

# NATIONAL EMERGENCY

## RESPONSE

Official Journal of the Australian Institute of Emergency Services



A.I.E.S.

VOLUME 27 NO. 3 WINTER 2014  
PRINT POST PUBLICATION NO. PP100018976





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*National Emergency Response* is published by  
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GPO Box 2466, Melbourne 3001  
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www.aies.net.au

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The website has sections for each State as well as National Areas. If you have ideas for State Division content, please contact your State Registrar, for National content, email web@aies.net.au Please be aware that all content must go past the National Registrar prior to web publication to ensure it meets required guidelines.

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Winter2014 • National Emergency Response

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### FRONTCOVER

A man is pulled to safety as floodwaters rise.  
Photo courtesy of SES NSW.

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**Bob Maul** LFAIES

*General Secretary/Registrar*

### NEW MEMBERS

The Australian Institute of Emergency Services is pleased to announce the following emergency services people joined the AIES between March and May 2014.

NAME	ORGANISATION	STATE
Mick Beltran	Rural Fire Service	NSW
Stewart Duncan	Emergency Management (Thailand)	VIC
Raymond Schealler	Fire Rescue Service	QLD
Kane Treloar	Surf Life Saving	VIC
Marilyn King-Mace	Fire Rescue Service	QLD
Simon Mitchell	St John Ambulance	VIC
Ron Gui	Health Services	QLD
Gary Sambridge	Rural Fire Service	NSW
Steve Glassey	Emergency Management	NZ

### LONG SERVICE AWARDS

The General Council of the AIES, on the recommendation of the NSW Division, has awarded Long Service Certificates to members of the NSW Division for services and membership in excess of 10 years. General Council extends its congratulation to the following award recipients:

NAME	AWARD	NAME	AWARD
Gregory James	30 years	Greg Perry	10 years
James Pullin	30 years	William Hoyles	10 years
David Parsons	30 years	Danny Fraticelli	10 years
Robert Maul	30 years	Teena Windsor	10 years
Christopher Huer	30 years	Alan Lidbetter	10 years
Craig Bowra	20 years	Kathleen Lamoureux	10 years
Desmond Lambley	20 years	Craig Ronan	10 years
Gordon Blair	20 years	Nadar Hanna	10 years
Gregory Snape	20 years	Mark Constable	10 years
Peter Dixon	20 years	James Armstrong	10 years
Stephen Flanagan	20 years	Graeme Browne	10 years
Constantine Zakis	20 years	Graeme Craig	10 years
Evan Longworth	20 years	Grant Owen	10 years
Gordon Hill	20 years	Shane Griffin	10 years
Gary Fry	20 years	Ian Manock	10 years
Colin McQueen	20 years	Andrew Pinfold	10 years
Barry Archer	20 years	Karl Cronin	10 years
Phillip Wilkinson	20 years		
Charles Keys	20 years		



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# CALL TO ACTION!

'Have you written a paper, article or human interest story about emergency services in Australia or overseas?  
Or taken a photo you would like published?

*National Emergency Response* accepts submissions from AIES members. Please email [editor@aies.net.au](mailto:editor@aies.net.au)

# FROM THE PRESIDENT'S DESK

**BarryArcher** MAIES

*AIES National President*

It is a special honour and a privilege to begin my term as President of the Australian Institute of Emergency Services.

Our outgoing President, Alan Marshall, deserves an enormous thank you from all of us. Alan will continue to serve as an officer of the Institute and also as the Victorian Divisional President. I am grateful that I will be able to rely on his wise counsel during my term.

As a newcomer to the Board and newly elected as your President I expect that I will be rather busy in the coming months bringing myself up to speed with the governance and direction of the national body. I come to this position with over 20 years of Institute membership and over 40 years of working within the emergency services field. I concurrently hold the position of NSW Divisional President having recently been the Vice President.

I have always had the highest regard for our Institute and the role that it has in providing a platform and gathering point for all persons engaged in the noble pursuit of serving our communities in the emergency services. I intend to make full use of this year in office and with the support of each

division and the Board, to strengthen our membership and to hopefully capture more of the non-traditional organisations and individuals that work in the emergency fields. I personally appeal to each of you to reach out to your networks within the industry and encourage them to engage with the AIES.

I can assure you that your national team is a mixture of long serving and new members. We are listening and caring about both divisional issues and the national strategies of the organisation. I will be meeting with our national secretary in the near future to establish a closer relationship between divisions and the national teams. I want to promote the expertise and experience contained within our membership into areas where we can influence changes and innovations to where they are needed. For example standards, legislative and codes development panels where for many years they have been missing. Your Institute has fine publication and IT platforms in our Twitter and Facebook pages and I urge you to please contribute and use them on a regular basis.



As most of you would know the fastest way to communicate and to inform during emergencies and disasters is via social media these days, regardless of where we operate or organisational escalation processes that are in place. We find out more information quickly from unofficial sites like Facebook and Twitter than we often find out through our formal networks. We will continue to grow these areas of the AIES.

In my day job I travel our country on a frequent basis so I will be letting the divisions know when I'm around and I can try and catch-up with as many of you as I can. In the meantime if you would like to contact me please don't hesitate to flick me an email anytime. ●



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# UNDERSTANDING THE IMPACTS OF SEVERE STORMS AND FLOODS ON THE VICTORIAN ROAD NETWORK

Russell Thompson, Yiqun Chen and Abbas Rajabifard

*Department of Infrastructure Engineering  
The University of Melbourne*

Natural disasters such as severe storms and floods often lead to road closures that can cause major disruption for road users. In late 2010, VicRoads developed a Traffic Alerts and Road Closures system for disseminating and logging information relating to traffic alerts and road closures. This paper presents an analysis of effects of three severe storm and flood disaster events that occurred in Victoria during 2011 and 2012 based on the data from the VicRoads emergency roads closures database.

There is a need to improve understanding of the nature of disruptions to road networks from extreme weather events such as floods. This will aid the development of methods for improving the resilience of traffic infrastructure as well as provide guidance to road users to minimise delays.

This paper describes the nature of the recovery of road networks in Victoria focusing on recent flood and storm events. Such analysis can assist in improved planning and preparation for future disaster events.

Hojati et al (2011) analysed traffic incident data from the Southeast Queensland urban road network over a one-year period to identify factors that contributed to the frequency, type, characteristics, duration and location of incidents. However, only 0.4 per cent of traffic incidents were attributed to flood or alerts and these were not investigated in detail.

VicRoads, the State Road Authority in Victoria, has implemented an information system that disseminates details of road incidents to the public using the internet. A database of the events from this system for the period 2 December 2011 to 22 January 2014 was analysed



*Moira, in Victoria's north, received extensive damage to its 4,000km road network when 12 months of rain fell over four days in February/March 2012. Photo courtesy of Moira Shire Council.*

to identify patterns associated with disruption to the Victorian road network from disasters. ArcGIS (v10.1) was used to produce maps illustrating the nature of road closures.

Real-time information about traffic incidents is available on the VicRoads web application. Interactive maps allow road users access to traffic incidents, and details of which roads are closed and why. This permits alternative routes to be planned if diversions are necessary.

The Emergency Road Closures database provided by VicRoads contains details of all emergency road closures, lane closures and traffic alerts, including the type of incident that caused the

disruption (for example flood or road damage), the location, name of road, start and end time/date of the closure during the analysis period.

## OVERALL DISRUPTION

The nature of all the road incidents during the entire period was investigated. A total of 9,014 road incidents were recorded throughout Victoria during this period. A high proportion of these were categorised as Traffic Alerts (71.6%), with Road Closed the next most frequent (21.2%) and Lane Closed (7.2%). Traffic Alerts are incidents that have an impact on traffic flow but do not involve a road or lane closure.

The type of road incident was found to be not independent with road class, duration and incident type. Local roads being well over-represented and freeways well under-represented with road closed incidents. Road closed incidents for 16-plus days' duration were well over-represented and lane closed events between 10 and 16 days well under-represented. Fire and floods were both well over-represented in road closed events.

For road closed incidents, the relationship between road classification and duration was found to be not





independent, with local roads being substantially over-represented in longer duration road closures and freeways and highways being over-represented in short duration road closures.

A significant relationship between the duration of road closures and whether they were in the Greater Melbourne region or not was determined, with road incidents occurring in Greater Melbourne being more likely to be of shorter duration.

### VICTORIAN DISASTERS

The Australian Emergency Management Knowledge Hub listed three flood and severe disasters that occurred in Victoria during the analysis period:

- (i) Gippsland Flood (4 June 2012)
- (ii) Flood in Central North Victoria & Melbourne (26 February 2012)
- (iii) Severe Storm in Melbourne (25 December 2011)

Since the influence of disasters such as floods or storms can occur a considerable time after an extreme weather event, for each of the three disasters considered, we assumed that road closure incidents recorded in the next 20 consecutive days were related to that disaster.

In terms of road closure incident types, only flood, road damage and emergency works were included in the analysis of three Victorian disasters. Separate analysis of the road closures was also conducted for each of the three disasters occurring during the analysis period.

### GIPPSLAND FLOOD

Record rainfall in eastern Victoria, commencing on 4 June 2012, resulted in many roads being closed due to floods, including the Princes Highway (the main road in the region) between Traralgon and Rosedale as well as east of Orbost. Damaged trees from storms also blocked sections of the South Gippsland and Monaro Highways (AEMKH, 2014).

There were a total of 210 road incidents in the region from 4 June to 24 June 2012. The most common type of incident was Road Closed (76%) and Traffic Alert (23%).

A total number of 160 Road Closed incidents were recorded in the Gippsland region in the 20 days following the initial heavy rainfall. Road Closed incidents were widespread across the region, occurring mainly on local roads (55.6%), with only 12 (7.5%) incidents occurring on highways.

A significant relationship between road classification and duration was also found for Road Closed incidents for this disaster. Only four (33%) of Road Closed incidents recorded on highways were for longer than one day, all of which were less than five days' duration. However, 60 (67.4%) Road Closed incidents on local roads were for at least a one day duration, with 32 (36%) incidents being greater than six days' duration.

