mean the networks could broadcast live as the gates opened and the ambulances rolled out through an honour guard of rescue miners.

Within the media contingent, the competitive nature between the networks raised its head — with two days of discussions undertaken to find a suitable (and trusted) cameraman.

This was similar with the photographers with a heated discussion on a suitable pool photographer taking place in the main street of the town and being reported to police as a disturbance.

Finally the pool cameraman was selected by the media advisers — a local ABC cameraman. His vision would be live linked to the networks with a contingency camera provided by Channel Ten.

An international award-winning photographer, from Getty Images, was finally elected to take the images. The contingency photographer was from the Tasmanian newspaper, *The Examiner*.

Radio was to be syndicated through 2GB and the vision from the pool camera was also broadcast directly



A Tasmanian Ambulance Service paramedic is interviewed after completing his underground shift in the rescue area.

to a large screen in a campervan from where other radio journalists could watch and broadcast.

Media management of the final stages of rescue and extraction became a police operation under Inspector Paul Reynolds with the mission of “ensuring the assembled media are managed in such a way that the patients can be transported from the mine unimpeded whilst allowing the media to obtain suitable footage and pictures for broadcast purposes.”

Sections of the carpark, media camp and public park were barricaded off as media marshalling areas. Each network selected their own site and there was a pool area for television cameras and photographers.

Any camera crew or photographer wishing to step over the barricades during the departure of the ambulances to cover public reaction to the rescue had to seek permission from the Government media advisors prior to the event.

With the drilling getting closer to the trapped miners, the media contingent grew rapidly — preparing to split resources between Beaconsfield and the Launceston General Hospital.

A Government media team was already in place at the hospital with an area set aside for media operations and arrangements had been made through BMJV's Mike Lester to notify the media once the miners were rescued via SMS.

Such a plan required cooperation from all media. As the drilling underground drew closer, expectations of an impending rescue grew. Channel Nine and Ten were preparing to broadcast live from midnight on Saturday the 6th of May — however it was another three days before the miners would reach the surface.

Producers and senior journalists were called to a meeting at the West Tamar Council Chambers on

Friday 5th of May where the media management plan for the extraction was outlined to them.

A wholesale agreement was obtained from all media organisations to abide by in order to obtain the pool vision and images — following approval from the families of the trapped miners.

Two issues came close to jeopardising this agreement for pool vision. The first saw mine staff locating a web camera mounted on the facade of the Grubb Shaft, overlooking the mine head. BMJV removed the web camera, contracted to News Ltd, resulting in strong discussions between News Ltd management and the Government media staff.

The second issue related to a remote camera owned by Channel Seven. This camera was mounted on a teleboom that the network often raised over the rear fence of the mine yard.

Mine staff retaliated by raising the tarpaulins higher — effectively cutting other photographers out of their ideal positions.

As the rescue and extraction of Brant Webb and Todd Russell unfolded, the pool site provided the media with the vision and images for which they had longed.

International interest was also strong with CNN's Hugh Williams breaking into a broadcast of Oprah Winfrey in the United States.

The decision to leave the ambulance doors open came as the result of a request by Webb and Russell — proving an added coup for media crews.

The provision of spokespeople, including senior mine rescue staff, immediately as the ambulances departed was a deliberate aspect of the media management plan. This was designed to prevent media crews chasing the ambulances along the highway into Launceston.



Paramedic Matthew Eastham faces a media crush during an interview in the small media centre.

Police officers at the bottom of West St were also to be used as a delay for any pursuing crews. However, no crews undertook any pursuit given the access to Webb and Russell after they stepped from the shaft lift.

The media management of the Beaconsfield Mine collapse was a success. The facilitation approach to media liaison certainly gained the confidence of the media during the protracted nature of the rescue.

It was its protracted nature that certainly sets the incident apart from other similar incidents across Australia.

An experienced international journalist, Hugh Williams from CNN, applauded the overall management processes.

“The plan to have a live TV pool camera (and photo), a road corridor for ambulances, and lock-down positions for the news organizations was crucial to the success of everyone’s coverage when the miners finally emerged,” Hugh Williams said.

“If this hadn’t been sorted out in advance, and all of the journalists hadn’t agreed to be asked to stay put...I think the outcome might have been a lot different.”

“While some journalists might complain about access restrictions to certain stories; if they can be explained, and compromises made, then everyone will usually be happy with the outcome.”

“It’s important that all journalists get equal access, and I am a big fan of pool coverage as opposed to NO coverage.”

A number of lessons in media management evolved from the Beaconsfield experience.

These were:

1. The media management approach of facilitation was adopted by all on-ground media advisers
2. Know your key stakeholders and media people
3. Prevent the information vacuum – in the absence of information speculation will take over
4. Listen to media requests and create or facilitate opportunities
5. Seek media cooperation and encourage their input
6. Aim to present fresh spokespeople on a regular and planned basis
7. Plan for all media reactions, including competition between organisations
8. Work closely with other media advisers and operate on a common plan that supports all stakeholders.

About the Author

Const. Phil Pike has been involved in media and communications since Port Arthur in 1996. He specialises in crisis and issues management, holds a BA in Politics/History and a BA in Journalism (Monash University). He has written several papers on police and media for universities and journals. He currently is the Defence Public Affairs officer for Tasmania and the Commander of the Second Division (which is the Army Reserve). He was the media liaison officer in southern Iraq for the ADF in 2003, and teaches public affairs and media management around Australia for the ADF.
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Flood-prone caravan parks in NSW – is the system failing?

*Stephen Yeo and Paul Grech consider the effectiveness
of planning controls in managing flood risk at caravan parks*

Summary

This paper assesses the effectiveness of the planning system in relation to flood-prone caravan parks in New South Wales. The hazardous location of many caravan parks, allied with the typically high vulnerability to flooding of caravans and their occupants, represents a high risk situation. Reasons for this are explored, including the historical evolution of caravan parks and planning controls, councils' implementation of those controls, and the role of the Land and Environment Court of NSW. It is argued that flood planning controls have failed to recognise the changing nature of caravan parks. Recommendations to improve flood risk management in caravan parks in NSW include using development controls to manage new developments and to require community awareness measures and emergency planning as a condition for granting approvals to operate parks.

Introduction

Floodplain management policy in New South Wales is regarded as close to international best practice. The last 15–20 years have witnessed impressive advances in managing flood risks (Keys, 2006). Despite substantial investment in treating flood risks, however, damaging floods continue to occur.

One sector that appears to be particularly exposed to flood losses is the caravan park. This is a place where tourists may be accommodated in tents, traditional caravans or 'cabins' (prefabricated buildings transportable in modules by trucks and generally referred to as 'manufactured homes'). A caravan park may also function as a low-cost place of permanent residence. Parks developed specifically for permanent residents, predominately consisting of manufactured homes, are known as 'manufactured home estates'.

A disproportional number of families living in caravan parks (21 per cent) were given relief payments after the April/May 1988 NSW floods (Lambley & Cordery, 1992). Vans were carried about 200 metres, a 53-year old woman was drowned, and a disabled man was rescued at the last minute during flash flooding at a caravan park in Coffs Harbour in November 1996. Floodwaters destroyed vans at Nundle in November 2000. Relatively frequent flooding (1 in 15 years) caused direct losses of about \$25,000 for two caravan parks located on Palmers Island in March 2001, as well as substantial indirect losses through cancellations (refer to Figure 1 for these locations).

An investigation of the April 1998 floods in the United Kingdom found significant culpability with the planning system, which it was said had 'failed to safeguard people and caravans from extreme flood hazard and to recognize that caravan parks represent a highly exposed floodplain land use' (McEwen *et al.*, 2002, p.299). The chief purpose of this paper is to examine whether a similar conclusion can be reached for caravan parks in NSW.

First we provide an overview of the current hazardousness and vulnerability of caravan parks and their occupants. We do not adopt a dogmatic definition of vulnerability, but rather view it broadly as 'a measure of the susceptibility to suffer loss or damage' (Buckle *et al.*, 2001, p.8). A review of the evolution of caravan parks and planning controls, the implementation of those controls, and recent Court judgements, provides a context for understanding the current pattern of exposure to floods. We conclude with a number of recommendations for improving the management of flood risk at caravan parks in NSW.

How hazardous are caravan parks?

A comprehensive assessment of the degree of flood-liability of caravan parks in NSW is not available. Anecdotal evidence suggests that a majority of caravan parks are subject to flooding. A survey of caravan parks from four local government areas (Tweed, Hawkesbury, Baulkham Hills and Eurobodalla, located on Figure 1) – representing 10 per cent of the State's nearly 900

registered parks – suggests that about three-quarters of parks are flood-prone, where flood-prone land is taken to include land flooded by the Probable Maximum Flood, along with land potentially inundated by storm surge conditions (Yeo, 2003).

Figure 1. Location of places described in text.



A qualitative assessment found that although caravan parks in NSW are subject to a diverse range of flood hazards, a significant proportion of caravan parks are subject to a high flood hazard, which was rated according to frequency, depth, velocity and extent of flooding (Table 1).

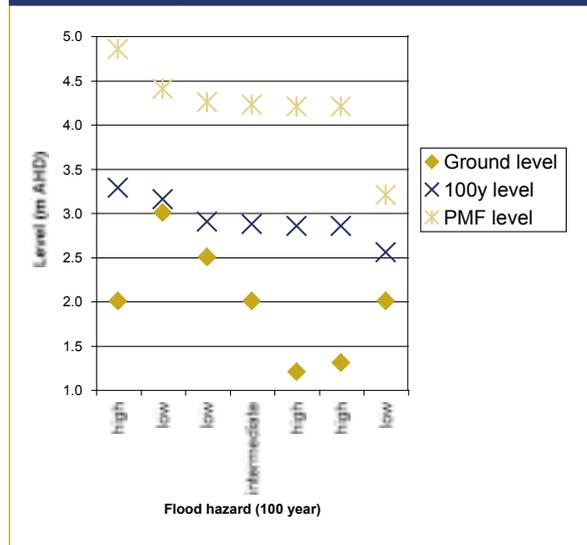
Table 1. Flood risk matrix for caravan parks in NSW.

(Based on interviews and site inspections from 71 parks in coastal NSW – Yeo, 2003)

		Vulnerability			Total
		Low	Medium	High	
Hazard	Low	3%	14%	13%	30%
	Medium	1%	15%	8%	25%
	High	8%	11%	25%	45%
	Total	13%	41%	46%	100%

An assessment of provisional hydraulic hazard along the floodplain of the Camden Haven River (located on Figure 1) indicates that three out of seven caravan parks are subject to high hazard, one of which would experience a depth of 1.7m and flow velocity of 0.5m/s in the 100 year flood (Figure 2). The consequences of such flooding could be disastrous. In addition, low-lying access roads mean that some parks will be regularly cut off (Bewsher Consulting, 2004).

Figure 2. Hydraulic hazard for seven caravan parks along Camden Haven River floodplain.



More work is needed to systematically assess the hazards to caravan parks in NSW. Nevertheless, the available evidence indicates that a high proportion of caravan parks occupy flood-prone locations, and a significant proportion of these occupy highly hazardous sites.

How vulnerable are caravans and their occupants?

Property

Figure 3 demonstrates the susceptibility of caravans to floodwaters. Traditional caravans are constructed using aluminium cladding on a timber frame, with veneer chipboard or veneer ply furniture (Smith *et al.*, 1990, Vol. 2, p.10). Even shallow inundation causes severe damage to caravans, indicated by abrupt stage-damage curves (Hall *et al.*, 2000). Moreover, vans easily become buoyant, which can raise flood levels by blocking culverts, exacerbate losses by collision with other objects, and pose hazards to boat rescue operations.

Damage to contents can also be severe with floor coverings easily destroyed at very shallow depths. There is also limited potential to raise items above water inundation (Smith *et al.*, 1990, Vol 2., p.10).

People

Caravan park occupants' high level of vulnerability is emphasised by a consideration of their composition. Table 2 indicates that the nearly 900 registered caravan parks in NSW cater for both short-term tourists and long-term residents. Each group presents a different profile of vulnerability to flooding.



Figure 3. Caravan after November 1996 flood.
(Source: Coffs Harbour Advocate).

Table 2. Number of caravan parks in NSW according to site type.

(Based on the Department’s May 2003 register of caravan parks, which has not been updated for several years. Data do not include 50 primitive camping grounds and 9 manufactured home estates.)

Nature of caravan park	Number of caravan parks
LT = Long-term	
ST = Short-term	
C = Camping	
LT sites only	53
ST/C sites only	263
Both LT and ST/C sites	580
No. of LT sites > No. of ST/C sites	109
No. of ST/C sites > No. of LT sites	437
No. of LT sites = No. of ST/C sites	34
TOTAL	896

Tourists tend to lack awareness of the risk. They can also dramatically swell the logistical task. In the order of 5,000 people would need to be evacuated from caravan parks near Tweed Heads if severe flooding of the Tweed estuary on the far north coast of NSW (Figure 1) was predicted during the peak holiday season (Yeo, 2003).

The Census data in Table 3 indicate that residents of caravan parks include relatively short-stay occupants, who also may lack awareness of the risk. Residents are often elderly and retired. Those in the workforce tend to be employed in low-paying jobs, and a relatively high proportion are unemployed. There is a clear association between living in a caravan park and low income (cf. Hunter *et al.*, 2006). These characteristics point to the

likelihood of difficult emergency evacuation (high level of aged) and reduced capacities to recover after floods by repairing or relocating (low savings and income levels).

Table 3. Socio-economic data for residents of caravan parks in Australia, 2001 Census.

(Source: Wensing *et al.*, 2003, p.21 and App. 2)

	Caravan Parks	Australia
At same address in 1996	38%	52%
Age: 65 and over	23%	13%
Age: 55–64	19%	9%
Household type: lone person household	60%	24%
Household type: couple without children	25%	11%
Labour force status: not in labour force	51%	35%
Labour force status: unemployed	9.9%	4.4%
Occupation: labourers and related workers	25%	9%
Household income: less than \$500/week	62%	25%
Post-school qualifications: university degree	2%	13%

Business

Another aspect of vulnerability is vulnerability of the caravan park business itself. Damage to infrastructure, and lost trade – blamed by a few proprietors on prolonged and unfounded adverse media coverage – represented significant costs to caravan parks flooded in March 2001 (Yeo, 2003). At one park, the owner/manager had borrowed to purchase the park, and could not survive the loss only six months later. The stress of the situation had prompted the manager to resume smoking.

Trends

An assessment of vulnerability needs to acknowledge that vulnerability is not simply a state but a process. Figure 4 shows a four-fold increase in the number of ‘cabins, flats etc’ in caravan parks in NSW from 1986 to 1997, growth that was set against a decrease in total capacity. Another series reveals the addition of more than 6,000 ‘cabins, flats etc’ from 1997 to 2003, while the number of ‘other powered’ sites (excluding on-site vans) and unpowered sites decreased proportionally (ABS, 2000, 2003). ‘Cabins’ in the Australian Bureau of Statistics’ surveys seem to include both short-term (tourist) and long-term (resident) housing. The importance of this change for our inquiry is the

replacement of dwellings that can be evacuated from a floodplain by dwellings that are generally much less mobile. In essence, property exposure has increased.

Identifying trends in the number of people living in caravan parks is a rather more complicated task. On a state-wide basis, the number of long-term residents increased from 1986 to 1990 (Figure 5), consequent to the introduction of Ordinance No. 71 under the *Local Government Act 1919* in 1986, which officially validated long-term residency. As well as exposing more people (and more vulnerable people) to flooding, long-term residency tends to generate greater capitalisation, exposing more property to flood hazards (Lambley & Cordery, 1992). Table 2 indicates that 53 caravan parks in NSW today cater exclusively for long-term residents, and another 109 parks have a majority of sites dedicated to long-term residents. Perhaps up to 30,000 permanent residents currently dwell in caravan parks in NSW (Office of Fair Trading, 2004, p.5).

From 1991, the number of long-term residents living in NSW parks declined, influenced strongly by a decrease in the Sydney Statistical Division (Figure 5). This decrease in caravan parks providing long-term resident sites has reportedly continued over recent years, driven by the growth of lucrative retirement tourism and by rising land prices that have boosted owners' incentive to sell to developers (Park and Village Service, 2002). In one respect this has benefits, since fewer residents may be exposed to flood hazards, but in another respect, the loss of affordable housing may force residents into even more economically marginal settings.

Figure 4. Number of 'cabins, flats etc' and total number of sites in NSW caravan parks, 1986-97.

(Source: ABS Survey of tourist accommodation; Yeo, 2001)

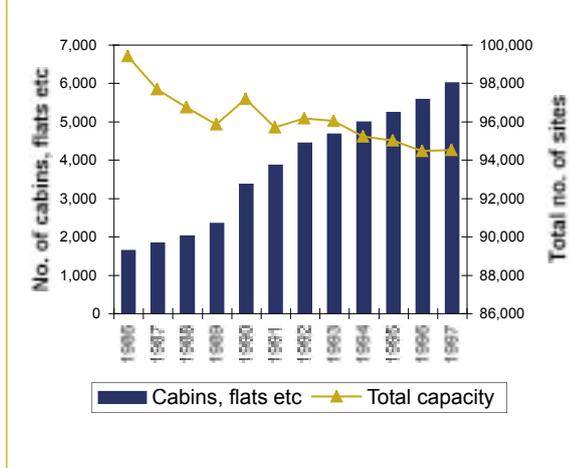
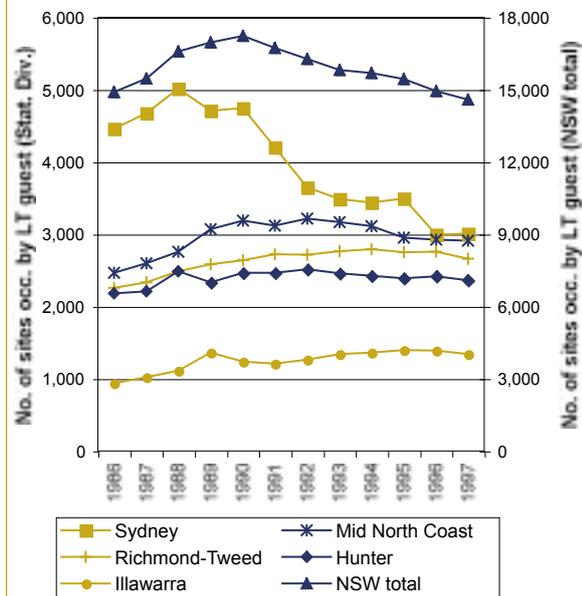


Figure 5. Number of sites occupied by long-term guests in NSW caravan parks, 1986-97.

(Source: ABS Survey of tourist accommodation; Yeo, 2001)



Preparedness

Given the hazardous location of many caravan parks, and the high vulnerability of caravans, their occupants and the business of running the park, mechanisms should be in place to manage the risk. However, an investigation by Yeo (2003) found that this is generally not the case. A high turnover of park managers means that most have no experience of floods, and they often deny or underestimate the risk. Most cabins and 'relocatable' homes, as well as many permanent caravans, could not be shifted in the available warning time, at least for the coastal rivers that were the subject of that study. Most caravan parks have no markers or notices to signify a flood risk. The process of flood response planning by caravan park operators is patchy and of poor quality. An assessment of the overall preparedness of caravan parks, rated according to the perceived level of community awareness, the status of flood response planning, the attitude of the manager and the potential for van removal, found that only 13 per cent of the sample was well prepared (ie had a low 'vulnerability', see Table 1).

Retrospect: how has this situation arisen?

Many caravan parks in NSW are flood-prone; some are dangerously flood-prone. These parks typically contain vulnerable people living in vulnerable structures. Often, very little has been done to prepare for flooding.



Flooded property, Gunnedah, 1998.

Together, these elements signify a high risk situation. In order to address this risk, it is first important to understand how this situation has arisen.

History of caravan parks and planning controls

Caravan parks historically provided low-cost, short-term accommodation. From the early 1900s, caravan parks provided a traditional venue for holidaying in Australia. Often they were located in open space zones and in public reserves proximate to natural assets such as beaches and rivers. Consequently, caravan parks were often developed in floodplains. Up until the 1960s and 1970s, parks were generally unsophisticated, with large areas devoted to campsites, clustered around basic amenities, and were considered by planners to be appropriate uses in open space zones and reserves due to a scarcity of permanent structures and the recreational tourism function of parks.

Gradually, and unofficially, caravan parks accepted extended stays. Pressure for long-term stays increased in the 1980s, with economic recession fuelling rises in housing interest rates and real estate values, generating a shortfall in affordable housing. In Wollongong in 1982/83, the coal and steel industries experienced sharp downturns and laid off thousands of workers, forcing people out of houses and into caravans. Legislation evolved both proactively and reactively in response to the emerging trend to adapt caravan parks to provide low cost housing opportunities. A selection of legislation pertaining to our topic is listed, and key points are summarized, in Table 4.

Permanent residency in caravan parks in NSW was officially validated in 1986 by the introduction of Ordinance No. 71. Since then various pieces of legislation have been introduced to increase the security of tenure for long-term residents of caravan parks. Although in 1986 it was recognised that caravan parks accommodating long-term residents should not be located on flood-prone land, the reality of the situation led to concessions for existing parks. Similarly, although the Ordinance required councils to 'have regard to the principles contained in the Floodplain Development Manual' before approving the installation

of manufactured homes or rigid annexes on flood-prone land in caravan parks, moveable dwellings manufactured before 1987 were exempt. The Regulations that replaced Ordinance No. 71 in 1995 and subsequently in 2005 continued this non-retrospectivity. Thus, a significant proportion of the flood-labile dwellings in caravan parks today pre-date regulatory controls, because about 80% of caravan parks in NSW existed before 1986 (Hassall & Associates, 2005, p.4).

