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EXTREME WEATHER

**SOUTH AUSTRALIA'S
COORDINATED RESPONSE**

**Live to tell—surviving
a natural disaster**

**Think nationally about
fire safety**

**National Position on
Prescribed Burning**



PERTRONIC F220 Fire Alarm Panel

Identifies
Exact
Location of
Alarm

One Key Access to Alarm List View

Pertronic F220 Friday 11 March 2016 10:57

Alarm Events

Event	Zone	Location	Type
46	530	GYMNASIUM	Heat Alarm
47	505	LEV 1 APARTMENTS SPRINKLER	Smoke Alarm
48	524	LEV 6 DETECTION	Smoke Alarm
49	530	GYMNASIUM	Smoke Alarm
50	524	LEV 6 DETECTION	Smoke Alarm
51	525	LEV 7 DETECTION	Smoke Alarm
52	530	GYMNASIUM	Smoke Alarm
53	530	GYMNASIUM	Smoke Alarm
54	525	LEV 7 DETECTION	Smoke Alarm

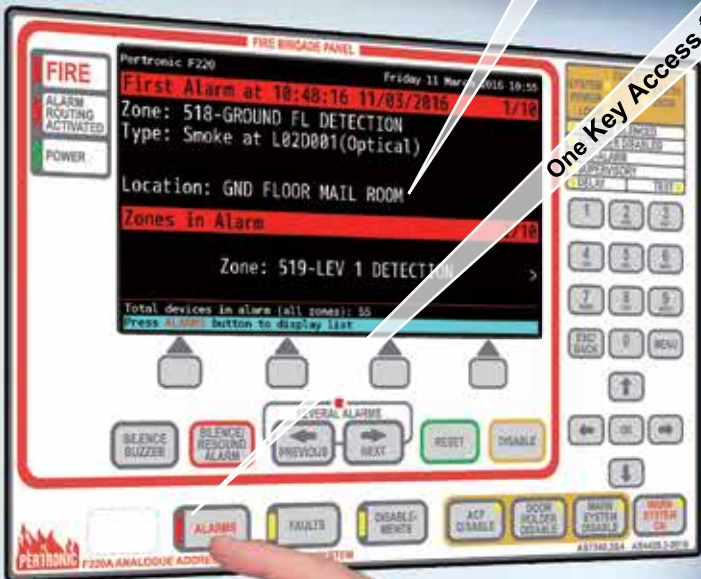
Alarm Point: 50 of 55

Item: OPT at LEVEL 6 ELECT CUFB (L02D071)

Time: 10:48:21, 11 March 2016

Total zones in alarm: 10

Page Up Page Down First Page



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AN INDUSTRY TO BE PROUD OF

BY
STUART ELLIS

Chief Executive Officer,
AFAC



AFAC National Council, made up of the heads of fire, emergency services and land management organisations across Australia and New Zealand, meets twice a year to outline the strategic direction of AFAC on behalf of the emergency management sector.

As a sector we are always looking for ways to improve on what we do and AFAC, through the Council and the collaboration network, aspires to share ideas, insights and approaches that have worked and that we can

learn from. As we enter 2017, AFAC National Council has identified key priorities for the sector.

Diversity and inclusion will become a key focus of the Council. Persistent low levels of gender diversity and inclusiveness within some AFAC member organisation workforces, coupled with the findings of reviews of workplace culture and behaviour in other sectors, have prompted the Council to seek solutions.

AFAC formed a Diversity Working Group of practitioners to develop a discussion paper to better articulate issues of diversity and inclusion within the sector. The paper outlines several opportunities and recommendations for AFAC National Council.

In recognition of this challenge, AFAC National Council has committed to Male Champions of Change, an initiative that will allow the emergency management sector to benchmark itself against other industries.

You can find further details on page six. I hope you enjoy this issue of *Fire Australia*.

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OUR COVER

In September 2016, one of the most extreme weather events to ever hit South Australia resulted in a statewide loss of power and significant damage to infrastructure.

PHOTO: SOUTH AUSTRALIAN STATE EMERGENCY SERVICE

ABOUT FIRE AUSTRALIA

Fire Australia is a joint publication of Fire Protection Association Australia, AFAC and the Bushfire and Natural Hazards CRC. We aim to bring the latest news, developments and technical information to the fire protection industry, emergency services and natural hazards research organisations. *Fire Australia* is produced quarterly and distributed throughout Australia and New Zealand. Editorial submissions are welcome and can be sent to: john.rees@fpaa.com.au. For more details on submitting a contribution, please contact the editors.

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PACIFIC PARTNERSHIP BETWEEN ACT AND VANUATU

The ACT Emergency Services Agency (ACT ESA) has formed a partnership with the Vanuatu Fire Service in relation to fire and emergency management activities.

Personnel from ACT ESA travelled to Port Vila, Vanuatu, in September 2016 to formally recognise the partnership through signing a Memorandum of Understanding between ACT ESA and the Vanuatu Government. The arrangement is supported by AFAC through the Pacific Islands Emergency Management Alliance and the Pacific Islands Fire and Emergency Services Association.

During the visit two appliances were donated to the Vanuatu Fire Service—a Scania urban pumper from ACT Fire & Rescue and an Isuzu 4WD bushfire tanker from ACT Rural Fire Service. Personal protective clothing and hydraulic rescue tools were also donated. While in Port Vila, ACT ESA personnel delivered 10 days of training to the Vanuatu firefighters to ensure their competency to respond and operate the vehicles and equipment.

The visit, funded through the European Union and coordinated through PIEMA and the Secretariat of the Pacific Community (SPC), was the culmination of ongoing hard work by recently retired Superintendent Greg Kent (ACT Fire & Rescue), Jill Edwards (AFAC) and Mark Reid (SPC).

Vanuatu fire crews quickly realised the benefits of the



Vanuatu firefighters participated in training exercises with ACT ESA personnel.



The new appliances donated by ACT ESA assisted fire crews in Port Vila to respond quickly to a major structure fire.

NATIONAL GONG FOR RESEARCHER

Bushfire and Natural Hazards CRC researcher Associate Professor Dr Amisha Mehta has been nationally recognised, picking up a Public Relations Institute of Australia (PRIA) Golden Target Award for research and teaching.

Receiving the award at the PRIA event in Sydney, Dr Mehta, from the Queensland University of Technology Business School, was highly commended in the PR Educator of the Year category, after earlier winning the Queensland state award in the same category.

Dr Mehta draws on her CRC research in the Connecting Communities and Resilience study to teach business, science and



Associate Professor Amisha Mehta has been awarded a PRIA Golden Target Award for her research.

engineering students along with disaster management professionals enrolled in postgraduate corporate education programs.

“I use my research to teach students how to communicate powerfully during risk and crisis events—these practices can protect lives and property and support organisational trust,” Dr Mehta said.

“As an educator, I am driven not only to share research findings but to build student capabilities in research as an evidence base for communication strategies. It is great to be able to practise what I preach by showcasing our work with the CRC and our team of end users.” ■

AS 1851-2012 AMENDMENT 1

The success of FPA Australia’s AS 1851-2012 *Routine Service of Fire Protection Systems and Equipment* Amendment 1 seminars indicated how vital and necessary the change was, according to FPA Australia General Manager Technical Services and Deputy CEO Matthew Wright.

FPA Australia, sponsored by Alan Wilson Insurance Brokers, organised seminars

in Melbourne, Adelaide, Perth, Sydney and Brisbane to provide a full briefing on how Amendment 1 should be interpreted. The seminar panel included Glenn Talbot, Managing Director of Verified, who chaired the Standards Australia committee that developed Amendment 1.

Mr Wright said: “These were some of the best turnouts ever for a technical event that FPA Australia has run.

The audiences were highly engaged and I think that’s because they had been waiting for clarification on baseline data requirements associated with AS 1851 for some time.”

Mario Apela and Richard Duerden of

Australian Essential Services attended the Victorian seminar and said it was good to have the opportunity to hear first-hand how Amendment 1 would affect their work.

“It’s a pivotal point and the seminars are a great chance to get a better understanding,” Mr Duerden said. “There’s a message there to property owners too, that they’re part of the process [in record-keeping].”

Leigh Climes of Fire Alarm Essentials agreed that the clarification was long awaited. “It’s good to know the detail. It has been a grey area for some time so it’s great to get a better explanation. These sessions are very useful,” he said. ■

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AFAC PLACES FOCUS ON DIVERSITY AND INCLUSION

The AFAC National Council has identified diversity and inclusion throughout the emergency management sector as a key priority.

Persistent low levels of gender diversity and inclusiveness within some AFAC member organisation workforces have prompted the Council to seek solutions.

AFAC formed a Diversity Working Group of practitioners to inform the development of a discussion paper. Whilst recognising that inclusiveness is a greater concern, the paper focuses on improving women's representation and participation across fire and emergency service workforces. It explores the situation for fire and emergency services in Australia and New Zealand and draws on research and experiences to offer suggestions on how the sector could improve.

Leadership, ownership and buy-in were identified in the paper as critical and the Council have committed to becoming Male Champions of Change (MCC), a strategy founded by former Sex Discrimination Commissioner Elizabeth Broderick. The strategy encourages men of power and influence to form a high-profile coalition to achieve change on gender equality issues.

Joining the MCC movement will allow AFAC member organisations to benchmark themselves against other industries to gain a clear understanding of where we sit as a sector and highlight the areas for improvement.

The paper also proposes an industry model for good practice, consistent reporting, modelling of inclusive language and further research. AFAC Council have supported the creation of a collaboration group to discuss and progress issues of diversity and inclusion. ■

The discussion paper is available at: www.afac.com.au

INDUSTRY LEADER GREG MULLINS RETIRES



Greg Mullins has retired following 13 years as Commissioner of Fire & Rescue New South Wales.

After an illustrious career and a 13-year run as Commissioner of Fire & Rescue New South Wales (FRNSW), Greg Mullins AFSM has retired.

Mr Mullins began his firefighting career with the NSW Fire Brigade in 1978. He was appointed as Commissioner in 2003 and became the first person to rise through the ranks to fulfil the role of Chief Fire Officer and Chief Executive Officer.

Mr Mullins has had a distinguished career in fire services and was appointed as President of AFAC in October 2013, serving in the role until October 2016. Throughout his time as AFAC President Mr Mullins was committed to seeing AFAC develop and progress as the Australian and New Zealand National Council for fire, emergency services and land management.

Mr Mullins has represented Australian fire services internationally on issues concerning the emergency management sector, managing consequences of terrorist attacks and urban rescue.

"It has been an enormous privilege to serve beside incredibly dedicated men and women who willingly put their own lives on the line on a daily basis to save people who they have never met," he said.

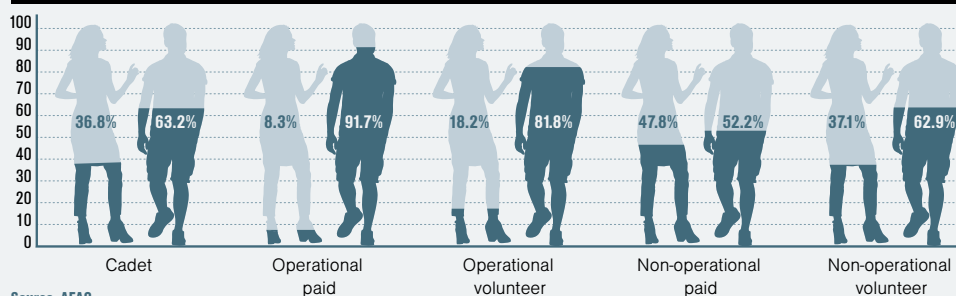
Mr Mullins officially stepped down from the role on 6 January.

Paul Baxter has been appointed as the new Commissioner of FRNSW and will commence in April. Mr Baxter is highly experienced in fire services, having served as the National Commander and Chief Executive of New Zealand Fire Service since 2012. ■



Greg Mullins was thanked for his contributions as AFAC President at the AFAC16 Gala Dinner.

FIGURE 3 AFAC workforce employment status by gender 2014 – 2015



Source: AFAC

FIRST GROUPS THROUGH TRAINING FACILITY

The first fire safety practitioners have used FPA Australia's new training facility in Sydney. Classes began in November, with attendees agreeing that the facility would become extremely valuable for its ability to provide a more practical, real-world learning environment.

Simon Hutchings, from DEM Fire and Essential Service, said: "It's quite a good training set-up with gas lines, indicator panels and so forth." Mr Hutchings was among the first group to attend a training session at the Mascot facility.

"It's more like what you would see in the field. You

can simulate tests or do any of the servicing you would do. The course is really well set up and it turned out really well."

FPA Australia sees the facility as the prototype model for the future and is investigating the possibility of similar centres opening at other strategic locations.

The CEO of FPA Australia, Scott Williams, said: "Training and testing is crucial as we continue to develop our industry. It is therefore vital we have the right facilities to ensure the highest standards and Sydney is a step along that journey." ■



Chris Orr

NEW NATIONAL PRESIDENT FOR FPA AUSTRALIA

Chris Orr was appointed as the new FPA Australia National President at the Association's Annual General Meeting on 3 November in Sydney.

Mr Orr was previously Senior Vice-President and has a Master of Fire Safety Engineering and a diploma in Design for Bushfire Prone Areas. He sits on several Standards Australia committees.

Mr Orr takes over from Mr Trevor Voevodin, who steps down after four years and assumes the role of Senior Vice-President.

Rhondel Johannessen became Junior Vice-President while Bill Lea remains Treasurer. FPA Australia's other Board directors are Graeme Thom, Alan Wilson, Graham Harris, Hank Van Ravenstein and Patrick Conway. ■

The training centre offers attendees to work in real-world situations.



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ENGAGEMENT MATTERS— COMMUNITY WORKSHOP

The Australian Institute for Disaster Resilience (AIDR) is teaming up with the TAFE NSW Centre for Emergency Management to offer a two-day workshop in May 2017. Emergency management agencies and organisations from across Australia, including people who work in a broad range of community engagement activities, are encouraged to attend.