### FLOODS IN NORTHERN VICTORIA & MELBOURNE

Heavy rain and thunderstorms started throughout Victoria on 26 February, 2012. Numerous towns in northern Victoria including Yarrowonga, Cobram, Shepparton, Seymour and Benalla experienced flash floods. An evacuation order was issued for the town of Nathalia. Flash flooding also occurred in many suburbs of Melbourne (AEMKH, 2014).

There were a total of 319 road closure incidents recorded in the Northern Victorian region and Melbourne during the period 26 February 2012 to 16 March 2012. The most common type of closure event was Road Closed (82%) and Traffic Alert (18%).

A total number of 260 Road Closed incidents were recorded in both regions in the 20 days following the initial storms. Road Closed incidents were widespread across the regions, occurring mainly on local roads (53.1%) and sub-arterial roads (27.3%).

A significant relationship between road classification and duration was also found for Road Closed incidents for the disasters in both regions (Table 4). Again, local roads were over-represented in road closed incidents with long durations. However, there was substantial disruption to highways, arterial and sub-arterial roads in the regions (Figure 3).

Although only a small number of road closed incidents occurred on freeways and highways, a substantial proportion of these were for greater than one day (Table 4). A high percentage of road closures on arterial and sub-arterial roads were for a least one day.

#### MELBOURNE STORM

Melbourne experienced severe thunderstorms on 25 December 2011 that resulted in a large amount of wind

damage and flash flooding in many suburbs. A total of 32 road incidents were recorded across Melbourne with around 90 per cent of these being traffic alerts, with a substantial number being on arterial roads. Only two Road Closed incidents were reported and these were of short duration and caused by floods.

#### CONCLUSIONS

The floods in Gippsland and Northern Victoria highlighted the widespread nature of natural disasters. While the main road system did not experience any major disruptions in the Gippsland floods in 2012, numerous local roads were impacted. Improved understanding of the needs of local residents who are affected by closures caused by floods on local roads in rural areas is required to minimise the effects on local communities.

The floods in Northern Victoria demonstrated how floods can also have a substantial impact on major roads. To reduce the effect of these types of natural disasters, diversion plans are required to be constructed

and disseminated to road users. Such systems will need to be developed in the future.

GIS provide an efficient tool for generating maps displaying the location and duration of road incidents in affected regions combined with the road network. Maps could be used to display diversion plans for future disaster events. GIS combined with traffic demand modelling could be used to estimate the disruption costs from flood events that could then be used to develop works programs for strengthening vulnerable elements of the road network. ●

This paper was presented at the Australian and New Zealand Disaster and Emergency Management Conference held in on the Gold Coast, 5-7 May 2014. Some edits have been made to fit with the *National Emergency Response Journal*. To view the full paper, including the references, please go to [www.anzdm.com.au](http://www.anzdm.com.au)



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# IMPORTANCE OF GOVERNANCE FOR VOLUNTEER ORGANISATIONS



Brian Mattner, MAIES

*AIES President SA/WA/NT*

Last year I was invited to attend the 15th National Conference on Volunteering in Adelaide by Volunteering Australia.

The conference had a collection of excellent keynote speakers that included CEO of the Directory of Social Change in the UK Debra Allcock Taylor and ANU Crawford School of Public Policy in the ACT Professor Robert Costanza.

Ms Taylor is an internationally published author and a forthright defender of volunteers and protecting charities' independence and reputations. I would describe her as refreshing, honest and straight forward with a great presence. If you get a chance to hear her speak, grab it. She is entertaining, blunt and knows her stuff.

Professor Costanza is a world leading ecological economist. His research and presentation into the unsustainable consumerism society of today was delivered in terms that everyone understood. Importantly, he was able to show how changes in our individual habits can and does bring about large industrial change that can benefit society.

The other keynote speaker that really struck accord was Kate Costello who spoke on governance, in particular board governance. Ms Costello is a qualified lawyer with over 25 years' experience as a company director. Ms Costello spoke on the requirements for boards to manage the affairs of their organisations in an ever-demanding environment.

So in keeping with the theme of the keynote speakers at the conference, here is a synopsis of what good governance should be.

## 1. Getting the right board member can be difficult, but attracting the right people for the job is vital. Here are some tips:

- Appointing an operational type person to the board will result in consistently working on and addressing operational issues. That is not the job of the board.
- A full and frank induction is fundamental to getting a new member on the right foot and ready to step off straight away. Induction needs to address the history, constitution, minutes and other documentation of the organisation.
- Make sure you have the right committees in place that support the board. Too many will clog the process but too few can cause burnout and collapse.
- Board members must be prepared to be open minded to change, which can be one or two points or everything. If you can't appreciate or accept change, you shouldn't be on a board.
- Develop a standardised board presentation document template. The format allows presenters to know what it is they need to address so the board can deal with the proposal immediately as part of the agenda items.
- Timeframes for proposal submissions are crucial to enable board members to pre-read, research and ask questions so the proposal is addressed at the board meeting, not deficiencies within the document.
- Encourage healthy, robust discussion. There is a distinct difference between discussion and argument.
- Produce accurate but succinct minutes. General Discussion is a simple comment that indicates the board discussed the agenda item. Unless specific points are made and require recording, keep it simple and clear.

## 2. The board's time should be spent on strategy and strategic issues. The role of the board is to take the organisation into a successful future. Here's how:

- Committees, working groups and work units are the arms and legs of the organisation. Use them to implement the plans, processes and functions of the organisation.
- Any agenda prepared for a board meeting should address the 'big stuff' first. Get to the small stuff last but just because the smaller items aren't as strategic, it doesn't mean you spend any less time dealing with them.

## 3. Ensure there is clarity about policies and procedures that the board are going to address and have ownership of. There should be a clear separation of strategic and operational policies. This can be achieved by:

- Choosing a chair based on ability, not longevity.
- Maintaining confidentiality when needed but transparency should always be the first consideration. Board members need to understand privilege and discretion is a vital commodity.
- Undergo annual succession planning. This goes hand-in-hand with the appointment and recruitment of the right person (ie ability versus longevity).

Communication is also a major component of board management and governance. Communication in this context does not include internet, email, Facebook, Twitter, iPhones, tablets or any other form of electronic device.

Communication is being able to sit together and discuss issues and concepts face-to-face that need to be addressed for the benefit of the organisation.

This is where body language supports or counteracts verbal position. It is where we use common language that is clear, unambiguous and more importantly – understood.

The human psyche does not want to admit that we don't understand a phrase, sentence or concept. However too often when we are home, talking privately, and reviewing what was said, we convert the language used into common speak and the light goes on.

In summary, ever so more than previously, we need good governance in our organisations. The points raised by Ms Costello would assist any board in maintaining its rightful position in the command structure and keep its focus where it should be. More importantly, participating on a board is a privilege, not a right. It should always be about the organisation and not about you. ●

# ANNUAL MEETING OF AIES AND ANNUAL MEETING OF GENERAL COUNCIL – HOBART 12 APRIL 2014

Bob Maul

*General Secretary/National Registrar  
General Council AIES*

The Annual Meeting of the Australian Institute of Emergency Services, and the board of directors, was held in Hobart on Saturday 12 April 2014. Held at the Salamanca Inn, the board meeting occurred during the day and the AGM later that night.

A number of new state representatives were elected to the board of directors and the board now consists of the following:

Barry Archer	President and Principal Executive Officer	NSW
Scott Milne	Vice President	ACT
Alan Marshall	Director	VIC
Steve Jenkins	Director	QLD
Ron Jones	Director	TAS
Brian Mattner	Director	SA
John Rice	Director and Web Master/ Membership Officer	QLD
Robert Maul	Company Secretary/ National Registrar	NSW

Retiring Directors were Mr Barry Presgrave, Mr Harold Wolpert, Darrell Johnson and Gregory Eustace. A synopsis of matters raised, items discussed and resolutions reached at the two meetings is as follows:

1. Discussion and tabling of the draft Strategic Plan developed by the previous National President Alan Marshall and a report produced by a working party established to consider the draft and recommendations contained therein as to how the plan should be implemented. The plan and recommendations made in the report are to be reviewed by the new national president with a view to how the Institute goes from here. State sub divisions in the meantime are to consider such issues as branding, offering, membership, vision, training and accreditation of other agencies, and report findings to the national president.
2. AIES involvement and participation in the three-day emergency management conference on the Gold Coast, Queensland, held between 5 and 7 May 2014 and reports arising.
3. Additional distribution of this journal to emergency management organisation and agencies throughout Australia.
4. Finalisation of the new constitution and rules of the AIES, which will replace the existing Articles of Association, Memorandum of Association and By-Laws of the AIES. The constitutional documents are to be placed on the AIES website and members are to be informed by divisions that the constitution and rules can be accessed on the website for scrutiny and comment for a period of three months. After this, the board will review the documents to determine, if following comments, alterations or additions are to be made. Within six months, the constitution and rules will be referred to the Institute's solicitors for advice and amendments, if necessary. A motion will then be formally developed for presentation to, and adoption by, members at the 2015 AGM of the institute to be held in Sydney.
5. The production of Statements of Duties for office bearers of the institute and a National Finance Manual for use by office bearers.



The beautiful city of Hobart played host to the national executive and AIES members who attended the institute's AGM in April.



New AIES President Barry Archer makes his inaugural speech at the Institute's AGM in Hobart.

6. The agreement of the board to present the Award of Excellence to three Life Fellows of the Institute, namely Maurice Massie QPM (Tasmanis), Alan Alder OAM (Victoria), and Barry Presgrave OAM (South Australia) for the years 2012, 2013 and 2014.

7. Continuation of the Young Endeavour Award which enables a person between the ages of 18-24 to undertake a maritime training voyage of two weeks' duration aboard the vessel the Young Endeavour. The 2014 Award was given to Laura Smith, a member of the Tasmania Division. Laura is the first female member to receive the award.

8. The adoption of the 2013 National Annual Accounts and Statements and National Auditor's Report by

the AGM. At national level the accumulated funds/assets of the Institute for the financial year ending 31 December stood at just over \$35,000 and a slight profit of over \$1000 was achieved. This is not to be confused with the Annual Accounts of the State Divisions of the Institute, which are presented at the Division AGMs and audited separately.