In addition to the legislation recorded in Table 4, Local Environmental Plans (LEPs) often evolved to provide specific regulations in regard to caravan parks and manufactured home estates. LEPs are the principal form of land use zoning plan in NSW, controlling the permissibility of development in various zones, with decisions based upon a range of issues of which flooding is just one. Experience has shown that LEPs often permit caravan parks and manufactured home estates in floodplains because of their pre-existence in such locations. The prohibition of such uses will not necessarily lead to their removal from any location, including a hazardous floodplain, since *existing use rights* would prevail.

A key reason for the high level of exposure of caravan parks to flooding is the failure of the emerging planning controls to address the historical legacy and the particular risks resulting from the transition of caravan parks from providers of tourist accommodation to permanent accommodation. In effect, the need for affordable accommodation was given more weight than the potential for flood disaster.

In this context it is informative to consider a recent correspondence. In 2002, the NSW State Emergency Service (SES) made a submission to the Government Working Party on the future of caravan parks in NSW (Keys, 2002). It argued that flooding threatens the sustainability of caravan parks, and called for a review of the *Local Government (Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 1995*. The submission was found to be outside the terms of reference for the Working Party, which was set up to address the closure of caravan parks and dislocation of long-term residents.



Short-stay cabins, Gunnedah, 1998.

Table 4. Summary of selected legislation.		
Year	Legislation	Significance
1986	<i>Ordinance 71 (Caravan Parks and Moveable Dwellings)</i> , under the <i>Local Government Act 1919</i> , introduced.	Provided legal recognition and official State Government support for permanent residency in caravan parks. Required councils to have regard to the principles contained in the Floodplain Development Manual before approving the installation of an unregistrable moveable dwelling or a rigid annexe on flood liable land (Clause 91).
1986	<i>Department of Environment and Planning Circular No. 108 (Guidelines for the Location of Caravan Parks Accommodating Long Term Residents)</i> issued.	Advised that ' <i>caravan parks accommodating long-term residents should not be located on flood-liable land</i> ', but conceded that ' <i>councils will have to accept the reality of the situation and grant licenses to [existing] parks with predominantly long-term occupation, which do not fulfil the criteria in these guidelines</i> '.
1989	<i>Community Land Development Act</i> gazetted.	Provided a titling mechanism alternative to leasehold titles, increasing the attractiveness of manufactured homes as a legitimate form of permanent housing.
1992	<i>State Environmental Planning Policy (SEPP) 21—Caravan Parks</i> , under the <i>Environmental Planning and Assessment Act 1979</i> , gazetted.	Required that development consent be obtained from the local Council for development for the purposes of caravan parks. Required councils to consider ' <i>whether, because of its location or character, the land concerned is particularly suitable for use as a caravan park for tourists or for long-term residence</i> ' (Clause 10(a)).
1993	<i>SEPP 36—Manufactured Home Estates</i> gazetted.	Allowed, with development consent, manufactured home estates on certain land on which caravan parks are permitted. Permissible land excluded the Sydney Region (except Gosford and Wyong LGAs) and land identified in the LEP ' <i>which the Council, after taking into account the principles set out in the Floodplain Development Manual, considers is unsuitable because of flooding</i> ' (Clause 6(a) and Item 2, Schedule 2).
1994	<i>Residential Tenancies (Caravan Parks and Manufactured Housing Estates) Amendment Act 1994</i> gazetted.	Further increased security of tenure for persons who owned a principal place of residence, that is, a manufactured home or caravan with a rigid annex, on a rented site.
1995	<i>Local Government (Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 1995</i> , under the <i>Local Government Act 1993</i> , introduced.	Replaced <i>Ordinance 71</i> , under the <i>Local Government Act 1919</i> . Required councils to have regard to the principles contained in the Floodplain Development Manual before approving the installation of a relocatable home or rigid annexe on flood liable land (Clause 11A). For caravans situated on flood liable land, the wheels, axles and draw bar must not be removed but maintained in working order (Clause 98).
1995	<i>Local Government (Manufactured Home Estates and Manufactured Homes) Regulation 1995</i> , under the <i>Local Government Act 1993</i> , introduced.	Required councils to have regard to the principles contained in the Floodplain Development Manual before approving the installation of a manufactured home on flood liable land (Clause 7(2)).
1998	<i>Residential Parks Act 1998</i> gazetted.	Further increased security of tenancies in residential parks including manufactured home estates.
2005	<i>Local Government (Manufactured Home Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2005</i> , introduced.	Replaced the <i>Local Government (Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 1995</i> and the <i>Local Government (Manufactured Home Estates and Manufactured Homes) Regulation 1995</i> under the <i>Local Government Act 1993</i> . One new requirement is that caravan park and camping ground operators disclose in writing the location of designated flood liable land to prospective occupants of short-term and camping sites (Clause 123).

Nevertheless, perhaps in response to a growing number of voices calling for the Regulation to be revised to better manage flood risk in caravan parks, the *Local Government (Manufactured Home Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2005* contains a new requirement to raise the awareness of prospective tourists to the threat of flooding (Table 4). This new provision applies to all caravan parks in NSW (DOP, 2005). However, the new Regulation does not require prospective residents to be provided with this information, because their rights to information are governed by the *Residential Parks Act 1998*. No requirement to advise residents of the location of flood-liable land is currently contained in that Act. Also, while the Department of Planning (2005) 'recommends' that all park operators have an evacuation plan and display it in a prominent location, they are not required to do so under the new Regulation, in contrast to the equivalent Regulation from Victoria (*Residential Tenancies (Caravan Parks and Movable Dwellings Registration and Standards) Regulations 1999* – Regulation 36).

Implementation of planning controls

Another reason for the high level of exposure of caravan parks to flooding is the limited success of local councils in controlling and reducing the vulnerability of caravan parks as they evolved from providing traditional low cost holiday accommodation to more substantial permanent homes. The rapid growth in the number of cabins (Figure 4) suggests that whatever regard councils have given to the principles contained in the Floodplain Development Manual (NSW Government, 1986, 2005) has had little effect in keeping immobile structures away from flood-prone land. A recent survey of caravan parks showed that a requirement in the Regulation that caravans situated on flood-prone land be maintained in a towable condition, is often not enforced (Yeo, 2003).

A number of councils may lack the capacity to establish and implement appropriate standards, or to resist developmental pressures. Several councils appear to turn a blind eye to the issue, perhaps because they do not perceive a problem, or perhaps because they recognise that the affordable housing opportunities provided by such parks could be jeopardised by imposing higher standards. Another factor may be conflicts of interest, since councils form both the consent authority (applying the Regulation) and park operator (subject to the Regulation) for at least 13 per cent of parks in NSW (Yeo, 2003).

The Court

A significant 'player' in controlling development within caravan parks is the Land and Environment Court of NSW. Given the high stakes, it is not surprising that developers appeal to the Court if their proposals are rejected. For our purposes, it is useful to gain an insight into the Court's judgements. Table 5 summarises four

Court rulings that relate to development in a caravan park and a manufactured home estate: Ko-Veda Holiday Park on the banks of the Hawkesbury River (Baulkham Hills Shire Council) and Oaklands Village on the shores of Lake Illawarra (Wollongong City Council).

It is telling to observe the pressures being brought to bear on these parks. The proposals provide another indication of the tendency towards permanent structures. These include:

- a proposal to modify a regulation so that the proprietor does not have to evacuate caravans during flood;
- a proposal to replace 50 caravan sites with 50 cabin sites;
- a proposal to turn car spaces into garages; and
- a proposal to extend a manufactured home estate.

The Court rejected three of the appeals on flood related grounds: caravans represent a potential hazard so ought to be removed before flooding; flood damages would not be reduced were garages permitted; a deficient evacuation plan does not justify new development. The fourth appeal, relating to the 50 cabins, was not rejected on flood related grounds. Although the judge accepted that the 100 year flood would overtop the cabins, that the risk to property would increase since cabins were not mobile, and that there was no flood-free exit from the proposed site, these factors were not deemed sufficient for refusal of consent. Interestingly, the fact that the cabins were not primary residences seemed to hold weight, whereas the fact that only disposable income was at risk was apparently unpersuasive in the matter of the garages. Overall, then, the findings of the Court are somewhat inconsistent regarding the appropriateness of development within flood-liable caravan parks and manufactured home estates.

Prospect: what can be done in the future?

While caravan parks have evolved into developments that provide either more sophisticated forms of tourist accommodation, de facto low cost housing estates, or a combination of both, planning controls have not always evolved to respond, particularly in regard to flooding issues. The approach to managing flood risks associated with these forms of development must continue to evolve. This evolution should consider changes consistent with the following principles:

- A clear distinction must be drawn between parks and sites used by tourists, and parks and sites used by permanent residents. There is a significant difference between the two and consequently the types of risks that need to be managed.
- The flood related development controls that would normally apply to standard residential housing, should at a minimum be applied to sites in caravan parks and manufactured home estates used for

permanent residency (e.g., floor level controls). It could be argued that more stringent controls should be imposed, since residents tend to be less equipped to cope with flooding. This must be balanced against the social cost of discouraging affordable housing.

- Conversely, lower standards could be applied to tourist sites on the basis that the consequences of flooding would be less than those associated with permanent housing. This position is supported by one of the Court judgements discussed previously. It also recognises the economic planning imperative of locating tourist related developments in proximity to natural features such as rivers.
- There should be no distinction between parks and sites used by tourists, and parks and sites used by

permanent residents when considering risk to life. If flood depths and velocities are high, and if the rate of rise of floodwaters is such that people could be trapped in dangerous conditions, then development should not be permitted.

- The specific structural characteristics of caravans, rigid annexes and manufactured homes need to be individually recognised within planning controls. Measures to prevent structures floating away during floods, and to minimise physical damage, need to be employed requiring engineering solutions.
- While the new requirement that caravan park operators notify prospective tourists of the location of flood-prone land is noted, much more needs to be done to improve the capacity for emergency response. Operators should be required to prepare

Table 5. Recent findings of the Land and Environment Court of NSW.

Table 5. Recent findings of the Land and Environment Court of NSW.
Land and Environment Court of NSW No. 11162 of 2000
Details: Appeal to modify a development consent relating to Ko-Veda Caravan Park, which requires that during floods 42 caravans be evacuated and stored within a specified elevated area of the caravan park.
Outcome: Refused on the ground of flood hazard. The Court found, with Council, that any caravan left standing in floodwaters is a potential hazard, posing a threat to downstream areas.
Land and Environment Court of NSW No. 11164 of 2000
Details: Appeal against Council's refusal to grant a development application for 50 short-term sites for cabins, which were proposed to replace 50 approved short-term sites for caravans.
Outcome: Refused on the ground of unacceptable visual impact, not on the grounds of flood hazard. The Court found that the transfer of caravan sites will increase the risk to property because, in theory at least, caravans can be moved to a flood free platform while cabins are fixed and the floodwaters must pass through them. Fixtures such as stoves and refrigerators are likely to be damaged. The cabins themselves are to be built of water resistant materials and are not primary residences. While the transfer of sites would slightly increase the risk to property, the Court did not think that this risk was unacceptable. The principal negative feature of the proposed lot was found to be the absence of a flood free exit from it. The Court found that while this reduced the lot's suitability for a caravan park, it was not to an extent that flood liability, by itself, constituted sufficient grounds for refusal of consent.
Land and Environment Court of NSW No. 11291 of 2003
Details: Appeal against Council's refusal to amend an existing consent that allows 47 cabins to be erected on Ko-Veda Ski Park, which would allow each cabin to turn its approved car parking space into a garage.
Outcome: Refused on the ground that there would be no reduction of impact on and losses to owners or occupants of proposed garages in times of flood compared to the car spaces the Council approved. The assertion that only disposable/discretionary income would be at risk was apparently unpersuasive. The Court found that approval of garages in the past is no reason for their approval in the present. Damage could occur in the garages in the 1 in 2 year design flood, which would not occur if equipment was stored in the cabins which are located above the 1 in 20 year level.
Land and Environment Court of NSW No. 10387 of 2001
Details: Appeal against Wollongong City Council's refusal of a development application for the extension by 32 sites of an existing manufactured home park at Oaklands, Windang.
Outcome: Refused on the grounds that the proposal relies on augmenting the deficient, existing private Flood Emergency Evacuation Program, which does not comply with provisions of the Floodplain Management Manual, and does not merit consent under SEPP36.

Newsphoto/AFP PHOTO ANDRE DURAND



Flood-prone caravan parks should pay explicit attention to floodplain risk management

site-specific, periodically updated Flood Action Plans, and to display the Plan in dwellings and communal areas. Templates would be of value in controlling the quality of Flood Action Plans, and it is understood that the SES has prepared such a template for one area. Among other points, plans should take into account the unique circumstances of each park: the nature of the flood hazard in terms of depths and velocities; the number and manoeuvrability of dwellings; the number and mobility of tourists and residents; and arrangements for flood warning and evacuation, including the route, resources and time required to achieve a safe evacuation.

Various mechanisms should be used to promote implementation of these principles:

- The *Local Government (Manufactured Home Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2005* should be amended, at the very least to require that each operator prepares an emergency management plan.
- Councils should use the approval system to promote improved flood risk management. While the new Regulation does not list preparation of an emergency management plan as a standard condition for approval to operate a caravan park, councils have the option of imposing additional conditions under section 94 of the *Local Government Act 1993*. A sample of councils showed that while most grant approval to operate caravan parks for 1, 3 or 5-year periods, a smaller number grant approvals for over 30 or up to 99 years (Hassall & Associates, 2005, p.13). The practice of issuing approvals for periods longer than 5 years should be discontinued.
- Flood-prone caravan parks should receive explicit attention in floodplain risk management studies and plans. The Floodplain Development Manual (NSW

Government, 2005) details the process that provides for the production of floodplain risk management plans, allowing for the evaluation of social and economic objectives together in a balancing process with the risks associated with floods. At sites where more permanent forms of housing would not normally be permitted, a flood risk management plan prepared by a local council can specifically recommend the prohibition of manufactured home estates and residential caravan parks. This may not lead to the removal of existing developments, but could prohibit new development in highly hazardous areas of floodplains and act as a clear statement of policy to assist in restricting the expansion of existing developments.

- A Development Control Plan (DCP) is a quasi-statutory planning document in NSW that can provide an appropriate mechanism to impose controls on new developments and the expansion of existing ones. DCPs could be extended in application to provide policies for the continuing granting of approvals to caravan parks under the *Local Government Act* and Regulations, to manage flood related risks through awareness programs and the preparation of Flood Action Plans.
- While the focus of this paper has been on land use planning controls, there is also a place for educating park operators about the value of flood risk management, including benefits to their businesses (Yeo, 2003). This could be achieved through industry newsletters and by outreach from local SES units.

Conclusion

A majority of caravan parks in NSW are flood-prone, and many of these are located in high hazard areas. These parks typically contain vulnerable people, who live in susceptible structures, who may be unaware of

the risk and are often ill-prepared to cope with flooding. Some parks, albeit on rare occasions, will be extremely dangerous, with the very real possibility that deaths and significant property damage will occur. It can be argued that this high level of risk in itself represents a failure. To the extent that flood planning controls have failed to recognise the changing nature of caravan parks – especially, that many caravan parks have effectively evolved into medium density residential development – the planning system has indeed failed.

However, the vulnerable nature of caravan parks and manufactured home estates should not in itself lead to the automatic conclusion that such developments are unacceptable in floodplains and should be prohibited or removed. State Government policy and the Floodplain Development Manual require that the management of floodplains be evaluated with regard to a whole range of issues including social and economic factors. Caravan parks and manufactured home estates undoubtedly provide a valued source of affordable accommodation; their closures have been resisted by the community and government due to the dislocation of residents. Parks that cater for tourists often provide significant economic benefits.

Nevertheless, the evidence presented here suggests that in the often-fraught balance between the benefits of development and the risk of occupying floodplains, for caravan parks in NSW, insufficient weight has been given to the latter. Several key principles for redressing the current imbalance have been proposed, and mechanisms for implementing those principles have been put forward, which would see caravan parks developed in a manner more compatible with the flood risk.

Acknowledgements

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Terrorism preparedness of building facilities managers

Then and Loosemore present first-line research on risk, crisis and continuity management practices of facilities managers

Abstract

Many of the new security threats we face today, revolve around the apparent exposure and vulnerability of buildings and infrastructure to terrorist attacks. Yet little is known about the level of preparedness to deal with changes in terrorist strategies away from secured "hard" targets towards "soft" unsecured targets in the urban environment such as buildings, infrastructure and public spaces. This paper presents the findings of preliminary research into the risk management, crisis management and business continuity management practices of Facilities Managers responsible for a range of major public and private buildings in Sydney, Australia. The results suggest that Facilities Managers may underestimate the vulnerability of their buildings towards terrorist attack. They also point to a possible misconception about likely targets and inadequate systems for preventing and managing the occurrence and aftermath of a terrorist incident.

Introduction

For some time, there has been evidence to indicate that terrorists have shifted their interests towards the public by focusing on soft unsecured targets such as buildings, businesses, public spaces and public infrastructure (Fischer and Green, 1992, Decker 2001, Gilbert *et al* 2003, Nathwani 2004). Although there has been a considerable amount of technical research and development to design more terrorist resistant buildings (Holtorp 1994, Vesilind 2003), the state of facility management preparedness has been largely ignored. The aim of this paper is to help address this problem by exploring current facilities management strategies to prevent, cope with and recover from terrorist attack.

Terrorism and the built environment

Terrorism is the systematic use of violence for the purpose of achieving a political objective (ADSC 1996, Pizam and Smith 2000, ASIO 2004). In countries like Australia, which have received specific threats of

terrorist attack, protecting critical infrastructure and buildings from terrorism has become a high priority, prompting nationwide reviews of security (ASIO 2004, Vermeer 2004). These reviews have identified a range of facilities which are considered to be at particularly high risk of attack, including iconic buildings such as the Sydney Opera House, major bridges and public rail networks in major cities. Nevertheless, recent changes in terrorist strategies make it more likely that the focus of future attacks will be on soft unsecured targets where large crowds congregate such as transport facilities, large businesses, shopping malls, public spaces, schools, libraries and hospitals (Lorch 2001, ADSC 2004, Nicholls 2004, Nathwani 2004, Connolly 2004). Recent examples are September 11th bombings, the Chechnya school siege, the Moscow theatre siege, the Bali bombing, the Oklahoma bombing, the Aum Shinrikyo cult gas attack in Japan, the Madrid train bombings, the embassy bombings in Jakarta, Indonesia and the recent underground bombings in London.

Terrorism and facilities management

Most organisations are exposed to six main areas of security risk, namely: premises; personnel; equipment; data, information and knowledge; information systems and; public relations (BWA 1994). Facilities management is involved with the management of an organisation's premises risks and in simple terms involves planning, providing and managing a workplace environment to enable an organisation to achieve its core business objectives (Alexander 1996). Facilities management is a rapidly growing discipline which is in the process of defining itself and responsibilities taken by facilities managers can range from a simple traditional maintenance contract for building fabric and services to project management and space planning and more commonly, responsibility for a wide range of non-core business support services such as cleaning, catering, landscaping, parking, energy management, waste disposal and of course, security (McGregor and Then 1999, Barrett 2000, FMA 2004).

In recent years, security has understandably become a more important dimension of a facilities management function, since the security of an organisation's premises are is clearly central to the protection of an organisation's human, intellectual and physical capital and thus its

business continuity. However, in most organisations the importance of facility-related issues has gone unrecognised; security traditionally being restricted to issues such as theft, computer crimes, drugs and workplace violence (Baen 2002). This is a trend which has driven by a general belief that it is the government's responsibility to deal with terrorism in the built environment (NEI 2003). Nevertheless, recent changes in building procurement processes towards private-public-partnerships have ensured that over 90% of Australia's critical infrastructure and buildings are now privately owned. In this new privatised environment, effective protection against all forms of hazard, including terrorism, now depends on an effective partnership between the business community and government (Rothery 2005). While governments and authorities may do much to prevent the likelihood of terrorist attack through intelligence agencies, information networks and emergency services, it is also the responsibility of property owners and their facilities managers to manage this risk.

However, buildings represent a complex security challenge since the physical location, design, construction and operation of a building can represent both a risk and opportunity to security objectives. Nevertheless, it is important to recognise that most buildings and infrastructure were conceived and designed before recent terrorist attacks rose to prominence in peoples' minds, have not been designed with security in mind and therefore represent a logistical problem in controlling access and visibility. For example, many buildings have numerous access points which require a greater degree of security to prevent physical infiltration. Many buildings are located in busy inner-city areas where large numbers of people and buildings in the surrounding urban environment may afford protection for potential threats and risks for effective prevention and response. Furthermore, the majority of buildings we occupy have many spaces in which explosive devices can be easily concealed and which are difficult to monitor, control and evacuate. Indeed, with new high efficiency ventilation and water supply systems, very large buildings containing many thousands of people could be completely contaminated by a biological attack in a few minutes (CIS 2002, Perinotto 2002). The materials used in buildings can also hinder effective security. For example, contemporary cladding materials such as glass present a higher degree of visibility to outside elements, a high level of fragmentation in an explosion and modern sprinkler systems to deal with fire can cause enormous collateral damage to electronic information systems and security systems and can destroy physical data records. All of these risks are amplified when an organisation's facilities cover more than one building or site and where the facility envelope may include a range of areas for non-core services including catering, entertainment,

recreation, relaxation, parking, refreshment etc. There may also be hazardous materials stored in the buildings such as compressed gasses, flammables, corrosive materials, explosives and even radioactive materials. And in some businesses, the number of people using a facility can run into many thousands per day and the access needs of all these people and the interrelationships between the many different functions which operate within it must be considered in any effective security strategy.