The workshop, *Engagement Matters: Tools for Disaster Resilient Communities*, will provide a unique and focused opportunity to learn, network with other community engagement practitioners from around Australia and obtain new skills to use within community work.

Fire agencies will be well represented with practitioners and other attendees already confirmed from the Tasmania Fire Service and NSW Rural Fire Service. Participants will have an opportunity to learn from other emergency-focused agencies in attendance, researchers and consultants.

The line-up of confirmed presenters will cover a diverse range of themes across eight streams. The facilitators will present on the practical application of themes and tools relating to challenging entrenched ideas, planning together, empowering communities, eliciting ideas through dialogue, managing high-stake situations, engaging children, agreeing on expectations and identifying risks. An overview of the workshop program, including facilitator biographies and session summaries, is available online.

Community development expert Tim Muirhead, author of *Weaving Tapestries—a handbook for building communities*, will deliver a keynote presentation followed by a workshop dinner.

The workshop will be held at the TAFE NSW campus in Albury, NSW, on 4 and 5 May 2017. ■

Registration details and information for travel and accommodation options are available at www.aidr.org.au/events.

NATURAL HAZARDS RESEARCH TO 2021

The full research program of the Bushfire and Natural Hazards CRC has been reviewed and renewed to take it through to the end of the current funding in 2021.

After extensive consultation and discussion among partner organisations, researchers and other interested groups since the start of 2016, the CRC Board has approved the shape of the refreshed research program.

Some projects will continue with a renewed mandate to explore further research questions. Some projects will focus on transferring findings into useable opportunities, while several new projects will add further dimensions to the overall program.

This refresh is a refinement of the research program to ensure the work is contributing to a more disaster-resilient Australia and meeting the needs of Australia's emergency management organisations and the community. ■

ONE YEAR FOR AIDR

Delivering a fresh approach to emergency management education, professional development and knowledge sharing, the Australian Institute for Disaster Resilience (AIDR) celebrated one year of operations in November 2016.

A partnership between the Bushfire and Natural Hazards CRC, AFAC, the Australian Red Cross and the Federal Attorney-General's Department, AIDR's priority in its foundation year has been to understand the needs of the broad emergency

management sector, said Director Dr John Bates.

"It has been a fantastic journey so far, as we have seen the idea of cooperatively building and sharing disaster resilience knowledge grow within and among agencies, communities, government, research organisations and education institutions," Dr Bates said.

"We have enjoyed having the ability to invest in developing the skills and knowledge of people from staff to

volunteers to enhance their leadership skills, build their understanding of resilience and influence their practices to support their work in building safer, more resilient communities."

CEO of the CRC, Dr Richard Thornton said each partner in AIDR brought a unique set of skills and strengths to the table. "This considerable value is greater than the sum of the parts, from operational, humanitarian and research backgrounds across all hazards," Dr Thornton said.

"The CRC sees AIDR as an important way of getting our research out to people who would benefit from it and in a way that they can understand and use in their daily lives."

AFAC CEO Stuart Ellis said that partnering in initiatives, such as AIDR, was an extension of the collaboration model on which AFAC was built. "Increasingly we are seeing that successful partnerships deliver results for the AFAC membership and Australasian communities," Mr Ellis said.

"Through AIDR we have already seen relationships grow between groups and individuals with common goals. This was the objective of the Institute and we are excited to see what we can achieve together." ■

Launch of AIDR in November 2015.



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PRACTITIONERS AWARDED PROFESSIONAL CREDENTIAL

Emergency management practitioners are being awarded a professional credential in recognition of their skills, abilities and experience in incident control.

The Emergency Management Professionalisation Scheme (EMPS), an initiative of AFAC, offers the Certified Incident Controller (CIC) credential, awarded through an assessment panel. The credential provides successful applicants with professional recognition throughout the emergency management sector and beyond as experts in incident control.

Six candidates recently completed CIC assessments in Perth and all were successful. AFAC congratulates Gregory Mair (Department of Parks and Wildlife, WA) and John Tillman, Murray Bawden, Craig Waters, Mark Bowen and Allan Riley (Department of Fire and Emergency Services, WA). The successful candidates were presented with their credentials through their organisations.

Steve Pearce, a member of the assessment panel and an independent consultant with 30 years of experience in emergency services, chaired the recent assessments. Mr Pearce said the value

of the EMPS experience was felt by both candidates and panellists.

"EMPS provides a vehicle for these incident controllers, who are really skilled and talented men and women, to sit down in a comfortable and controlled environment and reflect on what they did.

"A lot of them say it's a very cathartic experience being able to sit back and personally reflect on an incident that they have managed," he said.

Assessments are undertaken by panels with a minimum of five members, including the nominated chair. All panel members have undergone the assessment process and Mr Pearce said it was just as much a learning opportunity for them as it was for the candidates.

"There is a great advantage for the panel members themselves as a professional development opportunity. It's an opportunity to reflect on incident management capability while assessing the candidates.

"I can't think of any other forum where there's an opportunity for respected and skilled incident managers to come together on a national basis to talk specifically about incident

management capability."

The panel considers an applicant's experience in managing incidents, as well as what Mr Pearce calls the human characteristics, such as the ability to self-reflect.

"Those skills are unique to leadership within high-stress team environments; it's that strategic vision of incident management that we're really looking at."

In addition to receiving a professional credential, successful applicants are listed on the Emergency Management Register. To date there are 29 CICs on the register and Mr Pearce encouraged those interested to apply.

"My advice to anyone thinking about participating is to embrace it and enter into the scheme. It's in a safe, controlled environment and the benefits are both direct and indirect for them personally and for their organisations."

For those who manage more day-to-day incidents, the alternative credential of Registered Incident Controller (RIC) is also available. ■

If you would like to know more about EMPS or find out if you are eligible, visit www.afac.com.au/emps

EMPS panel members [L-R] Steve Pearce (independent consultant), Ian Tanner (Dept of Environment, Water and Natural Resources, SA), Steve Yorke (NSW Rural Fire Service), David Letheby (NT Fire, Rescue and Emergency Service), John Cawcutt (Queensland Fire and Emergency Services) and Darren Klemm (Dept of Fire and Emergency Services, WA).



PHOTO: AFAC

SCHOOL PROGRAM DRAWS ON RESEARCH

Research from the Bushfire and Natural Hazards CRC is supporting bushfire education for primary school students in New South Wales.

The bushfire education kit, *Guide to working with school communities*, put together for primary schools by the New South Wales Rural Fire Service (NSW RFS), was launched at the Warrimoo Public School in the Blue Mountains.

During the launch NSW Premier Mike Baird, the NSW Emergency Services Minister David Elliott and the NSW RFS Commissioner Shane Fitzsimmons sat in on the lesson.

With many NSW RFS brigades already working with their local school communities, the guide will be rolled out to all school across the state to assist with preparation for bushfires, even in areas where the threat is considered low. The resource is intended for NSW RFS volunteers who deliver school fire safety programs and will greatly benefit teachers and students.

The guide comprises a three-step program where students will learn skills to be safe around fire through scenario-based exercises; the guide will also determine the context of the knowledge within their own lives. Students will be encouraged to share their learning with family and friends, further improving their knowledge.

The guide is based on key research to help children gain an understanding of bushfire preparation and safety. It involved



PHOTO: BEN SHEPHERD, NSW RFS

NSW RFS volunteers using the new education guide at Warrimoo Public School.

the input of CRC researcher Dr Briony Towers. Dr Towers provided expert insight on research findings and insights into how children learn about bushfires. The collaboration is continuing, and Dr Towers and her team will evaluate the guide over upcoming fire seasons to gather baseline data so that its impact on community safety can be measured over time.

"We were really keen to be involved with the NSW RFS in producing the guide," Dr Towers said.

"It is more than just being able to provide learnings from our research. It is really valuable to learn as much as we can from Tony Jarrett and Brenda

Doran-Higgins from the NSW RFS on community engagement and designing education programs. Collaboration and partnerships are a big part of what the Bushfire and Natural Hazards CRC is all about, and it has been fantastic to be a part of developing the guide.

"We will now work on evaluating the guide and gathering some baseline data so that we can measure its impacts on community safety over time."

The guide sessions are structured using the 'learn, practice, share' approach to give both children and parents a clear understanding of the material. ■

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AFAC17 CALL FOR ABSTRACTS OPEN



Queensland Fire and Emergency Services Commissioner, Katarina Carroll was one of the keynote speakers at AFAC16, which took place in Brisbane.

COLLABORATING FOR SUCCESS—IMPROVING PERFORMANCE IN EMERGENCY MANAGEMENT

Collaborating and improving performance are essential for success in emergency management.

Innovating in the face of disruptions and developing our people to successfully manage organisations of the future is a key challenge. Understanding what our people need in order to deliver what communities expect is no simple task. Working together is how we will deliver the best results.

AFAC17 will focus on how we can work together to improve our performance, what leading the way looks like and who will benefit from our collective effort.

SUBMITTING YOUR ABSTRACT

AFAC member organisations have been asked to conduct an internal selection process for abstract submissions. If you are a staff member or volunteer of an AFAC member organisation, please contact your organisation in relation to this before submitting an abstract online.

To submit an abstract and for more information on the topics visit: www.afaconference.com.au/call-for-abstracts. The call for abstracts will close in mid-February.

The call for abstracts for AFAC17 powered by INTERSCHUTZ is now open and will close in mid-February.

Co-produced with the Bushfire and Natural Hazards CRC, the conference will explore the theme *Collaborating for Success—Improving performance in emergency management* and will again open with the CRC's Research Forum.

Abstract submissions are open to all with involvement in emergency management including professionals, volunteers, researchers and academics from industry, community and all levels of government (www.afaconference.com.au/call-for-abstracts for details).

AFAC17 will be held at the new International Convention Centre in Darling Harbour, Sydney, from 4–7 September 2017.

To explore the theme, abstracts should address:

- ◆ **Collaboration and performance**—including the opportunities for collaboration that allow for the delivery of effective and efficient services to communities, with examples of how collaboration has driven performance.
- ◆ **Research utilisation and innovation**—research utilisation and innovation are paramount to ensuring ongoing capability development and improvement. This topic will explore approaches, complexities and the culture needed to create organisations where both are supported.

- ◆ **Data to drive performance**—the use of data to drive performance is complex. How are, could and should data be used in the emergency management sector?
- ◆ **Strengthening organisations**—understanding that successful organisations are those that can leverage the social capital of their workforce to continually improve service delivery, this topic will explore how in a sector built on the command and control model the needs and expectations of the modern workforce can be supported.
- ◆ **Public value**—defining, measuring and managing public value is a major challenge facing the public sector and AFAC17 will explore how alignment across the public value proposition, organisational capabilities and sources of political support and legitimacy creates successful organisations.
- ◆ **Value of mitigation and disaster resilience**—moving beyond the PPPR model to focus attention on mitigation and disaster resilience, this topic will explore where our collective efforts should be focused. ■



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COOPERATION KEY TO EMERGENCY RESPONSE SUCCESS

South Australia's state emergency management arrangements stood up to the tests posed by ferocious storms that knocked out electrical power across the state.

BY **CHRIS BEATTIE**

Chief Officer, South Australian State Emergency Service

One of the most extreme weather events to ever hit South Australia arrived with great ferocity on 28 September 2016 and brought with it a series of intense low-pressure fronts that crossed the state from the west and south-west. The severity of the weather conditions was magnified by a powerful low-pressure system that deepened over the Great Australian Bight. By 4.00 pm, the entire state was without power.

Although it was restored to the metropolitan area within six hours, large areas of the state remained without power for an extended period. Power to Port Lincoln was not restored until the morning of 1 October 2016.

Over the nine days following the initial storm, a series of fronts brought destructive winds, heavy rainfall, floods and storm tides to central and eastern districts of the state. Key characteristics of weather-induced hazards included:

- ◆ storm-force winds over coastal areas
- ◆ damaging wind and destructive gusts on land

- ◆ at least seven confirmed tornados
- ◆ thousands of storm damage incidents
- ◆ storm surge in gulf waters
- ◆ damaging waves
- ◆ heavy rain and large hailstones (some measuring 4–5 centimetres)
- ◆ supercell thunderstorms and lightning
- ◆ simultaneous floods in multiple catchments
- ◆ dam burst inundation.

The impact and response challenges arising from this weather system were compounded by saturated catchments in many districts and a fatigued emergency services workforce, which had been stretched over winter and spring with an unprecedented level of operational activity.

Although there were no fatalities, other losses were significant with storm damage and flooding in several catchments; Adelaide Plains, Adelaide metropolitan area, Mount Lofty Ranges and the mid-north were among the worst-affected areas.

Impact assessments of building and vehicle losses were undertaken in hardest-hit locations by a multi-agency damage assessment team led by

police. Overall, there was limited private property damage with about 5,000 insurance claims in total. However, there were significant infrastructure losses and social effects, particularly in the intensive horticultural areas in the Gawler catchment near Virginia.

Some of the direct consequences included:

- ◆ in the mid-north, 23 electricity towers and three high-voltage circuits were brought down by the storm, causing a shutdown of power to the entire state
- ◆ significant damage to roads, bridges, jetties, rail and other infrastructure
- ◆ storm damage to hundreds of properties and thousands of trees downed or damaged
- ◆ storm surges caused significant coastal damage and erosion, particularly on the west coast and eastern coast of the Spencer Gulf
- ◆ primary producers in the Northern Adelaide plains were hit hard, with initial cost estimates of more than \$51 M of damage. Up to 300 primary producers were affected and about 1,500 hectares of farming land (open

PHOTO: SOUTH AUSTRALIAN STATE EMERGENCY SERVICE



South Australian SES responded to thousands of storm and damage incidents across the state.

fields and 727 greenhouses) was inundated as a result of the floods from the Gawler catchment.