9. The development of an online AIES membership database that enables members to pay fees electronically and update their own details on the membership database including the production of a manual explaining how members can access the database and issue an online individual membership number for each member of the Institute in Australia and overseas.
10. The upgrading of the AIES national website by the webmaster and a request that divisions provide regular input to the website to make it relevant and up-to-date.
11. Consideration as to the need to establish a Western Australia Division of the AIES. At the moment the affairs of members in Western Australia are administered by the South Australian Division.
12. Implementation of more professional administrative support to members in all Divisions.

The next AGM will be held in Sydney on 11 April 2015. ●

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# TASSIE AWARDS

Ronald Jones, FAIES

*AIES President Tasmania*

The Tasmanian AIES AGM and awards night was held at the Balmoral Motor Inn on 1 March. The dinner was well attended with members, guests and nominees enjoying the hospitality of Jean and her staff once again.

The awards night included the presentation of our inaugural Tasmania RSL Spirit of the Anzacs Service Worker of the Year Award and the annual PJ Parssey award.

Following the promotion of the RSL allowing emergency service personnel to qualify for affiliated membership of the RSL, Tasmanian RSL President Robert Dick approached us to establish an award along the lines of the PJ Parssey Award. The Tasmania RSL Spirit of the Anzacs Service Worker of the Year Award will be an annual award to recognise the fantastic work of our emergency service personnel – both permanent and voluntary.

Nominations for this award were called through the three RSL regions – southern, northern and north western). The regional winning nomination was forwarded to RSL headquarters for final judging of the state award.

The three regional winners were Alton Bond from SES Huonville (southern region), Rodney Brewer from Tasmanian Fire Service and Ambulance Tasmania (northern region) and John Duncombe from SES Burnie (north western).

Mr Dick presented each winning nominee with an RSL shield and



*PJ Parssey Award nominees (L to R) Melissa West, Paul Bugg, award winner Scott Clarke, Tony Perry representing the Sassafras Fire Brigade and AIES Tasmania President Ronald Jones. Absent is Chris Ryan.*



*RSL award presentation. (L-R) award winner Rodney Brewer with RSL Tasmania President Robert Dick, AIES Tasmania President Ronald Jones and nominees Alton Bond and John Duncombe.*

certificate before announcing Rodney Brewer the inaugural winner of the RSL's Spirit of the Anzacs Emergency Service Worker of the Year.

Nominations for this year's PJ Parssey Memorial Award all came from our other partners in our awards, the Tasmanian Broadcasters Radio Networks Emergency Service Volunteer Worker of the Year Awards.

These included Tasmanian Fire Service Queenstown's Paul Bugg (7XS Radio Station), Scott Clarke from TFS Burnie (7BU/SeaFM Radio Station), Sassafras Fire Brigade (7BU/SeaFM

Radio Station), Melissa West from Ambulance Tasmania George Town (7LA/Chilli FM Radio Station) and Chris Ryan, Cambridge Fire Brigade (7HO FM Radio Station).

Betty Parssey, wife of the late Peter Parssey, unveiled this year's winner – Scott Clarke from Burnie. Mr Clarke is a fifth generation firefighter and his sons are also following in their father's footsteps. Mr Clarke received a \$500 travel voucher.

Congratulations to all our award nominees for the fantastic work they are doing for the state and community. ●



## Your chance to contribute

Last year we arranged to have our *National Emergency Response Journal* sent to all police stations, ambulance stations and SES units around the state. This year we will be arranging the Tasmanian Fire Brigades and affiliated services to also receive copies each quarter.

All AIES members are encouraged to contribute to the journal to be in the running to win the annual gold pen prize.

We are also looking for photos of our Tasmanian Emergency Services in action for our calendar, so get snapping and send them to your state registrar with the chance of having your photo published in our national calendar. ●



Tasmania Fire Service's Laura Smith has become the first female to receive the AIES Young Volunteer award.



**A**IES Tasmania member Laura Smith has received the national Young Endeavour Award for her work as a volunteer with the state's fire service.

Laura is the first female to win the award, which was launched in 2010.

Joining the Tasmania Fire Service at Rocherlea in late 2007, Laura became a firefighter in August the following year.

She has attended numerous community events including the Tasmania Pacing Club's Christmas function at Mowbray, Playgroup Tasmania's Day for Daniel at Civic Square, Launceston City Christmas Parade and the National Families Week Fair at Waverley Primary School.

Currently the Assistant State Secretary of the Tasmanian Retained Volunteer Firefighter Association, Laura is an Officiate for the Tasmania Fire Brigade Competitions Association assisting at the State Firefighter Championships.

She regularly attends emergency incidents and training with the Rocherlea Fire Brigade and has also been deployed as part of strike teams and task forces to large wildfires across the state at places like Wayatinah, Dunalley, Beaconsfield, Pipers River and Interlaken.

Within her brigade, Laura has been



*Laura Smith will sail into the trip of a lifetime on board the Young Endeavour.*

a valuable mentor to new members, taking them through their brigade induction and basic firefighting course.

She is a volunteer training instructor with Northern Region's Learning and Development Unit and assists in the training and development of volunteers across the region in such skills as pump operation and urban firefighting.

Outside of brigade training hours, she has been a firefighter in crews assigned to assist driver training courses and other career development courses, and undertake hazard reduction burning.

The AIES extends its congratulations to Laura and wishes her a safe and exciting journey on the Young Endeavour from Brisbane to Sydney later this year. ●



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# Information about Probate and Deceased Estates

## (will with an appointed executor)

### What is probate?

Probate is the term used throughout Australia for the process by which a person named as executor in the last valid will of a deceased person becomes entitled to stand in the shoes of the deceased for the purposes of distributing the deceased's assets in accordance with the deceased's will.

The executor must apply for a Supreme Court order for a grant of probate according to the rules which apply in the state or territory in which the deceased lived. In some cases, the Court's power to grant probate (in uncontested matters) is delegated to the Registrar of Probates who functions separately to the Court via the Probate Office.

As part of the application process the executor must prove the will, in other words, the executor must produce and lodge the original of the will and swear on affidavit that it is the last known will of the deceased. In most cases this is just a formal process which goes smoothly, but occasionally the Probate Office will have some questions or require more information and, even more rarely, there may be some challenge to the validity of the will.

Probate has nothing to do with probate duty which was a state based tax applying to deceased estates throughout Australia and abolished many years ago.

### Do you need probate?

The executor is not legally obliged to obtain probate, however there are a number of scenarios where, practically speaking, the executor will need to obtain probate, namely:

- If the deceased owned real estate either solely or as a tenant in common, and
- If the deceased held significant bank account balances solely (banks vary as to their requirements but anything over around \$10,000 is likely to require probate)

So for an estate with a jointly owned home and minimal other assets, there may be no need to obtain probate, and the executor could simply administer the will using a copy of the will and copy of the death certificate to satisfy all necessary authorities.

### Some important facts about probate in Australia

- A grant of probate once made in a state or territory can be registered or resealed in any other state or territory without the need to reswear affidavits or prove the will again.
- Some states and territories have a simplified regime for small estates (estates worth less than a prescribed maximum figure varying between \$10,000 and \$50,000)
- In all states and territories (apart from SA) you must give at least 14 days notice of your intention to apply for probate by publishing a notice to that effect.
- All states and territories allow claims to be made against an estate by persons who may have been inadequately provided for in the will (testator's family maintenance or TFM claims)

The contents of this information sheet is intended as general advice only and should not be relied upon for any specific circumstances. If you require specific advice on your own personal circumstances then please contact us. If you require financial and/or accounting advice you should contact a qualified accountant and/or financial adviser.

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# URBAN PLANNING, BUSHFIRE RISK AND EMERGENCY MANAGEMENT

Laura Gannon, MAIES

**U**rban and regional planning is a discipline that seeks to manage land use so as to improve the health, wellbeing and amenity of communities and balance the often-competing needs of economic development and environmental management. Good planning can build community resilience, strengthen social networks, maximise development potential and ensure ecological systems are retained, whilst addressing possible risks associated with natural hazard including that of bushfire.

The utilisation of planning systems, processes and methodologies to better plan for bushfire hazard and build community resilience is one of the most effective instruments available to manage the risk of emergency and disaster. The growth of development at the urban/rural periphery and 'tree changing' trends resulting in increased rural residential subdivision remain some of the more significant drivers of hazard exposure with regard to the potential risk of bushfire, and is an issue which resonates in many Australian cities and townships. This frontier can be well managed

where appropriate planning measures are adopted to recognise and respond to areas of hazard.

Community resilience is a term which emerges quite frequently in emergency management discourse, principally focusing on the ability of our communities to withstand and recover from emergency or disaster with the least amount of impact or disruption, as quickly as possible, and continue to function and prosper. How we build community resilience in a planning context is significant and relates to how and where we locate populations and development across the landscape.

## BUSHFIRE PLANNING MEASURES

The planning response to bushfire hazard varies between states, however, irrespective of the planning system in place successful planning measures can be adopted to assist in the mitigation and management of bushfire hazard in existing and proposed communities. Very rarely is it as simple as forming a policy position of prohibiting development in certain hazard areas, however, this is and certainly should remain a fundamental hazard management approach – to avoid significant hazard in the first instance.

Australians have long maintained a strong affiliation with and affection for the bush, which is beneficial for regional townships and localities which rely largely on population growth to drive economic development and infrastructure investment. In light of the amenity and cultural association with bushland areas, a fine balance exists between risk exposure and development in bushfire hazard areas. In response to this, responsive planning and building construction provisions can allow development to occur based upon an assessment of the risk profile relevant to the locality and the development site. In such situations, governments will require a very high level of informed, certain and reliable information upon which to base such a decision, however, as is so often the case, obtaining this extensive level of detail at the strategic planning (planning scheme preparation) stage has proven difficult in the past. This is notwithstanding political pressures which also remain at play in this context.