Clearly, with increased terrorist risks, it is now more important than ever, for building owners to think carefully about the design of their buildings and whom they share information with during the planning, design, construction and operational phases of a facility's life. It is also important that any response is commensurate with critical security threat factors such as: the significance of the business as a target; the proximity to such organisations; the history of terrorist attack in the building's proximity; the ease and extent of public access to the building and its surrounding urban environment and; existing security measures in the building and its surrounding environment. In response to these risks a range of preventative and coping design strategies should be employed to reduce the probability of terrorist attack and the impact of such an attack on physical assets and people, should it occur. For example, preventative measures may include: cladding or re-cladding a building in blast absorbing, non-fragmenting materials such as reinforced concrete or laminated/reinforced glass; installing physical barriers to entry such as screens, turnstiles or landscaping; locating cellular offices on the perimeters of open plan offices; locating car parks away from highly occupied areas; locating important areas (with many employees, hazardous materials and critical systems) away from vulnerable disaster zones; simplifying perimeter shape and reducing perimeter area to minimise access and reduce blast waves reflection; floodlighting and; installing electronic alarms, detectors, surveillance cameras, close circuit TV and centralised control systems etc. (BWA 1994). The role of the facilities manager with responsibility for security is to ensure that such measures are incorporated into a business's facilities, that they are commensurate with levels of risk, that they are maintained effectively and updated in response to changes in critical risk factors and, that they are tested frequently. It is also their responsibility to liaise with emergency services, devise and document and implement emergency response procedures, to ensure that in the event of a crisis an organisation's assets and personnel are afforded maximum protection and to ensure that a business can recover from an attack as rapidly as possible. These dimensions of a facility manager's security responsibilities are discussed in more detail below.

A comprehensive terrorism management strategy

A complete strategy to deal with terrorism should incorporate a *preventative* (risk management), *coping* (crisis management) and *recovery* (business continuity management) dimension.

Prevention

Risk management is a proactive process to help mitigate risk which has a number of simple steps. First, the organisational assets which can be affected by an act of terrorism must be clearly understood to identify the potential impact of a terrorist act. These assets can include people, buildings, technologies, raw materials, data, reputation etc. Having identified assets and vulnerabilities, the next step is to identify ways in which they can be exploited and to measure the likelihood and consequences of this. The final stage of the risk management process is to develop, implement and monitor countermeasures to minimise the risks identified.

Crisis management

The steps involved in managing a crisis are: take charge; understand the circumstances; define the problem; identify solutions; move decisively to eliminate causes and; prevent recurrence (Loosemore 2000). Security and public relations are also important issues since interference from unwanted elements can exacerbate a crisis or, at the very least, interfere with its management. After a crisis, attention must be given to recovery and rectifying the long-term consequences of a crisis such as damage to the environment, or dealing with government or legal investigations.

Business continuity management (BCM)

BCM is concerned with how an organisation plans to re-establish key business processes in the aftermath of

a crisis to ensure survival in the longer-term. The first stage in developing a BCM program is to develop a clear plan for development and implementation with key objectives and milestones. The next step is to ensure that managers understand their business and undertake a business impact analysis, which involves asking questions which revolve around “outage”. Having identified maximum outages, a treatment plan should be developed to mitigate potential outage losses. The penultimate step is to document them in a BCM plan and to implement them and the final step is to regularly audit, test, refine and maintain it.

Method

A survey was conducted to investigate the risk management, crisis management and BCM strategies of facilities managers responsible for twenty seven potentially vulnerable buildings in the Sydney metropolitan area, Australia. A vulnerability assessment using FEMA (2004a) revealed that the sample consisted of no low risk buildings, 93% medium risk buildings and 7% high risk buildings. 74% of the buildings had a high visibility and 44% a high asset value, indicating that these buildings were important to their local constituencies. An accessibility assessment indicated that the sample buildings had unprotected entry and open access. Population capacities indicated that 85% of the sample buildings had a daily population rate of over 500 (19% over 5000, 44% over 1000 and 22% over 500) and 70% of the sample buildings had a local urban population within a one mile radius of over 5000 people.

Perceptions of vulnerability

Perceptions of vulnerability are illustrated in Figures 1 and 2.

Figure 1. Perceptions of vulnerability

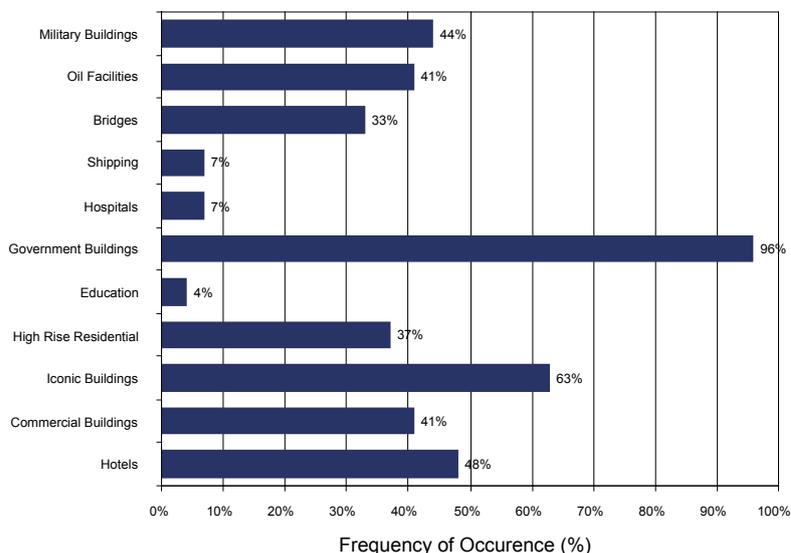
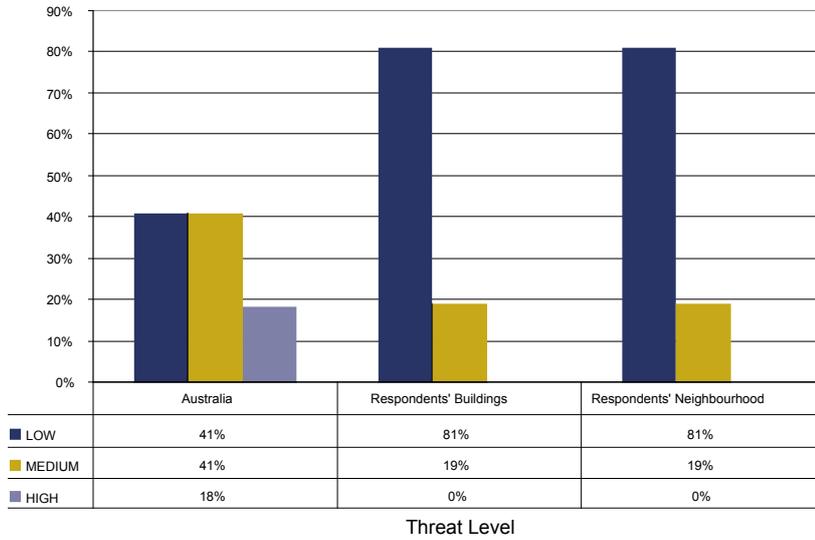


Figure 2. Perceptions of threat



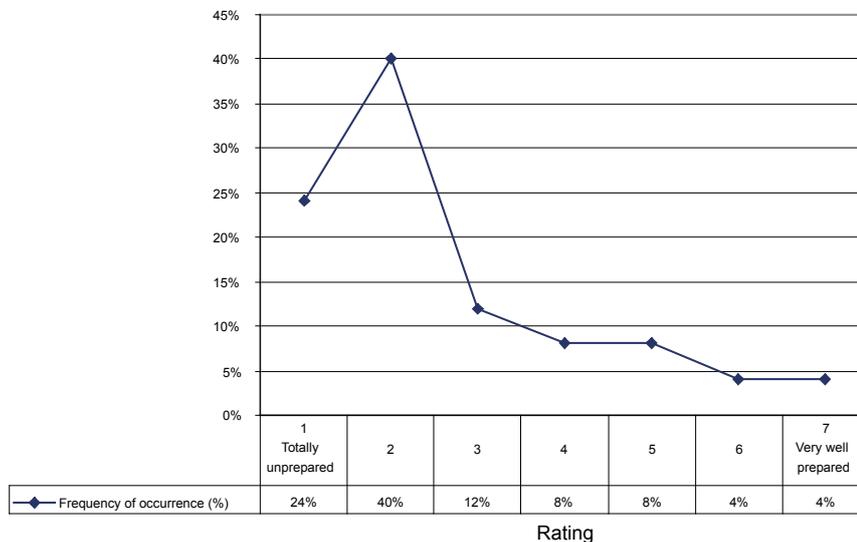
Predictably, government buildings were perceived as most vulnerable (96%), followed by iconic buildings (63%) and then hotels (48%). 41% of our respondents in Figure 2 considered the general possibility of attack to be low. 81% of our respondents also perceived the possibility of a specific attack on their building as low. These perceptions contrast with recent intelligence and research which identifies a medium level of risk and unsecured soft targets being at greatest risk. Further evidence of risk underestimation is found in a comparison of our respondents' perceptions of threat (Figure 2) with our initial vulnerability assessment which indicated that 100% of our sampled buildings were of medium or high vulnerability. Finally, the

identical results relating to specific buildings and neighbourhoods are also interesting given the range of vulnerabilities identified in Figure 1. This may indicate that our respondents have difficulty in distinguishing between the two and understanding the relationship between their building and the wider urban environment. It also implies a lack of collective responsibility in the built environment towards dealing with terrorist threats, which could inhibit coordinated responses to such events.

Risk management

Figure 3 illustrates the perceived state of preparedness for terrorist attack in our sample.

Figure 3. Perceived state of risk management preparedness



76% of our respondents considered their buildings as being unprepared for an attack (24% being totally unprepared). 48% of respondents had a formal risk management system to deal with terrorism, while 41% did not and 11% did not know. 64% of those who did not have a system in place cited the low risk of terrorism as the reason. The other 36% provided a range of reasons such as “not applicable”, “the tenant has a program in place”, “considered necessary but not yet

implemented”, “currently looking at a program” etc. Of those programs that did exist, 69% had been developed in the last five years, in reaction to the September 11th and Bali bombings.

Figure 4 shows that risk management systems typically focussed on the protection of employees, premises and plant and equipment. The protection of IT systems and business processes are given relatively low priority.

Figure 4. Scope of risk management systems

Activities	Respondent												
	4	5	8	10	11	12	14	20	21	22	23	24	25
IT / Communication Systems		✓	✓										
Premises / Facilities		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
Processes		✓	✓	✓									
Plant and equipment		✓	✓		✓			✓	✓	✓	✓	✓	✓
Employees / tenants		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Other													
Don't know	✓												

Crisis management

74% of our respondents had a crisis management plan for terrorism, a higher response than the 48% for risk management systems, indicating a reactive approach to the problem. Perceptions of crisis preparedness are illustrated in Figure 5.

Figure 5 does not reflect that 74% of our respondents had a crisis management plan and would suggest a relatively low level of confidence in them. Only 55% of our respondents had updated their plans, 20% had never been updated and 25% of our respondents did not know. The channel used most widely to communicate those plans were evacuation drills (95% of respondents) and training (75% of respondents) and the stakeholders involved are illustrated in Figure 6.

Figure 5. Perceptions of crisis preparedness

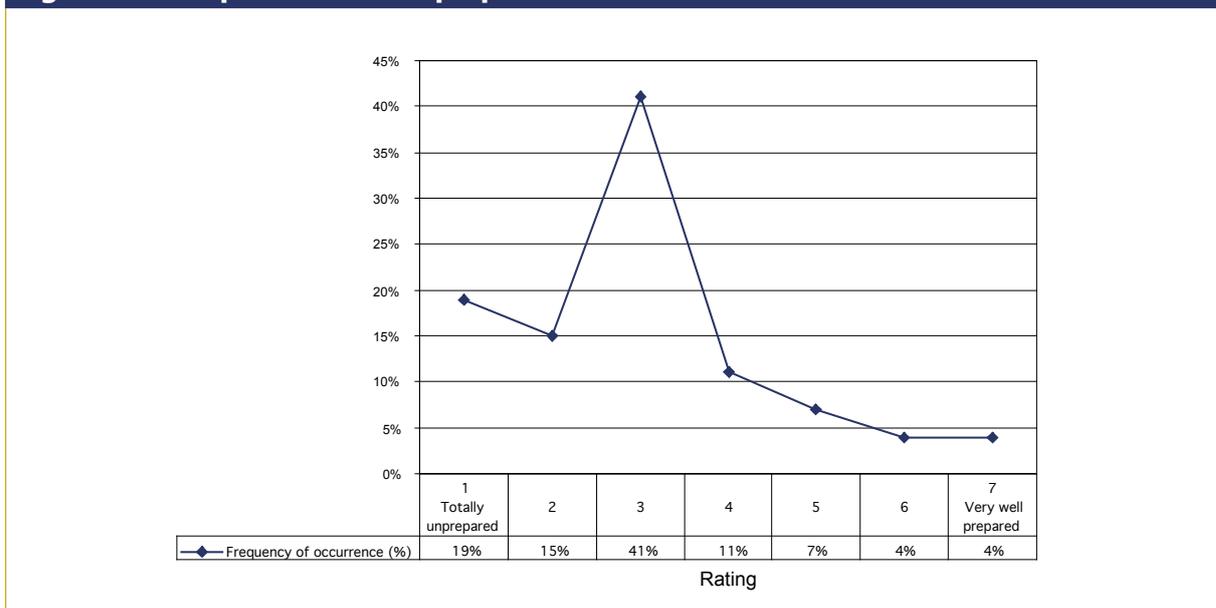
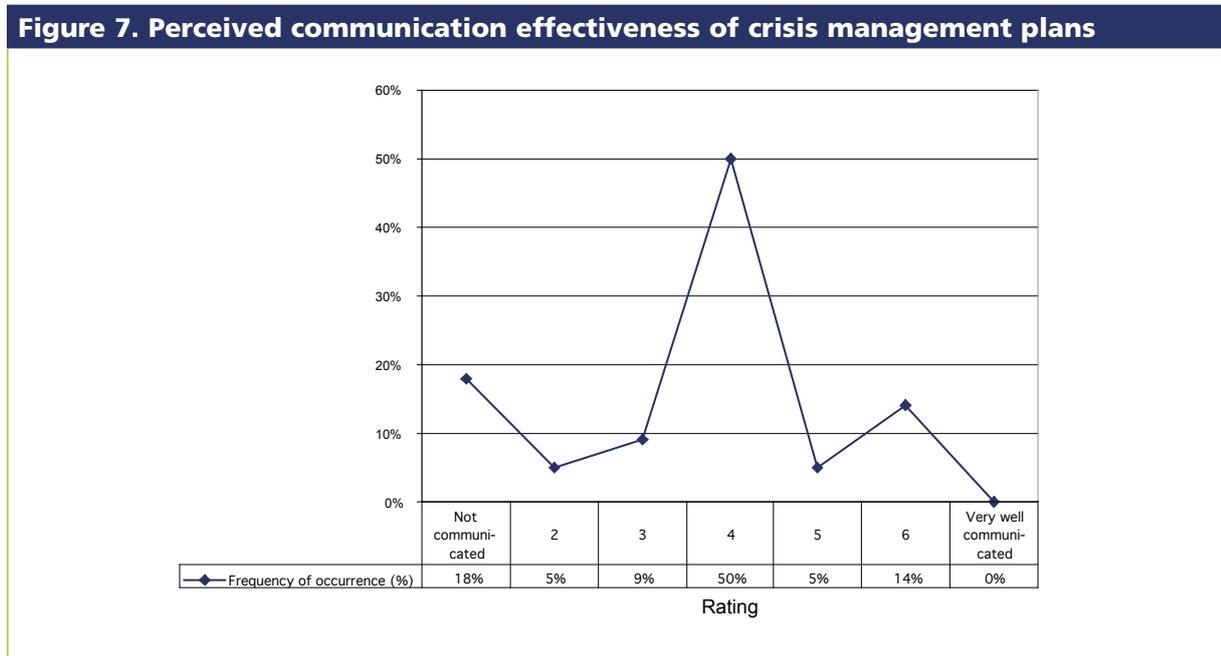
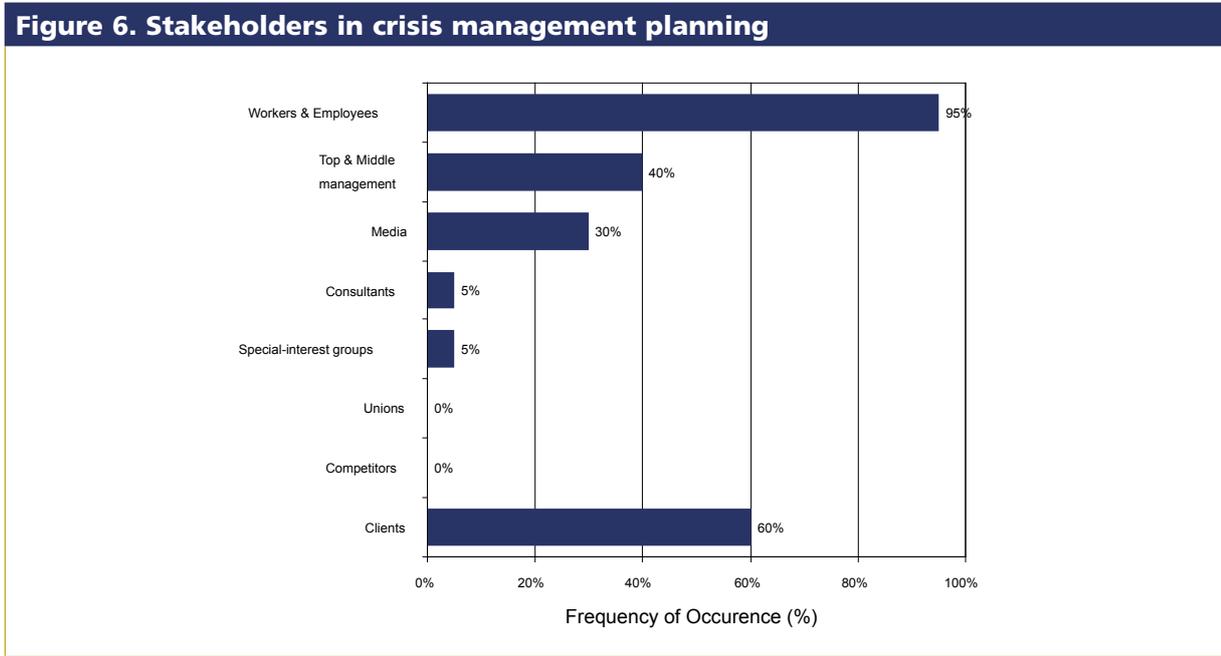


Figure 6 indicates that crisis management planning is internally focussed on workers and employees. The complete exclusion of the unions is somewhat surprising given their strong emphasis on health and safety but may reflect a non unionised white collar workforce. It is

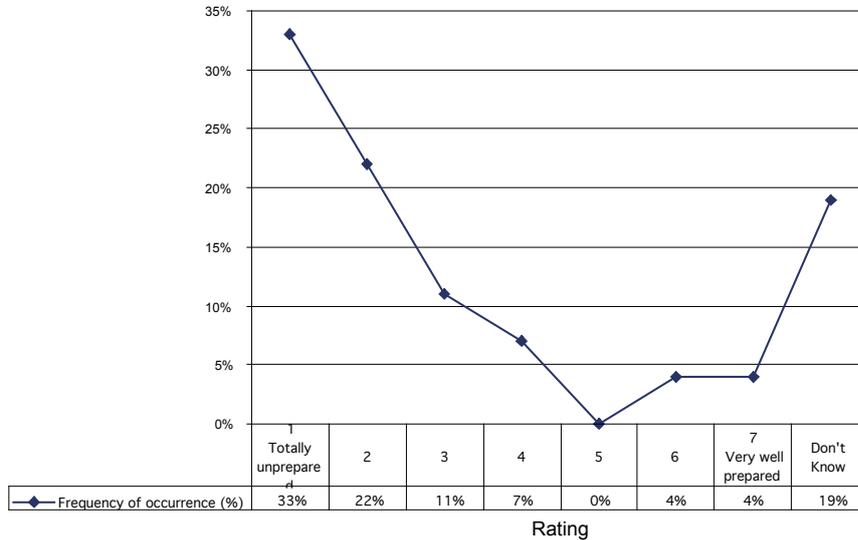
also surprising that 40% of our respondents did not consider clients as a key stakeholder and that 70% did not see the media as an important stakeholder. These findings are reflected in the perceptions of communication illustrated in Figure 7.



Business continuity management

The overall rating of BCM preparedness given by our respondents is illustrated in Figure 8.

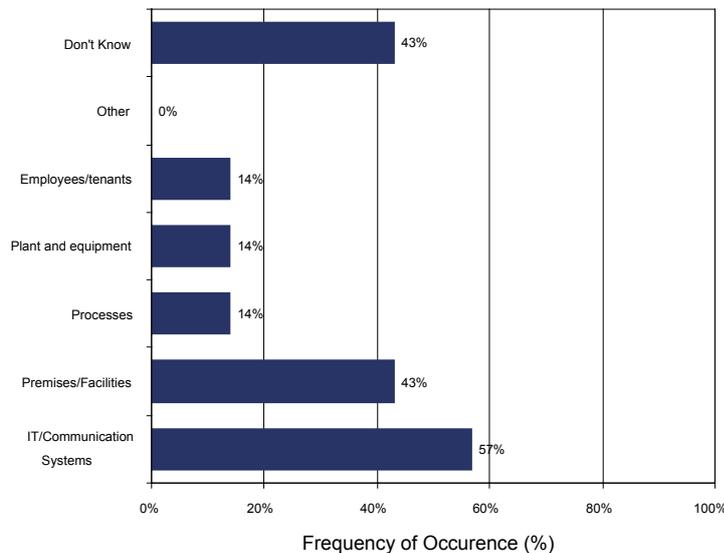
Figure 8. Perceptions of BCM preparedness



The rather poor state of preparedness portrayed in Figure 8 is reflected by the fact that only 26% of our respondents had a BCM plan in place, that 52% did not and that 22% did not know. Reasons for this revolved around a perceived lack of responsibility for clients' business operations. Other reasons were terrorism being a low risk (31%) and BCM planning being a low priority (56%). To most of our respondents, BCM was seen as the responsibility of individual tenants

reflecting an ignorance of the relationships between buildings and tenant business objectives. Of the 26% of respondents who did have a BCM plan in place, only 57% had undertaken a criticality assessment. This is not surprising given that tenants were rarely regarded as key stakeholders in BCM planning. The most widely involved stakeholder was the IT department which reflects the common problem associated with BCM plans to focus on IT activities, as illustrated in Figure 9.