Cooperation key to success

The statewide response to this event was significant and largely successful. Cooperation between agencies and between federal, state and local government organisations was one of the keys to this success. It soon became apparent that a collective and coordinated effort was required and a large number of government agencies – including South Australia Police, South Australian Country Fire Service (SA CFS), South Australian Metropolitan Fire Service and the Department of Environment, Water and Natural Resources – were called upon for their assistance.

The Australian Defence Force and deployments of emergency services volunteers from Victoria and Western Australia also helped bolster the state's response. SA State Emergency Services could not have managed an event of this scale alone.

The capability and value of volunteer emergency responders was realised throughout the event. Systems and

processes associated with receipt of emergency calls, dispatch of emergency resources and communications about the event (including scaled alerts and warnings) were successful.

South Australia's SES State Control Centre (SCC) remained activated 24/7 throughout the event with staff levels varying between 20 and 45 personnel at any given time. In addition, the State Emergency Centre, State Crisis Centre, regional coordination centres, zone emergency centres, local unit control centres, and catchment-based incident control centres were activated or established to facilitate command, control and coordination of the response effort.

The operational response involved substantial levels of consequence management activity associated with effects on infrastructure, loss of electricity, dam failures, levee breaches, transport disruption, food shortages, health system impact and business disruption.

Some of the consequence management issues and challenges were associated with landline and mobile suppliers experiencing

fluctuations in their networks due to the lack of mains power supply and subsequent loss of triple zero services to some communities.

Other issues included cancellation of community events and effects on tourism and small businesses, failure of backup generators for some hospitals, restricted access to fuel and cash in some regional areas, closure of the central train station in Adelaide due to lack of backup power and traffic management issues.

A coordinated recovery effort

As the weather abated response activities were de-escalated, interstate crews returned home, control centres were stood down, staging areas repatriated and there was a transfer of responsibility to recovery agencies. On 6 October at 11.00 pm the SES SCC was stood down.

Recovery operations started early with the establishment of a recovery hotline. Preliminary outreach activities were coordinated for communities affected in the Gawler catchment from the Roseworthy Incident Management Control Centre.

A local Recovery Coordinator was formally appointed by the state government on 4 October and soon after the local Recovery Committee and Community Reference Group were established.

Outreach services were coordinated into affected communities, with assistance from the Australian Red Cross and Pastoral Ministry Services. These services continue in Clare, Stockport, Blyth and the Northern Plains regions.

Other aspects associated with the recovery efforts included:

- ◆ registration of spontaneous volunteers via Volunteering SA & NT
- ◆ translation of key recovery information and public health fact sheets into Khmer and Vietnamese
- ◆ establishment of a recovery hotline with operating hours extended to 24/7 and 13,028 calls received between 28 September and 24 October
- ◆ formal Natural Disaster Relief and Recovery Arrangements notification to the Commonwealth
- ◆ in excess of 14,600 applications were made for a loss of power grant and more than \$7.5 M was paid to applicants
- ◆ 152 emergency relief grants were paid (\$86,470) and 142 flood clean-up grants were paid (\$68,400)
- ◆ coordinated de-watering and pumping reimbursement schemes for inundated land owners
- ◆ waiving of waste disposal levies for those affected by the event.
- ◆ Recovery assistance grants of up to \$10,000 for primary producers offered to those who suffered direct damage as a result of the Gawler River floodplain floods and are intending to re-establish their primary production businesses.

Most council areas have not finalised damage costs at the time of writing; however, there is substantial road and coastal infrastructure damage.

The response to this event required a considerable effort from many people across the community. Their combined efforts to minimise the effects on the community highlighted the professionalism and willingness of those in the emergency management sector to help the South Australian community during times of need.

As with all complex emergencies there will be much learned and opportunities to improve. On balance, the community was well served by the state's emergency management arrangements, which stood up when put to the test. ■

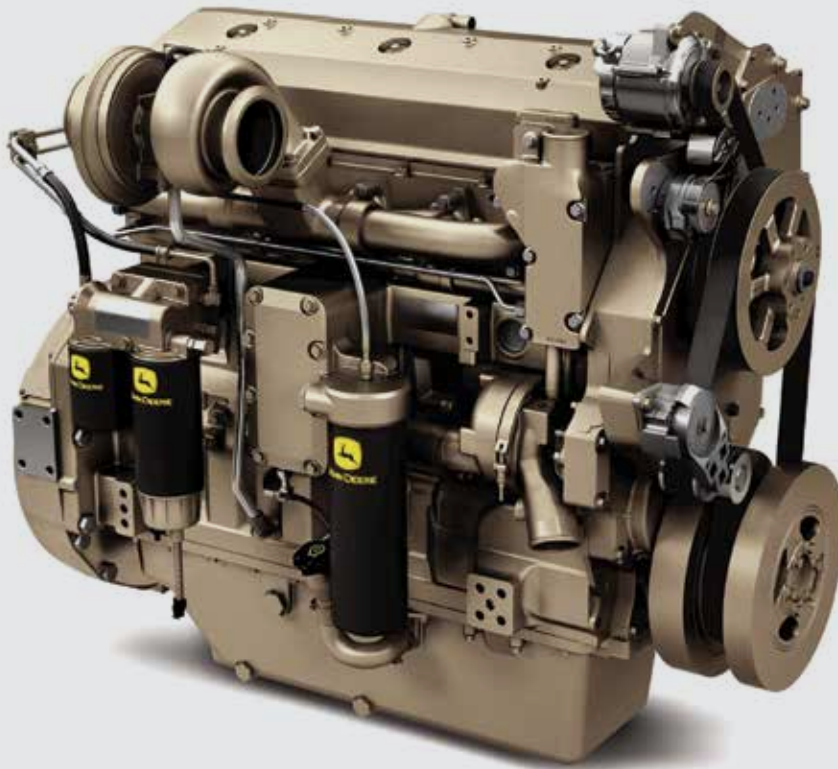
KEY FEATURES ASSOCIATED WITH THE RESPONSE AND COORDINATION EFFORTS

- ◆ 93 flood warnings were issued by the SES
- ◆ 57,812 SMS text message warnings sent to at-risk communities
- ◆ Significant community response involving self-help for flood preparedness and the distribution of more than 314,000 sandbags from 44 SES, SA CFS and council depots around the state
- ◆ Emergency Relief Centre activations involved eight facilities, which combined received 9,948 registrations
- ◆ Declaration of a 'Major Incident' by the Commissioner of Police for a 12-hour period
- ◆ Multiple meetings of Cabinet's Emergency Management Council
- ◆ Interstate support from Victoria and Western Australia under the new national Arrangements for Interstate Assistance developed by AFAC's Commissioners and Chief Officers Strategic Committee
- ◆ Provision of Commonwealth support under COMDISPLAN and the deployment of an Emergency Management Liaison Officer to the SES SCC
- ◆ Provision of ADF support under Defence Aid to the Civil Community arrangements
- ◆ State Emergency Information Call Centre Capability activation involving fall over to the National Emergency Call Centre.



PHOTO: SOUTH AUSTRALIAN STATE EMERGENCY SERVICE

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INDUSTRY AWARDS TO GET BIGGER IN 2017

BY **JOHN REES**

Communications Manager, FPA Australia

Following the huge success of the inaugural Fire Protection Industry Awards in November, FPA Australia CEO Scott Williams has promised the 2017 event will be bigger still.

“The response from industry has been overwhelmingly positive,” Mr Williams says. “This is something the industry has wanted for a long time and it’s great that the first event has been received so well.

“We are already planning for the 2017 event in Melbourne to be even more spectacular.”

The award winners were:

- ◆ Harry Marryatt Company of the Year Award for 1–49 employees—**Bushfire Prone Planning**
- ◆ Harry Marryatt Company of the Year Award for 50+ employees—**Arup**
- ◆ Barry Lee Technical Excellence Award—**Andre Mierzwa of FM Global**

- ◆ Young Achiever Award for the most outstanding young leader in the industry—**Daniel Rhodes of Territory Fire Service and Training**
 - ◆ AV Viscogliosi Outstanding Service Award—**David Isaac.**
 - ◆ Meritorious Service Awards—**Grahame Douglas and Simon Hill.**
- “Thanks go to our Principal Partners Tyco Fire Protection Products and Alan Wilson Insurance Brokers, our Welcome Partner Kidde and our Award Category Partner Wormald for their great support,” Mr Williams says.

Platinum members

FPA Australia also celebrated the contributions made by its Platinum members in 2016–17—Brooks Australia, Chubb Fire & Security, FlameStop Australia, Alan Wilson Insurance Brokers, Kidde, Wormald and Tyco Fire Protection Products. ■



Entertainment on the night was provided by The Enormous Horns.



Arup award received by David Graham.



Winner of the Barry Lee Technical Excellence Award, Andre Mierzwa.



David Isaac received the AV Viscogliosi Outstanding Service Award.



[L–R] Scott Williams, Barry Lee, Andre Mierzwa and Andrew Lee.



Awards host Tony Barber.



Simon Hill receives his Meritorious Service Award.



Kathy Nastov, Bushfire Prone Planning, receives her award.



Grahame Douglas receives his Meritorious Service Award.

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Part Number	Major Application
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A489FG	GREAT WALL X240; MITSUBISHI Challenger PA, Pajero NH,NJ,NK Petrol, Starwagon, Triton MH,MJ,MK Petrol
A1311FG	MITSUBISHI Lancer, Mirage, Outlander
A1397FG	TOYOTA Hilux RZN Petrol, Landcruiser Prado VZSJ95R
A1412FG	NISSAN Patrol GU (Diesel)
A1438FG	TOYOTA Hilux (Diesel & Turbo Diesel) (02-14) various
A1449FG	MITSUBISHI Pajero (02-14)
A1495FG	NISSAN Navara D22 Series (Diesel & Turbo Diesel)
A1504FG	HOLDEN Jackaroo Turbo Diesel 3.0L (3/98-04), Rodeo Turbo Diesel 3.0L RA,TRF6,R9
A1512FG	HOLDEN Colorado RC (Petrol), Rodeo RA (Petrol) 2.4L & 3.5L; MITSUBISHI Challenger PB, PC (Diesel), Triton ML,MN,MQ
A1522FG	TOYOTA Landcruiser VDJ76-79 (Petrol), Landcruiser Prado KZJ (Turbo Diesel), RZJ120R (03-04)
A1527FG	SUBARU Liberty, Outback, Forester, Tribeca, XV
A1541FG	FORD Ranger PJ,PK (Turbo Diesel); MAZDA BT50 DX (Turbo Diesel); TOYOTA Hilux (Turbo Diesel) w/1KDFTV & 2TRFE (Petrol) Engines
A1619FG	NISSAN X-Trail & Dualis (Petrol), Gashqai
A1622FG	MITSUBISHI ASX, Lancer CJ (incl. Evolution), Outlander ZG, ZH
A1784FG	FORD Ranger PX (Turbo Diesel), Everest UA (Turbo Diesel); Mazda BT50 UPOY
A1789FG	NISSAN Navara NP300
A1811FG	HOLDEN Colorado RG, Colorado 7 - Z71 (Turbo Diesel)
A1828FG	ISUZU D-Max TF (07/12 ..on), MU-X
A1829FG	VOLKSWAGEN Amarok
HDA5980FG	CFA Pump Engines (interchangeable with Donaldson P122510)
HDA5286FG	CFA Pump Engines (interchangeable with Donaldson P902846)



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RSK15FG	A1522FG	R2651P	R2657P		TOYOTA	Landcruiser, Megacruiser VDJ70 Series (Turbo Diesel)
RSK25CFG	A1784FG	R2720P	R2724P	RCA227P	FORD, MAZDA	Ranger PX; BT-50 UPOY (Turbo Diesel)
RSK2FG	A1541FG	Z418	R2619P		TOYOTA	Hilux, Hilux Surf, KUN16/26
RSK30FG	A1412FG	R2593P	Z712		NISSAN	Patrol GU ZD30D (09/07 - on)

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Halon is a potent ozone-depleting substance. It has been illegal to own or use halon-based fire protection systems in Australia since 1995, unless for an approved essential use.

People are encouraged to surrender their halon fire extinguishers for safe disposal. Extinguishers can be surrendered to fire services or holders of an Extinguishing Agent Trading Authorisation. The National Halon Bank will pay transport and disposal costs for extinguishers surrendered by the public.

Holders of Extinguishing Agent Trading Authorisations and fire services across Australia play an important role in the disposal of halon extinguishers held by the community and businesses. The process these organisations should follow for disposing of halon fire extinguishers is:

- 1** Accept halon extinguishers surrendered by the general public.
- 2** Arrange free pick-up of the extinguishers by contacting the National Halon Bank on 1800 658 084.
- 3** Safely store extinguishers until the National Halon Bank's transport contractor collects them.

HALON THE DESTROYER

The environment needs your continued support. One kilogram of halon 1211 can destroy 50 tonnes of ozone! Please continue to accept and arrange for disposal of halon fire extinguishers by following the three steps described in the main article. Together, we can continue to safely remove halon held in Australia.

More information, including whether deposit fees apply, can be found on the Department of the Environment and Energy's website at: www.environment.gov.au/protection/ozone/halon/halon-disposal



PHOTO: CREDIT TO COME

Halon extinguishers being safely transported for recycling.

FIRE AUSTRALIA 2017

ICC Sydney 3–5 May

Fire Australia 2017 is the fire protection industry's major event for the year. This year it will for, the first time, combine three distinct areas of fire and life safety. As well as focusing on key topics related to all sectors within the fire protection industry, FPA Australia is partnering with the Society of Fire Safety to include a dedicated 'Fire Safety Engineering' stream throughout the conference.

In addition a Hazmat stream will once again feature at the conference. As the premier fire and life-safety event in Australia, the bringing together of these three key areas will result in a bigger and better conference and tradeshow that promises to attract key decision makers and leading subject matter experts from government and industry.

The event will also host key industry professionals from the fire protection, fire safety, emergency management and hazardous materials sectors, as well as representatives of government and fire agencies.