Notwithstanding, other tangible measures which are more concisely addressed by local planning schemes can provide a sufficient level of detail by which informed decisions can be made as to whether further development in



certain areas should be considered. Issues such as alternate road access options which provide multiple access and egress opportunities is a determining factor. If only one access and egress point is available to an area, its ability to readily provide for emergency access or safe evacuation is typically limited.

Likewise, the topography and vegetation characteristics of an area remain of valid consideration in terms of planning for bushfire hazard. Both elements, either individually or in concert, can significantly alter the intensity and behavioural characteristics of bushfire. In this respect, the siting of development in bushfire hazard areas is essential in relation to local or landscape level risk. These considerations should prevail across wider areas and localities via strategic analysis of existing and proposed settlement and land use patterns before being contemplated on a site-specific basis. A planning response which befits the nature of the hazard is essential at the strategic planning stage.

A range of other siting and on-site design measures can also assist in reducing the possibility of life and property loss, in terms of designing an environment that responds to the needs of emergency services in allowing for an efficient emergency response.

## THE VALUE OF RISK RESPONSIVE URBAN PLANNING

Essentially, planning for bushfire hazard involves forward thinking of the critical aspects which can limit development in inappropriate hazard areas, seek to prioritise life, design development to respond to the potential threat of bushfire and consider the needs of emergency services in the event of bushfire. This requires planners to develop or seek professional guidance in understanding of bushfire behaviour and emergency services needs in order to effectively plan for communities and development where bushfire hazard may exist.

Whilst current demographic projections anticipate decreases in rural and regional populations, this will be countered by increases in urban and metropolitan populations. This being the case, development at the urban/bushland interface is likely to continue. Bushfire awareness for those communities at this interface cannot



be guaranteed. Thus, a significant opportunity exists with regard to the utilisation of well-developed and informed planning processes in risk management and mitigation. Good planning can effectively assist to reduce the number of persons and property exposed to hazard and can implement measures which have considered locational characteristics, evacuation and emergency access. Ad hoc development tends to lack the ability to plan to a wider scale, where foresight and the ability to consider landscape issues that are external to site-based responses is removed. The cascading framework of planning and building processes and systems seeks to cover both macro and micro concepts and solutions. A strategic planning approach allows for the wider contemplation of cumulative effects in considering land use allocation, proactively responding to hazard and risk by adapting appropriate policy.

## PLANNING AND EMERGENCY SERVICES

The adoption of bushfire planning measures can directly assist emergency services response and the needs of emergency operations, easing the tasks for first responders. At a strategic scale planning can contemplate how and where populations and development are increased and how the landscape is used with consideration for emergency access and fire suppression needs as well as opportunities for safe operation. Settlement patterns, land use composition and access networks maintain a significant impact on how emergency services operate safely and effectively. Strategic planning can also consider evacuation routes and network

options and how and where these may be at risk, and subsequently where portions of communities may be at risk of isolation in the event of bushfire. At a site-based scale the provision of perimeter roads, the location of and access to static and mains water supplies, fire trails and firebreak networks and even items such as roll-over kerbs and roadway widths remain important considerations for fire services which can be addressed at the planning stage, aiding in the efficiency and safety of emergency responses. In general, good planning can make the job of responding to a bushfire easier for emergency services. This may result in flow on effects such as quicker response times, increasing the opportunity for life and property protection where available.

In significant events where emergency responders are unable to assist, planning measures can be utilised to provide the best possible opportunity for residents to protect their own lives and property. For those who chose to stay and defend or have left evacuation too late, planning measures can and should ensure dwellings and buildings are separated from at-risk vegetation thereby reducing the effects of radiant heat, flame contact and ember attack. Provisions for water supply, building siting, fencing and landscaping can be addressed at the planning stage to assist homeowners and residents build their own capacity to withstand and survive bushfire events.

The role of urban planning maintains the capacity to forward plan for emergency and introduce specific methodologies to reduce risk exposure and thus, mitigate the likelihood of bushfire disaster. Planning frameworks, which are enshrined in State legislation, provide an excellent vehicle for hazard mitigation based upon a reasoned and responsible approach to development. Together with the wide range of other processes and mitigation techniques and strategies, good urban planning can make a vast contribution in building community resilience and supporting safe emergency service operations. ●

### ABOUT THE AUTHOR

Laura Gannon is a senior town planner and bushfire planning specialist with Jensen Bowers Group based in Brisbane, and is an Affiliate Member of AIES.



# ARE THERE BETTER WAYS TO QUANTIFY FLOOD RISK TO LIFE?

© SES NSW

**Steven Molino**

*Molino Stewart*

**Mark Davison and  
Andrew Tagg**

*HR Wallingford, UK*

**Peter Cinque**

*NSW State Emergency Service*

**T**he NSW SES is the combat lead agency for floods (including coastal inundation), storms and tsunamis. Over the past 20 years the NSW SES has taken a more analytical approach to planning for such events, which has included assessing the likely triggers for evacuations, their potential scale and the time required to effect them. To this end it has developed the Flood Evacuation Timeline Model to quantify flood evacuation needs for a locality or region and to assist the NSW SES in its flood evacuation planning. Increasingly, the model has also been used to assess the evacuation implications of proposed developments. More recently the NSW SES has developed a tool and guideline to encourage more widespread and

consistent use of the Flood Evacuation Timeline Model.

A limitation of the Flood Evacuation Timeline Model (FETM) is that each community, development or precinct must be evaluated individually to determine whether full evacuation is possible from each. Then, if evacuation traffic from several locations will be directed to the same road and potentially converge during an evacuation, further calculations must be undertaken to see whether that convergence creates delays for some evacuation traffic and whether this in turn compromises full evacuation.

The FETM tool has been set up to enable these calculations to be done for traffic leaving two localities and converging at one point. While the FETM has been used to model multiple traffic streams with multiple convergences (including in the Hawkesbury Nepean Valley where more than 70,000 may need to evacuate from several population centres), the process is cumbersome, the results are coarse and it is challenging to present outputs in a way which is easy to communicate to decision makers. Furthermore, such modelling is really only modelling the evacuation road networks external to the area, which is evacuating and assumes

that the internal road networks are not a constraint to evacuation.

The guideline for the use of the FETM tool makes it clear that some, or all, of the evacuees may be unable, or unwilling to evacuate by motor vehicle even when the modelling indicates that everyone should be able to evacuate. The probability and consequences of such a failure must come into consideration when determining the appropriateness of a new development or reviewing the adequacy of emergency plans. The guideline and tool has some provision for determining whether pedestrian evacuation is a realistic fall back should vehicular evacuation fail. What the tool lacks is a robust method of estimating the fate of those who may fail to evacuate by vehicle or on foot or who may be overtaken by floodwaters in the process of evacuation.

## AVAILABLE MODELS

Several models have been developed in recent years to better model complex evacuation scenarios (not just for flooding) and others have been developed to better estimate loss of life from flooding. Some have been developed to do both.

The following is an overview of three particular evacuation models, which have been applied to flood evacuation





in NSW in an attempt to replicate the way in which the SES triggers evacuation and designates evacuation routes.

### NSW SES FLOOD EVACUATION TIMELINE MODEL

The FETM was born out of the 1997 Hawkesbury-Nepean Floodplain Management Strategy, where the NSW SES applied conventional timeline project management to the flood evacuation problem. The primary goal of the FETM is to compare the time required for evacuation with the time available for evacuation.

The model uses available information about flood rates of rise and flood warning to estimate the time available and empirical methods to estimate the time required for evacuation taking into consideration the time needed for people to respond to warnings, the carrying capacity of evacuation routes and the potential for delays.

### TUFLOW INTEGRATED GIS

This modelling offered several distinct advantages over the traditional static application of the FETM:

- It integrates with the dynamic two dimensional flood model to capture route closure information
- It calculates evacuation capacity on a time step basis making it more dynamic than the traditional application of the FETM
- It enables analysis of complex, multiple evacuation centres and routes
- It produces outputs as time series records for each population centre, route, junction and destination in both spreadsheet and GIS format.

### CONFLICT- BASED PATH-GENERATION MODEL

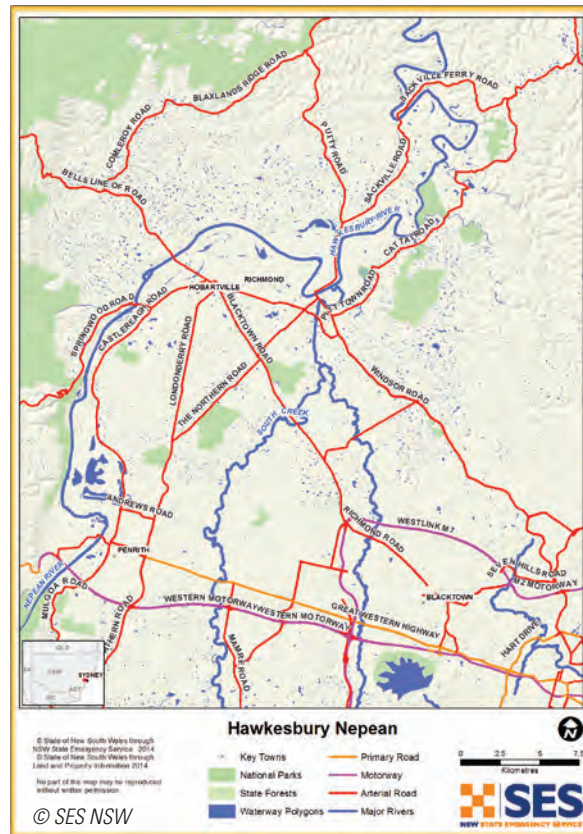
... Pillac et al (2013) have developed a dynamic evacuation model which models the evacuation problem as a population(s) at one or more threatened nodes having to reach one or more safe nodes along one or more available pathways which can be cut at different times during the evacuation. The primary objective is to get all of the evacuees to a safe node within the capacity of the road network. A secondary objective ... is to, 'evacuate them as late as possible, as this leaves more time to potentially refine the threat scenario and hence avoids unnecessary evacuations'.