Figure 9. Stakeholders in BCM planning



Conclusion

Given the exploratory nature of this research, it was inevitable that our survey was general in nature and fairly limited in scope. There is undoubtedly a need for more extensive and detailed investigations of the risk management, crisis management and BCM practices of facilities managers in a range of different building contexts. Furthermore, this research was conducted before the London underground bombings which are likely to have changed perceptions of terrorist risk, at least in the short-term. Nevertheless, the picture which has emerged from this research is quite disappointing. Not only is there a general lack of preparedness for terrorist attack but there is a worrying level of ignorance and a lack of confidence in the limited plans that do exist. Furthermore, the limited measures that have been taken to deal with this threat are largely reactive in nature and our respondents seemed to underestimate the level of risk in a general and specific building context. There was also a general misconception about likely targets.

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50 years of educa

A 50th Anniversary retrospective on the Aust

I have been fortunate to have seen so many changes over the years in EMA. Let me share with you some of the more light hearted ones, and what it was like in 1971 when I started at the Civil Defence School.

Staff

At the time the School came under the Commonwealth Department of Interior. The staff consisted of a Commandant, who had his own personal secretary, six instructors, a Registrar with four support staff and nine outdoor staff. The House was managed by a matron who lived permanently on the site. She had six or seven staff to manage including cooks and kitchen staff. We also had a bar person and three night watchman who each did an eight hour rotating shift.

It was the days of no females outside and no males employed inside the House, except perhaps a cook and an assistant. The males were in one staff room and the females in the other. Smoking was permitted in staff rooms and often one could hardly see the end of the room through the smokehaze.

A couple of days after I started, I was called into the Registrar's office to place my right hand on the Bible and

swear the oath of allegiance to Her Majesty the Queen. I swore to be an honest and fervent public servant. This was a must in those days.

The buildings and grounds

Entry to the school was via the Mount Road front entrance. No gates were attached, just a centre island light box containing yellow perspex which was lit up at night. The bridge and road were built in 1919 for the owner of the Macedon Golf House at a cost of approximately £2000. A gatehouse building was down the left hand side of the main driveway and had previously been converted. It was now being used for training in radioactivity response.

As one proceeded up the hill to the roundabout, which still remains, there was a grand front entrance to the Civil Defence School. This was a large double storey light grey coloured stucco concrete and timber building with an iron roof. A large veranda extended from the dining room across to the front left hand side of the building. This was built in 1919 as a golf guesthouse by a Melbourne bookmaker.

A couple of windows peeked up from the ground level on the left hand side. This was the bar area. A flagpole stood proudly in the garden on the north side of the roundabout. The flag was raised each morning and taken down at the end of the day by the nightwatchman. One could lose count of how many rooms this building had. I can remember six months after commencing, finding, what looked like a broom cupboard. It actually contained a vertical ladder which went to the highest point of the roof space. Students had found this before me and the remnants of late night parties in the attic were visible.

All main passages within the front of the main building had the usual run of good quality Commonwealth carpet with dark stained timber floors to the side. Red fire buckets filled with sand were at the end of each passage with the word FIRE in large white letters. Staff and students were always reminded, 'don't put your butts in the sand buckets'. Original brass ship lanterns were mounted on the walls at the end of each main passage. The nightwatchmen were required to polish and light these lanterns on a weekly basis and paint the fire buckets yearly. These lanterns are now displayed in the Brass Lantern Bar in the current accommodation building.

A brave few travelled to work via Waterfall's Road, this being just a gravel track at the time. Vegetables used in the kitchen were grown by the garden staff on the land opposite.

The Commonwealth budget was very tight even in those days. Sometimes we machined up the oregon from old unused beds to obtain timber to make new furniture.



The gatehouse

Education and training

Australian Civil Defence School by John Ramsdale

I did the carpentry, joinery and maintenance repair work as well as a variety of hands-on tasks. It was considered easier and cheaper to fix Civil Defence vehicles in-house rather than go to commercial operators. We had our own fire truck, a converted Army Blitz. The hose reel was on a pull-out hose reel cart. It was referred to as one of the 'little horses'.

Each Monday at 13:00hrs a fire drill was run for the students by staff members. One Friday near Christmas we had a special staff training session. We pulled out the hose reel to a simulated fire.



Some previous staff waiting for a rescue exercise to start

Someone had not tied the other end of the brass hose coupling to the cart and, as a result, it flew in the

air and cracked me across the face and broke my nose. It was back to work again on the Monday.

Practical training

In 1971 we had facilities like a radioactive compound where low doses of compound were stored in a small solid concrete shed, to the north west corner of the current car park. This was used for students to familiarise themselves with apparatus equipment training.

Practical rescue training for students was conducted on the 'Rescue Range' located on the grassed area opposite the current car park. It had

50 Years of Education and Training at EMA

Education and Training at EMA has come a long way in 50 years. In the early days the focus was on skills based training, mainly for the emergency services. This training is now undertaken by the States and Territories and the Institute concentrates on education for the broad range of people involved in emergency management. The Institutes current curriculum profile includes a range of competency based programs, a Graduate Certificate, and an Advanced Diploma in Emergency Management. Whilst the quality of EMA education has always been of the highest standard, external auditing of our learning and assessment system against the Australian Quality Training Framework Standards for Registered Training Organisations ensures that Qualifications and Statements of Attainment gained at EMA are now recognised under the national training framework.

EMA is committed to continuous improvement of its programs and services. Training needs are identified in consultation with the States and Territories with the aim of contributing to capacity/capability in emergency management. Identified training needs are assessed against national competency standards from the Public Safety and other Training Packages. This approach maximises participants' pathways for career and study progression.

Competency based curriculum is developed to meet training needs that do not align with current national competency standards. Curriculum is accredited through the Victorian Qualifications Authority and is nationally recognised. For details of the range of competency based programs and accredited courses offered by the Institute see the current hand book at www.ema.gov.au

Education and training programs are delivered either at the Institute in Mt. Macedon or by extension in the States and Territories. All programs are multi-agency and residential programs include participants from all states and territories, providing valuable networking opportunities.

Research and Innovation

The Institute keeps abreast of current international research and conducts occasional national workshops to explore emerging issues in emergency management. This approach has led to the development of a number of the Institutes accredited programs, recent examples are Emergency Management for Local Government, Business Continuity Management and Risk Based Land Use Planning.

A range of publications to support good practice in emergency management are developed in consultation with stakeholders.



Boiler room and hot house



Behind main building



Behind main building

simulated bombed buildings with brick rubble surrounding them. Outdoor staff were trained in rescue work and expected to take part in rescue demonstrations for the students. One of my favourites was the oxy lance, used to burn holes through solid concrete to reach a person trapped under rubble. When the oxygen was released through the preheated pipe, (which contained 14 black wires) a very large roar with sparks flying out would take place. On most occasions the students were not in their same viewing position at the end of the demonstration as they were when the demonstration started!

A hay shed was on the southern end of the range. The hay was used for smoke and heat test training. Another small tin fire training shed was located near where the cut

flowers are now grown. The hay was lit and instruction was given on how hay on fire in a shed could be put out with minimal water by persons if attacked soon enough. A staff member was required to keep low to the ground and enter the fire with a fire hose connected to a stirrup pump and bucket of water. Another staff member would man the stirrup pump by pumping like hell to keep the water pressure up. Only one bucket of water was used.

Further south were mud brick ovens, made by the students out of brick rubble and mud mortar. A clean rubbish bin was built in and used as an oven. A flue pipe was installed to make the fire draw properly. During the various Welfare Courses students were required to light up these ovens and cook a stew meal. On one occasion everyone

tried to light an oven that wouldn't light. Much later it was found a rabbit had become stuck in the flue downpipe. Once it was removed, the oven worked really well.

We all liked the night rescues as it meant a free meal, plenty of hype and some extra pay. In preparation for the rescue courses my colleague, Tom, and I were required to make patterns of full size people and sew up full size dummies. We packed them with saw dust and lead weights to get the average weight of a person. Tom left his industrial sewing machine on site at all times for this reason. These dummies were planted among the rescue building rubble heaps for the students to find. Many rescue techniques would be learnt by the students such as how to lash stretchers. They were trained in the different type of knots for different

applications. If you did not have enough stretchers to remove a person from the rubble you used a door for a stretcher. Students also learnt the different types of building floor collapses as well as different types of building shoring techniques.

In the early 70s we used the plumbers, fitters and electricians from Laverton Air Base as we were required to use only Commonwealth staff. Sometimes they would arrive on a cold winter Mt Macedon morning in a ute laden with pipes and an unlucky tradesperson riding in the back. One plumber was old Steve. He was a bald round-faced stocky guy who had a lot of time for everyone. He would never go into the building for hot water for

a cuppa. Instead he would always boil the billy outside on a metho burner. He insisted on drinking his tea outside the buildings.

The storeman was not available until approximately 09:00hrs each day. His first job was to wind and set the clocks in the training rooms and issue petrol for the vehicles. We had one of the old hand pump bowsers where he would pump the fuel up into the glass bowl and release the handle switch. All issues from the store were counted. Even screws, taken from their box, required the remainder written on the box for next time.

50 Years of History

On the 20th of October 2006, EMA Institute formally celebrates its 50 year anniversary. The school was officially opened on the 2nd of July 1956 by the Minister for the Interior. I am fortunate and proud to have been part of EMA for the past 35 years. I have witnessed a lot of changes during this time to make the present facility the cutting edge training facility it is today.

Skylab and the Institute

'SKYLAB', a scientific laboratory in space, was launched from Kennedy Space Center on 14 May 1973. In just over six years in orbit, it was visited for a total period of almost six months (171 days) by teams of three astronauts who, having completed their missions, returned to earth in the spacecraft which had carried them to 'SKYLAB'. It fell to earth on 12 July, 1979, creating a "debris footprint" over the Indian Ocean and remote areas of Western Australia, estimated by the American Aeronautics and Space Administration (NASA) to be about 3000 kilometres long and 50 kilometres wide.

The majority of 'SKYLAB' pieces came down in the Indian Ocean, but heavy pieces fell between Esperance, from where the Emergency Management Australia Institute's mounted remnant was recovered, and Rawlinna, in Western Australia.

The 'SKYLAB' re-entry caused no injury, and no damage has been reported.

'SKYLAB' itself was 35 metres long and weighed more than 89 tonnes. It was designed to accommodate three men, and provided separate bedrooms, a shared kitchen and other facilities. It orbited approximately 430 km above the earth.

The component of 'SKYLAB' mounted at the Institute is a welded titanium sphere 615 mm in diameter, weighing some 55 kg. Twenty-two such spheres were contained in 'SKYLAB' to facilitate attitude control – each sphere contained nitrogen under pressure, and was plumbed to a common manifold connected to attitude thruster modules.

A substantial part of 'SKYLAB' activities related to studies of natural phenomena on earth and in the earth's atmosphere. This included studies of meteorological and vulcanological phenomena.

It is fitting that, in the unveiling of the 'SKYLAB' remnant at the Institute, the future of those who seek to develop an efficient national counter-disaster capability should be linked to those who sought to understand and explain the nature of the hazards which face mankind.

The 'SKYLAB' remnant mounted at the Institute was provided by courtesy of Mr P Arledge, Local Volunteer Emergency Service Controller at Esperance, WA, within whose region of responsibility a number of 'SKYLAB' remnants landed.

Reprinted from 25th anniversary commemorative booklet – Emergency Management Australia.



Skylab remnant at Emergency Management Australia Institute, Mt. Macedon, Australia

Local government views on addressing flood risk management on the Gold Coast

Godber, Hasings and Childs present Gold Coast local government planning officers' views on 'sustainable' floodplain management in the region

Abstract

The premise of sustainable development infers the need to integrate risk management with land-use planning and sustainable community development. To achieve 'sustainable' floodplain management, policy makers and local government officers need to have an effective knowledge of the risks considered to be 'acceptable' by the community as well as the levels of flood awareness and local experience. This knowledge then needs to be further incorporated into acceptable risk standards and floodplain land-use policy – but how can this be achieved? Research to date has identified several factors relating to government, perception, resource availability and communication which limit such integration. Based on a case study on the Gold Coast, QLD, this paper presents the views of local government officers on potential solutions to address the problems of setting and communicating flood risk standards in land-use planning.

Introduction

In studying perceptions of acceptable flood risk on the Gold Coast, Queensland, Godber (2005a; 2005b) postulated that land-use decision-makers needed to more effectively incorporate community risk perceptions when establishing 'acceptable' risk standards. In Queensland, local government has prime responsibility for the application of hazard management. This paper presents the views of local government officers on potential solutions to address the problems of setting and communicating flood risk standards in land-use planning.

The focus case study, the Guragunbah urban floodplain, is located within the lower catchment of the Nerang River system (figure 1). This region is susceptible to flood¹ but has experienced substantial population growth over the past three decades. This has resulted in significant land-use change from predominantly

Figure 1. Location of Study Area – Guragunbah on the Gold Coast, QLD



farm and swampland to urban development (Godber, 2005a). The region continues to attract new residents (approximately 15 000 per year, Gold Coast City Council, 2003; ABS, 2001)² many of whom may have little or no direct experience with flooding in South-East Queensland (Table 1).

Although construction associated with urban floodplain development at Guragunbah has generally conformed to regulation based on the best available flood-risk information at the time, some developments are now

1 In the latest extensive flood event, in July 2005 moderate to major flooding affected the Gold Coast region resulting in inundation of residential and commercial properties and infrastructure.

2 On the Gold Coast the number of private dwellings (houses, townhouses, etc) has increased from approximately 14 000 in the 1960s to just over 187 000 in 2000 (Gold Coast City Council, 2003; ABS, 2001). Further to this, the Queensland State Government's Regional Plan for the South-East indicates that populations within existing urban areas are set to increase in the order of 50 000 persons per year (Office of Urban Management, 2004).



The red line indicates the water level within residential areas during the extensive flood event in July 2005.

located at elevations below today's commonly accepted planning standard (i.e. the "defined flood event" – DFE) of the 1-in-100 year flood. Consequently, land-use planners and risk managers face the challenges of how to manage the potential exposure to flood hazard, and communicate the flood risks to the community. Complicating this is the fact that many in the community have inaccurate perceptions of the actual flood risk and differ in their acceptance of that flood risk, which has implications in terms of increasing community vulnerability (Godber, 2005a,b). Research has shown that risk perception and acceptance is influenced by a number of factors including: familiarity and experience with a hazard, knowledge about impacts, the way in which information is communicated/presented, and cognitive or psychological characteristics (Fischhoff, B., S. Lichtenstein, P. Slovic, S.L. Derby, and R.L. Keeney, 1995; Tobin and Montz, 1997; Slovic, 2000a,b).

Background

Surveys conducted in 2002–2003 on the Gold Coast by Godber (2005a; 2005b) established that the level of flood risk considered to be acceptable varies among key decision-making stakeholders in the community, namely local government, the development industry and the floodplain residents. Table 1 summarises key findings of this research, based on data collected from samples of stakeholder groups within the floodplain. The research identified a number of issues concerning floodplain land-use planning, risk management and acceptable risk and concluded that more attention could be directed towards planning *with* as opposed to *for* the community when considering the *acceptability* of risks and hazard impacts. From the results this approach is argued to be more appropriate in light of the public misinterpretation of flood impacts associated with standards such as the traditional 1-in-100-year flood.

These results imply that policy makers need to more effectively incorporate community risk perceptions when establishing 'acceptable' risk standards. The question becomes: *What can be done at the local government level to realign acceptable risks?* The present paper identifies

potential management strategies to address these issues, particularly from a local government perspective, and explores their efficacy in the case study region. Views from council officers on four potential strategies to address the problems of setting and communicating risk standards in relation to flood hazard and land-use planning reveal some limitations and possibilities.

Table 1. Key Findings from Godber (2005b)

<p>The stakeholders considered risks from different perspectives</p> <ul style="list-style-type: none"> • The floodplain residents in terms of the impacts that are likely to occur to their homes; • The local government and the development industry in terms of the management responsibility and regulatory and legal obligations for sites.
<p>Current planning standards were misinterpreted by the public and generally considered to be unacceptable.</p> <ul style="list-style-type: none"> • The floodplain residents were generally unaware of the land-use planning measures that had been implemented to address flooding (for example minimum development standards or acceptable risks); • The floodplain residents did not believe the local governments would permit residential land-use within areas that may be flooded, if only by events greater than the current minimum acceptable standard (the 1-in-100 year flood); • When the potential impacts associated with the 1-in-100 year flood were illustrated graphically, the floodplain residents considered the consequences to be unacceptable.
<p>Flood risk could be 'removed' through land-use planning.</p> <ul style="list-style-type: none"> • Many floodplain residents and some development industry representatives did not consider land which had been developed, (particularly to heights above previous flood events or the planning standards) to be "floodplain"; • The planning standards were often seen by the some of the residents and members of the development industry as having removed all flood risk.
<p>Differences exist between actual and perceived responsibilities for education and flood mitigation.</p> <ul style="list-style-type: none"> • The floodplain residents considered local government to be responsible for informing the community about flooding and then mitigating the risk; • The majority of development industry representatives also considered community education to be the responsibility of the local government; • The developers did acknowledge the role played by their industry in mitigating flood risks; however, the representatives did suggest that local governments needed to ensure that land-owners actually undertook the mitigation required for their sites; • The Local Government considers education and mitigation to be 'whole-of-community' issues.

The Four Strategies

Policy makers and local government officers need to have an effective knowledge of the risks considered to be 'acceptable' by the community as well as the levels of flood awareness and local experience. This knowledge then needs to be further incorporated into acceptable risk standards and floodplain land-use policy – but how can this be achieved?

The Godber studies (2005a; 2005b) identified stages at which decisions about flooding and acceptable flood risk were made at the local government level, and by whom. This was achieved through a modelling process, describing the planning and risk management processes existing within the Gold Coast City Council. The derived model was also analysed in terms of frameworks and processes recommended within the literature (Holway and Burby, 1993; Smith *et al.*, 1996; Smith, 1998; Penning-Rowsell *et al.*, 1998; Burby *et al.*, 2000) and existing policy and guidelines (Queensland Government, IDAS 1997; Standards Association of Australia, 1995; SCARM, 2000; EMA, 2002). From this analysis opportunities were identified to further integrate flood risk management and land-use planning, including closer consideration of acceptable risks.

1. Change the planning approach

The first strategy involves changing the planning approach and the way in which planning schemes are constructed, from the current top-down approach, where local government makes the decisions, to a bottom-up approach based on what risks the community considers to be acceptable. For example, within QLD, local governments already seek public comments and feedback on particular developments and proposed land-use, as well as drafts of new planning schemes. This community consultation, however, does not appear to drive the setting of acceptable flood risk standards. Rather local government adopts a standard incorporating a level of risk which it believes is acceptable within the community. This results in potential mismatches between imposed risk standards and community preferences.

2. Change the planning process to allow flexibility in standards

The second strategy involves modifying the existing planning process to allow the community to select the risk standards it considers to be acceptable for any given land-use i.e., flexible decision-making. At present there are different standards of flood risk exposure considered acceptable for different land-uses (i.e., 1-in-100 for residential homes; 1-in-20 for parkland areas), but these have traditionally been adopted from pre-existing policy and technical assessments of risk, rather than being based on community perceptions of flooding.

It is possible for local governments to adopt flood risk standards that differ from those specified within the existing legislation and guidelines (i.e., within QLD the State Planning Policy (SPP) 1/03), if the new level

can be justified through flood studies that reflect the community's understanding and acceptance of flood risk impacts.

3. Mitigate the Existing Risk

The third strategy involves using structural engineering methods (such as raising dam walls or constructing levees) to mitigate the existing flood risks. Instead of changing the planning standards, the actual risk that exists on the ground would be altered to levels considered to be 'acceptable' by the community. For example this could be achieved through raising the walls of the existing dams; constructing additional dams to increase storage capacity; and/or constructing levee banks around weak points in the river banks or near highly populated/developed locations. Traditionally, levees and other forms of structural engineering have been identified as one of the most feasible options for mitigating the risk to existing land-uses, e.g., Lismore and Grafton, NSW. This mitigation, however, has been based on technical assessments of risk as opposed to community perceptions of acceptable (or unacceptable) flood impacts.

4. Communicate the risk better

The fourth strategy involves communicating flood risks and associated impacts to stakeholders in a way that the community can understand and relate to their own location or situation. For example this could be achieved through the use of photos, scenarios or flood markers instead of only technical expressions such as 1%AEP or 1-in-100-year flood. At present, some local government areas (e.g. Rolleston in QLD and Raymond Terrace in NSW) have flood markers on telephone/telegraph poles around their towns, illustrating the water levels of previous flood events.