All of these stakeholders will be engaged by a variety of presentations and industry experts with a passion for delivering positive outcomes

Fire Australia 2017 Tradeshow

The tradeshow at Fire Australia 2017 will be the largest exhibition of its type that specialises in showcasing products and services for the fire protection and hazardous materials sectors. FPA Australia anticipates it will attract at least 1,000 visitors.

Held over three days, including an evening session on Day 1, the tradeshow will be promoted as an event in its own right, providing educational and product demonstration opportunities to attract hundreds of fire protection representatives.

The organisers have secured the largest ever space for a Fire Australia tradeshow, at the brand new Sydney International Convention Centre. This state-of-the-art venue overlooks Darling Harbour and will cater for an exhibition space of more than 4,000m², allowing for more than 100 exhibition booths.

The exhibition space will be central to all activities, including catering and café seating areas and the Showcase Theatre – a

dedicated presentation area where sponsors and exhibitors can display their products and services.

Professions represented will include fire protection manufacturers, distributors and technicians, fire safety engineers, fire and emergency management planning consultants, facility managers, property developers and building owners, fire and emergency service personnel, government authorities and agencies, building surveyors, architects and building designers, personnel involved in storage, handling or transportation of dangerous goods, and specialists responsible for approval, classification and labelling of hazardous substances industry consultants

For more information regarding attendance, sponsorship or exhibition opportunities at Fire Australia 2017 please visit www.fireaustralia.com.au or call the Events Team at FPA Australia on (03) 8892 3184 or email: events@fpaa.com.au.

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The Wye River bushfire in Victoria on Christmas Day 2015 was an example of a community that took action when threatened, resulting in zero fatalities.

LIVE TO TELL THE TALE

What does it mean to survive a natural disaster? To mark the International Day for Disaster Reduction, the Bushfire and Natural Hazards CRC hosted a public event to hear perspectives on disaster risk reduction.

BY **FREYA JONES**

Communications Officer, Bushfire and Natural Hazards CRC

Every year on 13 October communities around the world discuss what they are doing to reduce their disaster risk. The International Day for Disaster Reduction, an initiative of the United Nations Office for Disaster Reduction, is recognised globally and focuses on a different theme each year. In 2016, communities, organisations, governments and individuals reflected on the theme Live to Tell, discussing fatalities and the survivors of disasters.

The Bushfire and Natural Hazards CRC and RMIT University held a free

public forum on the research and policies that aim to prevent deaths in natural disasters. Every year the CRC hosts an event in association with the day, featuring a variety of speakers tackling the theme from different angles such as policy and practice, research and the human side. The 2016 event considered what it means to survive a disaster and how we can enable communities to live to tell the story.

Speakers at the forum in Melbourne came from across the emergency management sector: Mark Crossweller AFSM, Emergency Management Australia (EMA); John Schauble, Emergency Management Victoria (EMV); Dr Katharine Haynes, Bushfire

and Natural Hazards CRC and Risk Frontiers; Dr Martine Woolf, Bushfire and Natural Hazards CRC and Geoscience Australia; and John Richardson, Australian Red Cross.

Dr Richard Thornton, CEO of the CRC, told the audience that the day was a significant step in bringing leaders in emergency management together.

"The day provides an opportunity for all of government, local and state government, NGOs [non-government organisations], civil society groups, academics and science and business communities to demonstrate support for the implementation of the Sendai Framework for action on disaster risk reduction," he said.



PHOTO: SOUTH AUSTRALIAN STATE EMERGENCY SERVICE

SES volunteers clean up storm damage around Adelaide. The International Day for Disaster Reduction is a day for communities to discuss what they are doing to reduce their disaster risk.

Policy and practice

In his role as Director-General of EMA, Mark Croweller is responsible for the coordination of Australia's response to crises including natural disasters and terrorist or security-related incidents.

Mr Croweller framed the topic from a federal perspective and addressed a seemingly simple but ultimately complex question: "Are we prepared for catastrophic disasters?"

Mr Croweller argued that we need to accept the inevitability of unimaginable, catastrophic disasters in order to prepare for them. He argued that when we reached that level of disaster severity the impact and consequences began to exceed our capability because often we had never experienced them.

"Understanding our point of limitation is very important. One of the points of limit in the human mind is the limits of knowledge, skills, experience and imagination," he said.

Mr Croweller reflected on how events such as the 2009 Victorian Black Saturday fires or the 2003 Canberra fires had tested the limits of those responding to them. "When you hit extreme and catastrophic, the event and its

manifestation go way past the capability. When you talk to commissioners and chief officers, two things come out of the conversations. One is 'we dodged a bullet'—they say that it could have been worse—and the second thing they'll often say is 'we were stretched to our limit'."

Following Mr Croweller, EMV's Director for Emergency Management and Resilience, John Schauble, spoke about the state policy side of disaster risk reduction and the importance of the language used to frame policies.

"The emphasis here in Victoria has shifted very much from managing risk to managing consequence," Mr Schauble said. Rather than focusing all the efforts on what agencies and government could do in the wake of disasters, the focus had turned to building resilient communities. He explained that EMV was in the process of developing a risk resilience framework to help empower communities to make decisions.

Reflecting on the 2009 Black Saturday fires that claimed 173 lives, Mr Schauble spoke about the shift in policy and language in Victoria. "The immediate aftermath of significant disasters is the worst possible time to

develop public policy, yet this is often the political cycle in which public policy is made."

In the aftermath of Black Saturday, 'primacy of life' emerged as the principal policy. "It's interesting because I'm sure no one in government or fire industries, certainly not firefighters, ever doubted that primacy of life was the key objective."

The 'Stay or Go' policy, which was active at the time of the fires, was seen to place too high a premium on the idea that property ranked equally with preservation of life, Mr Schauble said. "The policy shift was one of emphasis. The message became 'leave early' and the defence of property became secondary."

The shift in bushfire policy was put to the test in Victoria during the 2015 Christmas Day bushfire in Wye River. Mr Schauble reflected that the change worked well and resulted in zero fatalities.

"There was a clear message. There was a community that was primed for action and they took action. As a sector we're accepting that we can't actually eliminate risk but we can increase the capacity of communities to bounce back afterwards," Mr Schauble said.



PHOTO: BUSHFIRE AND NATURAL HAZARDS CRC

Speakers at Australia's International Day for Disaster Reduction event were [L-R] Professor John Handmer, Mr John Richardson, Dr Katharine Haynes, Mr John Schauble, Dr Martine Woolf, Mr Mark Croweller and Dr Richard Thornton.

Disaster research

Dr Katharine Haynes's research with the CRC and Risk Frontiers investigated human fatalities from natural hazards, in particular floods, and created a dataset of information to determine trends around each fatality.

Dr Haynes said the data showed that most people who died in floods were men, comprising 80% of all recorded flood fatalities since 1900. However, this trend was shown to be shifting over time.

"Although there are still statistically more men dying in floods, from the 1960s onwards we're seeing more women fatalities," Dr Haynes said.

So why are people dying in floods and how can we change their behaviour? The research showed that often people simply underestimated the danger. "The highest proportions of men and women are dying while they are attempting to cross a bridge or flooded road. Where the information is available we can see that most of those people are trying to make their way home," Dr Haynes said.

The research also considered people's capacity to make decisions during the event. "For most people they are aware of the flood but the speed and depth took them by surprise."

Most of the deaths in vehicles occurred at night or during twilight when visibility was poor, which could suggest that drivers were unaware of the exact danger of the situation, Dr Haynes said.

The research posed many questions as to whether the messages were getting

through to people, whether we needed to invest more in improving infrastructure and whether we were accurately evaluating our risk reduction strategies.

Dr Martine Woolf's research for Geoscience Australia focused on the impact of natural disasters, in particular earthquakes.

Dr Woolf used contrasting examples of the 6.2-magnitude earthquake that struck central Italy in August 2016 and killed 250 people, and a similar-magnitude earthquake in the Petermann Ranges in Australia, which killed no one. The difference, of course, was the location—the earthquake in Italy struck in a densely populated and built environment, while the Petermann Ranges in the remote Northern Territory are largely unpopulated.

Dr Woolf's research used realistic disaster scenario analysis to model potential disasters in urban cities in Australia to gain a greater understanding of their effects. She provided an example scenario involving a 4.3-magnitude earthquake in Sydney. It was a scenario that might seem unimaginable, but one that was very possible, she said.

"With the work we are doing modelling disaster scenarios we are asking what can we do to try and prevent some of these impacts from happening, specifically when it comes to injuries and fatalities," she said.

Dr Woolf's scenario analysis also looked at how we could mitigate the effects of the Sydney earthquake

scenario through retrofitting houses. When modelling the same magnitude earthquake on retrofitted housing, the damage was significantly lessened.

The answer could be in improving the resilience of existing structures, Dr Woolf said. "We can understand elements of the puzzle that we can actually control to improve the outcome, in terms of fatalities and injuries.

"In the case of earthquakes and many other hazards, all the housing and infrastructure legacy assets are vulnerable to hazards. We think about modern building codes but forget that they are not applicable to many of the structures you see around you."

The human side of disasters

John Richardson, the National Coordinator for Preparedness at the Australian Red Cross, gave a different perspective on disaster resilience and what it meant to survive a disaster. Drawing on his experience as a registered nurse working in bereavement and trauma, he focused on the human side of fatalities.

"Death is an increasingly foreign concept for us in modern society ... when death happens now it's unusual; it is a surprise, so our societal reactions are quite overt," he said.

Mr Richardson spoke about the meaning that deaths give to disasters and the way we interpreted them. "We tend to categorise disasters by death tolls, not by those who have been left behind to deal with the aftermath, or those that survive."

The ingrained attitudes we placed on survivors in telling them they were lucky and to think of those who did not survive were potentially harmful, he said. "Your experience as a survivor is actually diminished."

Another human inclination was our tendency to feel collective ownership over disasters, which could be damaging to the survivors and families and friends of those who died, Mr Richardson said. "After a disaster your grief is not your own. You mourn in the view of the public, including the mourners-in-chief, the inquisition."

The forum closed with a panel discussion where speakers answered questions from the audience. The day was an important opportunity for a range of voices and perspectives on disaster risk reduction to be heard.

The forum was filmed and can be viewed at: www.bnhcrc.com.au

The 2017 International Day for Disaster Risk Reduction is all about reducing the number of people affected by hazards globally. The CRC will host an event in Sydney on 13 October.

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THAI PYROGEN DEATHS A GRIM REMINDER

The Australian Standard for condensed aerosol fire extinguishing systems recommends safety features to prevent accidental activation.

BY **BRETT STAINES**

Chair, FPA Australia Technical Advisory Committee for Special Hazard Fire Protection Systems (TAC/11/22)

The tragic deaths of eight people following the accidental triggering of a Pyrogen extinguishing system in a Thai bank in March 2016 should not happen in Australia as long as the necessary standards are used.

Pyrogen systems have been sold and installed in Australia for more than 20 years. Pyrogen is a specific brand of a type of product, known as a 'condensed aerosol fire extinguishing agent'. This article provides guidance in relation to the Australian Standard for such systems and recommendations to ensure locally installed systems incorporate the safety features required by AS 4487 to minimise the possibility of a similar incident occurring.

While the incident in Thailand related to a specific brand of condensed aerosol, it should be noted that different brands have different chemistries and

as a result different toxicology. At least one condensed aerosol product has a sufficiently safe toxicological profile to be listed with the US Environmental Protection Agency Significant New Alternatives Policy (US EPA SNAP) and approved for use in occupied spaces.

Enquiries about the specific approvals and toxicological information on individual brands of condensed aerosols should be directed to the relevant manufacturer or supplier.

Australian Standard requirements

Australian Standard AS 4487 *Condensed aerosol fire extinguishing systems—requirements for system design, installation and commissioning and test methods for components* provides guidelines for these types of systems.

It details the potential safety hazards associated with condensed aerosols and specifies safety precautions and features to be incorporated in such systems to minimise the risk of exposing people to a discharge of condensed aerosol.

These are some of the safety hazards and precautions detailed in AS 4487:

- ◆ Potential hazards of aerosol extinguishing systems include noise, reduced visibility, high temperature, turbulence, potential toxicity and skin or eye irritation to people in the protected space and other areas where the aerosol may migrate.
- ◆ Determination for use of an agent in spaces that are normally occupied or normally unoccupied shall be based on an evaluation of the adverse effects(s) caused due to accidental exposure to the aerosol
- ◆ In any proposed use of aerosol where people may enter the protected enclosure or be close to the protected risk, suitable safeguards such as personnel training, warning signs, pre-discharge alarms and system isolate switches shall be provided. Means of ventilation after fire shall be readily available



- ◆ **Aerosol generators shall be installed in such a manner that they will not potentially cause injury to personnel. Condensed aerosol shall not directly impinge on areas where personnel may be located.**

In addition to the above warnings, AS 4487 specifies that the following safety features be incorporated into condensed aerosol systems:

1. Automatic/manual switch, to allow the system to be placed in manual mode when the protected enclosure is occupied.
2. System isolate switch to prevent discharge of the system during maintenance activities.
3. Exit routes and emergency lighting and adequate direction signs to minimise travel distances from areas that may be occupied.
4. Outward-swinging, self-closing doors that can be opened from the inside, including when locked from the outside.
5. Continuous visual and audible alarms at entrances and designated exits

inside the protected area and a continuous visual alarm outside the protected area, which operate until the protected area has been made safe.

6. Appropriate warning and instruction signs. Warning notices must be provided at all entrances to the protected enclosure.
7. Means for prompt natural or forced-draft ventilation after discharge.

Recommendations

If you have a Pyrogen system installed in your facility or you service a facility with such a system installed, the following is strongly recommended.

Land-based systems

1. An audit of the system be conducted to ascertain its compliance to the requirements of the current edition of AS 4487 (land-based systems).
2. The system is upgraded to incorporate the important safety features specified in AS 4487 or replaced with an alternative fire extinguishing system.

While it is not a specific requirement of AS 4487, it is recommended that dual stage detection and control systems be installed (where appropriate) in conjunction with condensed aerosol extinguishing systems so as to minimise the possibility of accidental operation.