They took three approaches to the modelling with the first being a free flow model that allowed evacuees to follow whichever (open) evacuation path they chose. The second ensured that those from a particular evacuation node followed a designated evacuation route. The third is what they describe as a Conflict-Based Heuristic Path Generation model, which reduces computational complexity, and therefore increases computational speed, by separating the generation of evacuation paths from the scheduling of the evacuation.

These models were applied to an evacuation of 70,000 people from the Hawkesbury Nepean floodplain and demonstrated that evacuation of the entire threatened population can only be achieved if evacuation is commenced very early in the flood.

### LIFE LOSS MODELS DSO-99-06 PROCEDURE

The Australian National Committee on Large Dams recommends the US Bureau of Reclamation DSO-99-06 Procedure, which is a methodology developed by Graham (1999) for estimating loss of life from dam failure. This is an empirical method based on the results of analysis of 16 dam failures, which resulted in a total of 450 deaths around the world. It applies a fatality rate per head of population at risk to estimate the total number of lives lost taking into account the dam failure event, the number and location of people exposed to the event and the availability and efficacy of planned warnings and evacuations. This approach is not applicable to flooding which has not been generated by dam failure and assumes that evacuation is not constrained by transport network capacity.



### JONKMAN

Lang (2009) describes this as an empirical method for estimating loss of life from flooding of low lying delta areas. It uses fatality rates, which have been derived from UK, US and Japanese case studies, and uses an event tree approach to characterise warning and evacuation possibilities. It was applied during the FLORIS Project to estimate the consequences of flooding in the Netherlands but has had limited application elsewhere. It has been reported that the fatality rates in New Orleans were significantly different to the case studies upon which this method was based.

### COMBINED MODELS LIFESim

This was first developed by Utah State University but is now being developed by the United States Army Corps of Engineers. It is not yet publically available. This model distributes the population at risk into three zones: chance zone (high damage); compromised zone (moderate damage); and safe zone (low damage) and applies an empirically-based fatality rate to the population which finds itself in each zone when the floodwaters arrive. It uses flood routing to categorise the various zones. It then uses inputs



© SES NSW

on topography, distribution of buildings and populations at risk, characteristics of warning and mobilisations, and the road network to distribute the population at risk horizontally and vertically depending on whether they are likely to move to a different part of the floodplain or move to a higher location in the building in which they are in. This is done via a series of decision trees within the database which is the interface of LIFESim. As such, it includes a quasi simulation of evacuation.

### HEC-FIA

The HEC-FIA (Flood Impact Analysis) software package was developed by the Utah State University to analyse the consequences from a flood. It calculates damages to structures and contents, losses to agriculture, and estimates the potential for life loss.

### LIFE SAFETY MODEL

The Life Safety Model (LSM) has evolved from work pioneered by British Columbia Hydro in assessing life safety risks downstream of its dams. HR Wallingford, under licence from British Columbia Hydro, has developed the LSM into a dynamic model that represents:

- the rise and spread of floodwaters
- the receipt of warning messages
- the response of occupants to the warning
- evacuation traffic flows
- the fate of those who fail to evacuate before the arrival of floodwaters.

It models the evacuation and fate of each individual household based on their exact spatial location and the available road network over time. Time series output from the model can be viewed as animations as well as in tables.

### WINDSOR LSM PILOT

In 2013 the NSW SES commissioned Molino Stewart and HR Wallingford to pilot the use of the LSM in Windsor in the Hawkesbury Nepean floodplain.

Windsor was chosen because:

- It is a self-contained population centre which needs to be completely evacuated in extreme floods
- There is reasonably good data on the locations of each of the existing buildings – residential and others
- There are proposals for additional major development as well as ongoing creeping growth through infill development
- Flooding is not complex, it is essentially the same level rising across the entire area
- There is one evacuation route through the town and out
- The Hawkesbury Floodplain Risk Management Study and Plan (HCC, 2012) recommends the duplication of this evacuation route
- The FETM evacuation modelling done to date indicates that there are capacity issues on the evacuation route for the current level of development if a nine-hour warning time is assumed
- There are proposals for future development outside of Windsor which will have evacuation traffic which may converge with (and therefore block) Windsor evacuation traffic.

### EVACUATION

The roads in and out of Windsor cross the Hawkesbury River, South Creek or Rickabys Creek floodplains and therefore are flooded before there is significant flooding of the urban areas of Windsor.

The NSW SES Flood Emergency Plan for the Hawkesbury Nepean River (NSW SES, 2008) recognises that:

- Windsor can be isolated by floodwaters for some days
- Windsor can be completely overwhelmed by floodwaters
- Early and complete evacuation of Windsor is necessary if it is forecast that the town will be significantly impacted by flooding.

The application of the NSW SES FETM to Windsor showed that evacuation would need to be triggered using flood predictions based on forecast rainfall well in advance of a flood developing.

The Flood Emergency Plan divides Windsor into subsectors for the purposes of evacuation and all of these subsectors use local evacuation routes within Windsor to take them to Day Street which leads onto Jim Anderson Bridge.

From here traffic is directed through Mulgrave and Vineyard onto the regional evacuation route, which follows Windsor Road then Old Windsor Road to the M7, which leads onto the M2. From the M2 evacuees can make their way to the main evacuation centre, which will be established at the Olympic Stadium at Homebush. Not all evacuees are expected to reach Homebush with the majority of them expected to find temporary accommodation with family or friends or by other means.

### MODEL SET UP

The steps involved in setting up and running the Life Safety Model (LSM) are:

- Buildings – The physical location of occupied buildings to provide a start location for the population groups and vehicles.
- Population data – Use census data to define household groups and distribute to physical building location.
- Number of Vehicles – The number of vehicles evacuating from each property are distributed to the building locations.
- Road network – Digitise a simplified road network containing the evacuation route and minor roads leading to it. The number of lanes and free flow speed limits are required.
- Hydrodynamic data – 2D depths, water levels, velocity for a number of time intervals covering the flood event. The time interval depends on the duration and rate of rise of the flood event.
- Run the model for the base scenario.



- Create emergency management scenarios to be tested.

## ASSUMPTIONS

Several assumptions were made in setting up the model. The main assumptions were:

- Only evacuation from residential dwellings would be modelled at this stage.
  - All households with their own car will self-evacuate (about 90 per cent of the dwellings) and that all cars will be evacuated.
  - The remaining 10 per cent of households will require public transport/assistance and it has been assumed that there will be one bus for every 30 people in these households.
  - People would leave their homes randomly throughout Windsor but their departure times could be described by an S shaped departure curve with total time of eight hours and P50 of four hours as shown in Figure 4. This is consistent with the approaches taken in the Netherlands (Tagg et al., 2012) where evacuation planning is a major exercise.
  - The maximum traffic flow was set at 600 vehicles per hour per lane to match NSW SES recommended values. This was done by setting a target free flow speed of 48 kph and the maximum density at 50 vehicles per km.
- With regard to the S shaped departure curve, the underlying assumption behind this curve is that reaction to an evacuation order will be immediate but slow at first, then accelerate as people see others leaving. It will then taper off as the most resistant to evacuation leave it until the latest possible time. In this way it varies from the assumption within the SES FETM, which assumes that there will be:
- a one hour warning acceptance factor (WAF) – the time taken for people to accept the warning
  - a one hour warning lag factor (WLF) the time taken for people to prepare to evacuate
  - a constant rate of evacuation which matches the road capacity (assuming that door knocking can be undertaken at the same rate)
  - a traffic safety factor (in the case of Windsor this would be two hours) to account
  - for traffic delays due to contingencies such as car accidents, breakdowns, downed electricity wires or trees or water across the road.

## RESULTS

The model was run for the base case scenario, which was a nighttime evacuation in which all dwellings, but no non-residential buildings, would be occupied. In the absence of a 2D hydraulic model, data was extracted from the dynamic traffic modelling to graph when people are ready to leave their homes, when they cross the point where the evacuation route rises above the PMF and when they would arrive at the Sydney Olympic Precinct at Homebush.

If evacuation of the whole town is ordered nine hours before the main evacuation route is cut then the LSM suggests that only about 95 per cent of the residents would have time to depart.

If the FETM were used for the same number of vehicles, it would suggest that:

Warning Acceptance Factor	1 hour
Warning Lag Factor	1 hour
Travel Time = $4,210 / 600$	7 hours
Traffic Safety Factor	2 hours
<b>Total</b>	<b>11hrs</b>

The FETM is suggesting an additional 1.5 hours is needed to evacuate Windsor compared to the LSM results. However, this is because the FETM includes a factor for traffic delays, which is not included in the LSM. If the TSF is ignored in the FETM and the results compared to the LSM, the LSM suggests that it would take 0.5 hours longer to evacuate Windsor than is suggested by the FETM. This is most likely due to the slowing of traffic flow caused by congestion and queuing within the town, which cannot be modelled by the FETM.

Were a two-dimensional flood model available for integrating into the LSM at Windsor, the LSM would evaluate the fate of any people who were unable to evacuate before they were overtaken by floodwaters. This would depend the magnitude of the flood, which was modelled and allows pedestrian evacuation to be modelled as a default when vehicular evacuation has failed. In the case of Windsor, after the evacuation route is cut it would be possible for some residents to walk up to the highest parts of town which were above the reach of the 1867 flood but which would be completely inundated in more extreme events.

## CONCLUSIONS

While there are several models available, which either model flood evacuation or loss of life, there are few, which are able to model both. The Life Safety Model appears to be a versatile and robust model for evacuation analysis and planning and life safety analysis because it can:

- fully integrate with two-dimensional flood models
- model different warning dissemination mechanisms
- model vehicular and pedestrian evacuation
- model individual buildings and vehicles with spatial accuracy
- replicate NSW SES warning, departure and travel assumptions
- test alternative evacuation modelling assumptions
- model the entire road network including networks internal to evacuation nodes
- model traffic convergence within and outside of evacuation nodes
- show results dynamically and visually in a way which helps communicate convergence, queuing and evacuation failure
- model the fate of those who fail to evacuate and provide a defensible estimate of loss of life
- undertake sensitivity analysis quickly.