Local government responses to the four strategies

Interviews were conducted in October 2003 with representatives (hereafter referred to as council officers) from the risk management and land-use planning units of the Gold Coast Local Government. The council officers, and their roles within the floodplain land-use planning process, included:

- A representative from the Flood Strategies Section, a unit responsible for developing floodplain management and land-use planning policy and consulting with the community about flood risk;
- A representative from the Strategic Environmental Planning and Transport Directorate, a unit responsible for developing land-use planning guidelines and assessing the suitability of proposed land-use; and
- A representative from the Planning (South) Committee, comprising Local Area representatives and responsible for making the final decision about the suitability of land-use on behalf of the local government.

The four strategies described above and the assessment of their feasibility by council officers (working within the constraints of legislation and local government policy) are presented below.

1. Change the Planning Approach

The council officers suggested that changing from the current top-down to a bottom up planning process would not be practical at the local government level, because any envisaged changes to the actual legislated processes would be the responsibility of the State Government. There were also suggestions that the State Government had not provided enough resources or guidelines for local governments to consult with the community about risk, and specifically, acceptable risk. While community consultation does occur, risk acceptability is not covered. As a result, there were concerns that the community could not be sufficiently informed about the range of issues that had to be considered when designing planning schemes. Furthermore, changes to the actual legislated process would need to be initiated and undertaken at the State Government level to ensure an equitable process would be adopted across the State's floodplains. The SPP 1/03 however, does address some of these issues, but at the time of interviews the legislation had only been enacted for one month.

2. Change the planning process to allow flexibility in standards

While this strategy was not entirely dismissed, the council officers did indicate that it would be impractical to change the minimum planning standards for several reasons. Firstly, local governments do not want to initiate changes that may have negative impacts on other local government authorities and development interests that might reduce land availability and affordability. Secondly, there were also concerns about which stakeholders should be consulted, particularly with a mobile population. Thirdly, there was debate as to whose interpretation of acceptable risk is most 'appropriate'. The representatives also noted that Local Governments have a 'duty of care' to all landholders and permitting one landholder to develop below a standard has the potential to increase or alter the physical risk of surrounding residents, to levels they may not agree to accept/ consider acceptable.

3. Mitigate the existing risk

The council officers indicated that while it would be possible to mitigate the existing risk via engineering solutions, these would be difficult to implement for a number of reasons. Firstly, identifying and consulting with stakeholders is difficult, particularly with uncertainties surrounding the following issues: choice of effective and legally sound risk communication method; and the extent to which residents would be affected by flooding. Secondly, prioritisation over funding and resources for competing projects (that might offer social/

economic benefits that, to some, outweigh the potential flood risk) and the day-to-day duties and services that local governments must also provide, would be a source of debate. Thirdly, the distribution of costs – should only those who directly benefit pay or should the whole community contribute? Finally, the rapid growth and development occurring in the geographical area present challenges for floodplain managers including regular updating of existing flood models in order to accurately predict potential flooding.

4. Communicate the risk better

The council officers indicated that this would be the most practical solution to address the problem, but again there were issues that would have an impact on how risk could be communicated – funding to purchase educational material; state guidance in terms of a standard presentation format for flood risks; the possibility of communicating the 'wrong' information and the potential legal consequences as a result; and inadequate resources to actually assess flood risk. The representatives further acknowledged that the community does not understand the technical language currently used to communicate flood risks, with debates within council over which format should be used to present flood risk information to whom the information should be provided. The risk management and land-use planning representatives also suggested that the placement of visible flood markers within suburbs is not an option the local government would consider. The implication was that there would be the potential for litigation from landholders trying to sell their properties and calls for the identification of other potentially contentious land-uses, such as public housing. Recent research has questioned the validity of this argument, observing that a flood-event rather than the designation of land as flood-affected or floodplain will have more of a negative long-term impact on property values (Babcock and Mitchell, 1980; Muckleston *et al*, 1981; Muckleston, 1983; Schaefer, 1990; Tobin and Montz, 1988, 1990, 1994; Schrubsole, D., M., Green, and J., Scherer, 1997; Yeo, 2003). While the representatives also acknowledged the limited ability of maps to communicate detailed flood information, the consensus from the council officers is that maps illustrating general areas that may be flood-affected (but not specific heights), could be useful to the community as reference point.

Summary: limitations of the four strategies

The premise of sustainable development infers the need to integrate risk management with land-use planning and sustainable community development (e.g. Berke, 1995:373). Research to date has identified several factors relating to government, perception and resource availability which limit such integration. These include:

1. the acknowledgement (and prioritising) of the hazard by the relevant authorities and local communities;

2. the resource potential of the hazardous environment; and
3. the coordination of the jurisdictions responsible for planning and management.

(Smith and Handmer, 1984; Lambley, 1990; Handmer, 1996; Smith *et al.*, 1996; Penning-Rowsell and Tunstall, 1996; Lustig and Maher, 1997; May, 1997; Berke, 1998; Burby 1998a,b; Burby *et al.*, 1998, 1999, 2000). The results of the current study generally support the inhibiting factors identified by the above sources. In particular this identifies issues that potentially limit the realignment of standards to levels considered acceptable by them community and integration of risk management and land-use planning.

1. Resource availability and prioritisation

Local Governments have only a limited internal resource base from which to directly fund or request funding required for mitigation projects and the associated preliminary studies. This is a significant barrier also identified by Smith *et al.*, (1996). Mitigation projects (education as well as structural engineering) must also compete against both the day-to-day operations of local governments (such as waste management) and projects that often address contradictory issues, for example, during times of drought, the management of limited water resources. The potential flood risk must also be balanced against the projected social economic and environmental benefits offered by the location and prospective land-use, an issue identified by Handmer (1995) and Penning-Rowsell *et al.*, (1996).

2. Lack of political will

The political will needed to initiate changes to levels of acceptable risk and the processes through which standards are established does not appear to exist at the local government level (at present), supporting the findings of Smith *et al.*, (1996). The results suggest that the local governments do not want to deviate too drastically from the traditional standards and initiate changes for fear of retribution from other local governments as well as the State and Federal Government and development interests. The lack of political will to initiate change further demonstrated the tussle between managing the flood risk and utilising a valuable land resource, identified by Burby *et al.*, (1998, 1999, 2000) as a significant inhibiting factor. Further, local governments do not want to reduce the available land for development or force other local governments to change their planning processes. This presents a management dilemma – will it take a major flood, impacting on the results of current land-use decisions, to initiate the political will to change?

3. Issues concerning stakeholder identification and knowledge levels

A mobile population and a limited resource base, leads to debates over which stakeholders should be consulted regarding land-use standards (previous, current or future residents)? The representatives acknowledged that the community does not understand the way in which flood risk information is currently presented. In response there are problems for local governments in attempting to address the community's misinterpretation of technical terms.

4. Uncertainties about community consultation

The dilemma over whose perceptions of risk the community consulted etc. should be considered the 'standard' was raised as a supporting argument for the continuation of current arrangements. The results also identified the contentious issues of which stakeholders will benefit from mitigation, whether that benefit is direct or indirect, and how the associated costs should be distributed.

Concerns regarding which level of government is, and should be responsible for providing the community with flood risk information were evident, supporting Burby *et al.*'s (1998, 1999, 2000) and Lustig and Maher's (1997) finding that jurisdiction conflicts have the potential to significantly interfere with effective hazard mitigation. The QLD State government could play a more active role and, following NSW, legislate that information regarding flood risk must be provided when purchasing property. However, the level of flood information available to local governments differs across the state and such legislation may see many local governments disadvantaged without considerable state assistance. In line with the provision of flood information, there would need to be a follow-up program to ensure the recipients correctly interpreted and appropriately used the information they received. Such a program, however, would need to compete against other local and state government projects for resources.

5. The uncertain and irregular nature of flooding

Local governments have been reluctant to provide too much specific information about potential flood impacts, due to the uncertainty that surrounds flooding and the unique characteristics of each flood event, a barrier to mitigation identified by Smith *et al.*, (1996). At present, the varying ability of local governments to accurately model flood risk is also a significant issue, linked to resource availability, issues over management jurisdiction and perceived inadequacies at the state government level, again supporting the findings of Smith *et al.*, (1996) and Burby *et al.*, (1998, 1999, 2000).

6. Limited guidance from the State Government regarding the communication of flood risk.

Similar to the key inhibitors identified by Lambley (1990), May *et al.*, (1996a,1996b), Smith *et al.*, (1996), Berke, (1998) and Burby *et al.*, (1998, 1999, 2000), the results of the present study indicate that the confusion surrounding which level of government (local or state) is and should be responsible for floodplain management/ mitigation might be preventing local governments from initiating change. At present, the issue is largely transferred onto the State Government, and it is here that changes (such as state-wide standards for communicating flood risk and consulting the community about the acceptability of risks and impacts) may need to be made.

Opportunities for change

These issues do not imply that local governments are *unable* to integrate perceptions of risk into planning, rather that they are *inhibited* from initiating change. There were two solutions identified by the council officers as potential *opportunities* for change – education and engineered structural mitigation. Berke (1998) and Burby *et al.*, (2000) have also identified structural mitigation and education as key flood risk management options for local governments to integrate into floodplain land-use planning. Such measures, however, remain surrounded by obstacles including resource availability and debates over stakeholder consultation and contribution (identified by above and e.g. Burby 1998a,b; Burby *et al.*, 1998, 1999, 2000). There still exists a fear of legal repercussions surrounding the provision of flood risk information within the community, either preventing or limiting the release of flood risk information and modifying the format in which such information is delivered. A solution to reduce this problem is ensuring that communication is mandated between local government and community stakeholders. This should lead to stakeholders making *informed decisions* regarding their potential exposure to flood risks when selecting a residence and give the community more control over their level of vulnerability.

In an ideal situation, planning schemes would be based on the land-use and hazard risks considered 'acceptable' by an informed community. From the local government perspective, however, there are a number of issues raised that inhibit changes to the planning processes, standard setting and the realignment of acceptable risks.

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Cyclone Tracy and Whitlam's 'new' federalism: implications for the management of natural disasters in Australia

Anita Dwyer examines the influence of federalism and how it shaped Australia's state and federal government approach to managing natural disasters.

Abstract

The influence of federalism, especially the role of conditional funding by the Australian Government, has significantly shaped how Australia's state and federal governments approach and manage natural disasters. A review of the political climate around the time Cyclone Tracy devastated Darwin in 1974 provides a significant insight into how the relationship between the federal and state governments shaped Australia's emergency management arrangements. This influence is still evident today and provides an ongoing challenge for developing national programs aimed at achieving comprehensive and effective long-term mitigation.

The following discussion looks at the role of federalism since the Whitlam Government, a time coinciding with one of Australia's most devastating natural disasters, the 1974 impact on Darwin of *Cyclone Tracy*. In outlining the events from this time until the current Howard Government, the issue of intergovernmental relations and, in particular, the use of Specific Purpose Payments to the states² by the Australian Government, is presented as a significant influence on Australia's management of natural disasters, especially when addressing the challenge of mitigation. In addition, the discussion outlines how Specific Purpose Payments have increased the influence of the Australian Government in traditional state social policy responsibilities, raising questions surrounding the role of Government before, during and after a natural disaster.

Introduction

There have been countless natural hazard events throughout Australia's history, claiming many lives, homes and livelihoods. Until the early 1970s, most of these events did not require any significant national response. However, as demonstrated by one of Australia's earliest recorded natural disasters in 1899 when *Cyclone Mahina* hit Bathurst Bay in Queensland killing 400 people and destroying over 100 pearling vessels, natural hazards do have the potential to become costly at any time both in terms of lives and the economy (DCITA 2004)¹. How these natural disasters are managed, in terms of mitigation, response and recovery, is an ongoing challenge for the Australian Government. The influence of federalism, especially the role of fiscal centralisation, has significantly shaped how the Australian Government approaches and manages natural disasters.

The political climate at the time of *Cyclone Tracy*

In January 1974, Brisbane experienced disastrous flooding, brought about by the greater than average rainfall across Australia the year before (1973 was one of the wettest years in Australia's recorded history) and the arrival of *Cyclone Wanda* (Bureau of Meteorology 2004). Over 13,000 buildings were affected and 14 people drowned in what was the worst city flooding in Australia's history (SDMG 2004). The estimated cost of \$980 million³ was unprecedented in Australian recorded history. The costs and co-ordination associated with this natural disaster required more assistance than the Queensland Government could provide (SDMG 2004). Reports of an army officer losing his life during the floods and of Brisbane residents being evacuated by defence forces demonstrated that the Queensland Government was overwhelmed by the flood disaster,

1 Throughout this paper, when referring to Australia's recorded history, reference is made only to Australia's history since European occupation and not the history of Indigenous Australia.

2 'States' refers to both state and territory governments.

3 Figures quoted in 1974 dollar values.



Following Cyclone Tracy, emergency management arrangements began to involve a greater relationship between Commonwealth and State governments.

as Australian civil defence forces can only intervene in an emergency when requested by a state government (The Australian 1974; Short 1979).

In February 1974, the Natural Disasters Organisation was created by Federal Cabinet to co-ordinate Commonwealth physical assistance to states and territories in the event of a natural disaster (EMA 2004). The Brisbane floods highlighted that Australian Government assistance to the states during times of natural disasters was essential. Only ten months after the creation of the Natural Disasters Organisation, the devastation of Darwin by *Cyclone Tracy* confirmed the need for an ongoing role for the Australian Government in state and territory affairs during natural disasters. While the Northern Territory was under Commonwealth administration at the time of *Cyclone Tracy*'s impact and thus Commonwealth assistance to the Darwin community was binding, it did, in the words of the Director of Operations and Plans in the Natural Disasters Organisation at the time, Roger Jones, "provide the impetus to the development of legislation and new arrangements for States and Territories" (Jones 2005). Following *Cyclone Tracy*, emergency management arrangements began to involve a greater relationship between the Commonwealth and state government than ever before, and occurred at a time when intergovernmental relationships were being notoriously overhauled in Whitlam's 'new federalism'.

The impact of *Cyclone Tracy* occurred at a time when Prime Minister Whitlam, in the second year of a Labor Government after 23 years in opposition, was redefining the role of the Commonwealth Government in state affairs. In his rearticulation of 'federalism', Whitlam asserted the need for a greater role for the Commonwealth Government in policy areas assigned to the states under the Constitution, including 'education, health, housing, social security, national resources and transport' (Mathews and Grewal 1995). Whitlam saw that these areas were of a national social interest and could therefore 'only be solved' at a federal level with

federal financing (Summers 2002:97). The expansion of Commonwealth powers at that time created significant conflict between the states and the Commonwealth Government (Summers 2002; Grewal and Sheen 2003:5). The states greatly opposed Whitlam's 'new federalism', especially the conditional grants scheme, a scheme which existed under the Constitution as 'Specific Purpose Payments' but which Whitlam ramped up during his term (Summers 2002:109, Worthington and Burmeister 2002). This constitutional arrangement allowed the Commonwealth Government the right to grant funding to states as it saw fit (Worthington and Burmeister 2004).

Specific Purpose Payments: expanding Commonwealth fiscal control

The Specific Purpose Payments (SPP) also allowed the Commonwealth Government to effectively bypass the states to directly fund local governments (Summers 2002:109). The Commonwealth Government had already made increasing use of the SPP during the 1950s and 1960s, however Whitlam became renowned for substantially increasing their use (Summers 2002). The SPP were another aspect of Whitlam's new federalism which, while intending to bring all three levels of government to greater alliance, greatly infuriated the states. The already limited fiscal autonomy of the states was now becoming further restricted by the Commonwealth Government's conditions.

During this time, Darwin was being reconstructed after the impact of *Cyclone Tracy* and the full costs of a large scale natural disaster were being realised; over 25,000 people were evacuated by air alone (Northern Territory Library 2004). However, questions arose about 'recovery' and how much funding governments should provide, as the Darwin reconstruction became an extremely expensive exercise. The people of Darwin became increasingly frustrated that debates surrounding the reconstruction of their city were occurring at the federal level in the ACT (Northern Territory Library 2004). The issue of the Northern Territory's lack of self-governance

was pushed to the forefront at a time when Darwin residents wanted to participate in the reconstruction of their community, and at a time when Whitlam was becoming increasingly unpopular with the states.

Despite the Whitlam Government providing the Northern Territory (and the Australian Capital Territory) with two Senate seats and a fully elected Legislative Assembly in 1974, the Northern Territory was still more heavily dependent on the Commonwealth than the states. It was not until 1978, under the Fraser Government, that the Northern Territory received self-governance. While it surprised many that Fraser so strongly supported the Territory's self-governance, it was also argued that the Commonwealth's expenditure on reconstructing Darwin would appear less 'decadent' if it could be 'shown as though it were in the form of a grant to the states' (Northern Territory Library, 2004). As long as the Northern Territory was administered by a Commonwealth Government Minister, any money allocated to the reconstruction of Darwin was considered direct Commonwealth expenditure. By granting self-governance to the Territory, the Commonwealth also handed over fiscal management and accountability to the new Northern Territory Government. Commonwealth assistance in the rebuilding of Darwin could now occur in the form of SPP, a 'conditional grant to a state' rather than appearing as direct Commonwealth capital expenditure.

The increase in the use of SPP by the Whitlam Government from approximately 20–28 per cent to 48 per cent of total Commonwealth payments never again reverted back to such low figures (Grewal and Sheehan 2003). Whitlam's move towards a new fiscal centralisation through an increased use of SPP created a legacy. Although Whitlam was criticised for increasing the use of SPP, the following Fraser Government took advantage of the very same mechanism in response to the long recovery of Darwin after *Cyclone Tracy*. However, the Fraser Government, like the following Hawke, Keating and Howard Governments, continued to employ a significant percentage of state expenditure in SPP, with all governments following Whitlam maintaining a level between approximately 40 and 50 per cent⁴. Although it has been within the Liberal tradition to take a greater reductionist approach to government expenditure than the Labor Party, the use of SPP has defied such a traditional line. The recent Howard Government increased these tied grants to 51 per cent of Australian Government funding to the states, demonstrating that the 'new federalism' espoused by each of the governments since Whitlam has gradually reduced the states' fiscal autonomy (Castles and Uhr 2002).



Newspix/1974 File Pic

Gough Whitlam circa 1970

Changing roles: Commonwealth expanding into social policy

The emphasis on fiscal centralisation occurred long before the Whitlam Government, in terms of gradually removing taxation revenue powers from the states. However, the significant use of 'conditionality' through the use of the SPP since the 1970s has an 'expansion of social policy [by the Commonwealth] combined with a streamlining of central controls over expenditure by the states' (Castles and Uhr 2002). By linking up to 50 per cent of funding to the states by the conditional SPP, the Commonwealth has also stepped into the realm of social policy, an area of state responsibility under the Constitution. Although the states have received increases in grants from the Australian Government, the process of fiscal centralisation since Whitlam has seen them lose elements of policy autonomy (Castles and Uhr 2002; Hamill 2005). Tying the states to federal funding imposed conditions and directions. The SPP has redefined the role of the Australian Government without formally changing the Constitution. Most of the state's Constitutional responsibilities have now become 'functions of shared responsibility' (Grewal and Sheehan 2003:3). The expansion of the SPP has seen 'the federal government striving to establish leadership in health, education and housing and the personal social services' (Mendelsohn 1989).

The view was that the Federal Government was raising the money and should therefore have a strong role and responsibility in determining how that was spent (Parliament of Victoria 1998; Worthington and Burmeister 2002). For example, the Commonwealth Government 'took over financing of tertiary education from the states in 1974', greatly increasing their ability to influence education policy (Grewal and Sheehan 2003:5). Another example was seen in the Fraser Government's decision not to renew hospital cost-sharing agreements in 1981 and replace this with an

⁴ This is the percentage of total Commonwealth payments spent as Specific Purpose Payments.

SPP called 'Identified Health Grants', a decision which saw the Commonwealth Government increase their ability to influence health policy (Mathews and Grewal 1995)⁵. Other examples of increased Commonwealth presence in social policy can be seen in the numerous SPP developed since Whitlam, including those in the areas of disability policy, primary healthcare policy and Indigenous affairs policy (Mathews and Grewal 1995; Ivanitz 1998).

The expansion of the Australian Government into social policy through the increased use of SPP since Whitlam has also shaped the management of natural disasters in Australia. Since *Cyclone Tracy*, the conditional grant, under the Constitutional term of the SPP, has become the predominant means by which the states receive assistance to manage natural disasters. These payments, generally in the form of the Natural Disaster Relief Assistance (NDRA), have largely occurred in the form of relief assistance grants and reconstruction or redevelopment grants to the states, and in turn, from the states to local government. This reflects both the Australian Government's traditional Constitutional role in emergencies, which is in the area of response through the defence forces, and also the traditional emergency management approach, which is in the area of response and relief. The states have responsibility for emergency management under the Constitution and have a strong history and tradition in this area, outside of Australian Government intervention. However, assistance to the states for natural disaster management has been through the Natural Disaster Relief Assistance (NDRA) which, since its inception in the 1970s until only recently, has been for immediate response and relief matters.⁶

Recent changes agreed to in principle by the Council of Australian Governments (COAG), outlined in the section below, advocate a 'new holistic approach' to managing natural disasters in Australia, including a move from a response-centric approach to a greater focus on mitigation and recovery. The international research and practitioner communities have been advocating the importance of mitigation and recovery since the 1970s and state governments began to address their importance in state policy in the 1980s through the PPRR paradigm (Prevention, Preparedness, Response, Recovery). However, it is only very recently that the Australian Government has recognised their importance. Unlike response and relief, mitigation and recovery tap into much broader and complex social policy issues such as education and awareness, public health, welfare and Indigenous policy. States have disaster management programs outside of the Australian Government's conditional NDRA and Natural Disasters Mitigation Program (NDMP) grants, however, the increased scope and funding of these programs to include social policy

issues sees the Australian Government continue to expand into areas of traditional state responsibility. While changes to these conditional grants to include a greater focus on mitigation and recovery may improve natural disaster management – indeed, the academic literature and practitioner accounts suggest it will – it is also of significance that it continues to expand the scope of the Australian Government's role in state matters.