Marine systems

1. An audit of the system be conducted to ascertain its compliance to the requirements of the current edition of the National Standard for Commercial Vessels (NSCV).
2. The system is upgraded to incorporate the important safety features specified in the NSCV or replaced with an alternative fire extinguishing system.

Note: when servicing any condensed aerosol system, it is essential that the aerosol generators are electrically disconnected before undertaking any service activities that could cause an unintended discharge of the system. ■

FIRESTORMS: THE BUSHFIRE/ THUNDERSTORM HYBRIDS WE URGENTLY NEED TO UNDERSTAND

The journal *Climatic Change* has published a special edition of review papers discussing major natural hazards in Australia. This article is one of a series looking at those threats in detail. It was originally published in *The Conversation*.

THE CONVERSATION

Extreme bushfires account for only a small number of fires, but they cause the majority of building losses.



PHOTO: DEPARTMENT OF FIRE AND EMERGENCY SERVICES, WA



BY **ASSOCIATE PROFESSOR
JASON SHARPLES**

Bushfire and Natural Hazards CRC and the University of New South Wales

Fire has been a driving force across Australia for millennia. Indeed, the health of many of our ecosystems is intrinsically dependent on fire. But bushfires are also one of our most frequent natural hazards, with a total cost estimated at A\$340 million per year.

In the past decade or so, extreme bushfires in south-eastern Australia have burned more than a million hectares, claiming more than 200 lives and over 4000 homes. Similar losses in other major urban areas have prompted questions about whether we are seeing a shift towards a significantly more hazardous fire regime, characterised by increasing fire frequency and intensity, and the development of catastrophic 'firestorms'.

While these extreme bushfires account for only a very small percentage of fire events, they are responsible for the lion's share of bushfire-related losses.

In contrast to typical bushfires, which spread across the landscape as well-defined burning fronts with smoke plumes perhaps a few kilometres high, extreme bushfires exhibit deep and widespread flaming and produce smoke plumes that can extend 10–15km into the atmosphere.

At these altitudes, bushfire plumes can actually develop into thunderstorms (hence the term 'firestorm'). As such,

extreme bushfires become much more difficult for emergency services to handle, making them all but impossible to suppress and their spread difficult to predict.

Beyond hot, dry and windy

Like other dangerous bushfires, firestorms are driven by hot, dry and windy weather. But to spawn a firestorm, a range of other conditions must also be met; these can include a rugged landscape, particularly nasty weather events that produce 'spikes' in fire danger, and conditions in the upper atmosphere that allow fire plumes to grow to considerable heights.

While previous studies have considered past and projected changes in the hot, dry and windy aspect of fire danger, less research has been done on the future projections for these other types of conditions. This means that we have quite a poor understanding of how extreme bushfires might affect us in the future.

As part of a series of reviews produced by the Australian Energy and Water Exchange initiative, my colleagues and I have taken a closer look at the most catastrophic bushfire cases and the factors that drive them, beyond the usual hot, dry and gusty weather.

There has been an overall increase in the frequency of major bushfire events in south-eastern Australia since the mid-19th century. In particular, in the past 15 years a major fire event has occurred every five years or less. While some of this increase is due to changes in land use since European colonisation, there

is also strong evidence of climate-driven changes.

We found that besides increases in dangerous surface fire danger conditions, upper atmospheric conditions have also become more conducive to explosive fire growth. High levels of the c-Haines index, which signals greater potential for a fire's plume to rise high into the atmosphere, have become considerably more prevalent since the 1980s. The effects of droughts and widespread heatwaves have also contributed to the occurrence of extreme bushfires.

Looking into the future, high c-Haines values are projected to grow more prevalent still, albeit more gradually than over recent decades. Frontal weather patterns associated with particularly bad fire days are also projected to become more frequent during this century, and rainfall is projected to decrease over south-west and south-eastern Australia.

All of this suggests that extreme bushfires will become a more common occurrence into the future.

What we still don't know

Our methods for assessing fire danger do not explicitly account for the effects of extended drought and heatwaves on larger fuel elements such as branches and logs, and so may not properly account for their effects on fire spread and heat release into the atmosphere.

There is also considerable uncertainty about how fuel loads will change into the future. It is possible that the higher fire intensities expected to result from the direct effects of a



warmer, drier climate may be offset by lower fuel loads.

Our understanding of extreme fire occurrence is also hampered by the lack of long-term and prehistoric climate data, which makes it hard to work out what the 'normal' level of extreme bushfires has been in the past. While charcoal records show promise in this regard, we still don't know enough about how charcoal is generated, deposited and subsequently preserved during extreme fires.

To predict the future occurrence of extreme bushfires, we also have more work to do in understanding how the trends forecast by global climate models will play out in terms of creating regional-scale fire weather conditions. And we still need to figure out the likely effects of other large-scale patterns such as El Niño.

Given the relatively recent advances that have been made in understanding the key drivers of extreme bushfires, the field is now ready for targeted studies that will help us estimate the future risk of extreme bushfires—and how best we can confront the threat. ■

While these extreme bushfires account for only a very small percentage of fire events, they are responsible for the lion's share of bushfire-related losses.

CAN LESSONS EVER BE LEARNED?

[L to R] Dr Claire Cooper and Lisa Marie Jackson explained Emergency Management Victoria's EM-LEARN Framework at the Lessons Management Forum.



PHOTO: AFAC

A national Lessons Management Forum contemplates how emergency services can convert lessons into learning that improves how they respond in future to the complex, the uncertain and the unknown.

BY **BRENDA LEAHY**

Communications Officer, AFAC

Operating on assumptions rather than facts, inadequate or incomplete sharing of information, failure to consider the worst case, flawed communications and ambiguous authority among multiple parallel response organisations—sound like a familiar list of lessons identified?

These are among the “25 planning deficiencies” identified from the congressional investigation of the attack on Pearl Harbour in 1941. Fast forward 75 years and, according to Mark Cuthbert of the Attorney-General’s Department, these lessons sound a lot like the key themes that recur in the findings of internal and public reviews of emergencies both in Australia and overseas.

Mr Cuthbert was one of the presenters at a national forum on lessons management hosted by AFAC in Melbourne. Researchers, practitioners and leaders in the field came together to discuss the barriers and opportunities of lessons management. The forum, held in November 2016, came to fruition

through the efforts of AFAC’s Knowledge Innovation and Research Utilisation Network.

Drawing on the recurring ‘lessons’ identified across events such as Black Saturday and the Queensland floods, Mr Cuthbert posed a question: “Can these lessons be learned?” He suggested that the concept of lessons learned was flawed and there was a need to change the thinking around learning from experience.

“Lessons have been identified but not learned about learning lessons,” he said.

One of the major constraints on the traditional lessons learned approach, he said, was that “all our lessons are about the past and all our problems and decisions are about the future”.

This raises questions about how organisations and their people learn to contemplate, prepare for and manage through the complex, uncertain and unknown.

The Deepwater Horizon offshore semi-submersible mobile offshore drilling unit explosion, fire and oil spill in the Gulf of Mexico in 2010 highlighted the consequences of failing to prepare for the worst-case scenario. The crisis resulted in 11 deaths, 17 injured, sunk

the unit, and was billed as the largest environmental disaster in US history.

According to an investigative report in *The New York Times*, the rig crew had “rehearsed for the category one hurricane, but never contemplated the 100-year storm”.

“At critical moments that night, members of the crew hesitated and did not take the decisive steps needed. Communications fell apart, warning signs were missed and crew members in critical areas failed to coordinate a response. The result, the interviews and records show, was paralysis ...” the *Times* reported.

That paralysis stemmed from several sources: “the crew members, though expert in responding to the usual range of well problems, were unprepared for a major blowout followed by explosions, fires and a total loss of power”.

Preparing for the unknown

In high-reliability organisations such as emergency services, how do you use lessons management effectively to prepare for what you do not know or have yet to experience?

According to researcher Dr Christine Owen, a keynote presenter at the Forum,

research on lessons management within the sector has not fully explored this area. Typically, the research focuses on factors such as the need for learning lessons, the processes of capturing and managing the lessons, and explaining barriers to learning lessons, she said.

As a result the concept of learning in emergency management workplaces remained somewhat of a “black box”, she said.

New learning, which involves critically reflecting on work practice and testing assumptions to develop new ways of thinking about old problems, was rare. This was because higher-level learning was disruptive, challenged the status quo and got in the way of the routines and functions of operations and response.

Examples of new learning are testing whether new problems are being made to “fit” old patterns and asking if the identified lesson is an aberration or an emerging pattern of systemic problems.

“The research on organisational learning shows that organisations tend to create learning systems that inhibit practices that would question their norms, objectives and basic policies,” she said.

Some of the challenges for learning lessons included the busyness of agency work, cultural barriers and short-term horizons for change and implementation.

Fixing the weak links in the lessons learning cycle “may therefore require agencies to have a deeper understanding of how to learn and how to make the learning stick in practice”.

According to Dr Owen, some of the ways to make lessons stick include:

- ◆ embedding roles and responsibilities for learning, review and follow-up
- ◆ developing methods to monitor and measure change
- ◆ making best use of crises when political attention is focused
- ◆ paying attention to linking learning with practice
- ◆ embedding the practice of looking for lessons in low complexity, low risk, routine events
- ◆ focusing on the positive elements that need to be sustained as well as what could have been sustained
- ◆ investing in enhanced training and exercising with fewer exercises and narrower and sharper objectives.

A new learning framework

Emergency Management Victoria (EMV) is one agency moving its lessons management focus into a broader whole-of-organisation learning framework.

Dr Claire Cooper and Lisa Marie Jackson, EMV’s Standards and Review team, were a driving force behind the development of the Victorian EM-LEARN (Emergency Management – Lessons, Evaluation and Review Network) Framework.

It has been designed to support continuous improvement processes and activities for all communities, all hazards, all phases, all agencies and all levels, to support behaviour change, future service delivery planning and improving organisational performance.

It was founded on research by Ms Jackson for her master’s degree in 2014, in which she examined the international research literature and conducted case study focus groups in Victoria’s Country Fire Authority, and later developed and approved as a lessons management approach for Victoria’s emergency management sector.

Ms Jackson said success in lessons management hinged on having a culture that supported learning and improvement. Culture influenced how an organisation recorded, analysed and built knowledge, and managed its lessons and could largely explain why many organisations still struggled with implementing effective lessons management.

In a learning culture, learning lessons is a way of operating rather than an after-thought. “Everyone plays a role,” she said. “It’s a move away from recommendations and towards lessons, away from reports and towards case studies and away from action tracking and towards monitoring improvement.”

At the Lessons Management Forum, Australian National University and Bushfire and Natural Hazards CRC researcher Dr Michael Eburn asked whether the recommendations from formal inquiries and reviews into incidents were a helpful mechanism for learning lessons.

The role of the inquiries was to determine what “we can learn from the examination and what we need to do to prevent or mitigate another like event”.

“But following recommendations diligently may not help,” Dr Eburn said. “They may not be practical, they may not be helpful, they may be too expensive and they may reveal other vulnerabilities. No two events

are the same. They may be in conflict.”

Recommendations made with hindsight bias were also unhelpful. It should be about trying to understand why the person made a specific decision in the circumstances, “because people generally don’t come to work to do a bad job or to die”.

The recommendations and approach of formal inquiries overlook the needs of people and the human factors, such as “the need to be heard and to tell our stories, as well as the need to restore relationships”.

“Royal commissions/coroners are adversarial (even if they don’t want to be), make recommendations based on counter-factuals and don’t allow people to tell their story.”

Dr Eburn suggested an approach based on the principles of restorative justice as an alternative to formal reviews. “Disasters harm communities and relationships between government and citizens. A restorative approach would aim to undo the harm,” he told the forum.

“Restorative justice is a process whereby all the parties with a stake in a particular event come together to resolve collectively how to deal with the aftermath and its implications for the future.”

Dr Eburn’s presentation was based on his research for the Bushfire and Natural Hazards CRC. He is seeking feedback on his work, which can be found at www.bnhcrc.com.au. ■

All papers from the Lessons Management Forum are available on the AFAC website: www.afac.com.au



Dr Michael Eburn spoke about the principles of restorative justice and how they could apply to formal inquiries and recommendations.

STRONG CODES ONLY HALF OF THE FIRE SAFETY EQUATION

Industry, government and regulators working together to set and then enforce minimum fire safety standards will produce the best results for the community.



The Lacrosse apartment tower fire in November 2014 at Melbourne's Docklands was front of mind as amendments were made to the National Construction Code that extend mandatory sprinkler protection to Class 2, Class 3, Class 4 and Class 9 buildings.

All Queensland dwellings must have a working smoke alarm from 1 January 2017. The new law, which follows recommendations made after the inquiry into the 2011 Slacks Creek fire where 11 people died, mandates the type of smoke alarm (photoelectric), where it must be installed and how it is powered.

Meanwhile, Victoria has amended the National Construction Code (NCC) to extend mandatory sprinkler protection to include covered balconies in Class 2, Class 3, Class 4 and Class 9 buildings.

This move comes after the highly publicised Lacrosse Apartment fire of November 2014, where a blaze that began on a balcony on the eighth floor rapidly spread up the side of the building because of the use of non-compliant combustible external wall cladding. Although the severity of the fire was caused by several factors, one key element was that the balcony where the fire started was not required to have sprinkler protection because of its size.

The changes were implemented as Victorian variations to the NCC in 2016 with the rest of the country yet to follow; the next edition of the NCC is not due until 2019.

Both cases address occupant safety, but they also illustrate a much wider issue: what is happening in one state is not

necessarily replicated nationally. Some people in the fire protection industry argue that a unilateral approach is not as effective because it is not part of a broader conversation to address a range of cultural issues within the industry.

FPA Australia's General Manager Technical Services and Deputy CEO Matthew Wright says: "The issues at hand are symptomatic of a broader concern that we have of the balance between the effort we put into developing standards and codes versus how they're actually enforced and introduced.