This paper was presented at the Australian & New Zealand Disaster and Emergency Management Conference EARTH: FIRE AND RAIN held on the Gold Coast, 5-7 May 2014. This paper has been edited slightly to fit with the style and size of *National Emergency Response*. To view the full paper, including references, go to [www.anzdm.com.au](http://www.anzdm.com.au)





# BUILDING RESILIENCE FROM THE GROUND UP

Brian Mattner, MAIES

*AIES President SA/WA/NT*

**W**ith the implementation of the National Strategy for Disaster Resilience (NSDR) and the subsequent South Australian Resilience Conference held in July last year, it has become clear that the theme of resilience is quite complex. The communication of resilient principles was the discussion trigger at the conference that initially brought the group together to investigate a way for the NSDR message could be reached by the broader community. In the immortal words of Shrek – “it’s like an onion”.

That doesn’t mean it will make you cry, however if we don’t get it right, I’m sure tears will flow. The onion metaphor identifies a visual representation of how many layers there are within community resilience. Some of the main layers that build a resilient community that have been identified, and had representation at the conference, include:

- Individuals
- Family
- Street (neighbourhood)
- Community (suburb)
- Regional (councils)
- State (government entities)
- National

Supporting, and in some instances creating, these layers are additional elements such as:

- Business (private and public)
- Industry representatives
- Non-government organisations
- Volunteer organisations

The feedback NSDR conference organisers received from delegates was positive and, in conjunction with the workshop, generated suggestions to help assist South Australia build knowledge and understanding of resilience outcomes.

One of the recommendations that seemed to echo through the delegate responses was the desire to see and hear of existing resilience building strategies and examples of their implementation and application. In this day and age, collaboration and communication is important to enable communities to work efficiently and effectively. Sharing knowledge creates symbiotic community relationships, so let’s not re-invent the wheel. Sharing ideas and strategies helps build networks and breaks down barriers.

A further key point was the desire for people who wanted to receive clear and unambiguous direction and suggestions as to what resilience actually means to them. This is the onion part. What are the requirements and responsibilities

desired at the various levels throughout the community? What does the individual do and what do you do as neighbours? What is the community’s resilient capacity when taken in context with their unique environment and circumstances?

Building Resilient Communities through the multi-layers requires a coordinated and planned approach. It will require community communication, collaboration and education, followed by the application and implementation of the resilient strategies. This is only the first phase leading to the continued exercise and review of the developed plans.

The conference committee was pleased to receive favourable responses in regards to the conference structure and the deliverables, particularly the education component. What many delegates highlighted was that the conference did not focus on individual groups and that it had attracted a broad demographic of community representation.

From the conference committee perspective this was a difficult but rewarding exercise, however it did reinforce that it is the resilient planning, processes and systems that will build a resilient community and give the most reward. ●



Photo courtesy of SA CFS.

# CELEBRATING VOLUNTEERS



Volunteering Australia took the lead in celebrating the 25th National Volunteer Week held on 12-18 May.

Pointing to the power of volunteers and volunteering in Australia, the theme was 'celebrate the power of volunteering'.

This theme was adopted by volunteering organisations nationally to acknowledge and thank more than six million volunteers who together form a formidable workforce powering many essential community, environmental, sporting and cultural services and supports. ●



Photo courtesy of NSW SES.

## 10 SURPRISING FACTS ABOUT VOLUNTEERING

1. Volunteers contribute \$200 billion to the Australian economy annually
2. Volunteering produces health benefits such as happiness, health and longevity
3. The rate of volunteering by young people in Australia increased from 16 per cent in 1995 to 27.1 per cent in 2010
4. The number of volunteers in Australia has doubled from 1995 (3.2 million) to 2010 (6.1 million)
5. The average number of hours contributed by each volunteer per year has decreased from 74 hours in 1995 to 56 hours in 2010
6. Of the 600 000 not-for-profit organisations in Australia, only 60 000 have paid staff
7. 50 per cent of volunteers are in employment
8. 44 per cent of volunteers are engaged in short-term volunteering roles
9. Volunteering is more common amongst those outside the capital cities, with a 38 per cent participation rate for outside the capital cities versus 32 per cent in the cities
10. 35 per cent of volunteers who became involved in volunteering in the last 10 years were asked by someone



# POSTCARD FROM BANGKOK



**M**y wife and I visited Bangkok during the State of Emergency at the invitation of my wife's cousin Teresa and stayed with her and her husband, Ambassador James Wise, in the Ambassador's Residence at the Australian Embassy compound in South Southorn Road.

Like much of Bangkok, the Embassy was built on flood prone land and the Australian architect Ken Woolley's design made excellent use of a water feature lake to drain the land and at the same time provide a moat as a security perimeter.

Originally bounded by a small fence the design did however include a tank trap at the only vehicular entrance. Subsequently, a high security fence became necessary due to worldwide terrorism concerns but even this is now no longer considered adequate. New specifications for Australian Embassies require a larger security perimeter around all embassies meaning that the existing Bangkok Embassy is in the process of being replaced. At the front of the embassy, made of teak, is the obligatory Spirit House. Thai people believe that

food are regularly offered at the Spirit House to ensure the spirits of the land remain friendly.

Adjacent to the embassy are high-rise apartments, one block of which has penthouses occupied by ambassadors from other countries. Remarkably, one of these apartment blocks has a substantial tree growing on the tenth floor balcony of one of the penthouses. You can only imagine receiving a request for assistance for 'pot plant down on apartment balcony', and on arrival discovering it to be a large tree growing ten storeys high above the ground.

About 800 metres from the embassy was Lumpini Park (aka Lumpini Park). Initially when we arrived it was one of many anti-government protest sites in the city. However during our stay it became the major focus of demonstrations as the protestors consolidated their seven protest sites into this one location for security reasons. With Teresa, we visited the huge weekend Chatuchak Market by Skytrain, commencing and ending our return journey at Lumpini Park Station, which

was directly opposite the sandbagged Gate Four entrance to the park close to the Thai-Belgian Bridge. This entrance had previously been the scene of shooting and grenade attacks on 25 February 2014 as reported in the *Bangkok Post*. In accordance with DEFAT's travel advice we did not enter the protest site. Around the perimeter of the park and at nearby intersections there were multiple small army installations each with soldiers sitting beneath camouflage netting

of Lumpini Park while another was immediately across the road under the Thai-Belgian Bridge, and a third was situated 100 metres up the road outside the Kasikorn Bank. Two other installations were located about 800 metres up the road just 50 metres from our embassy on either side of a pedestrian footbridge over North and South Southorn Roads. Visible in each installation were a table, chairs, radio equipment, iPads, maps, bottled water, takeaway food and in some cases canvas pole stretchers. There were no weapons visible but the army personnel were dressed in combat camouflage uniforms and wore webbing packs, black flak jackets and helmets. Newspaper reports said that there were 176 such installations in operation in Bangkok and I certainly saw dozens in the area around the park. Walking over the footbridge near our embassy I came across two soldiers with binoculars who were stationed on the centre of the footbridge, directly behind a magnificent tribute to the King. They were looking down the main road towards the Thai-Belgian Bridge. Individual soldiers with binoculars and radios were also on duty at strategic locations inside permanent roadside shelters. A visit to the residence by our Thai tailor revealed the fears and rumours circulating in the community. He said that something was brewing. He cited the decrease in traffic and increased army presence and he was pessimistic that there would soon be blood on the streets again. On our second last day the protest came to us. Several truckloads of student protesters with loud speakers mounted on trucks approached the front gates of the embassy to deliver a letter outlining the reasons behind their protests. They had already visited the Chinese, USA and other embassies and after a short time they moved on.

Not all national emergencies involve protestors and police. Indeed we gained an interesting insight into another national emergency that had been facing Thailand – that of population growth and the successful efforts of one man to address the problem. James drove us to an amazing restaurant for dinner called Condoms and Cabbages. Here we ate



when land is cleared for a new building, the spirits that occupy the land will be displeased unless they are given their own house to live in. Therefore, each new construction has its own Spirit House that must be built outside of the shadow of the new building. Gifts of flowers and

which also covers their sandbagged walls. They displayed large red crosses on their installations, and indeed on some vehicles, and had signs that read either Army Emergency Response Team or RTA (Royal Thai Army) Public Security Support Team. One installation was located directly outside the gates





an excellent traditional Thai meal, read about his achievements in dramatically reducing the birth rate through family planning and contraception, and then browsed through a shop where the products all related to contraception and safe sex. The food was 'guaranteed not to make you pregnant' and in place of an after dinner mint each diner received a free male or female condom (depending on gender). This was truly an uplifting experience. Accompanying us at the meal were two other guests staying at the Ambassador's residence. Cyril and Elizabeth Parker live in South Africa where they have established health clinics and are pioneering work in male circumcision to combat another national emergency – the spread of HIV/AIDS. Both previously lived in Australia where Cyril practiced medicine and Elizabeth lectured in music at ANU and UNSW, and also was German language coach at the Sydney Opera House. During several conversations we gained fascinating insights into trials of a new male circumcision instrument that they are developing to combat the spread of HIV, and which has recently undergone clinical trials in South Africa. The following day we travelled together to the Oriental Hotel and had morning tea overlooking the Chao Phraya River. Sitting watching the boats, including ferries with coloured flags indicating their destinations, I was surprised to see a series of bright yellow punts very similar to our NSW SES flood-boats travelling downstream, juxtaposed with various traditional Thai river craft. Teresa told me that the river floods regularly, inundating the area on which we were standing for photographs, and also flooding other parts of the city. This was confirmed during my subsequent visit to Jim Thompson's house, the American founder of the Thai Silk Company, where the guide pointed out the stilts on which his teak house was built. Other parts of Thailand are also badly affected by floods from time to time. In 2011, when the areas of Ayutthaya and Lopburi were badly flooded, James took time to personally travel with other embassy staff to Ayutthaya to help distribute Australian aid to flood affected communities. In photographs that were published at the time of James wearing his bright orange PFD, he could easily be mistaken for a NSW SES volunteer.