A new holistic approach: The COAG 'Natural Disasters in Australia' Report

COAG was established in 1992 during the Keating Government, but is considered an 'institutional legacy' of Hawke (Castles and Uhr 2002). The Council served as a new tool for another Australian Government to again espouse a 'new federalism', where intergovernmental relations were to be enhanced. COAG is considered the peak intergovernmental forum in Australia and is comprised of the Prime Minister, State Premiers, Territory Chief Ministers and the President of the Australian Local Government Association (COAG 2004).

In 2003, COAG gave in-principle approval to the report *Natural Disasters in Australia: Reforming mitigation, relief and recovery*. The Report into Natural Disasters proposed 12 reform commitments and 66 recommendations focusing on developing a national and consistent approach to managing natural disasters (COAG 2003). The High Level Group responsible for the Report recognised that the current approach to dealing with natural disasters was not necessarily the most cost-effective. It recommended that a stronger intergovernmental and holistic approach to natural disaster management be at the foundation of any changes made to the current arrangements. Not surprisingly, this proposal promotes the COAG tradition of intergovernmental collaboration and shared responsibility. It also supports the recent findings of Australian and international research into the management of natural disasters, which advocate a shift from response-driven emergency management to an emphasis on mitigation and recovery.

Australian Government assistance to the states is still predominantly in the form of SPP, advocating conditions to the extent that the Australian Government has defined a 'natural disaster' for any funding purposes (Minister for Local Government, Territories and Roads 2004). A natural disaster is defined as 'a serious disruption to a community or region caused by the impact of a naturally occurring rapid onset event that threatens or causes death, injury or damage to property or the environment and which requires significant and coordinated multi-agency response. Such disruptions can be caused by any one, or combination, of the

5 South Australia and Tasmania's hospital arrangements did not expire until June 1985.

6 Recognised through the COAG Report into Natural Disasters, discussed later.

following natural hazards: bushfire; earthquake; flood; storm; cyclone; storm surge; landslide; tsunami; meteorite strike; or tornado' (COAG 2003). In addition, the COAG Report also acknowledged the lack of consistency in the financial assistance to the states as an intergovernmental concern (COAG 2003). Therefore, the move toward a more rigorous approach to natural disaster SPP funding which also incorporates contemporary changes in natural disaster management has increased the Australian Government's role in natural disaster management. While response and relief involve policy issues of security and defence, mitigation and long-term recovery involve far greater and complex social issues. The linkage of these issues to an agenda via SPP is a significant expansion of both the Australian Government's economic and social role under the Constitution (Mathews and Grewal 1995; Grewal and Sheehan 2003).

Traditional response and relief activities brought attention to Australia's strong military and co-ordination capacities. However, a focus on mitigation and long-term recovery has the potential to highlight that housing arrangements, such as access to accommodation or structural vulnerability, are inadequate. It also has the potential to show there are insufficient hospitals or welfare agencies in a community to cope with a natural disaster. These issues are complex, and have the potential to expose insufficient public funding or inadequate public policy. These are traditionally the responsibility of the state governments and the move towards improved natural disaster arrangements through broader SPP will inherently increase the Australian Government's involvement. The application of SPP to mitigation and long-term recovery activities in the reformed natural disaster arrangements has the potential to reduce social policy autonomy of the states. This echoes the sentiments of some social analysts who have referred to conditional grants as 'the most potent weapon of cooperation or coercion' (Mendelsohn 1979).

The move towards mitigation and long-term recovery in Australian natural disaster management arrangements is best-practice disaster management. However, we face a situation where the precedent set by the Whitlam Government's increased use of SPP could continue to greatly influence the implementation and effectiveness of such best-practice natural disaster management. Natural disaster funding, through SPP, will either continue to focus on response and relief, reflecting the traditional responsibilities of the Australian and state governments and avoiding the sensitive areas of social policy that are integral to effective mitigation and long-term recovery. Or, the move towards mitigation and long-term recovery activities will take place, potentially creating a conflict between the Australian and state governments over the development of social policies and programs that support best-practice natural disaster management.

Conclusion

The expansion of Australian Government powers under the banner of fiscal federalism, from Whitlam through to Howard, has created an intergovernmental framework that has influenced the management arrangements of natural disasters in Australia. The shift from mere fiscal assistance in the immediacy of a natural disaster to one of greater social policy involvement highlights the ever changing relationship between the two levels of government.

The recent move to holistic disaster management with a focus on mitigation and long-term recovery, rather than merely response and relief, is a result of the changing needs of both Australian communities and practitioners. The natural disaster and political events of the mid-1970s shaped this move, influencing how natural disasters are managed in an intergovernmental policy framework. The COAG Report, which is influenced by the ongoing and significant use of SPP, and the recognition of the shifting roles of government in the management of natural disasters, has the potential to begin a new era of natural disaster management. The long-term support that recommendations from the COAG Report receive from state agencies involved in natural disaster management has yet to be determined, as has the increasing influence of the Australian Government in the intricacies of state social policy. If these difficulties can be addressed and accommodated, the move towards an holistic natural disaster management framework has the potential to greatly improve the well-being of communities in the event of a natural disaster.

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Risk management and prevention strategies

Superintendent Chris Lewis of NSW Fire Brigades discusses risk management, decision-making and the PPRR Model.

Abstract

Over the past few years, the NSW Fire Brigades (NSWFB) has embraced risk management as a method of understanding the risks impacting on the organisation and the community. This article discusses the use of risk management to enhance the decision making process and will compare this with how other agencies use risk management, specifically to design and implement prevention policy. This article will also examine and discuss the prevention, preparedness, response, recovery (PPRR) model that has been in common use for many years and will then compare this with the risk management model to see if it replaces or enhances the PPRR approach.

- Greater need to protect the organisation from risk exposures, both internal and external;
- International best practice;
- National and interstate best practice (as promoted by Australian Standards, Australian National Audit Office, Productivity Commission);
- Legislative requirements for reporting (annual reports, risk management plans, results services plans, finance and OHS), and
- State Government direction (Premiers Dept, NSW Treasury, Council on the Cost and Quality of Government).

The NSWFB has recognised the growing importance of risk management, and has stated its commitment in the NSWFB Corporate Plan 2005-2008. The corporate vision as stated in the plan is "Excellence in Emergency Risk Management". This is appropriate as we, as an emergency organisation, deal with risk everyday. Some of that risk is obvious and immediate such as firefighting and some risk is not so obvious but still crucial to the business continuity and good governance of the organisation. Effective risk management is therefore vital to the continued provision of high level services delivery to the community of NSW.

Introduction

Risk management is defined in AS/NZS 4360:2004 as "the culture, processes and structures that are directed towards the effective management of potential opportunities and adverse effects". The Standard points out that managing risk is about innovation and the pursuit of opportunities as well as minimising the effects of potential hazards. The Standard goes on to say that "it (risk management) is an iterative process consisting of steps that when taken in sequence, enable continuous improvement in decision making and facilitates continuous improvement in performance".

This linkage with the decision making process has also been noted by Pat Barrett (2000) the former Auditor General of Australia "transparency is achieved by ensuring that both the decision making process and importantly, the reasons for decisions made, are adequately documented and communicated to stakeholders". An important factor to this transparency and communication in the risk approach is the requirement for a heavy emphasis on understanding in detail, what is happening and why (McLucas 2003:185).

There are a number of other important drivers for fire services such as the NSWFB to establish an effective and consistent risk management framework:

Background

In the past, fire services generally have had an understandable cultural focus on consequence management (ie response). It has been argued that this operational imperative to deal with emergency incidents after they have occurred has adversely impacted upon the management culture of fire services particularly in the area of planning and strategic decision making (ODPM, 2003). This is not just an issue for fire services, Klein (1998) conducted research for the U.S Army and found that decision making processes developed for decisions made under tight time constraints and with limited information were frequently also being used by decision makers when faced with complex dynamic problems. McLucas (2003:19) points out that decision making heuristics or shortcuts that are developed at the operational level, are frequently used by managers and leaders at the strategic level despite being unsuitable for



Resources needed in response can often be considerable.

complex decisions. These decision making heuristics are even less suitable for the development of prevention strategies which, by their nature, are required to be evidence based, measurable, justifiable and rational (Scales, 1999).

Discussion

In their “Integrated Risk Management Framework” the Treasury Board of Canada (2001) highlighted that risk management strengthens decision making in the public interest, emphasises consultation and communication and supports a whole of Government approach grounded in rational priority setting and the principles of responsible spending. “The faster pace and need for innovation, combined with significant risk based events has focused attention on risk management as essential in decision making and accountability”. This comment is directly applicable to the changing fire environments that fire services deal with. Increasingly, Fire Services are facing unique or different incident types that require a different approach than that provided by scenario planning. Accountable decision making based on logic and the best current available information is far more flexible than using a standard operating guideline written many years before for a generic range of incidents.

This increasing requirement to justify the decision making process is also discussed by Smith (1996) in his paper analysing the use of risk management in fire services. In particular, he discusses that governments at all levels have actively raised management accountability, reduced spending, and shifted their focus to the measurement of outcomes in service delivery. He goes on to point out that emergency services will “need to apply more systematic and integrated approaches to the prevention of incidents”. Furthermore that the concept of risk management provides a foundation for this cultural shift and a means of integrating services.

If risk management is to be the new cure for all that ails fire services then what existing model is it replacing? Indeed, has there ever been a model for carrying out prevention in particular? While not a specific prevention model, the prevention, preparedness, response, recovery (PPRR) model has been in common use for many decades in Australia. The PPRR model originated in the USA in the 1970’s and has been used by Emergency Management Australia and Australian fire services to assist in the design of policy and to categorise a menu of emergency management strategies and activities usually with a heavy emphasis on response.

Cronstedt (2002) questioned the continued use of the prevention, preparedness, response and recovery (PPRR) model, otherwise known as the comprehensive model approach to managing emergencies. Cronstedt argues that “PPRR sets up artificial barriers between the four elements and therefore implies a clear delineation between the four elements”. This is important to note as the PPRR model frequently does reflect the physical make up and the decision making processes of many Fire Services. However it would be better described as the ppRr model in that the response quadrant is seen as the main core role of fire services and thus is always going to get the majority of resources.

To a degree, this is understandable because anything other than rapid and effective response is simply not acceptable to the community. Plus, the nature of fire and many emergency incidents means that quick intervention does actually reduce the consequences of the emergency event and this necessitates using the majority of resources to provide staff, fire appliances, training and fire stations to carry out this role. Perhaps a more useful comparison between the PPRR model and a risk management approach is to align the prevention/preparedness half with likelihood management and the response/recovery half with consequence management.

Newspix/LEADER



To this extent a risk management philosophy can sit over a more tactical PPRR model to provide direction and policy while still using a PPRR model to organize resources and processes.

The other fault highlighted by Crondstedt regarding the “PPRR” approach is that it is focused on activities of the fire services and not on the impact on the community of either fire service activities or the impact of the incident. Risk management, on the other hand does allow for a focus on the interaction between the community and the hazard within a particular context. This allows the focus to move beyond the actual incident and include other factors such as community capability and resilience and the opportunity provided by an incident to influence that capability and resilience of the community in the future. Normally these factors do not lend themselves easily to the PPRR framework.

Perhaps the point of the PPRR framework is that it formalised an existing system that was predominantly focused on responding to emergency incidents after the incident has occurred. Under this model token efforts are made to carry out some prevention, preparation and recovery work however the main focus for the actual service delivery was still on responding to emergency incidents. Whereas risk management is focused on doing something about the actual risks, preferably before the event occurs and reducing the consequences should the event occur. This necessitates making decisions and taking action before the event. Such a proactive approach requires a greater understanding of the risks and their impact on the community. This, in turn, requires a greater gathering of information and intelligence and then the use of that information to analyse and predict

where the risks will occur, what the consequences will be and how to reduce and remove those risks. This in turn highlights one of the greatest strengths of risk management in that information gathered to identify the risks initially can then be used to prove the success or otherwise of the risk mitigation strategy.

An excellent example of a risk management approach to prevention is the NSW Health policy document “Management Policy to Reduce Fall Injury Among Older Australians” (2003). The document highlights that fall related injuries consumes \$324 million in health costs each year in NSW and that when demographic changes are taken into consideration it is forecast that these costs will escalate to \$644 million by 2050. This will mean that if this trend is not addressed then the state will require four additional 200 bed hospitals plus and additional 1,200 new nursing home places just to deal with falls injuries alone. While acknowledging that more staff, training and hospitals will still be necessary for treatment, the policy does emphasis the need for prevention. “A strategic plan is required to ensure that the increase in demand for treatment does not reduce resources for prevention. Failure to allocate resources to prevention will lead to resource demands for treatment that will be difficult to meet”. The policy goes on to point out that a 1% reduction in fall injuries would save more than \$6 million a year and that it is estimated that for each dollar spent on prevention shows a return of \$7. This risk approach focuses on the hazard and its impact on the community, rather than just its consequential impact on the health infrastructure. NSW Health realise that simply building more hospitals does not stop the impact of falls on the community and eventually becomes impossible to resource.



Many fire services are starting to benefit from some new ways of thinking about how we go about our business.

While fire services do carry out a great deal of prevention work they would be hard pressed to state with any confidence how much of a saving that work has generated for the community. While fire services have started to go down this path (Rhodes and Odgers, 2003), this is the gap that an evidence base risk approach needs to address.

This risk approach is also used by the Roads and Traffic Authority. The RTA Annual Report (2003) points out that while their black spot reduction campaign, which focuses on road building, returns an estimated \$2 reduction in costs to the community for each dollar spent, their educational prevention programs deliver an estimated \$3 saving for each dollar spent. The report goes on to point out that a combination of education, engineering and enforcement has resulted in the lowest financial year road toll (531 fatalities) since 1947.

Just as safer roads contribute to reduced road deaths, a safer built environment should obviously lead to reduced fire deaths. Many fire services have been heavily involved for decades in working to ensure building codes and regulations do lead to safer buildings for the community and for the firefighters that have to fight fires in those buildings. It can be argued that the low rate of fatalities in public buildings is due to safer building codes and the involvement of fire services. While this is a risk approach in that it seeks to reduce firstly the likelihood of a fire and then the consequence of any fire, it fails to measure the success or otherwise of this approach. This in turn makes it difficult to argue for further resourcing of the fire safety approach. Unlike the RTA, fire services at this stage are unable to state that \$1 spent on fire prevention work will lead to an identified saving for the community.

The Office of the Deputy Prime Minister (2003) in discussing changes to UK fire services pointed out that “the starting point in integrated risk management planning must be the preventative measures that will reduce the incidences of fires and other emergency incidents” .This paper goes on to discuss that this will require a move from the traditional reliance on the “formulaic approach” using recommended standards set centrally, to locally assessed and determined strategies that will more effectively meet the needs of local communities.

Conclusion

That last statement from the Office of the Deputy Prime Minister sums up the strength of risk management. It is necessary to properly assess risks taking into consideration local community needs and the possible impact of those risks on the community, then have those risks mitigated by evidence based fire safety programs that can be measured for success or otherwise and adjusted accordingly. Finally having the risks that cannot be fully removed or mitigated dealt with by effective and efficient response and then using the lessons learnt by that response fed back into recovery and prevention strategies.

A risk management approach, unlike the PPRR approach, focuses attention on the actual risk and its impact on the community rather than the availability of existing fire services resources and existing emergency management strategies. This leads to a greater understanding of the risk and a greater focus on evaluating a range of strategies to reduce or remove that risk. While this does necessitate a greater reliance on information gathering and monitoring, it also allows the success or failure of

any mitigation strategy to be evaluated and communicated to all stakeholders. As Adams (2003:30) points out “knowledge is the modern currency of public policy”.

Many fire services, like NSW Fire Brigades, are starting to benefit from some new ways of thinking about how we go about our business. Risk management, systems thinking and improved intelligence gathering methodologies have given emergency services some improved tools to better understand the communities we serve, understand their problems and issues and then to apply efficient and effective mitigation strategies. Hit and miss fire prevention strategies are no longer sufficient, nor is the imposition of strategies “borrowed” from interstate or overseas that have no relevance to local community conditions. Evidence based fire prevention strategies based on real needs have indicators that can be measured initially to justify dollar cost and then to monitor their ongoing relevance and effectiveness. Importantly, these indicators can then be used to sell the success of such programs and to justify further resource usage. This philosophical shift increases the need for accurate, timely and realistic fire data and fire research. It also increases the need for efficient systems to formulate and implement policies and guidelines based on that information.

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Cyclone knowledge and household preparation – some insights from Cyclone Larry

King, Goudie and Dominey-Howes report on how well Innisfail prepared for Cyclone Larry

Abstract

Cyclone Larry crossed the Coral Sea in mid-March 2006, developing into a severe category five as it approached the coast south of Cairns. The eye of Larry crossed the coast between 6.20 and 7.20 am on Monday 20th March (Bureau of Meteorology 2006). Given Larry's magnitude, it would not have been unreasonable to expect devastation of the settlements in its path, with many deaths and injuries. However, there were no deaths and very few injuries. We seek to determine whether this is a reflection of a well prepared and knowledgeable community. We carried out a survey of residents in rural communities in and around Innisfail a week after Larry. This article shows that the impacted communities were, in a very Australian way, well-prepared having generally experienced other severe cyclones. While longer term post-cyclone recovery may be a difficult time for these rural communities, in our opinion their preparations and responses to warnings were appropriate and undoubtedly saved lives and injuries and lessened the overall impact.

Introduction and aim

The North Queensland monsoon had been very active during the early part of 2006. A tropical low in the Coral Sea in mid-March attracted the attention of many North Queensland residents, who watched it develop into a category five cyclone during the days preceding its landfall at 6.20 am on Monday 20th March 2006. Whilst Cyclone Larry could have made landfall anywhere between Port Douglas and Townsville, it headed very rapidly and directly towards Innisfail (see Figure 1). Consequently, even as late as Sunday 19th March, people from Cairns south to Townsville were making cyclone preparations.

During the Cyclone Warning Period on Sunday 19th March Larry intensified from a category four to a five. Shortly after landfall, Larry degraded to a category

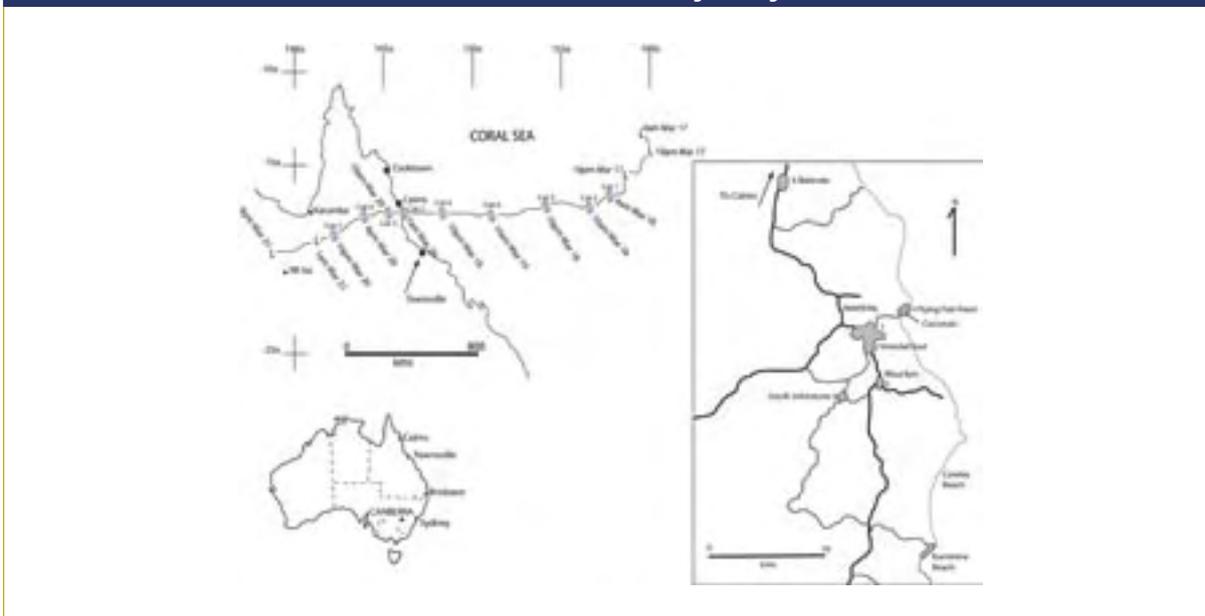
four but continued far inland before it weakened significantly by 21st March (Bureau of Meteorology 2006). Destructive winds started to impact the coast around 4:30 am on Monday 20th March and the cyclone cleared the southern end of the Atherton Tablelands by around 09:30. It maintained a rapid westward speed of about 25 km/hr, such that most communities in its path experienced up to four hours of destructive winds.

Larry caused widespread and severe damage to housing, agriculture, business property and to a lesser degree infrastructure and the natural environment. Significant post-event studies are underway and organisations like Geoscience Australia will present data concerning these impacts elsewhere. Despite the severity of Larry it was soon apparent that whilst a population of approximately 50,000 people lay in its path, there had been no deaths and only a few injuries. We assume that this negligible effect of people is because the local population had prepared correctly and had then behaved properly during its passage. The aim of this article therefore, is to test this assumption and to use our findings to provide feed back into the mitigation efforts of pre-cyclone education for community awareness and preparedness. Such an analysis should be of use because previous studies of levels of cyclone awareness and preparedness (Dilley 1998, Enders 2001, King 2004, Nielsen and Lidstone 1998, O'Neil 2004, Sullivan 2003) have highlighted many areas of poor knowledge and lack of proper preparation at the community level. Specifically, we are interested in learning from the residents affected by Larry, their views about the effectiveness of the safety weather warnings, the role and value of the media, their preparations, the impacts and lessons learned. The research outcomes are being targeted at emergency managers detailing any perceived community shortfalls in awareness and preparedness (King and Goudie 2006).