"The only reason we're having a conversation about this topic, which now has such a high profile, is because of two very high-profile catastrophes, one of which saw a tragically high death toll and the other which only narrowly avoided one.

"The irony for FPA Australia is that the technical issue about the requirement for sprinklers on balconies is less interesting than the broader discussion on what's shaping the development of our codes. Is it technical understanding, political benefit, or is it the broader lack of enforcement of the requirements for the industry?

"These new requirements to put sprinklers on balconies, while good in terms of extending the sprinkler coverage and responding to the contemporary use of balcony spaces,

will obviously have a cost associated with them that will ultimately get passed on to the consumer. That is, of course, if the requirements are complied with.

"The issue is about national efficiency and productivity in the building space being consistent, but it's also about clear expectations for industry to meet. Successful industry practice needs to be anchored in strong enforcement and governance from regulators and that, through independent reports on more than one occasion, has been shown to be missing."

FPA Australia also wants to see regulators invest more in industry with a greater emphasis on education.

"FPA Australia has invested heavily in the development of training and of accreditation programs to recognise individuals who can demonstrate competency in roles critical to delivering life safety outcomes," Mr Wright says. "And we still have work to do. However, healthy regulatory regimes are delivered when government and industry partner to setting and expecting minimum standards. Australia isn't really big enough to do this eight different ways.

"Regulators really should be turning to industry bodies to help them establish minimum competency requirements and deliver meaningful education and enforcement programs." ■

NSW LEADS ON FIRE REGULATORY REFORM

The release in late 2016 of the NSW Government's draft *Environmental Planning and Assessment Regulation 2000* amendment in relation to provisions for fire safety in the design, construction and approval of new buildings and building works, has created discussion throughout the industry.

FPA Australia labelled the changes, led by Minister for Innovation and Better Regulation, the Hon Victor Dominello, MP, among the most significant steps to improving fire safety in the state's history.

If adopted, FPA Australia believes the reforms will lead to improved safety outcomes in the state with a raft of changes that address the need to improve fire risk management.

"These are world-leading changes that will have a lasting impact on the management of fire risks in our built environment. The NSW Government and Minister Dominello are to be congratulated on their decision to adopt many of the recommendations from the *Independent Review of the Building*

Professionals Act 2005 (the so-called 'Lambert report')," FPA Australia CEO Scott Williams said.

"This is positive, once-in-a-generation change giving a clear framework for positive building reform so the community can have confidence in the safety of their buildings, whether new or old," Mr Williams said.

FPA Australia has constantly advocated for changes like this for many years. NSW has taken a leadership role and has acted quickly and decisively, consulting with the industry to draft the proposed regulations.

"The most significant part of the reforms is the shoring up of the crucial role played by competent fire safety practitioners. Individuals must be properly trained and credentialed through the proposed co-regulatory accreditation framework. It is essential that any work undertaken on buildings for life or fire safety purposes is done by competent practitioners. Peoples' lives depend on it.

"We never want a repeat of an



Scott Williams,
CEO of FPA
Australia.

incident such as what we witnessed with the tragic loss of Connie Zhang in the 2012 Bankstown fire—a catalyst for many of the reforms," Mr Williams said.

FPA Australia believes there is no better administrator of industry accreditation than the industry itself and operates an accreditation scheme known as the Fire Protection Accreditation Scheme, which already has several thousand accredited practitioners. ■



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THE QUEST FOR RESILIENCE

Emergency services and the want to build 'resilience' into communities. A University of Tasmania academic has developed a way to teach it to students.

BY **HANSIKA BHAGANI**

Bushfire and Natural Hazards CRC

In 2016, Tasmania experienced both bushfire and flood. According to the Tasmanian State Natural Disaster Risk Assessment, Tasmania is also not immune to severe storms, earthquakes and landslides.

To help prepare the next generation for these natural disasters, the University of Tasmania offers an undergraduate unit called 'Resilience in the face of emergencies'. It is a 'breadth' unit, offering a semester-long course of study

that is open to students from all faculties. It provides students with the skills and understanding that allow them to make a difference in their own lives and the lives of others.

Dr Benjamin Brooks is the unit coordinator and teaches the course alongside Dr Christine Owen and Dr Deb Carnes. The course is informed by a project led by Dr Brooks through the Bushfire and Natural Hazards CRC that looks at decision-making during emergencies. This unit, he explained, was critical for students to understand "wicked" problems—where the issues

were resistant to being resolved and where attempted solutions could affect the things that people depend on.

"The wicked problem we are dealing with now is how we improve resilience in the modern world when the number and scale of emergencies are increasing and acting to erode resilience. We want to improve it, but everything that is happening is eroding it," Dr Brooks said.

To understand resilience, students explore the concept from a range of perspectives including psychological and physiological, and at different levels, including personal, community,

PHOTO: BlazeAid



Resilience is not just theoretical; it has very practical applications and can lead to increased levels of involvement within communities.



PHOTO: AUSTRALIAN INSTITUTE OF DISASTER RESILIENCE

CRC research on decision-making is being used in an undergraduate course at the University of Tasmania.

organisational, governmental and global.

"Often people take a very narrow perspective of resilience, being simply the ability to bounce back. In fact resilience includes other aspects such as the work we do in order to be more resilient, even before an event occurs," Dr Brooks said.

"There are about a million books written by people where they've found themselves in an emergency and what they did in order to get out of that. Unpacking those accounts in terms of what the key aspects of psychology and physiology are that determine why this person actually made it through is really critical."

Students are asked to be creative in imagining a disaster scenario, undertaking a personal audit of their resilience based on that scenario, and extrapolating the issues they discover to a community context. On a practical level, students are asked to identify three things that would improve the resilience of their household.

The concept is taken further with students having to think critically about how their personal resilience factors might have effects at state or national levels.

"If they decided that one of the things their household needed was an independent water supply for three days, then we challenge them to think about what the implications are for everyone in the state or in Australia if that was scaled up. What impact does that have at a government level, how does that change the ways these levels of community and organisations should manage resilience and response?" he said.

Often people take a very narrow perspective of resilience, being simply the ability to bounce back. In fact resilience includes other aspects such as the work we do in order to be more resilient, even before an event occurs.

— Dr Benjamin Brooks, University of Tasmania

Many of the students have been affected by natural disaster, but the unit encourages them to think outside the usual emergency scenarios.

"There could be anything from getting lost in the bush to some sort of medical emergency. Essentially we're trying to teach people about resilience because it's not just theoretical, it has a very practical application," Dr Brooks said.

While the unit focuses on emergencies, Dr Brooks was surprised to hear feedback from students that the unit had built their personal resilience in many other areas.

"We had students talking about how their parents had recently split up and they were going to take some of the concepts they've learnt in the course and apply it to that situation. We didn't realise the scope of what we were dealing with until students started pointing out that they could use the learnings from the course to deal with all sorts of personal, emotional or social issues," Dr Brooks said.

While the course has been running since January 2016, Dr Brooks said

the next step was to turn the unit into a massive open online course for others in the community.

"We think there are lots of people in the community who could benefit from a profound understanding of resilience. The next stage is to think about how to design that course, and make it a bit more interactive online to account for the fact that you don't have people standing in front of you," he said.

"I wish these courses were available when I was a student. We spend a lot of time learning specific areas of expertise, and while university education and assessments are becoming more contextualised and more authentic, units like this are doing what I hoped for university students. It demonstrates the complexities of being in the real world and gets them to think through what that means." ■

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NATIONAL POSITION ON PRESCRIBED BURNING RELEASED

Members of AFAC and the Forest Fire Management Group, with the support of Australian government agencies, have agreed on a National Position on Prescribed Burning.

BY **WAYNE KINGTON AND DEB SPARKES**

AFAC

Much of the Australian landscape has evolved with fire. Fire events are a certainty and necessary for the continued survival of fire-dependent species and ecosystems. Indigenous Australians understood this relationship and effectively used fire to manage landscapes for multiple purposes.

Flammable environments create a challenge for public and private land managers to mitigate the risks of bushfires within the context of competing land management objectives.

In developed areas, the natural landscape—containing environmental or conservation assets—is fragmented and punctuated with communities and fire-vulnerable assets such as homes, primary industries, businesses, significant infrastructure and social and economic networks essential to

modern-day functionality.

Previous management philosophies of eliminating fire from the environment proved unsuccessful as they resulted in fuel accumulation where consequential unplanned fires caused catastrophic damage to life and property and resulted in long-term impacts on ecosystem health and biodiversity.

Today, land and fire managers proactively place prescribed fire into the landscape with the objective of reducing the spread and severity of bushfires and improving the safe and effective control of bushfires. Reduced bushfire impacts serve to protect communities, the built environment, ecosystems and biodiversity. Prescribed burning is placed in the landscape at a range of scales; from the local level to protect communities and infrastructure to a landscape level which provides risk reduction and broader ecological benefits. Well planned and implemented prescribed burning is an essential, practical and cost-effective tool for

reducing risk to life, property and the environment.

AFAC are undertaking a multi-year project bringing together inter-related aspects of prescribed burning across Australasia to design guiding frameworks and principles for a more consistent approach to prescribed burning. A key component was to deliver a National Position on Prescribed Burning which was approved by AFAC Council and the Forest Fire Management Group (FFMG) in October 2016.

The National Position on Prescribed Burning includes a position statement agreed upon by Australian fire and land management agencies, along with a number of agreed principles to guide and support prescribed burning activities. It is targeted at anyone interested in the common principles that underpin prescribed burning.

The position

AFAC and FFMG member agencies take the position that prescribed burning is

PHOTO: ECO LOGICAL AUSTRALIA



Well-planned and implemented prescribed burning is an essential and cost-effective tool to reduce the risk to life, property and the environment.

an essential part of bushfire mitigation across the Australian landscape to reduce risk to communities and ecological health.

Each fire and land management agency has different legal, political, organisational, social, economic and environmental requirements, and responds in its own manner in providing its prescribed burning programs.

Under the National Burning Project, extensive consultation with agencies has drawn out and identified common approaches which are defined in the principles below. The context of each principle describes the understanding AFAC and FFMG member agencies have of the environment from which these principles are drawn.

Principle: Protection of life is the highest consideration

Context: Prescribed burning is used in reducing the quantity, extent and connectivity of fuel hazards to assist in protection of life, property and community

assets. The protection of human life will be given priority over all other obligations in prescribed burning operations.

Principle: Landscape health is linked to fire and fire management

Context: Fire affects the environment as a single event and as multiple events (regimes) of differing fire intensities spread over temporal and spatial dimensions. Inappropriate fire and fire regimes pose a significant risk to ecosystem function, health and diversity.

Managing fire in the environment can help to create a mosaic of diverse fire regimes across the landscape. This aims to provide an improved range of habitats and ecosystems. Fire management also aids in the exclusion of fire from fire sensitive ecosystems by reducing adjacent fuel hazards. Maintenance of biodiversity can contribute significantly to the resilience of ecosystems in the face of bushfires and other threatening processes such as climate change and weed invasion.

Australia's Biodiversity Conservation Strategy (NRMCC, 2010) seeks to improve the use of ecological fire regimes to conserve biodiversity and protect the public.

Principle: Prescribed burning is a risk management tool

Context: Bushfires will never be eliminated from the environment. Prescribed burning can help to reduce the risk and severity of impacts that these events have on life, property, community and the environment. Reduced fuel hazards assist the success of first attack efforts and reduce the intensity, extent and impacts of subsequent bushfires.

Prescribed burning is more effective where used alongside complementary risk reduction measures.

Principle: Engagement with community and business stakeholders

Context: Community support for prescribed burning programs is

essential to their success. Engagement is a two-way model (e.g. IAP, 2016) whereby the intentions of agencies are communicated to stakeholders and concerns of stakeholders are identified and considered at all levels of prescribed burning planning and during the burn. In this way, the benefits to land managers and the broader community are optimised and any adverse impacts are minimised as far as practicable. Community engagement also serves to increase awareness of the benefits of prescribed burning for risk reduction and ecosystems.

Principle: Prescribed burning is done in the context of measurable outcomes

Context: Objectives of individual prescribed burns should be clearly stated, preferably as measurable objectives. Clearly stated objectives facilitate the formation of suitable burn prescriptions, fire implementation tactics and allow evaluation of burn success for adaptive management purposes. Objectives of individual burns should be guided by and service strategic objectives. Strategic objectives include broad organisational level goals that are further detailed through performance

measures that allow an organisation to monitor the success of burn programs.

Principle: Informed knowledge of fire in the landscape

Context: Our knowledge of fire, including fire behaviour, ecological responses to fire and the measurement of risk reduction from prescribed burning, can all be informed by sharing research and experience. Informed knowledge comes from research outputs from academic institutions, effective measurement, monitoring and evaluation of the operational programs undertaken by agencies, and from across the community including the knowledge of Traditional Owners. Applied knowledge will allow communities and managers to respect fire as a tool and a hazard. Knowledge can always be enhanced, so fire managers must engage in an adaptive management process to ensure improvements can be made across all processes and activities in a continual improvement framework.

Principle: Capability development

Context: While the theory of fire behaviour and fire ecology can be taught in a formal setting, the skill of

placing prescribed fire in the landscape to meet stated objectives requires practical experience that can only be gained under variable operational conditions. Experienced practitioners are a highly valued commodity. The knowledge of experienced practitioners should be captured through targeted development, mentoring and training programs to increase agencies' human capital and to feed into agencies' continuous improvement.

Principle: Traditional Owner use of fire in the landscape is acknowledged

Context: Fire is culturally significant to Indigenous Australians. The use of fire by many Indigenous Australians to shape the landscape is widely acknowledged. Where Traditional Owners have not been able to continue these practices the depth of spiritual and cultural knowledge and connection to the land is maintained through stories and memories. Integration of this retained knowledge into current agency practices should be actively supported and promoted. Where knowledge gaps exist, agencies should work with Traditional Owners to build that knowledge, and, where appropriate, revive practices.