**W**e travelled by coach from the steps of Saigon Opera House Ho Chi Minh City to the Mekong River with just one brief comfort stop en route to use the 'happy room'. On arrival at the formal naval base and now port city of My Tho we stepped cautiously onto a river boat equipped with orange life jackets for a short trip across the river to one of the four Mekong islands. Each was named after a holy animal – Turtle, Unicorn, Phoenix and Dragon. These are holy because each features in local pagodas. We also learned that this 'unicorn' is not a horse with a single horn – as we expected – but a creature with a dragon's head and a lion's body. In the distance I could see a suspension bridge that reminded me of the Anzac Bridge in Sydney – not surprising because it was designed and constructed by Aussies.. Our guide Linda explained that local Vietnamese engineers studied the Australian design and building process and then replicated it to construct an even longer bridge elsewhere in Vietnam. When we boarded our riverboat we noted that each riverboat has a pair of eyes painted either side

of the bow. These are believed to help the captain see his way home safely. However it was noted that the fishing boats do not have these eyes on the front. Apparently, locals believe that the fish in the Mekong see the eyes and believe that the boats are actually larger fish and therefore potential predators. This probably would not trouble the Mekong catfish, which my local controller – a keen fisherman – informed me was one of the largest freshwater fish in the world (the largest weighed in at 293kg).

I asked Linda about flooding on the Mekong islands and she told me about one island which is so low lying that a dyke needed to be built to alleviate the effects for the 300 inhabitants. The local villagers constructed the dyke of earth with assistance from army personnel. Flooding also affects My Tho with major flooding having occurred as recently as October 2013. Transferring from the river boat I had an opportunity to explore the tranquil waterways through one of the islands on a small rowing boat, and the somewhat noisier island highways and byways by Xe Loi (motorised cart).





## Postcard from Ho Chi Minh

**S**aigon may have been renamed Ho Chi Minh City some 38 years ago, but on the ground in South Vietnam the two names seem to be interchangeable. Just down the street from my hotel, the Grand Hotel Saigon, is the Saigon River, which is used much like any other major Asian river for transportation of goods, people, tourism, the ever-present floating restaurants and even a cruise liner. At the time of my visit it also had a naval ship docked at the River's Naval Base and two, what I presumed, Water

of water hyacinths, a green growth that sometimes surrounds the smaller boats near the jetties, easily determines the direction of flow. The Saigon River regularly floods parts of the city when the embankments are breached in certain districts. Flooding reached heights of 1.56 metres in 2009, 1.55 metres in 2010, 1.58 metres in 2011, and 1.62 metres in 2012. Record high flooding occurred in 2013 when streets in several districts were inundated with

Police boats decked out with blue lights and camouflage paintwork. Needless to say photographing defence facilities and hardware was not an option.

Signs on the river and on the restaurants were still featuring Chinese New Year decorations – including acknowledgement that it is the year of the horse.

The river ebbs and flows with the tides. The movement

floodwater that reached a level of 1.64 metres. At the time of my visit, high tide on the river reached 3.5 metres, with the highest tides normally being around 4 metres. Newspaper reports and scientific studies indicate that flooding causes major health and infrastructure problems including overflowing sewerage, infectious diseases and increased traffic congestion. The traffic congestion is understandable by anyone that has ever tried to cross the road in the face of the hundreds of thousands of bicycles and motorbikes in Ho Chi Minh. The advice that we received before leaving home worked well – use the water principle when crossing the road – that is, maintain a steady pace and the traffic will flow around you.

While in Ho Chi Minh I had an opportunity to look at a possible new design for SES flood-boats on display at the Ho Chi Minh City war remnants museum. It is based on an old US army riverboat design used in the Vietnam conflict, and features an eco-friendly olive green paint finish, and a forward mounted machine gun to discourage looters in flood ravaged rural towns.



## Postcard from Halong Bay Vietnam

**W**hen Typhoon Haiyan hit the north of Vietnam it had already devastated the Philippines causing massive damage and loss of life. One area impacted was

Halong Bay – a World Heritage Area of spectacular limestone islands that is one of the major tourist destinations in Vietnam. The typhoon had weakened when it hit Vietnam but Halong Bay City

was still damaged with the local newspapers showing large steel-mounted billboards that had been bent and twisted. However there was also a major impact on the tourist boats and fishermen of Halong Bay – with two tourist junks sunk and all tourist boats prevented from operating for three days as a government-instituted safety precaution. Largely because of the actions of the locals who are very familiar with severe storms there was remarkably little loss. I took an overnight cruise on Halong Bay together with my wife and two other tourists on a wooden junk that had a capacity of 24 passengers. It had a crew of 13, which included a captain, engineer, two chefs, two tour guides, a Tai Chi Instructor, barman, waiters, tender boat operator and general deck hands.

Sitting on the top deck of the junk I asked the guides about Typhoon Haiyan and its impact on the local community. They told me that as soon





as the forecast was confirmed many of the junks had made their way out to a shallow lagoon that is almost completely surrounded by high cliffs. Our boat, L'Azalee, was one of them and on arrival at the lagoon it had tied itself up to two other junks to provide increased stability. The three of them then effectively rode out the storm. Local fishermen had exercised several options – some had travelled to the shallow lagoon, and some had landed on the islands and tied their boats up. Others had made their way to caves to shelter, and some had merely stayed on their floating houses (known locally as water homes) if they believed they were sufficiently sheltered by surrounding cliffs. There had been some damage to local infrastructure particularly many fish farms that had lost stock and netting – but because of advance warning, local knowledge and excellent preparations it had been minimised.

The Halong Bay Pearl Farm was particularly well located. I visited it and asked about storm damage and was told that particular area was so well protected that it had been selected by the Vietnamese Coast Guard to shelter three of its own boats when the storm hit. Looking at the height of the surrounding cliffs and the horseshoe shape of the bay I could see why it had been chosen as a safe haven.

Indeed safety was in evidence all times during my cruise. My boat, L'Azalee, had its safety certificate prominently displayed. We were required to wear PFDs whenever being transported on the tender, or when kayaking, and were told that only three weeks earlier the overnight portion of all Halong Bay cruises had been cancelled by the government because of a potential storm threat. The tourists were extremely unhappy at being put up in hotels for their own safety. Having just endured the hazardous, uncomfortable, four hour road trip from Hanoi to Halong Bay I could understand their frustration, but as the tour operators said 'it's an act of God and the government will always err on the side of caution'. No doubt many SES Flood Incident Controllers will sympathise with this dilemma.

As to our cruise, it was misty and there was some rain but it just added to the mysterious magic of what is one of the most beautiful places on earth.

## Postcard From Hoi An



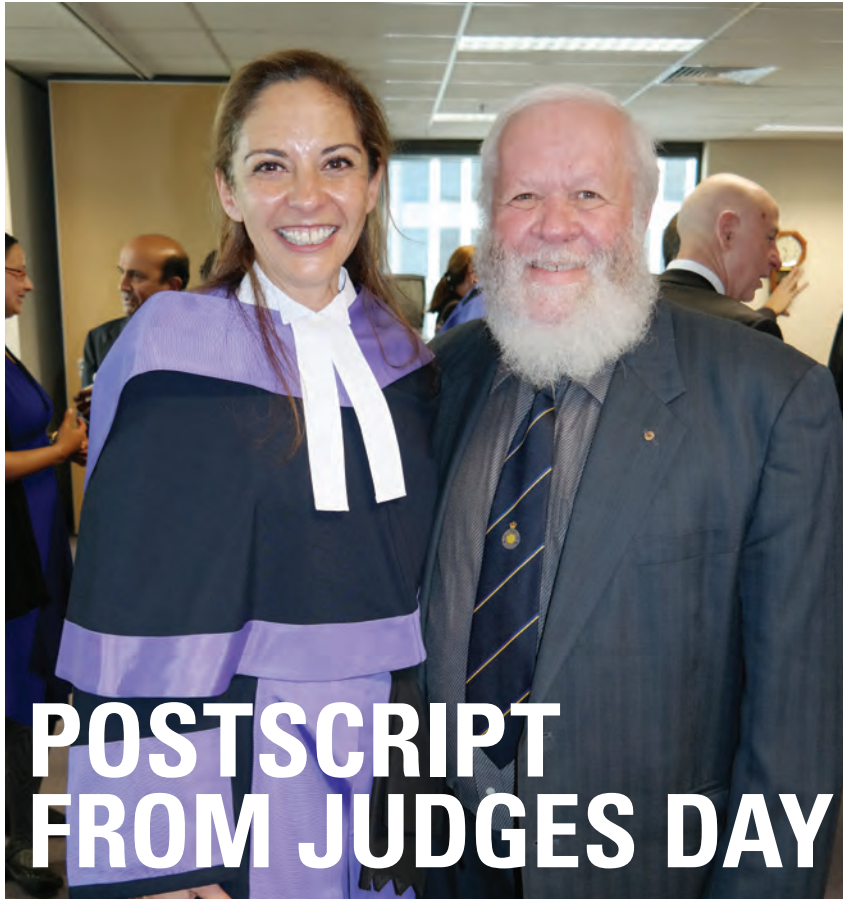
**M**y stay at the beautiful Golden Sands Beach Resort on Cua Dai Beach 7 kilometres from the centre of Hoi An revealed significant damage from Typhoon Nari which made landfall in Vietnam on 5 October 2013. The recovery effort was still a work in progress. On a morning stroll through the grounds of this four star resort I talked with the Hotel Manager who reflected on the storms devastation and the major damage to the resort's ocean view rooms. He told me that they were still unusable – but plans were in progress to both repair and also upgrade them. He said that Nari had been powerful enough to drag huge rocks from the sea floor and deposit them throughout the grounds of the hotel. The hotel staff had subsequently been tasked with moving these huge rocks back to the shoreline where they were still in evidence. Palm trees had been uprooted and there was massive sand erosion at the front of the resort.