Method – the Survey

The Centre for Disaster Studies at James Cook University prepared a short, open-ended survey in conjunction with the Bureau of Meteorology. A team of five researchers began household surveys five days after Larry made landfall. The team interviewed residents of

Figure 1. Map of central North Queensland from Cairns south to Townsville. The map also shows the location where Cyclone Larry originated as a tropical low pressure system in the Coral Sea on 16th March 2006. The storm's track as it approached the coast is indicated together with the locations of the coastal communities affected as it crossed the coast and headed inland. Our survey focuses on coastal communities around Innisfail rather than inland communities affected by Larry



147 households, in their homes, in eight areas of the coastal impact zone (see Figure 1) over four days. The survey focused on issues of warnings, preparations, behaviour and personal and community experience. People were very willing to share their often fearful experiences – Larry was fresh in people’s minds. We surveyed 147 households (totalling 471 people at the time the cyclone impacted) and our results indicate the general pattern of experiences. Our sample may be slightly skewed because people whose properties were made uninhabitable were, perhaps, underrepresented. The complete report and survey instrument can be accessed on the Centre’s web site at <http://www.tesag.jcu.edu.au/CDS/Pages/pdreport.htm>.

Results

We present our results by broad theme. These are: previous cyclone experience; household information sources for cyclone season preparations; warnings; preparations; community and perceptions and information issues.

Previous cyclone experience

Interestingly, 81% of our sample respondents had previously experienced a cyclone (Table 1). We consider this to be a very significant percentage of households within the affected area we studied.

Table 1. Previous experience of a cyclone (by location)

Location	Previously experienced a cyclone			Total number of households
	Winifred	Other cyclone	No previous experience	
Innisfail Estate	18	6	6	30
East Innisfail	18	6	9	33
Flying Fish Point	2		2	4
Coconuts	7	2	2	11
Kurrimine		1		1
Mourilyan	19	2	2	23
South Johnstone	13	2	2	17
Babinda	20	3	5	28
Total	97	22	28	147

Household information sources for cyclone season preparations

At the beginning of the cyclone season in November each year, local authorities conduct a cyclone information campaign. Respondents were asked about where they obtained advice about general cyclone preparedness and whether or not they had discussed an emergency plan with members of their household.

Our respondents gathered cyclone preparedness information from many sources (Figure 2). From the many sources available, 40% stated TV and radio and 31% stated that they just knew what to do. They prepared for the cyclone season on the basis of personal knowledge and previous experience. While this suggests that they felt they did not need to seek any other advice or information, it is probable that most of those who did seek cyclone information also had a high level of personal knowledge and previous cyclone experience (as indicated by the data in Table 1). Over half the households we surveyed had not discussed an emergency plan, although that includes single person households and many couples.

Warnings

The official cyclone warning period covered all of Sunday March 19th. However, 78% of our respondents were aware of Larry’s approach before then, most having watched it develop since before Saturday (Table 2). By lunchtime on Sunday 19th, a further 12% were aware of the warning. Informed well in advance, people had plenty of time to make final preparations and many households clearly did so.

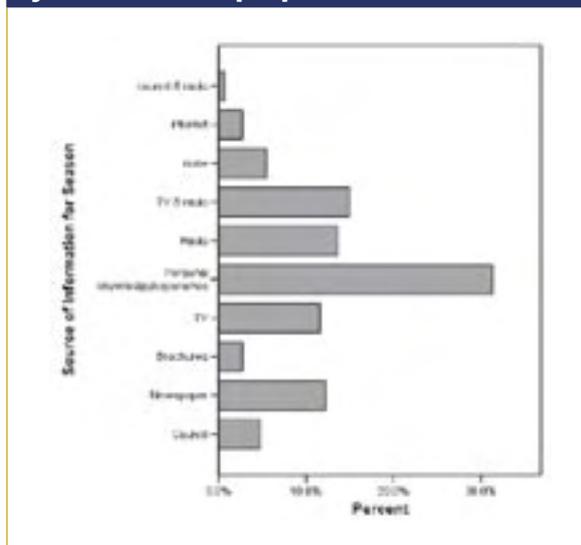
Table 2. Time that households became aware of Cyclone Larry’s approach

Time Aware of Larry	Number	Percent
Before Saturday	89	60%
Saturday	26	18%
Sunday 9–1	18	12%
Sunday 1–5	7	5%
Sunday 5–8	5	3%
Sunday after 8	2	1%
Total	147	100%

Television and radio dominated as the main warning sources for Larry. Households also accessed the internet as well as talking to family, friends and neighbours. Internet access appears relatively low at 13% (during the cyclone warning), but this matches the ABS 2001 census (ABS 2001, although this may have changed upward) where only 13% of the population of Johnstone Shire had internet access at home. It is generally the case in rural communities that internet access is low. During the warning period and even during the cyclone, 91% of households had contact with relatives and 86% with their neighbours. This included people coming out of their homes during the eye of the cyclone and talking to neighbours as well as clearing up some of the debris. Those in the centre of the eye had almost 40 minutes of relatively calm conditions.

Throughout the warning period on Sunday 19th, people shared their knowledge and kept seeking information and updates from media and the internet.

Figure 2. Sources of information for cyclone season preparations



They were generally very positive about the Bureau of Meteorology (BoM) messages, but the most common criticism was a call for more regular warnings and updates (see below), especially as the cyclone neared landfall. This criticism was often more directed at the media than at the BoM. People experienced frustration in accessing updates on TV and radio, complaining that some stations were still broadcasting older warnings after the time of a BoM update.

Preparations

The two main levels of preparation are the pre-season cleanup, and response to the specific cyclone warning when impact is imminent. Many households stated that they kept their house and yard in a good state of readiness throughout the cyclone season (Table 3) and did not feel the need to do further preparations (Table 4). Doing nothing (as indicated in Tables 3 and 4) does not indicate apathy or complacency as most respondents qualified it by saying that they did not feel there was anything more they could do.

Table 3. Activities in preparation for the cyclone season

Preparation for cyclone season	Number	Percent
Yard clean up	39	27%
House preparation	17	12%
Emergency kit	6	4%
Nothing	52	36%
Shopping	26	18%
All of the above activities	6	4%
Total	147	100%

Table 4. Additional preparations prompted by Cyclone Larry Warning

Preparations prompted by warning	Number	Percent
Nothing	26	18%
Clear yard	43	29%
Clear up, shop & secure	26	18%
Clear yard & secure boat	10	7%
Buy supplies	8	5%
Store water	7	5%
Secure other belongings	6	4%
Tape windows	5	3%
Buy supplies & store water	4	3%
Store water & secure belongings	3	2%
Evacuate	3	2%
Repair building/trim vegetation	2	1%
Secure car and/or boat	2	1%
Food preparation	1	1%
Buy fuel	1	1%
Total	147	100%

All of these actions are reflected in the positive assessments that people gave of the adequacy of their preparations both for the cyclone season and for the specific warning of Cyclone Larry (Table 5).

Where respondents have stated “pretty good” in Table 5 it is reasonable to assume that this is a typical understatement rather than an assessment that is qualitatively lower than good. Good or pretty good may be interpreted as meaning much the same thing.

Table 5 also cross tabulates the perception of adequacy of preparations by the decision to evacuate. Essentially there is no difference in attitudes to preparations between these two groups, although 17% of households who did evacuate also said they thought their preparations were “poor”. People did not evacuate because they had not prepared for Larry, but they had prepared first before they evacuated. Most of the households who evacuated did so because authorities advised them to leave during Sunday. Beachside and low-lying communities that were vulnerable to storm surge were instructed to evacuate. Amongst the survey respondents, this particularly applied to the Innisfail ‘suburbs’ of Flying Fish Point and Coconuts (Figure 1). A single individual who was from Kurrimine Beach was interviewed in Babinda, having evacuated and being unable to return. In all, 17% of households evacuated from their homes. There were no formal shelters to go to, so most people went to stay with relatives or friends in safer locations. A small number left the main cyclone impact area entirely.

For the households that did not evacuate, Table 6 indicates where in the house people chose to shelter. They mostly sheltered in central or inner rooms, stronger rooms such as block built structures underneath high set houses, and some moved location according to the primary wind direction. Their behaviour replicated cyclone advice and kept people safe, even where significant structural damage occurred to dwellings.

Table 5. Household assessment of cyclone preparations and decision to stay or evacuate during Larry

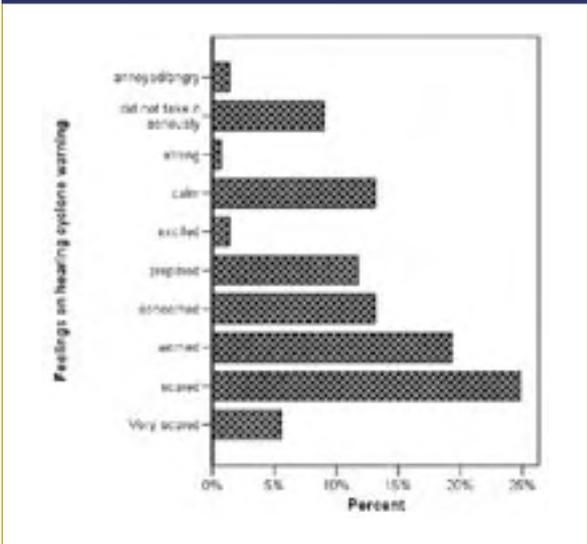
Adequacy of Preparations	Stay in House				Total	
	Yes		No – evacuate		Number	Percent
	Number	Percent	Number	Percent		
Excellent	11	9%	3	12%	14	10%
Good	90	75%	16	67%	106	74%
Pretty good	11	9%	1	4%	12	8%
Fair	8	7%			8	6%
Poor			4	17%	4	3%
Total	120	100%	24	100%	144	100%

Note: 3 households did not respond to this question

Table 6. Place of shelter within home and choice of evacuation shelter

Shelter Location	Number	Percent
Moved around inside	27	21%
Central area/hallway	40	31%
Bathroom/laundry	20	15%
Room under house/ car/garage	15	11%
Lounge	13	10%
Bedroom	9	7%
Kitchen	3	2%
Used mattresses	3	2%
Shelter at work place	1	1%
Total	131	100%
Sheltered elsewhere/Evacuated		
Relative or friend	19	73.1%
Other property	2	7.7%
At workplace	2	7.7%
Shelter/church	1	3.8%
Ignored evacuation order – no response	1	3.8%
Cairns	1	3.8%
Total	26	100%

Figure 3. People’s feelings in response to the cyclone warning



Community and perceptions

There was a great deal of contact between family members, friends and relatives before and during Larry. Much of this was by phone, both mobile and landline, with phone contact continuing during the storm, including broadcast

calls to radio stations. Many extended families came together to shelter as well as some groups of neighbours and friends. A few people mentioned a strong community spirit following Larry and clearly the small community nature of the region probably contributed to positive actions and mutual support.

If the population was well-prepared it did not mean they were in any way unworried or even complacent. Figure 3 illustrates that people were extremely affected emotionally by the threat. A grouping together of all of the categories of concerned, worried, scared or very scared, which includes terms like frightened, covers 63% of the respondents. Some expressed a feeling of “being prepared” or “strong” as an emotional response to the coming storm.

Table 7 lists the reaction of our respondents to their feelings about the cyclone warnings. Given that the survey took place five to eight days after Larry, it is likely that people felt a complex of emotions, but on reflection have focused on these responses. Taking some kind of action was a cathartic response for half of our respondents. Those who took no further action were mostly households that had already prepared as much as they could. Included in this response was the eighty year old lady who went bowling in the afternoon as “life must go on” and a 40 year old male in Innisfail who reported “panic buying of food”. “We left everything to the very last minute” and another reported “I screwed the windows shut”. There were many other practical but incorrect ideas, like opening the manhole cover to help equalise air pressure. As strong winds blew rain horizontally under sliding windows, the few who sealed the outside bases of their windows with broad tape had less water damage.

Information issues

Respondents identified two major issues in relation to the information available to them and how it was being delivered: (1) conflicting information from the Bureau of Meteorology (BoM) and the media and; (2) outdated media information. Many people reported conflicting information between the Bureau of Meteorology (BoM) www internet site and that released by the media. Respondents stated – “don’t stuff around. Be clear and precise”, “the messages were conflicting”, “felt that messages were misleading and contradictory”, “different sources said different things”, “TV, radio and www all giving different advice”, “Austar said Larry would hit by 6 am, and it did [in Mourilyan]” and “the radio said about 10 am – it was all over by 9.30.” Others call for consistency and accuracy of the information provided.

Other respondents noted that, “there was some confusion, because some of the information was 2 hours old – ie the 6 pm Sunday news gave a 3 pm bulletin”, “Listened to the ABC all night. We would like the broadcast bulletins to be up-to-date” and, “the media was presenting old reports.” A father

Table 7. How respondents acted on their feelings following the cyclone warning

Acted on Feeling	Number	Percent
Increased Preparations & activity	73	50%
No action	29	20%
Stay calm/don't scare others	29	20%
Confused	3	2%
Evacuated	6	4%
Listen to warnings	2	1%
Upset	3	2%
Total	145	100%

Note: 2 households did not respond to this question

of three got updates from out of the region by mobile phone (which had clear reception until Monday 20th) because “the ABC had old news”. A 38 year old male from Flying Fish Point said “the 8 pm report on the ABC was from the 5 pm bulletin from the Bureau... A 1 am bulletin was provided on the web, but a 2 am broadcast on the ABC quoted a 12 midnight Bureau bulletin”.

From the information provided by respondents, it is clear that the prediction of ‘time of impact’ needs to be clarified. For instance, people fearing for their lives, were concerned because the ABC was saying “the eye was coming at 8 am, when it had already passed”. Indeed, a 50 year old from Babinda asked to “make clear in broadcasts if they are talking about the eye of the cyclone, or which quadrant”. This feedback of requests to enlarge the scale as actual landfall approached and occurred, include people asking for “_ hourly warnings, more frequent TV updates”, and “a list of the exact locations which may be heavily impacted”. A significant issue is that, even though the BoM describes Larry as a ‘midget’ cyclone, impact time spread from about 6 am in the south to about 8 am in the north. A clearly shaken family in South Johnstone reported covering in their house as a main roof beam snapped and a panel of louvers blew in, only to hear on the radio that landfall would be in about an hour.

Whilst the BoM warning messages and the media’s dissemination of these messages attracted some criticism, another group of respondents provided much praise. For instance, “we were relying on the forecasts and we got what we needed” and, “The best!”. Some were concerned, after Larry, that Cyclone Wati which was in the Coral Sea was being underplayed and under-reported so as not to alarm residents already affected by Larry. Some asked for the BoM www internet site to be more widely advertised.



Wind impacts were ‘patchy’. This 90 year old house in Mourilyan survived with a couple of damaged windows. Photo: Douglas Goudie

Some found the web site a little hard to navigate into the cyclone information although the BoM have changed their web site format in May 2006.

Discussion

The weather warnings seemed to have been taken seriously. There was an aware, informed community, predisposed to precautionary preparation to maximise their safety – although there were still individual households who did not know that a cyclone was coming. Other considerations are that, unlike Tracy in 1974, Larry came and went in about 4 hours. There is a consensus among researchers and many residents that the damage would have been much worse if Larry had been slow moving. The patchy nature of maximum wind speeds may also have helped to restrict damage. A point of concern is that the media were sometimes lagging behind Bureau information and peoples’ ‘real-time’ experience. Prior research indicates people need consistent information from various, trusted sources (Rohrman 2000). While radio announcers were ‘known’, the conflicting information caused some distress.

The majority of people had been through Cyclone Winifred almost exactly 20 years earlier and most people had experienced multiple cyclones and impacts between 1990 and 2000 alone – Joy, Justin, Rona and Steve. During January 2006 the Cairns Post and the Innisfail Advocate ran 20 year anniversary editions remembering Winifred. This was a powerful educational reminder, coming just two months before Larry. People anticipated Larry in knowledge of Winifred’s impact. It is probable that the impact of the two cyclones was very similar.

However there are many qualifying factors that we need to acknowledge to guard against complacency. In our sample, an extremely high percentage of households had previously experienced cyclone events. We have not (or are unable) to separate out their evaluation of the



Power outages, lasting up to weeks post-impact, caused major inconvenience for communities and residents.
Photo: Douglas Goudie



Kurrimine Beach was severely impacted. Coastal vegetation adsorbed some of the wind and sea's energy.
Photo: Douglas Goudie

effectiveness of their household preparations from those households for whom Larry was their first cyclone (i.e., had recently moved in to the area). This latter group may have unique experiences and be especially vulnerable

The surveyed households relied too heavily on previous experience to guide them through their preparations. If for example the advice about what to do had changed since the last cyclone, they might have been relying on old advice rather than the new advice. They may have been denying themselves the possibility of learning new information about protecting themselves and their property by ignoring the yearly pre-season information campaigns. Families sheltering inside their properties did the right thing in terms of where to shelter and when to move around, apart from going outside during the eye.

Almost no household had a "household emergency plan" – even though this is best practice. There may have been an element of luck that no one died this time. If the cyclone had made landfall during daylight hours and families were separated people may have taken greater risks with dire consequences. Some households were lucky this time – rather than well prepared through household level planning. This means that the message about household emergency plans has still not been learnt. Thus we cannot say that no lives were lost purely because of preparedness, as there was an element of luck that it occurred in the middle of the night when families were together rather than moving around trying to find each other in the impact area. If the latter had been the case, we may have seen some (or even many) deaths. Finally our survey focused on coastal communities affected by Larry and did not travel on to the Atherton Tableland or other inland areas. These communities may have had different experiences



This isolated and seemingly vulnerable house, north of Innisfail, stood through the fury, although surrounding sugar cane was flattened; an example of the patchy wind speeds. Photo: Douglas Goudie

Conclusion: Experience and Chance

People, almost universally, and in a very Australian way, were as ready as could be hoped for. The safety weather warnings, coupled with prior experience, caused people to acknowledge the threat as real, and act to maximise (if sometimes belatedly) their safety. Most people had not expected utter devastation, and while the region looked devastated immediately after Larry had gone through, the reality for most people was relatively minor damage to most houses. There was extensive damage to vegetation, sheds, and farm and industrial structures. People had prepared well and relatively thoroughly and were satisfied with their preparations. They then sheltered in the safest parts of their houses and, apart from often fussing around windows during the cyclone, behaved with responsibility and resilience.



Banana crops in the full wind zone were uniformly destroyed, leaving clear indications of 'knock down' wind direction. Photo: Douglas Goudie



Surge and wave reach cause coastal erosion at Cardwell, at least 50 Km south of the main wind impacts. Photo: Douglas Goudie

Although a category five immediately prior to landfall, Larry's most destructive impacts were very patchy. It also moved extremely fast, at more than 20 km an hour, so that the battering of destructive winds was reduced to a much shorter period of time than most other cyclones. These aspects of luck combined with a cyclone-experienced and well-prepared community, reducing negative impact to a minimum. A lesson to be learned is that people do act correctly to protect themselves, but that each household does not necessarily do all of the things that are recommended. Educational campaigns and 'how-to' weather warnings need to consistently build on that resilience.

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NOTES FROM THE FIELD

Helen Anderson case studies how collaborative training and education has prepared an Indigenous community in Goondiwindi for medical emergency

A miracle four years in the making

Imagine a five-year-old boy is playing in a river; he falls off a log and goes under in one-and-a-half metre deep water. A frantic three to five minute search begins — is he caught under the log? Will he be found in time? What will be done if he is found? A bystander runs to find someone who knows first aid and another bystander notices the bright coloured board shorts the boy was wearing. He is found!

Now imagine that you are located in a remote Aboriginal community of about 200 people more than 30 kms from the closest rural township and hospital. That rural township, Goondiwindi has a population of around 5,000 and is located on the border of Queensland and New South Wales (NSW). It is over 368 km from the nearest capital city of Brisbane in Queensland and a major hospital.

The first aider orders the boy onto a sandbank in the middle of the river — eight metres from the riverbank and orders another bystander to call triple-zero (000). The five-year-old is unconscious and not breathing — his pulse cannot be found. The first aider clears his airways — administers CPR and gets him breathing. He takes turn with other first aid trained members of the community in performing CPR. Another triple-zero (000) call is made to inform the fast-approaching ambulance unit that Daniel (the five-year-old boy) is found and CPR is being administered. The two ambulance units make it more than 30kms from Goondiwindi to the Aboriginal community of Toomelah in just 13 minutes. Daniel is saved — but the story doesn't end there.

Only four years ago this scenario would have been very different. If someone were sick or injured from the Toomelah community

they would be thrown in the back seat of the nearest car and sped frantically, more than 30km, to the Goondiwindi hospital.

In the past, a lot of lives were lost and injuries were more complicated because of lack of education. Education however was not the only issue, funding of an ambulance ride was also contentious as Toomelah in NSW hosted the closest ambulance station but the hospital is located in Goondiwindi, Queensland.

Any triple-zero (000) call taken at this time would go to the NSW Ambulance Communications Centre in Dubbo then be systematically relayed to the Communications Centre in Toowoomba then onto the Queensland Ambulance Service (QAS) in Goondiwindi—giving rise to costly delays.

How did we get from that scenario to the above's fantastic 'Chain of Survival' example?