Principle: An integrated approach is required across land tenures

Context: An integrated and cooperative approach across all tenures is the best way to minimise bushfire risk to lives, property and the environment. Responsibility for risk reduction should be shared between all landholders (including land management agencies) and achieved by risk treatment within the boundaries of their own property and cooperatively with neighbours to increase these benefits across their shared landscape. Education on risk reduction is required in some cases to increase the understanding of the benefits of prescribed burning.

Principle: Prescribed burning is carried out under legislative, policy and planning requirements

Context: Agencies that carry out prescribed burning are required to comply with Commonwealth and relevant respective state or territory legislation that address facets of land management, environmental protection and Indigenous cultural heritage, among other requirements. ■

For more information and to download the position go to:
www.afac.com.au/initiative/burning

PHOTO: NSW PARKS AND WILDLIFE SERVICE

ACKNOWLEDGEMENTS

This position was prepared by AFAC in conjunction with the Forest Fire Management Group (FFMG), a subgroup of the Forestry and Forest Products Committee under the Agriculture Senior Officials' Committee and Agriculture Ministers Forum. The project was funded by the New South Wales Rural Fire Service with funds made available from the Commonwealth National Bushfire Mitigation Program. This position was prepared by Deb Sparkes, Wayne Kington and Gary Featherston of AFAC. Our thanks go to the AFAC and FFMG member agencies that contributed material and extensively reviewed the position document.

Community support for prescribed burning programs is essential to their success.



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RESEARCH HELPS FIRE PROTECTION IN BANGLADESH

PHOTOS: WORLD VISION AUSTRALIA



With structures packed tightly together in slums, fires can spread very quickly.

CRC research partners with World Vision and Google to help those in need.

BY **DYLAN BRUCE**

Research into how Australian children are involved in bushfire preparations around the home is being applied to disaster preparedness in the slum communities of Bangladesh.

Dr Briony Towers, through her PhD research with the Bushfire CRC completed in 2011, found that including children in the development of an emergency management plan greatly increased its effectiveness.

“If children are given the opportunity to access knowledge and information, and to be involved in emergency management planning, they actually have really great ideas that can improve the plan for the household and their community,” Dr Towers said.

Focusing on child-centred disaster risk reduction in Australia for her PhD in psychology, which she completed in 2011, Dr Towers has continued her child-focused work as a research fellow for RMIT University and is involved with the

Bushfire and Natural Hazards CRC.

Dr Towers is now assisting World Vision Australia to deploy a fire detector device, produced by the South African social enterprise Lumkani, in Bangladeshi slums. The Lumkani device is a sensor that, on detecting rapidly rising temperatures, sends out alerts to all other nearby Lumkani devices and to the phones of device owners.

World Vision Australia was recently involved in the Google Impact Challenge, which allows the public



Research is backing up the deployment of Lumkani in Dhaka.

to vote for a charity project to receive \$750,000 in funding. While not taking out the overall prize, World Vision Australia was granted \$250,000 by Google and plans to deploy the Lumkani device in informal settlements in Bangladesh. Estimates show that the losses from fires could be halved with the device.

Dr Towers' previous work with the Bushfire CRC has taught her important lessons about the role of children in disaster preparedness that she can apply to her work on deploying the Lumkani device in Bangladesh. "My PhD gave me a lot insight into the importance of understanding children's knowledge and experience from their own perspectives," Dr Towers says.

"I met kids that had been given genuine roles in their family's plan, and they were able to give me detailed descriptions of how to defend a property and what the different dangers are that you need to be thinking about.

"These kids were telling me all this information that is all consistent with the advice of the fire agencies, and that was because they had been given a genuine role in their family's emergency response plan."

According to Dr Towers, children who are included in the planning phase can become competent in making disaster



The Lumkani device is small, but will make a big difference in Dhaka.



The Lumkani device has already been rolled out successfully in parts of Africa and is easy to install.

risk reduction decisions at a young age, preparing them for future roles as community decision-makers. "They can actually be making really good decisions around disaster risk reduction now as children and young people."

In her work in Bangladesh, Dr Towers will apply the lessons learned from her research to best support the deployment of the Lumkani device. "Making sure children and youth have a seat at each table where a decision is being made about implementing the warning

system and making sure they have the information they need to genuinely participate is really important," she says.

"There might be some training workshops specifically for children where they have the opportunity to ask questions and see how the detector works." ■

Find out more about the Lumkani project at: www.worldvision.com.au/GIC
Learn more about Dr Towers' research at: www.bnhcrc.com.au

NEW PRESIDENT READY TO CEMENT AFAC'S VOICE

In a new series, AFAC CEO Stuart Ellis will interview a senior AFAC leader for each issue of *Fire Australia*. First up he spoke to new AFAC President Paul Baxter, who at the time was Chief Executive and National Commander of New Zealand Fire Service and has recently been appointed Commissioner Fire & Rescue NSW.



BY **STUART ELLIS**

Chief Executive Officer, AFAC

Congratulations on being elected as AFAC President. Do you have any key priorities coming into the role?

Thanks. Having been on the AFAC Board for some time I have a good understanding of where we are as an organisation. We've come through a period of significant growth and scope of the business operations, which is great. What's now required is a period of stability and bedding in of these new functions so we can maximise the benefits to members and the sector. All of these new areas were considered when we took them on, and they offer us the opportunity to really cement AFAC's position as the respected voice for Australasian fire and emergency management.

Will your appointment help to further integrate New Zealand into AFAC as the Australian and New Zealand National Council?

Without doubt—New Zealand has been a committed member for some time now. I think back to my first exposure to AFAC as a new chief, and the development that I was exposed to that helped shape my leadership. The availability of that kind of development has helped develop New Zealand's fire services and continues to do so.

If you couple that with the collaborative groups and access we have to the wider international community, the opportunities are endless. New Zealand has always felt an integral part of AFAC. We have a strong commitment to staying involved and my appointment as President will help that.

Given your time on the AFAC Board prior to your election as President, what are your existing impressions of the value of AFAC?

AFAC has gone from strength to strength and is driving value for its members by promoting recognition of the emergency

services profession. In my view it is starting to punch at the right weight level—we provide a consistent, clear and compelling voice for the sector. This voice is essential for us to position the sector's critical issues in the right place, not only at a government level but also from a community perspective.

Initiatives such as the Emergency Management Professionalisation Scheme, the Australian Institute for Disaster Resilience, the National Resource Sharing Centre, and bringing the AFAC conference under the INTERSCHUTZ family of exhibitions are all examples of successful engagement with the sector at a domestic and international level.

APPROACH TO LEADERSHIP AND THE SECTOR

Can you provide us with some background to your previous roles in NZFS?

My career began almost by accident. I was intent on becoming a pilot and had begun training but was encouraged to join the volunteer fire brigade by my boss. I got hooked and a couple of years later combined my love of aviation and the fire service by joining the Royal New Zealand Air Force as a rescue firefighter (yes we have an air force, admittedly not a big one!). I then took an opportunity back with the New Zealand Fire Service and entered as a career recruit. I had a pretty orthodox career, progressing through the ranks of firefighter, officer and on to chief officer.

Being a national service, I was able to work in our national headquarters in the media team, which was a great learning experience. I was also seconded for a project in the Ministry of Health to work on a national ambulance strategy. I was then promoted to region commander and later given responsibility for reorganising and standardising our region structures nationally.

During this time, I volunteered and worked part-time for the St John Ambulance, gaining and maintaining authority to practice up until I took on the role of Chief Executive and National Commander.

PHOTO: MARK TANTRUM



AFAC's new President Paul Baxter says the organisation requires a period of stability to bed down its new functions, which will maximise benefits to members and the sector.

You've had an extensive career in fire and emergency services. What has motivated you throughout your career?

That's difficult to answer—I think it's something that comes from within. Like everybody I want to do a good job and have always been motivated by what our organisations exist to do—help people and keep them safe.

That's all the motivation I have ever needed and I am often quoted as saying all of our decisions should be motivated by what's best for the people who need our help. As far as motivation to advance through promotion, I never set out to be the boss when I first started in the service. But I did advance by encouragement from others I worked with and I have always been very



PHOTO: NEW ZEALAND FIRE SERVICE

“One of the best learning experiences I had as a supervisor was to spend a year ‘in the back of the truck’ again as part of the firefighter exchange program. Without any doubt it provided me the most profound learnings of what sort of leader I did NOT want to be.”

Paul Baxter, AFAC President.

AFAC President, Paul Baxter (centre) says all of our decisions should be motivated by what’s best for the people who need our help.

conscious of that in how I encourage others, even if they are comfortable in their existing role.

What do you see as the biggest challenges facing the emergency management sector today?

Without a doubt our biggest challenge will be showing value for money as organisations and I hasten to add, as a sector. We must demonstrate integration at all levels from the way we think to the way we manage our business and plan and deliver our services. Everything we do has to be connected.

Our governments will not allow us to operate in any other way, and the public will not thank us for not doing so either. I think we are a long way towards achieving these things, but there are still opportunities out there to better demonstrate how we can work better together and offer that value.

What is your advice for those starting their career in emergency management?

It’s a difficult question. My advice to people has always been to learn your job as well as you can and always seek out opportunities that will broaden your experience. I think people can fall into the trap of thinking about their next role or promotion before they have fully developed in their current one. The next job will come soon enough, even sooner if you really nail your current role.

One of the best learning experiences I had as a supervisor was to spend a year ‘in the back of the truck’ again as part of the firefighter exchange program.

Without any doubt it provided me the most profound learnings of what sort of leader I did NOT want to be. I have reflected on that ever since and always taken time to think about what my impact on others is, particularly those reporting to me, and essentially walk in their shoes.

The other ‘ringer’ was advice that my mother gave me—“You have two ears and one mouth, use them in the proportion that you were given them”.

TRANSITION IN NEW ZEALAND

The New Zealand Fire Service is in transition, bringing together the New Zealand Fire Service and National Rural Fire Authority along with 40 separate rural fire authorities into one organisation. Can you give us an idea of the processes undertaken to support the transition?

On top of bringing more than 40 organisations together, which is a massive job in itself, we are also overhauling two pieces of outdated legislation from the 1970s into new, non-prescriptive legislation that better represents the roles and duties expected of firefighters today.

The first part of this process started a few years back when we set a new organisational vision. ‘Leading integrated fire and emergency services for a safer New Zealand’ is what we refer to as our Vision 2020. Set for both the New Zealand Fire Service and National Rural Fire Authority, it is a multifaceted vision that sets out behaviours, leadership, technology and supporting

volunteerism goals. This started a much more cooperative way of working between rural and urban agencies.

The transition is complicated and will take several years to evolve. The new responsibilities, functions and powers all require a complete redesign, and bringing together 40 organisations with separate governance and management structures, procedures, equipment, health and safety systems, etc, makes for a lot of moving parts.

An independent transition team has been established; as of now it consists of about 70 people. These specialist change managers and subject matter experts from the sector ensure sensible input to the design of the new organisation, which will be known as Fire and Emergency New Zealand (FENZ).

The legislation still has to pass in Parliament, though we expect this to occur by April 2017, so it can come into effect from 1 July. Additional funding has been provided by the Government over the duration of the program to address shortfalls in rural fire funding and improve our volunteer support systems and ICT capability.

In what ways will this transition support the career and volunteer workforce?

There is a lot in this for both career staff and volunteers. The organisation is going to be larger and will require more people in full-time roles to support the new responsibilities required in the legislation, including hazardous materials management, building and land risk management and compliance, fire investigation, training, volunteer

support and a new offences and penalties regime. That means a lot of development ahead for roles in the new organisation, which will provide many opportunities.

There is also a large focus on providing better support for volunteers. Many of these initiatives had been identified in the Vision 2020 strategy, such as a volunteer resilience and volunteer leadership programs, however we did not have the funding to progress these until now, as the funding package specifically allocates the money to do this.

And how will it benefit communities across New Zealand?

Moving from 40 organisations to one will remove some duplicated layers of governance, and a simpler funding system will ensure equal resourcing for all, so communities can expect the same or better level of service.

The other community assurance mechanism is the inclusion of a 'local committee' structure that is designed to give local input and advice to the national governing board. This concept has been specifically included in legislation to prevent a 'Wellington-centric' bureaucracy. Communities should also be assured that their volunteers will be better supported, and they will be getting a consistent level of service wherever they live in New Zealand.

Finally, noting the recent events in New Zealand, what are the key lessons from Christchurch that are being implemented in the current response?

As an organisation we took a bit of hammering in the wake of the Christchurch earthquakes with reviews, inquiries and coroners' inquests all having a lot to say. We actually did really good work in Christchurch, and lives were saved because of that, but we did have some failings. We learned a lot from this experience and have been on a path to address all that we could since then.

We overhauled our doctrine and procedures for disaster response involving urban search and rescue (USAR) national-level responses and invested heavily in our coordination centres at the region and national level. We introduced new technology and training for our staff, and regularly hold exercises to test our capability in these areas.

We committed to a comprehensive program of command development with all senior staff completing the AFAC Strategic Command course and introduced our own tactical and

strategic command training courses, which nearly all frontline officers have completed nationwide. Our USAR team has completed and gained the United Nations heavy classification and we have additionally invested a huge amount in USAR equipment and training for our people.

We now have a more proactive approach to emergency management events in New Zealand and require regions to be more on the front foot with emerging events, standing up coordination centres early and pre-positioning resources where possible.

Last November gave us a real test. Not only did we have a 7.8-magnitude earthquake, we had the complexity of it impacting multiple locations, including the small coastal town of Kaikoura, which was completely cut-off because of large slips on the main roads in and out. Several smaller towns in the South Island were also damaged, alongside parts of Wellington's CBD.

The following day we also experienced a 'weather bomb' in the wider Wellington region, with torrential rain cutting off the two main roads in and out of the city, further testing our resolve. Although our national headquarters building and coordination centre was out of action until we could get it seismically checked by engineers, we were able to use our fall-back centre in the Wellington region headquarters as a planned contingency.