I walked along what remained of the resorts shoreline to see the damage for myself. The grounds at the front of some of the ocean apartments had been badly eroded with deep holes gouged into the areas in front of the ground floor balconies. There was also some wind damage to the front verandas of the rooms. The sands at the front of the villas had been stripped away leaving a mess of palm branches, green coconuts, rocks and debris. There were even small pagodas from the previously landscaped gardens lying half buried in the sand, and the palm trees on the shoreline still required some support from

bamboo pickets. It was reminiscent of the damage I had seen at Grantham and Mission Beach after Cyclone Yasi. Fortunately for me the remainder of the hotel itself was fully functioning, the other rooms were still extremely comfortable, the food was of good quality, and the resort's 150-metre swimming pool (the longest in Vietnam) was still inviting.

Typhoons are not the only natural disasters to impact Hoi An. A visit to the centre of Hoi An Old Town revealed that the area is also no stranger to flooding from the Thu Bon River (aka Kuadai River) with floods inundating many houses every rainy season. One ancient house had the flood heights recorded on its wall, with the worst occurring in September 2009 being more than three metres high, while the most recent on 16 November 2013 was about 1.5 metres high. Other floods recorded were in November 1999, November 2007, October 2010 and November 2011. In another old house I was shown a trapdoor built into the first floor that was still used to haul up the antique furniture from the ground floor when floods were predicted. And almost every house is at least double storey to enable families to live upstairs during the rainy season when floods happen. Also most houses that are built of wood have concrete blocks at the base of each wooden pillar – to protect against rotting when flooding occurs. It is truly remarkable how the people of Hoi An actively live with the flooding, and how it has simply become a way of life for those close to the river.





## POSTSCRIPT FROM JUDGES DAY

In the Summer 2013/2014 edition of NER I wrote of my experiences at a Boston Red Sox match and later at Red Rooster Restaurant in Harlem. Two of the people who I had the pleasure to share those travels with have since made significant court appearances in Sydney.

Peter Hamill is arguably Australia's Number One Boston Red Sox fan –

his car even has REDSOX number plates. While in New York he took my son Robert to see his first professional baseball game – a match between the New York Yankees and the Boston Red Sox – having secured prized tickets behind Home Plate. It was Peter's enthusiasm for the Redsox that led to me attending the Red Sox vs Yankees

Baseball match at Boston's Fenway Park – and thereby witnessing the memorial service for the 9/11 attack and Boston Marathon bombing. On 29 April 2014 I saw Peter for the first time since sharing that birthday meal at Red Rooster in Harlem. This time we were at the Banco Court in Sydney where I attended his swearing-in ceremony as a NSW Supreme Court Judge.

Dina Yehia was the catalyst behind us visiting New York last year when she invited us to celebrate her 50th birthday party with lunch at a café in Central Park, and then dinner at Red Rooster Restaurant in Harlem. Peter was also with us at Red Rooster when Dina had Happy Birthday sung to her by the Nate Lucas Allstars – immediately before they sang Jingle Bells for my 65th birthday! As we do most years, Dina and I met up again camping with family and friends at the National Folk Festival in Canberra over Easter. It was there that she invited us to join her at Sydney's Madison Tower in the Downing Centre Court Complex on 5 May 2014 for her swearing-in ceremony as a NSW District Court Judge.

With all of the drive-by shootings and one-hit punches one can debate whether there is a crime wave sweeping like a tsunami through Sydney, and whether Australian crime rates in general constitute a national emergency. However I can safely say that with these two judicial appointments the future of justice in NSW is in very capable hands.

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L-R: Deputy Chief Fire Officer David Bruce, race winner Scott McGraw from Melbourne MFB, and Manager Scott Safety Peter Richard.

## FIGHTING FOR THE TOP

If your name is Scott and you train hard, it seems you had a better than average chance of winning this year's Australasian Police and Emergency Services Games stair race.

**M**FB fire officer Scott McGraw took out the top spot in the firefighting gear category in 8 minutes and 57 seconds, while Scott McTaggart of the Australian Federal Police won the athletic gear category in a time of 6 minutes and 4 seconds.

The 160 metre vertical race to the 43rd floor of Melbourne's Rialto Building, sponsored by Scott Safety, was held over the Easter weekend and attracted over 50 competitors from both sides of the Tasman.

Scott McGraw's winning run was an incredible feat considering the 23 kilos of firefighting gear worn by competitors. The full kit included Australian standard firefighting equipment including helmet, turnout coat, turnout pants, gloves and boots and full Scott Safety breathing apparatus.

The Australasian Police and Emergency Services Games is a biennial, week-long event of sporting action with participants from the police, fire, ambulance and other services.



Brody Mangos from New Zealand Fire Service at the start line.

The 2014 Games included competitions ranging from angling to shooting, ten pin bowling to cycling. It was held at a number of venues across Melbourne

and throughout regional Victoria.

The Games provide an opportunity to promote improved physical health and well-being as well as fostering participation, competition, fellowship and camaraderie between competitors and competing agencies. It also provided an opportunity for the public to show their appreciation and support for emergency services agencies. ●

### FIREFIGHTING GEAR RACE TOP 10

1	Scott McGraw	08.57
2	Robert Foote	10.03
3	Clint Fouche	10.45
4	Russell Smith	11.15
5	Christopher Beasley	11.36
6	Edward Love	12.03
7	William Nugent	12.34
8	Paul Sweeting-Shaw	12.39
9	David Nguyen	12.47
10	Chung Wai	12.58





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Postcode \_\_\_\_\_

Phone (W) \_\_\_\_\_ (H) \_\_\_\_\_ Mobile: \_\_\_\_\_ Date of Birth \_\_\_\_\_

Email: \_\_\_\_\_

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Address \_\_\_\_\_  
Postcode \_\_\_\_\_

Position/Title \_\_\_\_\_

Statement of experience and qualifications. (Note: Applicants may supply extra, relevant information and attach it hereto)

**Experience (as an Emergency Officer/Worker)**

From	TO	Appointment/Position	Duty/Responsibility

**Emergency Training Courses**

Institution	Course/Year	Results (where applicable)

**Qualifications (Degrees, Diplomas, etc)** \_\_\_\_\_

**Decorations/Awards etc** \_\_\_\_\_

**Referees** (Persons who have known me for several years and can give evidence of my character and background)

Name	Address	Phone	Email
(1) _____	_____	_____	_____
(2) _____	_____	_____	_____

I declare the above particulars to be true and hereby agree to be bound by the Constitution, By-Laws and Code of Ethics of the Institution)

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**For Office Use** Application recommended: Member  Associate  Student  Corporate Affiliate

Fee Received  Receipt No: \_\_\_\_\_ Divisional Registrar \_\_\_\_\_



Completed Application forms with fees should be forwarded to the Division Registrar in the State where you normally reside. Further information may also be obtained by contacting your Division Registrar or General Registrar of the Institute at the following addresses:

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The Registrar – TAS Division of Australian Institute of Emergency Services. PO Box 1 Lindisfarne, TAS 7015  
Email: registrar.tas@aies.net.au

#### **VICTORIA**

The Registrar – VIC Division of Australian Institute of Emergency Services. C/O 44 Webb St, Warrandyte, VIC 3113  
Email: registrar.vic@aies.net.au

#### **THE INSTITUTE'S AIMS**

To provide a professional body for the study of the roles and functions of Emergency Services and Emergency Management Organisations throughout Australia, and the promotion and advancement of professional standards in these and associated services.

#### **THE INSTITUTE'S OBJECTIVES**

- To raise the status and advance the interests of the profession of emergency management and counter disaster services administration.
- To represent generally the views and interests of the profession and to promote a high standard of integrity and efficiency in the skills of emergency and counter disaster administration.
- To provide opportunities for association among members and students to promote and protect their mutual interest.
- To facilitate full interchange of concepts and techniques amongst members.
- To bring to the notice of the public such matters that are deemed to be important for safety and protection of the community and to promote research and development of emergency services generally.
- To establish a national organisation to foster international co-operation in counter-disaster services administration.

#### **THE INSTITUTE OFFERS**

- An opportunity to be part of a progressive Australia-wide Institute dedicated to the progression and recognition of the Emergency Service role in the community.
- An independent forum where you can be heard and your opinions shared with other emergency service members.
- A journal with information from institutes and other sources around the world in addition to the interchange of views between Divisions in Australia, as well as access to the Institute website.
- Reduced fees for members at Institute Seminars and Conferences and an information service supplied by professional experienced officers.
- A Certificate of Membership.

- The opportunity to use the initials of the particular membership status after your name.
- Corporate members receive a bronze plaque free of charge and can advertise on the AIES website, as well as provide articles for inclusion in the Institute's journal.

#### **MEMBERSHIP**

Costs  
Nomination Fee: \$30.00  
Annual Subscription: \$60.00  
Fellows: \$70.00  
Corporate Subscription: \$250.00  
Note: Institute Fees may be tax deductible.

#### **Classes**

There are four classes of membership:

- Members • Fellows • Life Fellows • Corporate

There are five categories of affiliation with the Institute that may be offered to persons who do not meet the requirements for membership:

- Associate • Student Member • Retired Member  
• Honorary Member • Honorary Fellow

#### **Eligibility**

Applications for membership will be considered from persons who are at least eighteen years of age and who:

- Are members of a permanent emergency service or associated service, or
- Are volunteer members of emergency or associated services.

Admission as a member may be granted if in the opinion of the General Council the applicant meets all other conditions of membership and passes such examinations and/or other tests as may be required by General Council.

#### **MEMBERS**

Our members come from

- Ambulance Service • Community Services • Emergency Equipment Industry • Emergency Management Organisations  
• Fire Services • Health, Medical and Nursing Services • Mines Rescue • Police Service • Safety Officers • SES • Transport Services  
• Volunteer Marine Rescue • Volunteer Rescue Associations



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## NATIONAL EMERGENCY RESPONSE JOURNAL

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# FIRE OF MINE

An open cut mine fire at the Hazelwood plant in Morwell, Victoria, burned for 45 consecutive days, sending smoke across the community and endangering the health of residents.

Many residents were temporarily relocated as CFA and MFB crews fought the fire, which was believed to be deliberately lit. ●

*Photo courtesy of CFA Communities & Communication. Photographer: Keith Pakenham.*





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