The scene of the emergency – McIntyre River, near Toomelah, Goondiwindi, Queensland. Note the sandbank eight metres from the riverbank.

Matt Steer, Officer in Charge (OIC) of Goondiwindi Ambulance Station explains.

“About four years ago, a number of catastrophic medical events at Toomelah and the Aboriginal community made us realise that we needed to talk to the community and find out how to change their way of thinking. We recognised that there was a need to equip the community to manage emergencies in their own right and to trust that calling triple-zero (000) would bring them assistance and would not burden them with excessive costs. The triple-zero (000) action plan was born out of these discussions.

“We worked with NSW Health and NSW Ambulance Service; Queensland Indigenous Health and NSW Indigenous Health; and community workers in Toomelah and Boggabilla to get this plan up and running.

“Queensland Indigenous Health lead the charge, working with the QAS to provide first aid training and NSW Indigenous Health, in partnership with Mission Australia, facilitated meeting groups with the community and elders to talk about the importance of triple-zero (000)

and build the triple-zero (000) action plan in association with the ‘Border Rivers Parenting Project’—an informal training program with no written paper work.

“Meeting groups were held under trees around fires while participants cooked their tucker and we discussed their needs. A major finding was that the community didn’t understand the communications centre system and how it worked. When the community called triple-zero (000) they were unsure of who was taking the call and from what region.

“Another concern of the community was that it was embarrassing when an ambulance turned up with lights and sirens—they created a big spectacle and created unnecessary attention. The program instructors explained that in an emergency our emergency devices need to be used. The Elders and the ambulance station representatives mutually agreed that the lights and sirens would be turned off when driving across the bridge into the community.

“Constantly liaising with the NSW Ambulance Service, Queensland Indigenous Health received grant funding for Goondiwindi

ambulance staff to cross the border to conduct first aid training in the community.

“It was also handy that I play rugby league, and had contacts with the local rugby league football club (a lot of the Toomelah community play football with ex-football heroes in their ranks). I found this helped build the community’s trust in me.

“We initially found people within the community who were willing to undertake first aid training — about 10 or 15 people. The QAS OIC in Inglewood, Mike Price, who is a qualified first aid and community education instructor, did a lot of work with us in adapting the program for Indigenous people. Because the community preferred to be outdoors, training was conducted anywhere – from under a gum tree to whatever environment they were comfortable – in partnership with their community programs in Brisbane and our region.

“So the improvement has very much been a collaborative effort between Goondiwindi, QAS – in partnership with NSW Ambulance – and Queensland Indigenous Health. The results of this four-year program are that we now have up to 30 people out of a community of about 200



Daniel Connors, happy, healthy and alive today thanks to his community’s collaborative emergency management approach.



Rodney Bourke, Extended Care Paramedic, Daniel & Angus McIntosh & Matt Steer, OIC, Gundy

who are trained in first aid and are now coming back and doing their certification. So the interest is there to see the dramatic benefits, and the community has responded to many emergencies—obviously the most dramatic and wonderful outcome has been little Daniel, that's a tremendous achievement.

“The other achievement on which we've been working with the community is negotiating with the elders and the people in the community about using triple-zero (000). We started by convincing a few people to do it which has had a ripple effect in the community. People started thinking this wasn't a bad idea. We also negotiated with NSW Ambulance and the NSW government so when a triple-zero (000) call was made from Toomelah and other NSW communities that are closer to us – it came directly to our Communications Centre in Toowoomba and then to us. There was also the question of payment, for which the NSW government has now taken responsibility.”

On Saturday 29 October the four years of training and education all fell into place when little Daniel Connors fell off a log into the McIntyre River and was submerged for three to four minutes.

Angus McIntosh a Toomelah resident, was woken up to rush to Daniel's aid. He says, “I was actually home in bed and a little girl came and told me that Daniel had fallen in the river and they couldn't find him. He was still under water and they were still looking for him as I arrived. Then they found him and lifted him out and they didn't know what to do with him, so I told them to put him on the sandbank and that's when I jumped on him and remembered all my first aid training. He wasn't breathing, he was unconscious – I only learnt CPR at the start of this year. I cleared the airways, did the compressions on his chest, water came out of mouth and nose – a few of us took turns doing mouth-to-mouth and the compressions. I told a bystander to ring triple-zero (000), his parents were in Gundy and all that was on my mind was to go and tell them. I thought he was in trouble – I didn't think he'd make it.”

Matt Steer recounts the ambulance perspective of the story, “At 13.51pm Toowoomba Communications Centre received a triple-zero (000) call providing information that a young boy was walking on a log in the river and slipped and was in about one-and-

a-half metres worth of water. We were dispatched at 13.52pm and on-route received more information from the Communications Centre that Daniel had been found and they were doing CPR on him – that was a fairly ominous sign.

“We then notified Gundy Hospital and provided a situation report to the Queensland Emergency Management System (QEMS) (see diagram). When we arrived at Toomelah there was a line-up of people showing us exactly where to go. We were confronted with about 10 metres worth of water about waist deep that we had to get across. Daniel was on his left-lateral position on the sandbank in the middle of the river – he was still unconscious – he certainly had a pulse and diminished respiratory function, he wasn't breathing very well at all.

“We got him on the stretcher and made our way back across the river – he was quite cyanosed. We intubated, ventilated and sedated him on the riverbank and left the scene 28 minutes after arriving.

“Daniel was doing very well on the way to Gundy Hospital, his vital signs were improving, we had a team waiting to meet us at the hospital to continue ventilation and

resuscitation and the Retrieval Team arrived via the Royal Flying Doctor Service (RFDS) within three hours of the incident.

“In the case of Daniel the incident happened about 10 to 2pm and I think it was by 5.30pm that evening he was in the Brisbane-based Mater Children’s hospital. He has no neurological damage and all the way along, from the very beginning he was rescued in care and the carers were responding. It was continuous and compounding – the patient care continued all the way through.

“This is an on-going process of meeting with groups every two-three months with now 20% of the community trained in first aid and doing courses two-three times a year. We are now getting returns – people

coming back. Qld Indigenous Health continues to fund the training through grants.

“One of the courses per year is for High school kids at year 10 at Goondiwindi and Boggabilla High Schools.

“Indigenous kids come to Goondiwindi Ambulance Station and train for two days and get their first aid certificate. Our program targets the elders, adults and the young ones – we are focused on the young people as they are the people of the future.”

Once other communities saw the positive outcomes in the Goondawindi community they also have adopted similar processes. There has been a significant decrease in people using their own vehicles to transport patients to hospital. The community now know who is

trained in first aid and who to contact in an emergency. There is now pre-hospital support and QAS are arriving and continuing with care and utilising QEMS if needed and a full continuum-of-care from notification, to getting these people into tertiary care hospitals.

Perhaps the last word should go to Aboriginal elder, Aunty Ada, who was instrumental in changing attitudes to dialling triple-zero (000) and trusting QAS, “I am full of praise for the ambulance officers, hospital workers and my community for working together to save Daniel’s life. We live 30km out here and it’s a long way to town when something goes wrong. Our prayers were answered and I am very proud of the young people, though I think the kids have had a bit of a scare — they haven’t been back down to the river yet.”



The chain of survival

AN EXPLANATION OF THE QUEENSLAND EMERGENCY MEDICAL SYSTEM (QEMS)

The Queensland Emergency Medical System (QEMS) ensures an integrated and co-ordinated system to care for the acutely ill and injured. QEMS provides high quality primary health care, pre-hospital patient care and definitive medical care in Queensland through a continuum of care process using all emergency health care services. It focuses on a system, rather than organisational approaches to the delivery of patient care services.

This approach is necessary as emergency health care services are achieved through a series of focused sub-systems including private and public health care providers and emergency services agencies. These sub-systems, as summarised below, operate within a complex and extensive network of arrangements that together form QEMS.

High quality primary health care, pre-hospital patient care and definitive medical care is provided in Queensland through a continuum of care

process, which reflects the QEMS concept. The basic elements of this continuum of care:

- Health Promotion and Injury Prevention;
- First-aid;
- A ‘000’ Access system;
- Response Coordination;
- First Responders; (community members in rural or remote areas trained by QAS to respond until ambulances can arrive)
- Pre-hospital Response, Care and Transport; (provided by QAS)
- Retrieval and Inter-hospital Transfers (IHT);
- Medical care; and
- Rehabilitation.

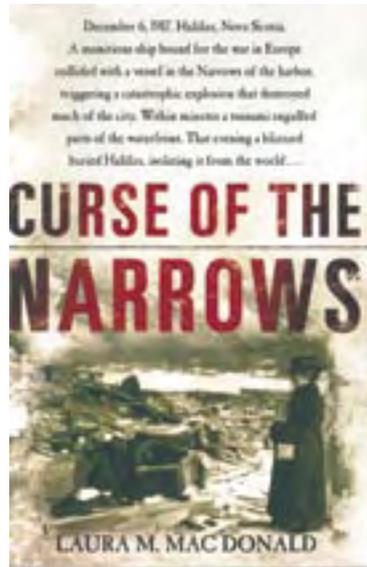
AJEM BOOK REVIEW

Curse of the Narrows by Roger Jones, Director, Board of the Victoria State Emergency Service Authority

by **Laura M. MacDonald.**
Publisher: Walker and Company, New York, 2005.

In 1917, the busy Canadian port of Halifax, Nova Scotia was crowded with supply ships servicing war-torn Europe. On the morning of December 6 Imo, a Belgian relief vessel collided with the Mont Blanc, a French munitions ship in the hard-to-navigate Narrows entrance to the harbour. The subsequent explosion, which effectively vaporised the 3,121-ton Mont Blanc and was later studied by J. Robert Oppenheimer to help predict the effects of an atomic explosion, devastated the port and the city, killing over 2,000 people (some 30% of whom were children) and wounding over 6,000. Nine thousand people, many of them widows or orphans, were made homeless.

Laura MacDonald's interest in the event was more than academic — an author and writer/producer for films and television, she grew up in Dartmouth, on the other side of the Narrows from Halifax proper, and many of her friends and neighbours were descendants of those affected by the explosion. Driven by that personal interest, she gained access to an array of historical, legal and primary sources including medical and welfare files.



The result is a well-written and fascinating narrative history of the cause and impact of the event itself, its immediate aftermath and its political, social and economic consequences, illustrated with a wealth of human interest stories. Many heroes feature in the stories — and a few villains.

For the student of disaster management, however, there are some particularly interesting aspects and more than a few reminders of how little we tend to learn or remember from one disaster to the next. MacDonald's detailed examination of the immediate post-disaster relief and rehabilitation activities, which involved a large

contingent of Massachusetts Public Safety Committee and American Red Cross volunteers, gives copious examples of both.

The issues of resource mobilisation and deployment, in an aftermath which featured fire, flooding, blizzards and transportation problems, are well canvassed and just as valid today. The concerns of the medical and public health services and of the city administration would have their modern parallels. One surprise is the extent of awareness of the longer-term recovery and reconstruction problems revealed in many of the reports, and of the degree of initiative and innovation displayed in dealing with them.

The book is extensively referenced, has detailed end-notes and a comprehensive index, together with a number of useful appendices, one of which is a transcript of a 1958 radio interview with Francis Mackey, the pilot of the Mont Blanc who survived the explosion and continued to work as a pilot in Halifax harbour for the rest of his life.

Commended as a thoroughly good read or even for adding to your collection.

EMA Research & Innovation Program

The EMA Research and Innovation Program aims to facilitate the capture and transfer of innovative practice and disaster research outcomes across the sector.

For more information please contact Sue Collins 02 6256 4614 or Mike Tarrant 03 5421 5219, or email projects@ema.gov.au

Terrorism and Pandemic Influenza — Population risk management and health behaviour determinants

A brief summary of the project

1. This project aims to pilot, field test and establish a survey module (SAFE - Secure against fear exposure):

- i) to provide the basis for surveillance of perceptions of community and personal risk;
- ii) to determine associated emotional, behavioural and mental health effects and factors contributing to adverse affective,

behavioural and mental health outcomes, as well as coping and resilience functions and strategies;

iii) to examine these factors in relation to potential terrorist attacks in Australia; and

iv) to examine these factors in relation to potential pandemic influenza in Australia.

2. To conduct a community survey to determine risk perception trends and related psychosocial effects with specific elements including:

i) perceptions regarding potential terrorist attack including the development of 'risk adverse' behaviours;

ii) Current knowledge of general influenza transmission; and

iii) Knowledge of and attitudes towards pandemic influenza threat, risk and safety, prevention and health protective behaviours.

3. To develop a brief version of the SAFE module for rapid deployment in the event of an actual terrorist event or pandemic influenza.

Modelling community resilience: A multi-level approach to assessment and capacity building

A brief summary of the project

This project will develop a parsimonious set of individual, community and societal predictors of adaptive capacity (resilience). By using generic predictors, the model will be capable of assessing resilience in different communities and across all hazards. This will allow a common measurement framework to be used locally, regionally and nationally and facilitate the development of a capacity for comparison across areas and regions. In addition to identifying

issues to be addressed by risk communication programs, the research will identify guidelines for developing program content. The model can serve as a decision support tool that can provide as additional evidence-based input into the risk assessment process, particularly with regard to assessing how risk (with regard to estimating the capacity of a community to adapt to hazard consequences) is distributed (locally, regionally, nationally). A capability to assess those community dynamics that represent good predictors can contribute to the cost-effectiveness of emergency

management planning. For example, the assessment framework can identify community strengths and weaknesses and allow limited resources to be directed to only those areas that require development. The assessment framework that the model affords also provides a systematic basis for evaluating intervention and monitoring change in levels of resilience and its distribution. The model framework can also inform response and recovery planning (e.g., identifying areas of greater susceptibility of loss and low adaptive capacity).

EM Update

Emergency Management Australia provides national leadership in the development of measures to reduce risk to communities and manage the consequences of disasters. EM Update provides current information on activities and issues in the emergency management environment across EMA and State and Territory jurisdictions.

EDUCATION AND TRAINING

Graduate Certificate in Emergency Management

The first cohort of the nationally recognised EMA Graduate Certificate in Emergency Management graduated in June following a seminar at which candidates presented their final research projects. The projects varied across the broad spectrum of emergency management and were of a very high standard.

The program is delivered in partnership with the Royal Melbourne Institute of Technology. Graduates have the opportunity to access Masters Programs in a range of disciplines. Visit www.ema.gov.au for details of the EMA Graduate Certificate in Emergency Management.

EmergoTrain

EmergoTrain is a major incident simulation system, created in Sweden for the health service. It enables health services to develop their mass casualty management by practising with in a real-time situation. Current (or indicative) bed occupancy might be incorporated at exercise start. Normal services are not disrupted.

Magnetic symbols are used to represent patients, staff and resources. Movable markers indicate priorities and treatment regimens. In the Australian version, use of a "delay board" ensures that predetermined, accurately validated times are adhered to, so that, with careful monitoring from the instructors, realism is assured.

EMA is supporting a national effort towards embracing this system. 42 senior instructors were qualified at two programs conducted in Feb/Mar 2006, at the EMA Institute, Mount Macedon. Participants were drawn mainly from States which provided the 'seeding' finance, Victoria and New South Wales.

This training, and the associated national endorsement, will provide Australian hospitals with an effective training and validation mechanism for their emergency departments, operating theatres, ICUs and ECCs in the management of a mass casualty event. The process also effectively includes pre-hospital elements, by incorporating those procedures and management practices in the early stages of the exercise.

Before the Commonwealth games, Victoria (in conjunction with WA, SA and QLD) conducted a 'surge' exercise involving 1200 victims over 4 major Victorian hospitals. This was the largest EmergoTrain exercise ever held. Victoria is now leading the way, planning to conduct 11 exercises in the second half of 2006. The Victorian Department of Human Services has engaged a senior policy advisor for 12 months to establish the exercise program and to ensure that the sector is adequately exercised in coping with a mass casualty event. NSW will also be establishing an exercise calendar.

For further information, contact Colin Fiford
Ph 03 5421 5290 or email colin.fiford@ema.gov.au

Inclusive Emergency Management with Culturally and Linguistically Diverse (CALD) Communities

Following on from the review of the Guidelines for Emergency Management in CALD Communities, EMA is in the process of developing and delivering targeted training. This training is intended to increase the engagement between CALD communities and the emergency management sector.

In this context EMA is conducting a program consisting of two workshops in which participants will be required to attend both workshops and to commit to completing a work project in the weeks between the workshops. This program is aimed at personnel who are members of local or regional/district emergency management planning committees in areas where there are high levels of CALD representation.

EDUCATION AND TRAINING

Another initiative is the development of learning materials for integrating multicultural awareness components within five existing EMA programs. These programs are: Emergency Management for Local Government; Undertake Emergency Planning; Context of Recovery Management; Course in Evacuation and Recovery Centres; and Emergency Coordination Centre Management.

For further information contact Judy Parker
Ph: 03 5421 5229 or e-mail: judy.parker@ema.gov.au

School Education

Earlier this year EMA commissioned Curriculum Corporation to conduct a national audit, of State and Territory primary and secondary school curricula and commercial resources, to identify strategies to better integrate all hazards and emergency preparedness education into the school curriculum. This audit has now been completed and the final report delivered to EMA.

Some of the key finding (in brief) from a curriculum perspective include;

- All jurisdictions have natural disasters well entrenched and explicit within the curriculum. However the main emphases are on where, what, how and why of disasters, mainly natural;
- With some exceptions, curriculum guidelines in general do not emphasise issues to do with planning, prevention, preparedness, and recovery following a disaster; and

- There is a trend towards a 'post' disaster approach, in which many schools conduct a special study following an event.

From a resource perspective, recommendations focused on making links specifically to State and Territory curricula and ensuring resources were relevant to children through; real-life case studies, investigation of realistic but hypothetical scenarios such as What would you do if ...?, role-playing scenarios, simulations and use of dramatisation and practical action-research activities within communities.

This report gives a clear understanding of the hazards and emergency preparedness needs in the Australian education system and is seen as a vital step in preventing the duplication of resources and provides direction for EMA's and other emergency management sector organisations efforts in this area.

A meeting of State and Territory Education Department officials and EM personnel will be convened later this year to table this report and develop an action plan.

For further information contact Melanie Ashby

Phone 03 5421 5269; email: melanie.ashby@ema.gov.au

The school education website can be viewed at www.ema.gov.au/schools

COMMUNITY DEVELOPMENT

Attorney-General announces successful grant recipients under the Working together to Manage Emergencies initiative

The Attorney-General, The Hon Philip Ruddock MP, has announced details of 365 projects, valued at \$13.1 million to be funded in 2006/07 through the Local Grants Scheme (LGS) and National Emergency Volunteer Support Fund (NEVSF).

The two programs were developed in September 2004 as part of the 'Working Together to Manage Emergencies' initiative which recognised the need to develop self-reliance at both the community and local government levels. The initiative provides funding to support local governments, communities and volunteer

organisations to develop strategies to improve community safety and to improve recruitment, retention and training for volunteers involved in emergency management.

Successful projects for 2006/07 ranged in value from under \$1,000 for the purchase of Tabards for use in an Emergency Operations Centre to \$360,000 for the development of the Australian Disaster Information Network (AusDIN) web portal, a cross jurisdictional national project that provides ready access to a wealth of emergency management related information.

Each state and territory convened a Selection Committee to prioritise all applications for funding received from local government areas, Indigenous

COMMUNITY DEVELOPMENT

communities and volunteer agencies within the jurisdiction. This ensured that only those projects that were consistent with the emergency management priorities of the state or territory were successful.

The projects supported in 2006/07 provide a balance across rural and urban areas, and offer assistance to remote communities, Indigenous communities and capital cities taking account of the risks and vulnerabilities facing people living in those communities. The successful projects provide assistance to the full range of volunteer organisations active in the emergency management sector and support their endeavours to build safer sustainable communities.

The funding allocated to local governments and volunteer emergency management agencies will assist them to further develop their capability to undertake their responsibilities. The funding breakdown by individual jurisdictions as announced by Mr Ruddock was:

Jurisdiction	Total
NSW	\$3.2 million
Victoria	\$2.1 million
Queensland	\$2.7 million
SA	\$1.2 million
WA	\$2.2 million
Tasmania	\$0.5 million
NT	\$0.5 million
ACT	\$0.2 million
National Projects	\$0.5 million.

National projects are those assessed as having significant benefit across all states and territories.

Applications for funding under the two programs in financial year 2007/08 will be called for in mid-December 2006, with a closing date of 2 March 2007. It is expected that guidelines and application forms will be available on the Emergency Management Australia website at www.ema.gov.au/communitydevelopment from mid-December.

interesting websites



www.fema.gov/kids

This innovative and colourful site is the brainchild of the US Federal Emergency Management Agency and aims to teach children how to prepare for disasters and prevent disaster damage.

Introduced by Herman, the spokesperson for the site, it makes learning fun through features such as cartoon character graphics, games, stories, information and even an opt-in 'become a Disaster Action Kid' program. In a cute little story, Herman even endeavours to find a disaster proof shell.

The site also contains on-line resources for parents and teachers such as curriculum items and safety information that can be used in the classroom or at home.



www.abc.net.au/newinventors/txt/s1493127.htm

This page is more of a new and interesting item, images of which can be viewed on the ABC New Inventors' website. The website showcases a Year 12 student, Katya Heise, who recently designed and made 'Bed+Aid' as part of her Design & Technology subject.

Initially Katya designed general purpose furniture made from cardboard, then the Boxing Day tragedy (the tsunami) occurred and she saw the need for a much more efficient method of dispatching aid. Katya set about designing Bed+Aid, a product that can be immediately transported to disaster struck areas to supply all the basic needs of people in an emergency situation; such as, clothes, food, water, first aid, a bed and bedding, while the more permanent clinics and refuge areas are being established.