Our frontline staff in all of the locations did what they do best and swung into action assisting their communities, with

more than 2000 calls for help received in the first 24 hours. Fortunately, due to the epicentre not being too near a main city and it being in the middle of the night, loss of life was minimised.

There were of course some snags along the way, but all minor, completely expected and all will be learned from just like we did last time. I was really pleased to see many things that have been put in place post-Christchurch were able to be used to good effect. I was impressed with the level of support provided by people across the organisation, who were able to come together and manage an excellent response to the communities affected.

At the time of writing our teams are still deployed but beginning to wind down. The aftershocks continue to roll in as expected. As there is still a possibility of a significant aftershock, our stand-down is being managed with this in mind.

The big lesson for me personally is that a commitment to learn from your past problems, resource the required improvements and not forget past lessons is what makes you a learning organisation that can continually grow. All the effort our people put in to improve our response was worthwhile in the end, and the result was outstanding service to our communities. ■

The Vision 2020 document for the New Zealand Fire Service and National Rural Fire Authority can be accessed at:
www.fire.org.nz/About-Us/Our-Organisation/Documents/Vision%202020.pdf



PHOTO: NEW ZEALAND FIRE SERVICE

Paul Baxter (top right) completed his training with the New Zealand Fire Service.



The USS Forrestal fire in 1967.

DISASTER IN THE GULF OF TONKIN—1967

BY **BARRY LEE, OAM**

On the morning of 29 July 1967, in the Gulf of Tonkin about 95 kilometres off the coast of North Vietnam, the USS Forrester experienced the worst US aircraft carrier fire since World War II. Two aircraft had just taken off when a Zuni rocket loaded in a pod under the wing of an F4 Phantom aircraft accidentally fired.

The rocket streaked across the flight deck and struck an A4 Skyhawk jet, puncturing the fuel tank and igniting a fire. Two A4 aircraft, each loaded with two 230kg bombs and Shrike missiles, one A4 loaded with two 230kg bombs and two 350kg bombs, and seven A4s each loaded with two 450kg bombs were engulfed in the fire.

Only 90 seconds after the fire started a 350kg bomb detonated, killing or seriously wounding most of the firefighters. The detonation ruptured the flight deck, spilling some 150,000

litres of JP5 (kerosene) fuel into the hangar deck below. More detonations followed. Major explosions continued for about five-and-a-half minutes. One 230kg bomb, one 350kg bomb, seven 450kg bombs and several missiles and rocket warheads exposed to the fire exploded with varying degrees of violence.

It took 10 hours to extinguish all of the fires on the ship, but not before 134 members of the Forrester's crew died and a further 161 were injured, 64 of them severely. Twenty-one aircraft were destroyed and another 39 damaged. The damage bill exceeded US\$72 million (equivalent to US\$511 million today), not including the damage to the aircraft.

Subsequent shipboard testing recommended the provision of flush-mounted, remote-controlled, zoned flight deck water spray systems. Automatic aqueous film-forming foam proportioning systems were also recommended for installation in the saltwater mains supply for each zone protection. ■

AN EARLIER TRAGEDY

The aircraft carrier the USS Constellation was heavily damaged by fire while in the final stages of construction at the Brooklyn Navy Yard in New York on 19 December 1960. The fire broke out when a dumpster truck operating on the hangar deck damaged a 1900-litre diesel fuel tank. Spilled fuel reached the lower levels of the ship and was ignited, possibly by a cutting torch. The fire took 17 hours to extinguish and 50 shipyard workers perished. Construction was delayed by seven months and the damage bill was US\$75 million.

BY IAN FINDLAY

Technical Coordinator, FPA Australia

STANDARDS AUSTRALIA

FP-001 Maintenance of fire protection equipment

Amendment 1 to AS 1851-2012 was published on 16 November 2016.

FP-002 Fire Detection and Alarm Systems

AS 4428.4:2016 (Emergency intercom control and indicating equipment) was published on 25 October 2016 as was Amendment 1 to AS 7240.4 (Power supply equipment). Work continues on revisions of AS 1603.3 (heat alarms), AS 1670.3 (fire alarm monitoring) and AS 4428.6 (alarm signalling equipment), and on the development of a new handbook for fire detection, warning, control and intercom systems (to complement AS 1670.1 and 1670.4).

FP-004 Automatic fire sprinkler installations

FP-004 met in early November 2016 to resolve the public comment and votes from the combined procedure (public comment and committee ballot) for the revision of AS 2118.1, *Automatic fire sprinkler systems—General systems*.

FP-008 Fire Pumps and Tanks

The kick-off meeting for Amendment 1 to AS 2304-2010, *Water storage tanks for fire protection systems*, has now occurred.



FP-009 Fire hydrant installations

The revision of AS 2419.1, *Fire hydrant installations—System design, installation and commissioning* went to a second round of public comment, which closed on 8 December 2016.

FP-011 Special Hazard Fire Protection Systems

Public comment for Amendment 1 to AS 4487-2013 (aerosol systems) has closed. Very few comments were received and it is expected to be published in early 2017. Standards Australia is working to resolve some issues before releasing the revision of AS 14520 (recombined and redesignated AS 4214) to public comment.

FP-018 Fire Safety

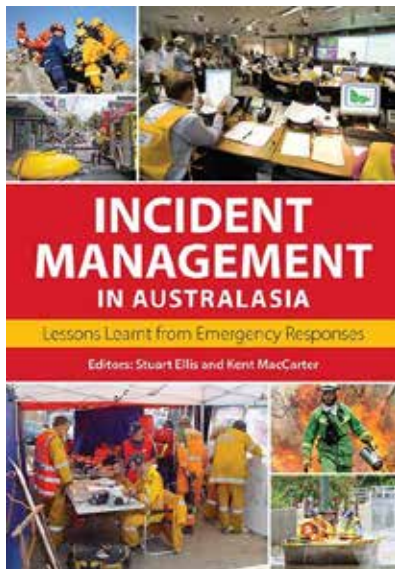
Work continues on the revisions of AS 1530.8.1 and AS 1530.8.2 (testing of elements of construction for buildings to simulate bushfire attack).

FP-020 Construction in Bushfire Prone Areas

Work continues on the revision of AS 3959, *Construction of buildings in bushfire-prone areas*.

LG-007 Emergency Lighting in Buildings

The draft revisions of AS/AS 2293 Parts 1, 2 and 3 (emergency escape lighting and exit signs) were released for public comment closing 21 November. LG-007 met in December to resolve the public comment received.



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Lessons Learnt from Emergency Responses

Edited by Stuart Ellis and Kent MacCarter

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TECHNICAL AND ADVISORY GROUPS AND SPECIAL INTEREST GROUPS

TAC/1 Maintenance of fire protection systems and equipment

With the publication of Amendment 1 to AS 1851-2012, the Good Practice Guide *Baseline Data for Routine Service of Fire Protection Systems* (GPG-05) has now been published. Work continues on a Technical Advisory Note on routine servicing of aspirating smoke detectors with respect to emerging technologies.

TAC/2 Fire detection and alarm systems

TAC/2 continues to work on a Good Practice Guide for speaker layouts. The FPAS questions are now complete and applications are being considered for FPAS accreditation in Fire Systems Design and Fire Systems Certify classes for fire detection and alarm systems.

TAC/3/7 Portable and mobile equipment

TAC/3/7 has reviewed the ABCB Consultation Regulatory Impact Statement (RIS) on *Assessment of the National Construction Code's fire hose reel requirements for new (Class 5) office buildings* and worked with the national office to make a submission in response to this RIS.

TAC/4/8/9 Fire sprinkler and hydrant systems, tanks and fixed

TAC/4/8/9 continues to work with the Pump Industry Association on fire pumpset checklists and certification documents for use by designers, manufacturers and certifiers. The FPAS questions are now complete and applications are being considered for FPAS accreditation in Fire Systems Design and Fire Systems Certify classes for fire sprinkler systems and fire hydrant and hose reel systems.



TAC/11/22 Special hazard fire protection systems

The Position Statement on Vehicle System Service Technician Competency has been published. TAC/11/22 continues to work on how the Queensland DEHP firefighting foam policy will be implemented and what advice FPA Australia can give to assist members and users in understanding and meeting this policy. This includes updating IB-06 to reflect FPA Australia's recommendations for environmental practices.

TAC/17 Emergency planning

TAC/17 continues to work on a variety of projects and is monitoring and contributing to the development of Amendment 2 to AS 3745-2010.

TAC/18 Fire safety and TAC/19 Passive fire protection

Following the receipt of advice from the ABCB in response to questions raised about issues covered by the TAC's draft Good Practice Guide on fire stopping systems, the TAC has worked extensively on addressing these issues.

TAC/20 Bushfire safety

TAC/20 continues to follow and contribute to the development of the AS 3959 revision. It also continues to monitor the revision of a NSW Rural Fire Service document, *Planning of Bushfire Protection*.

TAC/T

TAC/T continues to monitor the work by skills service organisation (SSO) Artibus Innovation as it forms working groups (of which FPA Australia has sought membership) for the monitoring and revision of fire protection qualifications under the construction and property services training packages.

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PAUL BAXTER

Paul Baxter has been appointed as Commissioner, Fire & Rescue NSW. Mr Baxter has more than 30 years' experience in fire and emergency services and was previously Chief Executive and National Commander, New Zealand Fire Service. See page 44 for our Q&A with Paul.

GREG CROSSMAN

Greg Crossman, Chief Officer and Chief Executive of the South Australian Metropolitan Fire Service (SA MFS), has been appointed as an AFAC Board Director. Mr Crossman joined the SA MFS in 1978 as a firefighter and was appointed Chief Officer and Chief Executive in 2015.

FRANCES DIVER

Frances Diver has been appointed as Chief Executive Officer at the Victorian Country Fire Authority (CFA). Ms Diver joins CFA after working for more than a decade as a senior executive in the Department of Health and Human Services.

SHANE FITZSIMMONS

Shane Fitzsimmons, Commissioner, NSW Rural Fire Service (NSW RFS), has been appointed as an AFAC Board Director. Mr Fitzsimmons has more than 30 years' experience with the NSW RFS and was appointed Commissioner in 2007.

GREG MULLINS

Greg Mullins has retired from the role of Commissioner of Fire & Rescue NSW. Mr Mullins served as Commissioner for 13 years and began his firefighting in 1978 with the then NSW Fire Brigade (see article on page 6).

PETER RAU

Peter Rau has retired from the position of Chief Officer at the Melbourne Metropolitan Fire and Emergency Services Board (MFB). Mr Rau has had a distinguished career with 30 years' experience in fire and emergency management with the CFA and MFB.

JENNIFER REILLY

Jennifer Reilly has been appointed as Director of the Northern Territory Fire, Rescue and Emergency Services. Ms Reilly has experience working across several government agencies including Queensland Police Service, Public Service Commission and Department of Health.

STEPHANIE ROTARANGI

The Victorian Department of Environment, Land, Water and Planning has appointed Dr Stephanie Rotarangi as Chief Fire Officer. Dr Rotarangi comes to the role from New Zealand's Otago Rural Fire Authority where she was Chief Executive.

DOUG SMITH

Doug Smith, Deputy Commissioner, Capability and Performance at the Queensland Fire and Emergency Services (QFES), will bring his expertise in strategy and reform to the Board of the Bushfire and Natural Hazards CRC after being successfully elected at the recent Annual General Meeting.

MARK SPAIN

Mark Spain has been appointed as Chief Fire Officer at the Northern Territory Fire, Rescue and Emergency Services. Mr Spain is a Northern Territory local with 30 years' experience as a professional firefighter.

SHANE WISEMAN

Shane Wiseman has retired from the position of Manager Fire and Flood Management at South Australia's Department of Environment, Water and Natural Resources. Mr Wiseman served on the AFAC National Council, was a member of the Forest Fire Management Group and Chairman of the Fire Equipment Development Officers Group.



Paul Baxter



Greg Crossman



Greg Mullins



Shane Fitzsimmons



Frances Diver



Jennifer Reilly



Peter Rau



Doug Smith



Stephanie Rotarangi



Mark Spain



Shane Wiseman

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Commercial and Storage | Dry Pendent ELO Sprinklers

Viking's Standard Response and Quick Response Dry Pendent ELO Sprinklers are the first of their kind as the only FM Approved ELO dry barrel models. With a nominal K-factor of 11.2 (161), the new sprinklers can reduce the overall water demand required in many cold storage sprinkler systems, particularly where ceiling heights are 35 ft. (10,5 m) and below. By reducing water supply requirements, Viking's new dry ELO sprinklers can help lower system costs by possibly eliminating the need for a fire pump and reducing the size of system piping and related components. Plain barrel, standard adjustable, and recessed adjustable models are all available in both standard and quick response options.

- The only FM Approved ELO dry barrel pendent sprinkler.
- Ideal for a wide variety of low temperature commercial and cold storage applications subject to temperatures below 40° F.
- 1 1/4" barrel and thread size – requires 1 1/4" tee.
- Lengths in 6" increments from 12" to 48" (305 to 1,219 mm) for plain barrel, standard adjustable, and recessed adjustable models.
- Available in ordinary, intermediate, and high temperature ratings; 165° F (74° C), 205° F (96° C), and 280° F (138° C).

Approvals: Factory Mutual

K-factor: 11.2 (161)

Connection: 1-1/4" NPT
(requires 1-1/4" tee)
32 mm BSP

Temperature: 165°F (74°C)
205°F (96°C)
280°F (138°C)

Operating Element: Fusible Link

Finish: Brass, Chrome, White

Item Price Group: V19.5

Occupancy/Hazard: Storage/Non-Storage

Technical Datasheet: F_040815

Wrench: 19748

Contact your local Viking SupplyNet team to place an order today!

Scan to view
technical data



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General reference only. Prior to the design, layout, and/or installation of any sprinkler system, please refer to Viking's technical documentation and consult with the AHJ.

Trusted above all.™

VIKING®